



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 21 – Project Plan Requirements
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

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About this document

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1 General

- (a) This Appendix 21 to the SWTC contains requirements for the Quality Plan and other Project Plans required under the deed.
- (b) Except as required by Section 1(b) of this Appendix 21, the Contractor may combine and integrate the requirements of the various Project Plans detailed in this Appendix 21. Where the Contractor elects to combine plans, all the requirements pertaining to individual plans detailed in this Appendix 21 must be addressed in the combined plan.
- (c) Notwithstanding the requirements of 1(a) above, the Environmental Management Plan, the Project WHS Management Plan and the Traffic Management and Safety Plan must be separate documents.
- (d) Further to the quality system requirements specified in Section 3.1.1 of the SWTC, the Contractor must utilise Quick Response (QR) codes as part of its document control and management system. As a minimum:
 - (i) QR codes, which can be scanned or interrogated by QR readers including those commercially available for smart phones or tablets (Apple iOS, Google Android or Microsoft Windows based operating systems) (Mobile Device), must be included on all Project Plans;
 - (ii) when the QR code printed on a document is scanned or interrogated, the user's Mobile Device must be directed to a website that is established and kept up to date by the Contractor; and
 - (iii) the website (referred to in section 1(d)(ii) above) must provide a clear statement to the Mobile Device to either confirm that the scanned document is the latest version, or indicate that it has been superseded by a later version. If the scanned Project Plan has been superseded, the website must provide the user with the option of directly downloading the latest version of the document to the Mobile Device or provide a link for the user to access the latest version from another device.

2 Quality Plan

- (a) The Quality Plan must satisfy the requirements specified in section 3 of the SWTC.
- (b) The Quality Plan must contain, as a minimum:
 - (i) the contents specified in Section 3 of the SWTC;
 - (ii) a schedule of Process Control Plans for work processes required by clause 7.5.1 of RMS Specification D&C Q6 and Inspection and Test Plans required by clause 8.1.1 of RMS Specification D&C Q6; and
 - (iii) a schedule of Hold Points and Witness Points.
- (c) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Quality Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in the design and construction processes, including the use and development of new designs and materials;
 - (ii) new design and construction processes requiring documentation which the existing Quality Plan does not address; and
 - (iii) changes in quality processes requiring documentation which the existing Quality Plan does not address, including changes associated with continuous improvement measures and those arising from corrective actions for minimising the recurrence of non-conformities.
- (d) The Contractor must initially submit the Quality Plan to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 30 days of the date of the deed.
- (e) The Contractor's Quality Plan must meet the overall quality requirements as per RMS Q6. This reflects Quality Standard ISO 9001; 2008 with additional requirements to meet RMS specific requirements.
- (f) The Contractor must not commence any Contractor's Work on the Construction Site until:
 - (g) the Quality Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time; and
 - (ii) all hold points required to be released prior to commencement of work upon the Site have been released in accordance with the requirements of the deed or the Quality Plan (as the case may be).

3 Project Management Plan

- (a) The Project Management Plan must identify the procedures, processes and management systems which:
 - (i) are not included in any other Project Plan;
 - (ii) the Contractor intends to apply to ensure delivery of the Project Works, Temporary Works and Contractor's Works in accordance with the deed; and
 - (iii) detail the interfaces between all the Project Plans and identifies the processes and responsibility for management of these interfaces.
 - (iv) demonstrates how the Contractor will discharge all of its obligations under the deed with a high degree of certainty and reliability, and which demonstrates to RMS the Contractor's full acceptance of its accountability for its obligations under the deed (**accountability**). As a minimum, the Contractor must document the strategies and actions that it will implement to:
 - A. ensure that the Contractor's accountability is accepted by the Contractor's personnel at all levels of the Contractor's organisation;
 - B. ensure that the Contractor's senior management remains informed as to the full delivery of the Contractor's accountability, and any departures by the Contractor's personnel or organisation; and
 - C. address any shortcomings or departures in the delivery of its accountability.
- (b) The Initial Project Management Plan is Appendix 35 to the SWTC.
- (c) The Project Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the Project Deed, within 20 days of the date of the deed; and
 - (ii) contain, as a minimum, the contents specified for the Project Management Plan in the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the Project Deed, the Contractor must undertake the ongoing development, amendment and updating of the Project Management Plan throughout the duration of the Contractor's Work to take into account:
 - (i) outcome of management reviews;
 - (ii) changes in the project management process; and
 - (iii) changes identified by the continuous improvement of processes.
- (e) The requirements set out in the Initial Project Management Plan are minimum requirements for the Project Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Project Management Plan.

- (f) As a minimum (unless dealt with in another Project Plan), the Project Management Plan must address:
- (i) the management team structures, nominated management and supervisory personnel, duty or position statements that clearly detail both accountability and responsibility for leading and achieving outcomes in service and product quality, WHS, environmental management, traffic management and community, the minimum skill levels of each position, the lines of communication and the performance milestones for the management team for each of the design and construction phases of the Contractor's Work;
 - (ii) processes to identify and manage work to be sub-contracted, including quality, safety, environmental and communication aspects of the Contractor's Work;
 - (iii) processes to ensure integration of the Contractor's personnel with designers and sub-contractors, and RMS personnel;
 - (iv) risk identification and risk management strategies and requirements for a formal "Risk Management Plan". The Risk Management Plan must be specific to the Project Works, the Temporary Works and the Contractor's Work. The Risk Management Plan must comply with the requirements of AS/NZS ISO 31000, include a risk register and detail processes for identification, management and close out of risks;
 - (v) independent project verification and proof engineering;
 - (vi) management interfaces with other Project Plans;
 - (vii) issues management, including the provision, implementation and operation of a management database of design and construction issues arising during the Contractor's Work. The issues management database must provide details on:
 - A. all issues;
 - B. the identities of personnel with responsibility for resolution of the issues;
 - C. all comments by RMS Representative, Proof Engineer, Project Verifier, Authorities, designer and Contractor; and
 - D. the status of each issue;
 - (viii) the methods of dealing with Services and any associated Authorities;
 - (ix) the project time, costs and quality control;
 - (x) resources management;
 - (xi) project management;
 - (xii) records management;
 - (xiii) project reporting;
 - (xiv) document management;
 - (xv) industrial relations management;
 - (xvi) strategies for obtaining all necessary Approvals;
 - (xvii) survey and condition monitoring;

- (xviii) the methods for engaging Authorities and recording the outcomes of any communications and agreements with Authorities; and
 - (xix) staff turnover and handover management including the processes for induction, training, expertise development and knowledge distribution.
- (g) The Project Management Plan must detail the methods, systems and procedures required to deliver the leadership requirements of section 2.1(e)(x) of the SWTC. The Project Management Plan must:
- (i) clearly identify accountabilities with respect to leadership, culture and values, including how motivation and visibility will be provided to all personnel engaged on the Contractor's Work. The plan must specifically consider the accountabilities of Senior Management, the Project Director, Construction Managers, Design Manager, Quality Manager, Geotechnical Design Manager, Community Relations Manager, Environmental Manager, Site Safety Representative, Traffic Manager and General Superintendent(s);
 - (ii) identify the methodology to engage sub-contractors and suppliers that have cultures aligned with the requirements of section 2.1(e)(x) of the SWTC;
 - (iii) identify the methodology to communicate the requirements of section 2.1(e)(x) of the SWTC to all personnel engaged on the Contractor's Work;
 - (iv) identify the methodology for the Contractor to lead and manage all personnel engaged on the Contractor's Work to achieve the required performance outcomes. This methodology must also include details of the leadership and management methodology that will be applied to each element of the Contractor's Work;
 - (v) identify the methodology to monitor the Contractor's performance with respect to leadership, culture and values;
 - (vi) identify the methodology and actions to manage organisational leadership and management risks that may materialise, as well as the measures to avoid, mitigate and recover from each risk;
 - (vii) identify the methodology to train personnel in leadership, culture and values;
 - (viii) identify corrective action and preventive processes and procedures where required, including methodologies for thorough investigations of the causes of failures associated with systems and procedures, leadership and management, training and personal accountability; and
 - (ix) identify the methodology to convert the requirements of the Project Management Plan into an action plan. As a minimum, the action plan must address the elements of the Contractor's Work outlined in section 3(g)(iv) and assign actions to the Contractor's personnel identified in section 3(g)(i). The action plan must be updated monthly, and the Contractor's performance against the action plan must be assessed and reported monthly.

4 Environmental Management Plan

- (a) The Environmental Management Plan, which must include the Construction Environmental Management Plan (CEMP), must identify how the Contractor and RMS will comply with their environmental management obligations under the deed.
- (b) The Initial Environmental Management Plan is Appendix 36 to the SWTC.
- (c) The Environmental Management Plan must comply with the requirements of the SWTC, including Appendix 4 (Additional Environmental Requirements) and RMS D&C G36, G38 and the Environmental Documents.
- (d) The Environmental Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the Project Deed, only until after the Notice to Proceed;
 - (ii) contain, as a minimum, the contents specified for the Environmental Management Plan in the SWTC or a reference to the location of that content if provided elsewhere;
 - (iii) define the environmental responsibilities of the Contractor and each position within the Contractor's management team;
 - (iv) include schedules of available resources, including personnel to deal with environmental incidents, processes that would be used to quickly report incidents and processes for learning from incidents, avoiding repeat incidents and training;
 - (v) as a minimum address the need for environmental safeguards and the adoption of environmentally sensitive work practices during any of the Contractor's Work including, but not limited to, procedures for:
 - A. noise, water, air quality, vibration and groundwater monitoring and control;
 - B. management measures to reduce noise levels;
 - C. management measures to avoid, reduce, reuse and recycle waste;
 - D. dust control measures including monitoring, mitigation and remedial actions;
 - E. detection, treatment and disposal of contaminated materials and water;
 - F. water quality control measures and facilities;
 - G. erosion and sediment control plans; and
 - H. road traffic management plans as they affect community safety and amenity.
 - (vi) integrate environmental, design and engineering teams to work together to identify and manage potential environmental risks, environmentally sensitive areas and upcoming construction works;

- (vii) include the proposed document control system to manage environmental information;
- (viii) determine the location of ancillary sites, construction compounds, including the location of any acoustic sheds and stockpile sites and processes to be undertaken to allow for efficient approval of these ancillary sites;
- (ix) identify proposed processes if unforeseen or additional ancillary sites are required during construction to enable sites to be approved;
- (x) address management of erosion and sediment control (ESC):
 - A. identification of any high risk erosion and sediment areas and what controls would be needed;
 - B. what ESC training would be implemented and how;
 - C. specific site measures for avoiding and managing mud tracking onto public roads; and
 - D. consultation process with relevant agencies with regard to erosion and sediment control measures and how issues raised by the agencies will be addressed and communicated.
- (xi) identify the approach to construction work within/above waterways including details on processes to identify, consider, assess and address the risks and impacts of the design and construction of the Temporary Works in the sensitive catchments, including environmental, construction activity, health and safety risks;
- (xii) address proposed measures and controls to ensure native fauna are protected during clearing and during the full extent of construction works;
- (xiii) address native vegetation clearing:
 - A. proposed control measures, systems and responsibilities to ensure compliance with clearing limits;
 - B. management of threatened flora species; and
 - C. measures and controls to ensure native fauna are protected during the full extent of construction works.
- (xiv) address any proposed measures and systems in relation to potential extraction, usage, storage and treatment of ground waters;
- (xv) identify the approach to:
 - A. creating a positive environmental culture on the Project and proactive attitudes and behaviours;
 - B. the management of poor performers/behaviours;
 - C. management of environmental non-conformances and learning from incidents; and
 - D. establishing relationships with other Authorities.

- (xvi) address the approach to providing high standard draft consistency/ environmental review reports to RMS well in advance of required dates, meeting all the approval requirements, addressing agency and RMS comments and meeting issued conditions of the REF Determination; and
 - (xvii) provide details on environmental innovations that improved environmental outcomes on recent projects and how they will be applied to this Project; and
 - (xviii) address the approach to selecting, managing and training subcontractors and managing poor performing subcontractors.
- (e) The Contractor must not commence any work upon the Site until the Environmental Management Plan has been submitted to RMS and RMS has not given the Contractor a notice under section 3.8(d) of the Deed.
- (f) Further to the requirements of clause 3.8(g)(ii) of the Project Deed, the Contractor must undertake the ongoing development, amendment and updating of the Environmental Management Plan throughout the duration of the Contractor's Work to take into account:
- (i) changes to the Environment or generally accepted environmental management practices, new risks to the Environment, any pollution, Contamination or Changes in Law; and
 - (ii) requests or requirements of the Department of Planning and Infrastructure, EPA or any other Authority.
- (g) The requirements set out in the Initial Environmental Management Plan are minimum requirements for the Environmental Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Environmental Management Plan.

5 Design Plan

- (a) The Design Plan must identify how the Contractor will comply with the design requirements of the deed.
- (b) The Initial Design Plan is Appendix 37 to the SWTC.
- (c) The Design Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the Project Deed, within 20 days of the date of the deed; and
 - (ii) contain, as a minimum, the contents specified for the Design Plan in this Appendix.
- (d) The requirements set out in the Initial Design Plan are minimum requirements for the Design Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, efforts, resources, experience or expertise, in the developed and any subsequently amended versions of the Design Plan.
- (e) As a minimum, the Design Plan must identify and address the processes to achieve and satisfy each of the following requirements:
 - (i) develop, implement, monitor and improve strategies that embed accountability and responsibility into the design team to ensure timely achievement of a conforming, integrated and optimised design without reliance on external parties, including project stakeholders, to support the design development and review process;
 - (ii) outline of the Design Team Structure including reporting arrangements (and critical member) and show the integration with the RMS review team;
 - (iii) design programming, achievement of design milestones and integration with the construction program;
 - (iv) interfaces with other Project Plans;
 - (v) design standards;
 - (vi) functional requirements and fitness for purpose;
 - (vii) design life requirements;
 - (viii) the durability requirements of the Project Deed;
 - (ix) specified performance requirements;
 - (x) risk assessment and design risk mitigation;
 - (xi) integration of all design elements;
 - (xii) design optimisation having regard to whole of life costs;
 - (xiii) design management processes, including processes for the integration of relevant design disciplines and communication between design teams;

- (xiv) Safety in Design (**SID**) having regard to work health and safety in the design phase to achieve legislative and Project requirements that apply during the construction, operation and decommissioning phases for each element of the Project Works and Temporary Works;
 - (xv) outline of how Safety in Design (**SID**) and risk will be integrated and optimised throughout the design development with reference to any site specific issues;
 - (xvi) design safety audits;
 - (xvii) early input into the design of community involvement, environmental management and traffic management requirements;
 - (xviii) development of a design that fully addresses constructability, including meeting the requirements outlined section 5(m) of this Appendix;
 - (xix) traffic design;
 - (xx) roadscape design strategies;
 - (xxi) urban and landscape design requirements;
 - (xxii) architectural standards appropriate to the Project Works;
 - (xxiii) Services locations and adjustments;
 - (xxiv) survey requirements;
 - (xxv) internal verification in accordance with AS/NZS 9001;
 - (xxvi) certification by the Proof Engineer;
 - (xxvii) verification by the Project Verifier;
 - (xxviii) RMS communication requirements and design reviews;
 - (xxix) interface with TMC;
 - (xxx) as built information requirements;
 - (xxxii) geotechnical modelling requirements, including foundation, ground condition and existing infrastructure predictions;
 - (xxxii) survey requirements;
 - (xxxiii) Design Documentation for the construction of all elements of the Project Works and Temporary Works;
 - (xxxiv) specifications for the construction of all elements of the Project Works; and
 - (xxxv) as constructed information;
- (f) The Design Plan must address all the Design Documentation requirements identified in section 3 of Appendix 24 (Contractor Documentation Schedule) of the SWTC. The Design Plan must address the process to determine the Predicted Effects of the Contractor's Work on the ground conditions, surface water quality and ground water levels and quality and on existing infrastructure.

- (g) The Design Plan must address the monitoring plan requirements to verify the effects of the Contractor's Work on the ground, surface and ground water conditions and the existing infrastructure.
- (h) The Design Plan must address the processes for provision of access to Design Documentation as it is developed, by the Project Verifier, Proof Engineer and RMS Representative.
- (i) The Design Plan must include design process performance targets and an evaluation process to monitor, evaluate and improve the effectiveness of the Contractor's design process. The evaluation process must address and report on:
 - (i) timeliness in achieving the target dates for each design package;
 - (ii) the effectiveness of the Contractor's internal management review process to ensure only substantially compliant design packages are released for review by the Project Verifier and RMS Representative;
 - (iii) the minimisation of the number of design packages requiring substantial rework;
 - (iv) measurement and reporting of the percentage of review comments closed out prior to issue of the next Design Documentation stage and the number of non-conformities identified; and
 - (v) required improvement measures and corrective actions where the design process performance targets are not achieved.
- (j) The Design Plan must address the processes for the management of the receipt, close out and reporting on comments provided by the Project Verifier, Proof Engineer and RMS Representative on Design Documentation, including the processes for addressing identified non-conformities, corrective and preventative actions. The Design Plan must identify the targets for close out of comments and non-conformities and the corrective and preventative actions to be taken where targets for close out of comments and non-conformities are not achieved.
- (k) The Design Plan must address the processes and resources to review proposed design changes and adjustments during construction to ensure that the requirements of the deed are met, including verification and certification of the design changes by the Project Verifier and the Proof Engineer respectively.
- (l) The Design Plan must address the requirements for provision by the Contractor of design resources on the Construction Site, as required by section 7.30 of the SWTC.
- (m) The Design Plan must include details of the Contractor's constructability review process and, as a minimum, must:
 - (i) define the roles and input required from the Contractor's construction personnel as part of its constructability review process. For each role, the Contractor must identify:
 - A. the minimum level of construction planning and delivery experience that must be possessed by the Contractor's construction personnel nominated to fulfil the role;
 - B. the scope and responsibilities of each role (referred to in item A. above) during the:

1. Developed Concept Design;
 2. Substantial Detailed Design; and
 3. Final Design.
- (ii) stages of each discrete element of the Contractor's Work. describe how the outcomes of the Contractor's constructability review process will be documented in constructability reports, including details of:
- A. the format and content of the constructability reports;
 - B. the internal review process to be undertaken by the Contractor prior to submission to RMS Representative and the Project Verifier; and
 - C. the Contractor's process to comply with the submission requirements of section 3(h) of Appendix 24 of the SWTC; and
- (iii) identify the Contractor's construction personnel who will be responsible for overseeing the constructability review process and responsible for preparing the constructability reports.

6 Construction Plan

- (a) The Construction Plan must identify how the Contractor will comply with the construction requirements of the deed.
- (b) The initial Construction Plan is Appendix 38 to the SWTC.
- (c) The Construction Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 60 days of the date of the deed; and
 - (ii) contain, as a minimum, the contents specified for the Construction Plan in this Appendix.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Construction Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in design or construction sequencing, staging, methodology or resourcing;
 - (ii) the status and progress of the Contractor's Work;
 - (iii) changes in access to the Construction Site; and
 - (iv) Variations directed by RMS Representative under the deed.
- (e) The requirements set out in the initial Construction Plan are minimum requirements for the Construction Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, efforts, resources, experience or expertise, in the developed and any subsequently amended versions of the Construction Plan.
- (f) The Initial Construction Plan must be used as a basis for all revisions with the revisions tracked against the original.
- (g) The Contractor must not, except as expressly permitted under the deed, commence any Construction until the Construction Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (h) As a minimum, the Construction Plan must identify the processes to achieve and satisfy each of the following requirements:
 - (i) design performance;
 - (ii) durability;
 - (iii) technical specifications and construction standards;
 - (iv) construction program;
 - (v) safe processes for each element of work including work carried out under or adjacent to traffic;

- (vi) adequacy and safety of Temporary Works, including measures to prevent unauthorised or illegal access to the Construction Site;
 - (vii) access to affected properties;
 - (viii) Property Works and Service Works;
 - (ix) as constructed information;
 - (x) details of construction methods, planned resource levels, sequencing and staging;
 - (xi) safe access to and from the areas where construction activities are taking place;
 - (xii) provision of up-to-date information to RMS at all times and as required by the deed;
 - (xiii) incident management during construction;
 - (xiv) maintenance during construction;
 - (xv) interfaces with other Project Plans;
 - (xvi) interface works;
 - (xvii) procurement strategy;
 - (xviii) work method statements;
 - (xix) security;
 - (xx) vegetation clearing limits; and
 - (xxi) weed free topsoil treatments.
- (i) The Construction Plan must include a detailed spoil management plan detailing the excavation, spoil disposal and haulage methodology and the management measures to avoid, reduce, reuse and recycle waste, including details of proposed beneficial reuse of excavated material.
 - (j) The Construction Plan must include a detailed site management plan that specifies the nature, extent and location of Temporary Works, and provides a detailed layout of the Site.
 - (k) The Construction Plan must effectively integrate and align with the Environmental Management Plan, including its sub plans.
 - (l) The Construction Plan must address requirements for, including locations and details of, site offices, compounds and ancillary sites including for concrete batch plants, precast yards and mobile asphalt plants.
 - (m) The Construction Plan must include the Contractor's strategy for staging the Project Works and Temporary Works including key traffic management staging with reference to the Traffic Management and Safety Plan.
 - (n) The Construction Plan must include a list of construction heavy vehicle numbers and an outline of the vehicle routes and frequency on construction haul routes, with respect to daily, AM peak, PM peak, nights and weekends time periods;

- (o) The Construction Plan must include outline of alterations to existing bus facilities as a result of the Concept Design;
- (p) The Construction Plan must include outline of changes to existing on street parking, pedestrian and cycle facilities during the construction period as a result of the Concept Design;
- (q) The Construction Plan must include outline of plant and equipment, including the size, for each major construction activity;
- (r) The Construction Plan must detail:
 - (i) how the Contractor will maintain access to businesses and residences impacted by the Contractor's Work;
 - (ii) where the Contractor's construction plant, equipment and materials will be parked and stored; and
 - (iii) how the impact on local roads impacted by the Contractor's Work will be managed and minimised by the Contractor.

7 Community Involvement Plan

- (a) The Community Involvement Plan must specify how the community involvement requirements of the deed will be met. The Community Involvement Plan must be compatible with, and must complement, current RMS community involvement procedures and guidelines.
- (b) The initial Community Involvement Plan is Appendix 40 to the SWTC.
- (c) The Community Involvement Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 35 days of the date of the deed; and
 - (ii) contain and address, as a minimum, the requirements of Section 8.1 of the SWTC. the requirements for community involvement and the contents specified for the Community Involvement Plan in the SWTC, including the Initial Community Involvement Plan in Appendix 40 to the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Community Involvement Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in the design and construction program;
 - (ii) changes in community needs; and
 - (iii) changes in the Contractor's Work and community information requirements.
- (e) The requirements set out in the initial Community Involvement Plan are minimum requirements for the Community Involvement Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Community Involvement Plan.
- (f) The Contractor must not commence any Contractor's Work on the Construction Site until the Community Involvement Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the Project Deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (g) The Community Involvement Plan must:
 - (i) describe the Contractor's approach to dealing with the community and all other road stakeholder groups with respect to the Contractor's Work;
 - (ii) clearly identify the responsibility for community and stakeholder liaison within the Contractor's management team. (Current copies of those details, together with 24 hours per day, seven days per week, contact details are to be provided to RMS); and

- (iii) include a communication strategy, which details communication systems, processes and procedures, which address all aspects of the Contractor's community and stakeholder interfaces.

As a minimum the communication strategy must address:

- A. community consultation required to ensure environment and community impacts are properly addressed;
 - B. announcements related to community benefits, commencement of works and completion of works;
 - C. advice to the community through advertising, particularly if the works have an impact on traffic flow through the area;
 - D. advice to affected stakeholders on when and how they will be affected;
 - E. advice to affected stakeholders concerning means of contact should they have any concerns or complaints; and
 - F. the scope, purpose and objectives of any communication by identifying the parties which should be consulted/informed, the reasons these parties should be consulted/informed, the information to be communicated and the timing requirements for such communication.
- (h) The Community Involvement Plan must provide for the Contractor to obtain the approval of RMS for all aspects of its communication strategy. In developing the strategy, the Contractor must liaise with RMS. The strategy must also provide for approval of all communications materials by RMS.
 - (i) The Community Involvement Plan must address and detail the role of the Community Relations Manager including:
 - (i) the hours of work and work location for the Community Relations Manager; and
 - (ii) the Community Relations Manager's support staff resources, hours of work and their work location.
 - (j) The Initial Community Involvement Plan must be used as a basis for all revisions with the revisions tracked against the original.
 - (k) The Community Involvement Plan must identify the capabilities required by the Contractor's personnel undertaking front line staff roles, and the training requirements for these roles must be documented in the Project Training Management Plan.
 - (l) The Community Involvement Plan must document how the Contractor will achieve the timeframes detailed in in section 8 of the Scope of Work and Technical Criteria for submission to RMS of any materials proposed to be used for community information. The plan must also document the preventative actions that will be deployed by the Contractor in the event of any non-compliance with these timeframes.

8 Project WHS Management Plan

- (a) The Project WHS Management Plan must identify how the Contractor will comply with the requirements of the WHS Laws, RMS D&C G22 and the deed.
- (b) The initial Project WHS Management Plan is Appendix 41 to the SWTC.
- (c) The Project WHS Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 40 days of the date of the deed; and
 - (ii) as a minimum, contain the contents specified for the Project WHS Management Plan the SWTC including this Appendix 21.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Project WHS Management Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in site conditions and work, generally accepted work health, safety and rehabilitation practices and changes in Law; and
 - (ii) requests or requirements of any Authority.
- (e) The Initial Project WHS Management Plan must be used as a basis for all revisions with the revisions tracked against the original.
- (f) The requirements set out in the initial Project WHS Management Plan are minimum requirements for the Project WHS Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Project WHS Management Plan.
- (g) The Contractor must not commence any Contractor's Work on the Construction Site until the Project WHS Management Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (h) As a minimum, the Project WHS Management Plan must address:
 - (i) hazard identification and risk analysis, including formal facilitated WHS risk workshops at key stages (design development and construction) including the designer, Contractor and Subcontractors, RMS Representative and the Project Verifier;
 - (ii) outline how the Contractor will fulfil the role of Principal Contractor on the Project and satisfy all of the WHS requirements;
 - (iii) the project specific WHS issues identified in Annexure G22/A of RMS D&C G22;
 - (iv) induction of all workers before they commence on site;
 - (v) work processes for safe systems of work;

- (vi) accident and incident reporting including corrective actions;
 - (vii) weekly team meetings to identify work health, safety and rehabilitation issues;
 - (viii) site vehicle and plant movement plans and processes.
 - (ix) process to ensure safety of workers around mobile plant;
 - (x) safety of workers when working in trenches working near underground and overhead utilities;
 - (xi) safety of workers in and or adjacent to traffic;
 - (xii) safety in design; and
 - (xiii) how the Contractor will ensure that procurement of subcontractors and supplies will appropriately take into account the hazards, risks and issues identified in section (h)(i) and (h)(ii) above and deliver high reliability controls.
- (i) The Project WHS Management Plan must include the development, and address the implementation of a WHS Development Plan. As a minimum, the WHS Development Plan must:
- (i) address safety in the design, documentation and specification of the Project Works, Temporary Works, Contractor's Works and Landscaping Maintenance Work, including any impacts on the operation and maintenance of the Project Works;
 - (ii) address the requirements of section 5.3 of the SWTC;
 - (iii) establish systems that record how health and safety issues will be identified and responded to throughout the Contractor's Work and in the Project Works and Temporary Works;
 - (iv) address the orderly management of health and safety throughout the Contractor's Work and the provision of evidence to demonstrate that the Contractor has met its legal health and safety obligations;
 - (v) be produced to become a resource document for the maintenance and operation of the Project Works;
 - (vi) contain procedures to ensure continuing involvement of the designers in the construction stages of the Contractor's Work and must address:
 - A. health and safety implications of design elements of the Project Works and Temporary Works;
 - B. unforeseen eventualities resulting in substantial design change which might affect health and safety and resources; and
 - C. health and safety implications of design where design work is carried out in stages; and
 - (vii) include health and safety issues, that are a function of and / or result from the Design Documentation, as part of the health and safety assessment process for construction activities and address the effective management of these issues during the Contractor's construction and maintenance activities.

9 Traffic Management and Safety Plan

- (a) The Traffic Management and Safety Plan must identify how the Contractor will comply with the traffic management and traffic safety requirements of the deed.
- (b) The plan must provide for constant monitoring and review of the Contractor's Work to ensure continued compliance with the Traffic Management and Safety Plan.
- (c) The initial Traffic Management and Safety Plan is Appendix 43 to the SWTC.
- (d) The Traffic Management and Safety Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 60 days of the date of the deed;
 - (ii) contain, as a minimum, the contents specified for Traffic Management and Safety Plans in the SWTC.
- (e) The requirements set out in the initial Traffic Management and Safety Plan are minimum requirements for the Traffic Management and Safety Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Traffic Management and Safety Plan.
- (f) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Traffic Management and Safety Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in the design and construction process;
 - (ii) for design and construction processes which the existing Traffic Management and Safety Plan does not address; and
 - (iii) the need to prevent the recurrence of any compromise to the safety of road users and the public.
- (g) The Contractor must not commence any Contractor's Work on the Construction Site until the Traffic Management and Safety Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (h) The Traffic Management and Safety Plan must comply with the requirements of the deed and SWTC and address, as a minimum, the key traffic management and safety issues, including:
 - (i) the requirements of Section 2.18 of the SWTC;
 - (ii) details of proposed measures to maintain capacity and performance of the existing road network during construction;

- (iii) temporary roadworks and traffic and staging arrangements during the performance of the Contractor's Work, access arrangements to and from areas of the Construction Site from the M4 Motorway and The Northern Road, and Temporary Works that are being used by the M4 Motorway and The Northern Road traffic;
 - (iv) each traffic management stage, including details on geometric design, intersection layouts and capacities, pavements, temporary connections, impacts on existing overtaking lanes and local road closures;
 - (v) timing of traffic management staging activities and strategies to be implemented during peak traffic flow periods;
 - (vi) information on geometric designs, posted speeds and pavements; and
 - (vii) details of all temporary arrangements to provide access and/or maintain access across the Construction Site for local community usage.
 - (viii) safety and amenity of road users and the public;
 - (ix) temporary lane or road closures, detours and other disruptions to traffic flows and access for pedestrians, pedal cyclists and disabled persons including identification of additional traffic generated on local roads as a consequence of these disruptions;
 - (x) site security, site access and signage;
 - (xi) project identification, including signs to acknowledge government funding and management;
 - (xii) traffic and road user delay management;
 - (xiii) watercourse and road overpass naming;
 - (xiv) numerical identification of structures;
 - (xv) information signage, distance information and advance warning signs;
 - (xvi) speed limit signage;
 - (xvii) lighting;
 - (xviii) traffic switching arrangements and procedures;
 - (xix) provisions for Special Events;
 - (xx) provisions for maintenance;
 - (xxi) frequency of inspections;
 - (xxii) implementation and permanent removal of all temporary traffic control arrangements including redundant pavement markings; and
 - (xxiii) emergency and incident response plans.
- (i) The Traffic Management and Safety Plan must contain:
- (i) details of traffic staging as part of the Temporary Works, including proposed traffic detours and diversions (with associated schedules showing the expected timeframes for traffic switches, etc.); and

- (ii) details of the traffic management responsibilities of all relevant construction staff in regard to all aspects of the Contractor's Work.
- (j) The Traffic Management and Safety Plan must contain a draft of all traffic control plans to be submitted and/or approved by the TMC for the Contractor's Work.
- (k) The Traffic Management and Safety Plan must contain a summary of traffic management responsibilities of all relevant construction and maintenance staff relating to all aspects of construction and maintenance at all stages of the Contractor's Work, including Landscaping Maintenance.
- (l) The Traffic Management and Safety Plan must address proposed changes to traffic flow arrangements, road or property access temporary closures, capacities, and facilities such as over taking lanes, rest areas, shoulders and parking areas on the existing, local and regional roads, notification requirements for various Authorities and advance signposting and advertising notification requirements that would be undertaken by the Contractor.
- (m) Controlled copies of the Traffic Management and Safety Plan must be issued to relevant construction and maintenance staff, RMS Representative and the Project Verifier.
- (n) The Traffic Management and Safety Plan must be promptly updated by the Contractor in response to any incidents or traffic disruptions arising from the Contractor's Work, including Landscaping Maintenance.
- (o) The Traffic Management and Safety Plan must identify the methodology for minimising traffic and transport impacts on local roads, villages and towns.

10 Project Training Management Plan

- (a) The Project Training Management Plan must identify how the Contractor will comply with the "NSW Government Training Management Guidelines" and section 2.11 of the SWTC.
- (b) The Project Training Management Plan must document the processes and procedures necessary to support the objective of developing a workforce which is knowledgeable and capable of delivering the Contractor's Work in compliance with all the requirements of the deed. The Enterprise Training Management Plan is Appendix 44 to the SWTC.
- (c) The Project Training Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 60 days of the date of the deed; and
 - (ii) contain, as a minimum, the contents specified for the Project Training Management Plan in this Appendix and the Enterprise Training Management Plan in Appendix 44 to the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Project Training Management Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in construction processes; and
 - (ii) changes in Project Plans including the Environmental Management Plan, the Traffic Management and Safety Plan and the Project Work Health & Safety Management Plan.
- (e) The requirements set out in the Enterprise Training Management Plan are minimum requirements for the Project Training Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the Project Training Management Plan initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, and any subsequently amended versions of the Project Training Management Plan.
- (f) The Contractor must not commence any Contractor's Work on the Construction Site until the Project Training Management Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (g) The Project Training Management Plan must be compatible with:
 - (i) any enterprise, or other industrial, agreement applicable to the Contractor's Work or Project Works;
 - (ii) the Project Work Health & Safety Management Plan;

- (iii) the Quality Plan, of which it may form part; and
 - (iv) the Contractor's obligations with respect to the Environment including statutory obligations.
- (h) The Project Training Management Plan must demonstrate how the Contractor will:
- (i) develop a project workforce that is knowledgeable and capable of delivering the Project Works, the Temporary Works and the Contractor's Work in accordance with the requirements of the deed;
 - (ii) meet statutory obligations including work health and safety training;
 - (iii) provide induction on WHS for all employees and Subcontractors which meets the requirements of the WHS Laws;
 - (iv) provide induction on environmental systems for all employees and Subcontractors;
 - (v) provide a structured training program to address the requirements of clause 5.4 of the deed and section 2.11 of the SWTC, including environmental and project specific requirements;
 - (vi) establish the dedicated training facility on the Construction Site required by section 2.11(o) of the SWTC;
 - (vii) maintain on the Construction Site an up to date copy of the Project Training Management Plan; and
 - (viii) comply with the staff training requirements outlined in section 8.10 of the SWTC.
- (i) The key elements of the Project Training Management Plan must include:
- (i) description and details of project workforce;
 - (ii) assessment of knowledge and capability of the workforce in each functional area of the workforce against the required knowledge and capability;
 - (iii) identification of the training gaps and needs of all personnel engaged on the Contractor's Work, including potential skill shortages and how they will be addressed;
 - (iv) a skill formation plan detailing training priorities for the Contractor's Work;
 - (v) an indication of how structured training outcomes are / will be achieved;
 - (vi) targets for addressing training needs; and
 - (vii) reporting on targets and achievements required by the NSW Government Training Management Guidelines.

11 Aboriginal Participation

- (a) Further to the requirements of clause 3.12 of the deed and Section 2.20 of the SWTC, the Aboriginal Participation Plan must:
- (i) be prepared and initially submitted to the RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 60 days of the date of the deed; and
 - (ii) contain, as a minimum, the contents shown in the Aboriginal Participation Plan template available from the following Australian Government internet address:
https://www.procurepoint.nsw.gov.au/system/files/documents/apic_policy_1_may_2015.pdf
- (b) Further to the requirements of clause 3.12 of the deed, the Aboriginal Participation Report must contain, as a minimum, the contents shown in the Aboriginal Participation Report template available from the following Australian Government internet address:
https://www.procurepoint.nsw.gov.au/system/files/documents/apic_policy_1_may_2015.pdf

12 Workplace Relations Management Plan

- (a) The Workplace Relations Management Plan must identify how the Contractor will comply with the workplace relations requirements of the deed.
- (b) The initial Workplace Relations Management Plan is Appendix 45 to the SWTC.
- (c) The Workplace Relations Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 60 days after the date of the deed; and
 - (ii) contain, as a minimum, the contents specified in “NSW Government Model Workplace Relations Management Plan Implementation Guidelines to the New South Wales Code of Practice for Procurement: Building and Construction – July 2013”, and the content of the initial Workplace Relations Management Plan in Appendix 45 to the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the Workplace Relations Management Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in the workplace relations management process; and
 - (ii) changes identified by the continuous improvement of processes.
- (e) The requirements set out in the initial Workplace Relations Management Plan are minimum requirements for the Workplace Relations Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the Workplace Relations Management Plan initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, and any subsequently amended versions of the Workplace Relations Management Plan.
- (f) The Contractor must not commence any Contractor's Work on the Construction Site until the Workplace Relations Management Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.

13 Chain of Responsibility Management Plan

- (a) The Chain of Responsibility (CoR) Management Plan must identify how the Contractor will comply with the requirements of the chain of responsibility provisions of the Heavy Vehicle National Law and the deed.
- (b) The initial CoR Management Plan is Appendix 39 to the SWTC.
- (c) The CoR Management Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 40 days of the date of the deed; and
 - (ii) as a minimum, contain the contents specified for the CoR Management Plan in the SWTC, including the Initial CoR Management Plan in Appendix 39 to the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the deed, the Contractor must undertake the ongoing development, amendment and updating of the CoR Management Plan throughout the duration of the Contractor's Work to take into account:
 - (i) changes in site conditions and work and changes in Law; and
 - (ii) requests or requirements of any Authority.
- (e) As a minimum, the CoR Management Plan must address:
 - (i) hazard identification and risk analysis of CoR issues, including formal CoR risk workshops at key stages (design development and construction) including the designer, Contractor, Subcontractors and suppliers of major items, RMS Representative and the Project Verifier. The CoR risk workshops can be combined with the WHS risk workshops;
 - (ii) reporting on near misses, accidents, incidents and infringements arising from CoR issues, within two working days of such events taking place, and including corrective actions in monthly progress reports;
 - (iii) the orderly management of CoR issues throughout the Contractor's Work and the provision of evidence that the Contractor has met its legal CoR obligations;
 - (iv) methods of managing interfaces with other stakeholders, suppliers, subcontractors and other organisations related to CoR;
 - (v) methods of dealing with relevant regulators and Authorities related to CoR;
 - (vi) strategy and processes for obtaining all necessary approvals which have CoR implications;
 - (vii) methods of developing, implementing and reporting on safety metrics for CoR;
 - (viii) the organisation chart showing team structure and defining CoR responsibilities, including for the project handover stage;
 - (ix) CoR related communication protocols, including for the project handover stage;

- (x) key personnel, description of their positions/qualifications and reporting lines, as related to CoR; and
 - (xi) resources management, including addressing shortage of skilled resources that are critical to management of CoR issues.
- (f) The requirements set out in the initial CoR Management Plan are minimum requirements for the CoR Management Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the CoR Management Plan.
- (g) The Contractor must not commence any Contractor's Work on the Construction Site until the CoR Management Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the deed has expired without RMS Representative having issued a relevant notice under that clause during that time.

14 Earthworks Plan

- (a) The Earthworks Plan must identify how the Contractor will investigate, design, construct and monitor, foundations and the earthworks formation, where the earthworks formation consists of cuttings, embankments, topsoil and spoil and any other changes to the existing surface.
- (b) The Initial Earthworks Plan is Appendix 42 to the SWTC.
- (c) The Earthworks Plan must:
 - (i) be prepared and initially submitted to RMS Representative and the Project Verifier, as required by clause 3.8(c) of the deed, within 35 days of the date of the deed; and
 - (ii) contain and address, as a minimum, the requirements for earthworks and the contents specified for the Earthworks Plan in the SWTC.
- (d) Further to the requirements of clause 3.8(g)(ii) of the Project Deed, the Contractor must undertake the ongoing development, amendment and updating of the Earthworks Plan throughout the duration of the Contractor's Work to take into account:
 - A. the physical and environmental conditions encountered;
 - B. changes in design; and
 - C. changes in construction processes.
- (e) The requirements set out in the initial Earthworks Plan are minimum requirements for the Earthworks Plan and the Contractor must not decrease or otherwise reduce these requirements, including those relating to the scope, processes, procedures, effort, resources, experience or expertise, in the developed and any subsequently amended versions of the Earthworks Plan.
- (f) The Contractor must not commence Construction until the Earthworks Plan has been prepared and initially submitted to RMS Representative and the Project Verifier and the time specified in clause 3.8(d)(ii) of the Project Deed has expired without RMS Representative having issued a relevant notice under that clause during that time.
- (g) The Earthworks Plan must be developed in conjunction with the Contractor's urban and landscape design to ensure that the roadscape integrates harmoniously with the environment.
- (h) The Earthworks Plan must address the key issues for cuttings detailed in Appendix 11 of the SWTC, and include:
 - (i) the programming and resources provided to undertake general and local batter treatments including for features identified during construction; and
 - (ii) the frequency and scope of batter and bench inspection and maintenance including proposed techniques for monitoring batter performance.
- (i) The Earthworks Plan must address the key issues associated with embankments detailed in Appendix 11 of the SWTC, and include:

- (i) construction techniques and resources to prepare and construct embankment foundations
 - (ii) construction techniques and resources to construct embankments;
 - (iii) construction techniques for work carried out in areas of acid sulphate soils;
 - (iv) construction techniques for work carried out using potential acid sulphate rocks, including methods for testing, segregating and treating acid sulphate materials. The Earthworks Plan must detail stockpile locations, methods of incorporating neutralising agents and identification of locations for placement of acid sulphate materials in the Project Works;
 - (v) construction techniques and resources to decommission any existing basins, dams and fish ponds, remove and or treat any unsuitable or potentially contaminated material and construct embankments;
 - (vi) the frequency and scope of embankment monitoring, inspection and maintenance and details of techniques used for the monitoring of embankment performance.
- (j) The Earthworks Plan must address the key issues associated with foundations of structures, including piles and abutments, detailed in Appendix 11 and Appendix 13 of the SWTC, and include:
- (i) the programming and resource provisions to construct foundations;
 - (ii) the frequency and scope of foundation inspections including proposed techniques for foundation inspections; and
 - (iii) construction techniques for constructing foundations.
- (k) The Earthworks Plan must address:
- (i) the provision of suitably experienced geotechnical advisory services (Geotechnical Design Representative) during construction to:
 - A. monitor encountered geotechnical conditions, including groundwater, and verify design assumptions;
 - B. identify and design long term solutions in response to encountered conditions; and
 - C. inspect and record geotechnical conditions for foundations of structures and the earthworks formation;
 - (ii) the excavation sequence and methodology for the management of all materials in the earthworks including unsuitable material, select, non-select and weathered surface materials, boulders and corestones, procurement and control of imported materials, materials from borrow sites and spoil;
 - (iii) mass haul diagram and information, including details on the types and quantities of materials to be excavated from each cutting and the sources and the locations for placement within the Project Works and Temporary Works;
 - (iv) procedures for identifying suitable locations for and managing temporary stockpiling of materials;

- (v) the identification of zones of potentially unsuitable materials and the management of the disposal and replacement of unsuitable materials;
 - (vi) procedures for procuring and managing materials from borrow sites;
 - (vii) sources of materials and testing proposed for structural treatments;
 - (viii) the identification and management of potential acid sulphate soils and rocks;
 - (ix) the identification, testing requirements and management of all earthworks materials, including identifying and implementing controls on equipment / haulage to be consistent with moisture control processes required by RMS D&C R44;
 - (x) methods to ensure that materials of the specified or higher quality are identified, made available and incorporated into the Project Works and Temporary Works at the sites where the quality of the material has been specified in the design. The methodology must include details on any testing, sorting, isolating, processing (including screening, crushing, blending, and modification of materials), storage, protection and placement of the materials proposed for such use;
 - (xi) the methods to be used to ensure that the higher quality materials are available for use in the upper zones of formation and to manage the supply and testing of both imported materials and materials won on-site to ensure that material conformity and traceability to each lot is achieved;
 - (xii) the methods to be used to construct and demonstrate uniform and stable pavement support;
 - (xiii) the methods to be used to achieve compaction requirements and to demonstrate that the specified compaction has been achieved over the full depth of each layer and that the specified layer thickness is not exceeded;
 - (xiv) the methods to be used to select and control the moisture content of earthworks materials and the methods to demonstrate compliance with specification requirements of RMS D&C R44;
 - (xv) the procedures proposed for the treatment of foundations including identification of requirements for control testing during construction, and geotechnical monitoring during construction and operation;
 - (xvi) the methods to be used to ensure the availability of foundation treatment materials and to manage the supply and testing of bridging layer material and other materials required for foundation treatment;
 - (xvii) stability requirements during construction; and
 - (xviii) the procedures proposed for protection of earthworks, including drainage of working areas, minimising ingress of excess water into earthworks and managing over-wet materials and over-dry materials.
- (l) The Earthworks Plan must address, for all topsoil, detailed procedures for:
- (i) temporary stockpiling;
 - (ii) weed control including residual weed seed banks and pasture grasses removal;

- (iii) suitable locations for topsoil in respect of flora;
- (iv) environmental and horticultural testing and improvement requirements as required by Appendix 15 of the SWTC; and
- (v) environmental requirements for movement of topsoil around the Construction Site.

15 Maintenance Plan

- (a) The Maintenance Plan must comprehensively identify the methods, systems and procedures required to operate and to maintain the Works.
- (b) The Maintenance Plan must contain separate sections for the Works.
- (c) The Maintenance Plan must address the durability requirements of section 2.14 of the Scope of Works and Technical Criteria.
- (d) The Maintenance Plan must address maintenance and operational issues identified in the WHS Development Plan.
- (e) As a minimum, the Maintenance Plan must:
 - (i) include a description of the physical elements of the Project Works, including operational and security systems;
 - (ii) include a comprehensive set of as constructed documentation as required by Appendix 24;
 - (iii) address the procedures for replacement of Asset Items and Asset Sub-Items at intervals consistent with the Design Lives specified in section 5.5 of the Scope of Works and Technical Criteria;
 - (iv) address the maintenance obligations and requirements identified in the maintenance diaries in Appendix 12 and Appendix 30;
 - (v) include operation and maintenance methodologies and manuals, including those for rectification of Defects and performance failures;
 - (vi) include operating procedures, including communication and coordination with NSW Transport Management Centre (TMC) in all aspects of operation;
 - (vii) include any operations and maintenance specifications developed during the Contractor's Work;
 - (viii) include an asset management system, including an Asset inventory listing all Asset Elements, Asset Types, Asset Items and Asset Sub-Items. The Asset inventory must use a location referencing system that is based on RMS ROADLOC road referencing system
 - (ix) include a slopes inventory in accordance with the requirements of section 5.13(f) of the Scope of Works and Technical Criteria for all slopes;
 - (x) include relevant Project Plans as required by clause 3.8(l) of deed;
 - (xi) include performance requirements;
 - (xii) include a fixed plant and equipment inventory;
 - (xiii) warranties; and
 - (xiv) Subcontractor and supplier contact register
- (f) The performance requirements must include:
 - (i) maintenance diaries;

- (ii) water and air quality targets, limits and assessment;
 - (iii) noise targets and limits and assessment;
 - (iv) normal operating condition levels;
 - (v) design life, durability strategies and assessment;
 - (vi) load limits and ratings; and
 - (vii) slope inventories and slope risk ratings.
- (g) The fixed plant and equipment inventory must detail all fixed plant and equipment that is part of the Works that may require periodic maintenance and / or inspection. The inventory must contain all associated data, including:
- (i) handbooks and warranties;
 - (ii) typical operating levels of voltage, current etc, as appropriate;
 - (iii) spare parts lists; and
 - (iv) any recommendations from the manufacturers with respect to servicing and / or inspection schedules.
- (h) The Contractor must develop a Landscaping Maintenance Plan as a subplan to the Maintenance Plan. The Landscaping Maintenance Plan must address any particular maintenance requirements of the landscaped and vegetated areas in the Construction Site during the Landscaping Maintenance Period and the organisation and maintenance methodologies to ensure compliance with the requirements of the deed and RMS D&C R179 and, as a minimum, must include:
- (i) details on all landscape maintenance activities and actions for the Landscaping Maintenance;
 - (ii) a maintenance organisation structure and responsibilities, including those of any Subcontractors;
 - (iii) details on key maintenance personnel and expertise;
 - (iv) details on the location of maintenance depot(s) and stockpile sites, if any;
 - (v) a training plan for RMS maintenance personnel;
 - (vi) details on plant and equipment that is required for the maintenance activities;
 - (vii) a maintenance risk management assessment;
 - (viii) details on safe methods of work;
 - (ix) details on handover performance requirements;
 - (x) inspection methods and an inspection schedule / program;
 - (xi) traffic control procedures; and
 - (xii) details on other key procedures, including annual maintenance planning.
- (i) The structure of the Landscaping Maintenance Plan must be generally consistent with the structure set out in Appendix C of the *“RTA Landscape Guideline April 2008”*.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 22 – RMS Site Facilities
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

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1 RMS Site Facilities

- (a) The Contractor must establish, provide, maintain, operate, service and remove site facilities for exclusive use by RMS Representative and RMS personnel as required by RMS D&C G4.

1.1. Location and Arrangement of the RMS Site Facility

- (a) The Contractor must submit details of the proposed location and arrangement of RMS' site facilities to the RMS Representative, not less than six weeks prior to commencement of the Contractor's Work, for review and acceptance by the RMS Representative. The details must include an office accommodation and site compound arrangement drawing, details and location of office fittings and furniture, and details of the Services to be provided to RMS' office accommodation.
- (b) The Contractor must allow a two week period after RMS Representative's receipt of the details, for review and acceptance by RMS Representative. The Contractor must not commence with the procurement and installation of the facilities until the Contractor's receipt of RMS Representative's acceptance of the details

1.2. Information Technology and Communications

- (a) The Contractor must provide, maintain and support one computer within the RMS Site Facility which must be made available from the date of contract award (Note: prior to the RMS Site Facility being established on Site, this computer must be made available to the RMS Project team at their primary location of work) The computer must be installed with Primavera P6 (or equivalent program software used by the Contractor) software with license for the duration of the Project. The Contractor must provide new software upgrades when available.. The computer must be connected to the Contractor's network with access as required by Section 2.19 of the SWTC.
- (b) The Contractor must not commence any work upon the Construction Site until the Contractor has supplied and installed in RMS vehicles, and maintained for the duration of the Contractor's Work, up to two complete vehicle based GPS 'Topcon Site Manager Kits' units, or equivalent, to suit and be fully compatible with the Contractor's proposed GPS system. The Contractor must provide training in the use of the system to RMS personnel.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 23 – Not Used
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 23
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

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1 Not Used



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 24 – Contractor Documentation
Schedule
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

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1 Reports

1.1 Progress reports on the Contractor's Work

During the period from the date of the deed to the completion of the Landscaping Maintenance Period, the Contractor must provide a monthly progress report to the RMS Representative (one electronic copy) and the Project Verifier (one electronic copy) by the seventh day of the following month and in such format as is required by RMS Representative, containing, setting out or providing the information identified in Sections 1.1.1 to 1.1.13 inclusive below and such other information as RMS Representative may from time to time request.

1.1.1 Project Planning

The monthly progress report must incorporate a project planning section that contains:

- (a) a report on the status of all Project Plans, including their preparation, implementation, review and modification, and details on any non-conformities identified under any Project Plan;
- (b) all reports required under any of the Project Plans, including the Quality Plan and the results of any audits carried out under the Quality Plan;
- (c) a report on the Contractor's performance against the requirements of Section 3(g)(ix) of Appendix 21 (Project Plan Requirements) of the SWTC including the monthly achievement of specific actions assigned to the key personnel and planned actions for the next three months; and
- (d) an updated current summary of key project risks and relevant mitigation actions.

1.1.2 Progress and Program

The monthly progress report must incorporate a progress and program section that contains, sets out and provides:

- (a) the updated Contract Program and Subsidiary Contract Programs in the electronic form in which it was generated including all electronic data and inputs used to generate the Contract Program and Subsidiary Contract Programs. The program software used by the Contractor must be installed and operational on the computers provided by the Contractor to RMS, as required by Appendix 22 of the SWTC;
- (b) the status and progress made by the Contractor on the Contractor's Work in the previous month compared with the progress predicted in the Contract Program and Subsidiary Contract Programs for the previous month, any changes to the anticipated Date of Opening Completion and the progress required in order to achieve completion by the Date for Construction Completion;
- (c) details of any delays to the Contractor's Work from the predicted progress shown in the Contract Program and Subsidiary Contract Programs in the previous monthly progress report including:
 - (i) reasons for the delay;

- (ii) details on the course of action that the Contractor proposes to undertake in response to any significant delays that have occurred to ensure that the Contractor's Work will thereafter be carried out in accordance with the Contract Program and Subsidiary Contract Programs and the terms of the deed to achieve Construction Completion by the Date for Construction Completion; and
 - (iii) impacts of the delay on the anticipated Date of Opening Completion.
- (d) updated extension of time register;
 - (e) impacts of the delay on the anticipated Date of Opening Completion;
 - (f) a cumulative table and graph of the Contractor's allowance for wet weather and the actual wet weather in monthly increments;
 - (g) a report on planned and actual productivity for the performance of the Contractor's Work that identifies production benchmarks, includes productivity graphs (plotted in "s-curve" format), provides commentary on material departures from planned production and on the issues that are having a material effect on production. The productivity graphs must show planned and actual production and include monthly and cumulative data. Productivity graphs must be provided for all significant elements of the Contractor's Work, including:
 - (i) earthworks, with separate graphs for bulk and select earthworks quantities;
 - (ii) pavement placement, with separate graphs for each pavement type;
 - (iii) drainage works; and
 - (iv) structures including bridges and retaining walls.

The productivity graphs referred to above must include baselines for dry weather, assumed wet weather and latest start to achieve program requirements.

1.1.3 Design

The monthly progress report must incorporate a design section that sets out the status and progress of the design, and contains and provides:

- (a) the design status for the design of each Milestone in Schedule 2 of the deed;
- (b) a comparison between actual and planned design progress;
- (c) details of any delays, potential delays or other issues likely to affect the timely completion of design;
- (d) progress of discussions with relevant Service Authorities, local Authorities and emergency services Authorities;
- (e) approvals and information required from RMS;
- (f) summary of the status of requests for information (RFI);
- (g) any proposed variations / changes in scope or quality;
- (h) current and planned design resources;
- (i) road safety audit reports;

- (j) traffic management and staging reports;
- (k) geotechnical reports;
- (l) urban and landscape design reports, including details of integration of urban and landscape design with other design elements;
- (m) noise design reports including details of integration of noise design with other design elements;
- (n) environmental design reports including details of integration of environmental design with other design elements; and
- (o) community liaison reports including details of integration of community liaison with other design elements.

1.1.4 Construction

The monthly progress report must incorporate a construction section that sets out the status and progress of construction, and contains and provides:

- (a) details on the progress in the previous month for each Milestone in each Cost Centre of Schedule 3 of the deed, including materials, plant, equipment and systems procurement, fabrication and supply;
- (b) a comparison between actual and planned construction progress of each Milestone in each Cost Centre of Schedule 3 of the deed, including planning, procurement, construction, commissioning and completion details;
- (c) current and planned plant and equipment levels, and a statement of the average number of large plant items on site in the previous month;
- (d) geotechnical matters;
- (e) bridge and M4 ramps construction;
- (f) property adjustment works;
- (g) progress and status of the production of the as constructed documentation required by Section 4 of this Appendix;
- (h) photographic records, using date marked photography, recording construction progress for the period; and
- (i) video records recording construction progress for the period (nominal duration of 15 minutes per report).

1.1.5 Work Health and Safety

The monthly progress report must incorporate a work health and safety section that sets out work health safety performance, and contains and provides:

- (a) statistics, near misses, trends and reports;
- (b) reporting required by RMS D&C G22; and
- (c) reporting required by the Project WHS Management Plan.

1.1.6 Human resources

The monthly progress report must incorporate a human resources section that sets out human resources performance, and contains and provides:

- (a) details of current and planned resources and staffing levels, including hours worked, location (on or off the Construction Site) and category (Contractor's staff or Subcontractors);
- (b) a summary of Code of Practice compliance and implementation issues;
- (c) a summary of workforce participation in training and the number of apprentices as well as performance against the requirements in the NSW Training Management Guidelines and in the Project Training Management Plan;
- (d) a summary of aboriginal participation and achievements as well as performance against the requirements in the Aboriginal Participation Plan, and any monthly reporting requirements as required under clause 3.12 of the deed; and
- (e) industrial relations.

1.1.7 Traffic management

The monthly progress report must incorporate a traffic management section that sets out traffic management and road user safety performance, and contains and provides:

- (a) temporary traffic management plans and timing;
- (b) a summary of any traffic accidents recorded at the Construction Site, or any other locations affected by the Contractor's Work; and
- (c) reporting required by:
 - (i) Section 7.19 of the SWTC;
 - (ii) Appendix 27 (Road Occupancy) of the SWTC; and
 - (iii) the Traffic Management and Safety Plan.

1.1.8 Community liaison

The monthly progress report must incorporate a community liaison section that sets out community liaison performance, and contains and provides:

- (a) a report on the status of the Contractor's stakeholder and community involvement performance against the requirements of the Community Involvement Plan;
- (b) details demonstrating that the Contractor is abiding by the requirements for the release of information detailed in Section 8.1(j) of the SWTC;
- (c) a summary of feedback from public displays and community information sessions detailed in Section 8.3 of the SWTC and a record of site tours by visitors detailed in Section 8.4.7 of the SWTC;
- (d) a summary of the information provided in the community information sessions required by Section 8.3 of the SWTC and feedback and questions from the local community;

- (e) a summary of the information provided in the public displays required by Section 8.3 of the Scope of Works and Technical and Criteria and the feedback and issues raised by the community at the displays;
- (f) details on the receipt of and responses to complaints, as required by Section 8.5(g) of the Scope of Works and Technical and Criteria;
- (g) details on the status of responses to representations from the community, as required by Section 8.6(f) of the Scope of Works and Technical and Criteria;
- (h) evidence that all of the Contractor's personnel and all personnel engaged on the Contractor's Work are aware of, and abide by, the requirements for the release of information detailed in Section 8.8.1 of the SWTC, as required by Section 8.8.1(b) of the SWTC; and
- (i) reporting required by the Community Involvement Plan.

1.1.9 Environment

The monthly progress report must incorporate an environment section that sets out environmental performance, and contains and provides:

- (a) a report on the Contractor's performance against the requirements of the Environmental Management Plan, including the status of compliance with the Environmental Documents;
- (b) a rolling six monthly schedule of all obligations arising from the Planning Approval and environmental licences, including identified risks in achieving compliance;
- (c) a summary of all reports and submissions sent to Authorities and copies of the reports and submissions required by Section 2.13 of the Scope of Work and Technical Criteria;
- (d) a summary of the quantity of all materials procured for incorporation into the Project Works, classified by type of material, per year;
- (e) all reporting required by:
 - (i) Environmental Documents;
 - (ii) RMS D&C G36; and
 - (iii) the Environmental Management Plan.

1.1.10 Quality

The monthly progress report must incorporate a quality section that sets out quality performance, and contains and provides:

- (a) a copy of the updated index of quality records detailed in Annexure Q/C of RMS D&C Q6, including all significant non-conformities identified under the Quality Plan together with the identified cause and/or contributing factors, dispositions, authorisations and corrective actions undertaken and the updated register of survey marks. Non-conformities must be categorised by product/service with any recurring non-conformities identified and details provided of any continuous improvement measures or corrective actions implemented to minimise the recurrence of non-conformities;

- (b) a summary, including by work type category and supporting details, of quality performance and status records including total numbers of lots opened, lots not closed, NCRs raised, NCRs not closed, CARs, Hold Points released in accordance with the deed, Hold Points not released in accordance with the deed, and Witness Points;
- (c) a copy of each certificate issued by the Project Verifier and the Quality Manager pursuant to the deed; and
- (d) a schedule of all audits planned under the Quality Plan.

1.1.11 Financial

The monthly progress report must incorporate a financial section that sets out:

- (a) anticipated future progress claims and cost forecast to the completion of the Landscaping Maintenance Period with respect to the Project Contract Sum that allows for all foreseeable impacts on program and production, including wet weather and industry shutdowns;
- (b) a summary of actual progress claims against anticipated future progress claims, including a commentary on any material departures between the previously anticipated future progress claims and the actual progress claims;
- (c) the status of all insurances that clause 7.5 of the deed requires the Contractor to arrange and have in place;
- (d) register of Variations and status (pending and approved); and
- (e) register of EOT claims (pending and approved).

1.1.12 Issues and claims

The monthly progress report must incorporate an issues and claims section that contains and provides:

- (a) a register of issues which have or are likely to have an adverse material effect on the progress of the Contractor's Work or the cost and quality of the Project Works and Temporary Works together with:
 - (i) the date that the issue was identified;
 - (ii) a description and commentary on any such issues including potential impacts on progress, cost and quality;
 - (iii) detailed particulars on how the Contractor is dealing with any such issue including the timing for the resolution of the issue;
 - (iv) the date that any unresolved issues were referred to the Management Review Group; and
 - (v) detailed particulars on how unresolved issues will be settled including the timing for the settlement of the unresolved issue; and
- (b) Disputes notified under the provisions of clause 20 of the deed.

1.1.13 Governance

The monthly progress report must incorporate a governance section that contains and provides:

- (a) a report on key governance issues including:
 - (i) leadership, culture, values and accountabilities;
 - (ii) effectiveness of management structures, processes and systems in the timely resolution of issues; and
 - (iii) accuracy and timeliness of reporting in relation to progress of the Contractor's Work and the cost and quality of the Project Works and Temporary Works; and
- (b) a summary of any unresolved issues including issues that have been referred to the Management Review Group.

1.2 Durability assessment reports

- (a) The Final Design Documentation for each discrete design element, or part thereof, must include a durability assessment report that:
 - (i) identifies the durability requirements and the performance criteria applicable to the discrete design element or part thereof;
 - (ii) details any design work undertaken by or on behalf of the Contractor in respect of the discrete design element or part thereof;
 - (iii) summarises the interim design stages and reviews;
 - (iv) includes copies of all certificates issued by the Project Verifier in accordance with the deed in relation to the discrete design element or part thereof;
 - (v) identifies the critical durability issues with respect to construction of the discrete design element or part thereof;
 - (vi) identifies the inspection / monitoring and maintenance requirements in the construction and operation of the discrete design element or part thereof to achieve the durability requirements; and
 - (vii) provides such other information as RMS Representative may from time to time request.
- (b) As a condition precedent to Construction Completion, the Contractor must submit to RMS Representative and the Project Verifier an addendum to the durability assessment report referred to in Section 1.2(b) of this Appendix 24 which provides details of:
 - (i) all non-conformities that occurred during the performance of the Contractor's Work and the potential impact of such non-conformities on the durability and performance of the discrete design element or part thereof;
 - (ii) the recommendations made and rectification work undertaken by the Contractor; and
 - (iii) any updates on the conclusions and recommendations made by the Contractor.

- (c) The Contractor must incorporate the outcomes of the durability assessment report referred to in Sections 1.2(a) and 1.2(b) of this Appendix 24 in the Maintenance Plan which must include:
 - (i) the type and frequency of inspection / monitoring for critical and non-critical discrete design elements or parts thereof;
 - (ii) guidance on interpretation of inspection / monitoring data;
 - (iii) actions to be taken arising from the review of the inspection / monitoring data;
 - (iv) impacts on the schedules of maintenance;
 - (v) the system of recording inspection / monitoring and maintenance records; and
 - (vi) a process to achieve durability performance where durability is compromised.

1.3 Chain of Responsibility

The monthly progress report must incorporate a “Chain of Responsibility” (CoR) section that sets out the chain of responsibility performance, and contains and provides:

- (a) reporting required by the CoR Management Plan; and
- (b) reporting on the Contractor’s CoR metrics related to management of:
 - (i) driver fatigue and speeding; and
 - (ii) fleet maintenance.

1.4 Australian Industry Participation Plan

- (a) The monthly progress report must incorporate an “Australian Industry Participation Plan” section that sets out details of compliance with and implementation of the certified AIP Plan.
- (b) The Contractor must report on the Contractor’s implementation of the certified AIP Plan, with respect to this Project only, as detailed below:
 - (i) details of variations to the certified AIP Plan, as relevant, during the progress of the Contractor’s Works; and
 - (ii) any other details related to the Contractor’s implementation of the certified AIP Plan that may, from time to time, be requested by the RMS Representative.
- (c) Within 5 months of the date of the deed, and then at 6 monthly intervals, the Contractor must provide to the RMS Representative a completed Compliance Report using the latest “Compliance Report – Project Phase” template. The Compliance Report template is available from the following Australian Government Department of Industry, Innovation and Science internet address:

<http://www.industry.gov.au/industry/IndustryInitiatives/AustralianIndustryParticipation/Pages/AIP-plans-required-Jobs-Act-2013.aspx>

2 Contract Program and Subsidiary Contract Programs

- (a) Each Subsidiary Contract Program required under clause 17.1(a) of the deed and each update of the Contract Program and Subsidiary Contract Programs required under clause 17.1(d) of the deed must identify the anticipated Date of Opening Completion and demonstrate how the Contractor will achieve Construction Completion by the Date for Construction Completion and:
- (i) be based on a time scaled calendar in units of one week and identify working days, non-working days, shifts, statutory holidays, rostered days off, Christmas and Easter shutdowns and any other shutdowns;
 - (ii) cover all activities associated with the Contractor's Work, including traffic management activities, and break down all activities into periods of no greater than 4 weeks with sufficient details to allow accurate monitoring of the progress of the Contractor's Work;
 - (iii) include details on programming contingencies;
 - (iv) show the logical relationship between activities and events in the program, including interactions between flood mitigation and bridge construction works, link all activities appropriately to predecessor and successor activities and identify all time leads, lags resource and other activity constraints used in the program;
 - (v) include details on the derivation of activity durations from work method design and construction methodology, resources availability and allocation, activity sequencing and / or cycle times and any other inputs affecting activity durations;
 - (vi) identify the production of each discrete design element or part thereof of all the Design Documentation associated with each major Milestone and activity included in Schedule 2 of the deed, including the time for supply of documentation and information to RMS Representative and the Project Verifier. Activities within Milestones must be detailed sufficiently to enable RMS to plan, program and coordinate its obligations;
 - (vii) identify all activities associated with the Contractor's Work and each Cost Centre and each major Milestone described in Schedule 3 of the deed, the current status and actual progress of each activity and the scheduled planned progress of activities. Activities within Cost Centres and Milestones must be detailed sufficiently to enable RMS to plan, program and co-ordinate its obligations. The program must show the dates when the Contractor will require information, documents, materials or instructions from RMS or RMS Representative and the dates when the Contractor will provide and request information or documents to or from RMS or RMS Representative, taking account of the processes contemplated by the deed. These dates must be no earlier than RMS or RMS Representative could reasonably have anticipated at the date of the deed that the information, documents, materials and instructions would be required and provided;

- (viii) identify labour, equipment and other resources on a resource chart linked to the programs;
 - (ix) identify planned and actual progress payments by graphical representation;
 - (x) identify early start dates, late start dates, durations, Date for Construction Completion, anticipated Date of Opening Completion inter-relationships, staging and sequences of design and construction activities other significant events, Milestones and the Contractor's Work, the critical path and the float relating to activities not on the critical path;
 - (xi) identify the work undertaken by the Contractor, consultants, sub-contractors, and suppliers;
 - (xii) identify comprehensively all pre-construction activities and all Approvals required to be obtained from Authorities, including preparation, consultation, submissions and Authority reviews of Approvals;
 - (xiii) identify off-site and on-site activities associated with the procurement, testing and commissioning of all plant, equipment, computer systems or materials, including order dates, supply lead times and site delivery dates;
 - (xiv) identify the award of all significant contracts and sub-contracts related to the Contractor's Work;
 - (xv) identify all activities that have a significant bearing on the time required to complete the Contractor's Work;
 - (xvi) include details on all certifications required for the Contractor to comply with its obligations under the deed; and
 - (xvii) be in an electronic form and include any such other detail as RMS Representative reasonably requires and be accurate, comprehensive and complete in all respects.
- (b) The coding and structure of the electronic forms of the Contract Programs and Subsidiary Contract Programs must allow viewing and editing by RMS Representative of selected activities and milestones and filtering of program activities by major trade or activity, work area, resource or Subcontractor, available float and variance in actual versus planned progress.
- (c) The program software used by the Contractor must be acceptable to RMS Representative and must be provided to RMS, with appropriate operating licences where required, installed and operational on the computers supplied by the Contractor in accordance with Appendix 22 (RMS Site Facilities) of the SWTC.

3 Design Documentation

- (a) Design Documentation must be developed for each discrete design element, which must include, as a minimum:
 - (i) structural design;
 - (ii) pavement design;
 - (iii) geometric road design;
 - (iv) environmental works design (including operational noise design studies);
 - (v) geotechnical design (including foundations, earthworks, subgrade and batters);
 - (vi) stormwater and drainage design;
 - (vii) safety design, including guardrail and signage;
 - (viii) durability design;
 - (ix) maintenance specifications;
 - (x) Services design (including lighting, electrical design and Services relocations);
 - (xi) urban and landscape design (including landscape);
 - (xii) signage, furniture and roadside furniture design;
 - (xiii) design for the maintenance of the Works and Other Road Works;
 - (xiv) traffic management design, including traffic staging, long term detours and traffic control plans, including those for major traffic switches; and
 - (xv) all other elements of the Project Works, Temporary Works and Landscaping Maintenance carried out by the Contractor.
- (b) Each structure, including each bridge and each retaining wall must be designed as discrete design elements. The Design Documentation must be complete for each structure, must include information and drawings that affect the performance of each structure and must contain all relevant design information, including information such as scour protection around bridge abutments and piers, soft soil treatments of approach embankment fills and geotechnical data. Design Documentation for structures must be fully comprehensive and independent from any other Design Documentation. Cross referencing different sets of drawings or standard component sets of drawings must not be used for any bridge components. Each set of bridge drawings must have on the title block of each drawing sheet, the "Registration Number of the Plans". The Registration Number of the plans and bridge numbers, which will be required for bridge name plates, will be supplied by RMS on request from the Contractor.
- (c) Design Documentation drawings for structures must be prepared and presented in accordance with section 3.1 of the RTA CADD Manual.
- (d) Design Documentation for pavements must include:
 - (i) an introduction setting out scope and purpose;

- (ii) a site description detailing site conditions including the presence and condition of any existing pavements;
- (iii) outcomes of site investigations, including survey and test details;
- (iv) test results, including comments and observations on the test results;
- (v) pavement layer material properties, including elastic properties of materials;
- (vi) design traffic loadings, including details of traffic data sources and calculations;
- (vii) pavement specifications and standard drawings, including RMS D&C specifications and RMS standard drawings;
- (viii) pavement drainage details, including typical cross section details of all subsurface drainage;
- (ix) pavement configurations including layer interface treatments and construction tolerances;
- (x) layout plans detailing extent of pavements, joints, travel lanes and subsoils drainage;
- (xi) life cycle costing analysis; and
- (xii) appendices which include pavement design criteria, site investigation plans, photographs, laboratory test results, pavement core, borehole and test pit logs, traffic loadings and pavement design calculations.

(e) Stages for Development and Preparation of Design Documentation

(i) Developed Concept Design

The Developed Concept Design is the 15% (approximately) developed Design Documentation for any discrete design element or part thereof, and is the stage at which the Concept Design has been developed to a design concept stage that will not change in relation to general details and any special details, including those details associated with foundation and support conditions, road and structure geometry and interfaces with adjacent infrastructure. The Developed Concept Design must include a written report identifying and addressing:

- A. the scope of the discrete design element or part thereof;
- B. any differences between the Developed Concept Design and the Concept Design and the reasons for the differences. Where the differences affect the design drawings, they must be identified and highlighted on drawings in the report;
- C. compliance with and satisfaction of the design requirements of clause 12.1 of the deed and Section 5 of the SWTC;
- D. integration and multi-disciplinary design interface issues and risks associated with other discrete design elements and associated mitigation strategies;
- E. durability issues and risks and measures to comply with the durability requirements for the discrete design elements or parts thereof;

- F. design and performance criteria and measures to comply with the design and performance criteria specified for the discrete design elements or parts thereof;
- G. the design loadings, load combinations, exposure conditions and design standards that will be adopted for detailed design of the discrete design elements or parts thereof;
- H. safety by design including requirements of Section 5.3 of the SWTC;
- I. operation and maintenance issues, impacts and requirements;
- J. any Approvals that the Contractor is required to obtain for the design and construction of the Project Works and the Temporary Works;
- K. constructability issues and measures, including traffic management during construction of the Project Works and the Temporary Works;
- L. model verification;
- M. all other risks associated with the design and construction of the discrete design elements or parts thereof and management strategies;
- N. safety (including safety by design), environmental, urban and landscape design and community criteria and measures to comply with the criteria specified for the discrete design elements or parts thereof; and
- O. any other details, calculations, models, drawings, reports or other information as reasonably requested by RMS Representative, or the Project Verifier.

Nothing in this Section 3(e)(i) will limit the operation of clause 12 of the deed or Section 5 of the SWTC.

(ii) Substantial Detailed Design

The Substantial Detailed Design is the 85% (approximately) developed design, which includes all the design standards, design reports, specifications, models and calculations and the 75% (approximately) developed drawings and shop drawings, for any discrete design element or part thereof, and is the stage at which the principal design analysis, design details and drawings demonstrate that the design, when fully developed, will comply with and satisfy all the requirements of the deed. The Substantial Detailed Design must include a written report identifying and addressing:

- A. any changes from the previously submitted Developed Concept Design and the reasons for the changes made. Where changes have been made, the report must identify and address the measures to comply with the durability requirements, performance, safety, environmental, urban and landscape design and community criteria and the design loadings and design standards to be applied to the discrete design elements or parts thereof. Where the changes affect the design drawings, they must be identified and highlighted on drawings in the report;

- B. compliance with and satisfaction of the design requirements of clause 12.1 of the deed and Section 5 of the SWTC;
- C. the predicted effects requirements of Section 2.16 of the SWTC;
- D. draft specialist engineering reports including durability, geotechnical and geotechnical parameters derivation, groundwater, hydrology, noise and vibration, materials testing, traffic, settlement assessment, monitoring and infrastructure protection;
- E. draft Contractor's Specifications;
- F. constructability issues, measures and methodologies, construction staging, traffic management, unique design components and special materials;
- G. Services conflicts identified using the three dimensional model required by Section 6.3(j) of the SWTC;
- H. safety by design including requirements of Section 5.3 of the SWTC;
- I. operation and maintenance issues, impacts and requirements including maintenance diaries and maintenance methodologies for major maintenance activities including those associated with:
 - 1. bridge bearings and joints;
 - 2. batters;
 - 3. drainage;
 - 4. pavements; and
 - 5. soil and slope structures / engineered slopes.
- J. updated durability issues and risks and measures to comply with the durability requirements for the discrete design elements or parts thereof;
- K. any comments on the Developed Concept Design received by the Contractor from RMS Representative or the Project Verifier; and
- L. any other details, calculations, models, drawings, reports or other information as reasonably requested by RMS Representative or the Project Verifier.

Nothing in this Section 3(e)(ii) will limit the operation of clause 12 of the deed or Section 5 of the SWTC.

(iii) Final Design Documentation

The Final Design Documentation is the final developed design, which includes all the design standards, design reports, specifications, models and calculations and the final developed drawings and shop drawings, for any design element or part thereof. The Final Design Documentation must include all the Design Documentation for the discrete design elements or parts thereof, including a durability assessment report and a report identifying and addressing:

- A. any changes from the previously submitted Substantial Detailed Design and the reasons for the changes made. Where changes have been made, the report must identify and address the measures to comply with the durability requirements, performance, safety, environmental, urban and landscape design and community criteria and the design loadings and design standards to be applied to the discrete design elements or parts thereof;
- B. compliance with and satisfaction of the design requirements of clause 12.1 of the deed and Section 5 of the SWTC;
- C. the predicted effects requirements of Section 2.16 of the SWTC;
- D. final Contractor's Specifications;
- E. copies of the road safety audits including resolution of all issues identified in the audits;
- F. safety by design including requirements of Section 5.3 of the SWTC;
- G. final specialist engineering reports including durability, geotechnical and geotechnical parameters derivation, groundwater, hydrology, noise and vibration, materials testing, traffic, settlement assessment, monitoring and infrastructure protection;
- H. a copy of the Proof Engineer's report required by clause 2.5 of the deed;
- I. constructability issues, measures and methodologies, construction staging, traffic management, unique design components and special materials;
- J. operation and maintenance issues, impacts and requirements;
- K. evidence of any Approvals that the Contractor is required to obtain for the design and construction of the Project Works and the Temporary Works;
- L. any comments on the Substantial Detailed Design received by the Contractor from RMS Representative or the Project Verifier;
- M. integration and multi-disciplinary design interface issues and risks associated with other discrete design elements and associated mitigation strategies;
- N. details of all the design work undertaken;
- O. interim design reviews in a summary form;
- P. evidence that the Design Documentation has received the concurrence or approval, as may be required, from all relevant Authorities affected by the design element; and
- Q. any other details, calculations, models, drawings, reports or other information as reasonably requested by RMS Representative, or the Project Verifier.

Nothing in this Section 3(e)(iii) will limit the operation of clause 12 of the deed or Section 5 of the SWTC.

(iv) IFC Design Documentation

The IFC Design Documentation is the design which the Contractor is entitled to use for construction purposes and incorporates minor amendments to the Final Design Documentation verified by the Project Verifier to address any comments or conditions noted in the Project Verifier's signed document in the form of Schedule 15.

- (f) At each stage in the development of the Design Documentation, for each structure, design analysis inputs, data, assumptions, parameters, calculations and outputs must be provided, as applicable to each stage, in both tabular and graphic form, clearly indicating loads, moments, stresses, deflections, settlements and movements. Design analysis details must be provided as electronic text files and not in pdf format. Data on the geotechnical analysis must also be presented in an electronic database format, in accordance with Section 4.2 of the SWTC and outputs must be produced in the form of coloured plans, geotechnical sections and schedules of information.
- (g) Design Documentation at each stage as identified in Section 3(e) of this Appendix 24 must include provision of data, inputs, calculations and outputs in electronic form that enables interrogation, manipulation and re-calculation by RMS Representative, and the Project Verifier. The geometric design must be in electronic form as an MX database file (model.fil) or a genio file which can be input into MX using MX Major Option Genio.
- (h) At each stage in the development of the Design Documentation (with the exclusion of the IFC Design Documentation stage) the Contractor must prepare and provide RMS Representative and the Project Verifier with a constructability report for each discrete design element of the Contractor's Work. The constructability report must comply with the Contractor's Design Plan.
- (i) The design safety report should include the following as minimum:
- (i) Documented method, reasons and outcomes of HSiD decisions;
 - (ii) Documentation for the design itself;
 - (iii) The reasons for decisions from client advice and constraints that may influence the safety of the design;
 - (iv) Address all the requirements of the safety report required under legislation.

4 As-Constructed Documentation

- (a) The Contractor must provide RMS Representative progressively, as construction of the elements of the Project Works and Other Road Works are completed, with the following data:
 - (i) a complete, comprehensive and accurate set of “as constructed drawings” showing details of the complete works under each design element as identified in clause 12.2(o) of the deed, including Services constructed and / or adjusted. The RMS contract number must be included on the plan signature box on each sheet of the “as constructed drawings”;
 - (ii) as constructed surveys and design models in electronic form as an MX database file (model.fil) or a genio file which can be input into MX using MX Major Option Genio with superseded strings deleted; and
 - (iii) certification from a registered surveyor that the relevant works are located as shown on the “as constructed drawings”.
- (b) As a condition precedent to Construction Completion, “as constructed drawings” must be prepared and submitted to RMS Representative for all Issued for Construction Design Documentation, with amendments to show any changes made during construction and any out-of-tolerance construction which was accepted for inclusion in the Project Works. The “as constructed drawings” must show all changes from the IFC Design Documentation. The “as constructed drawings” changes must cross reference any relevant RFI or NCR. Cross referencing alone to the relevant RFI or NCR without showing the actual changes on the “as constructed drawings” is not acceptable.
- (c) As constructed documentation must include slope risk ratings in accordance with Section 4.2(g) of the SWTC.
- (d) “As constructed drawings” and surveys must be submitted electronically. The “as constructed drawings” must be submitted in .pdf format with a maximum single file size of 100MB. A multi-page .pdf file or files must be provided for each set of “as constructed drawings”. Where more than one .pdf file is required for the “as constructed drawings”, the drawings must be grouped into logical structures within each file.

5 Construction Completion Reports

- (a) As a condition precedent to Construction Completion, the Contractor must provide RMS Representative with a construction completion report. The report must include:
- (i) background details of the project and project delivery;
 - (ii) a schedule of important milestones and their achievement dates;
 - (iii) a schedule of the major design and constructed elements, including quantities;
 - (iv) a durability report which references the impact of construction non-conformities on the Design Life of project elements;
 - (v) a finalisation report for the Environmental Management Plan, including any residual licence conditions; and
 - (vi) a summary report of the community liaison process and outcomes.
- (b) As a condition precedent to Construction Completion, the Contractor must confirm the long-term integrity of all pavements as they will exist at Construction Completion. A report must be submitted to RMS Representative detailing actual construction achievement including, but not limited to:
- (i) strengths;
 - (ii) layer thickness;
 - (iii) densities;
 - (iv) planned transverse and longitudinal crack formations;
 - (v) riding quality;
 - (vi) joint sealing;
 - (vii) testing summary;
 - (viii) pavement drainage; and
 - (ix) subgrade support.
- (c) As a condition precedent to Construction Completion, the Contractor must provide to the RMS Representative a completed, Project specific, 'Asset Acceptance Information' spreadsheet and 'Bridge Inventory Data for Asset Acceptance' spreadsheet for all relevant assets constructed as part of the Project.
- (i) The Asset Acceptance Information spreadsheet "Asset Acceptance Information Template.xls" and Bridge Inventory Data for Asset Acceptance spreadsheet "Bridge Inventory Data for Asset Acceptance.xlsx" will be provided as an electronic files on a separate disc titled:

Design and Construction of
The Northern Road Upgrade - Stage 3 North
Contract No.15.3662.2254
Exhibit F - Electronic Files

6 Other Documentation Requirements

- (a) The Contractor must provide all other documentation in accordance with the requirements of the Scope of Work and Technical Criteria, including:
 - (i) copies of all site investigation reports, property and land surveys and property condition surveys, within one month of the reports / surveys being completed;
 - (ii) as built documentation for all Services relocations, within one month of completion of relocation work;
 - (iii) settlement monitoring database; and
 - (iv) reports on the effects of fauna clearing activities.
- (b) Further to the quality system requirements specified in Section 3.1.1 of the SWTC, the Contractor must utilise Quick Response (QR) codes as part of its document control and management system. As a minimum:
 - (i) QR codes, which can be scanned or interrogated by QR readers including those commercially available for smart phones or tablets (Apple iOS, Google Android or Microsoft Windows based operating systems) (**Mobile Device**), must be included on all IFC Design Documentation;
 - (ii) when the QR code printed on a document is scanned or interrogated, the user's Mobile Device must be directed to a website that is established and kept up to date by the Contractor; and
 - (iii) the website (referred in Section 6(b)(ii) above) must provide a clear statement to the Mobile Device to either confirm that the scanned document is the latest version, or indicate that it has been superseded by a later version. If the scanned IFC Design Documentation has been superseded, the website must provide the user with the option of directly downloading the latest version of the document to the Mobile Device or provide a link for the user to access the latest version from another device.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 25 – Maintenance Standards
During Construction
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
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1 Maintenance during the Contractor's Work

- (a) This Appendix details the requirements for maintenance during construction of the Project Works and the Temporary Works.
- (b) All infrastructure, assets, facilities, amenities and areas identified in section 7.14(a) of the Scope of Works and Technical Criteria must be maintained and repaired by the Contractor in accordance with the requirements of this Appendix at all times during the Contractor's Work. As a minimum, the functional performance of the infrastructure, assets, facilities, amenities and areas must be to the conditions and standards that existed at the time of the preconstruction survey required by section 7.14(c) of the Scope of Works and Technical Criteria.

1.1 Activities

- (a) For the purpose of this Appendix, an Activity is a specific set of maintenance tasks. This section 1.1 defines the Activities that must be undertaken, as a minimum, by the Contractor in the maintenance and repair of the infrastructure, assets, facilities, amenities and areas required by section 1(b) of this Appendix.

1.1.1 Activity 100 – Infrastructure, Asset and Areas Inspections

- (a) The Contractor must develop and implement an inspection system to manage the maintenance of the infrastructure, assets, facilities, amenities and areas. The Contractor must issue a copy of the inspection system to the RMS Representative and the Project Verifier.
- (b) The Contractor must develop and maintain an inspection calendar that includes, as a minimum, the information identified in Annexure C Form C.4. The Contractor must issue a copy of the inspection calendar to the RMS Representative and the Project Verifier.
- (c) Inspections may be either in the form of planned formal inspections or random periodic inspections by the Contractor's maintenance personnel during the performance of the maintenance work.
- (d) The Contractor must identify and record the following details during inspections:
 - (i) infrastructure, assets, facilities, amenities or areas inspected;
 - (ii) inspector(s) name and position;
 - (iii) date and time of inspection;
 - (iv) nature and extent of any defects present;
 - (v) locations of any defects (segment, distance from start of segment, lane and offset from centreline);
 - (vi) appropriate maintenance activity (including estimated duration); and
 - (vii) timing for any required maintenance activity.
- (e) Additional inspections must also be undertaken by the Contractor to ensure the continuous adequate performance of the infrastructure, assets, facilities, amenities and areas, particularly following the occurrence of an event, including heavy rain,

that is likely to have had a detrimental affect on the condition of the infrastructure, assets, facilities, amenities and areas.

- (f) Inspections of infrastructure, assets, facilities, amenities and areas must be undertaken in accordance with the requirements of section 1.2.3 of this Appendix.

1.1.2 Activity 120 – Repair pothole

- (a) Subject to section 1.1.2(b) of this Appendix, the Contractor must repair:
 - (i) rigid and flexible pavements;
 - (ii) sealed and unsealed road shoulders;
 - (iii) paved medians;
 - (iv) footways and footpaths; and
 - (v) the wearing surface on bridges.
- (b) The Contractor is not required to repair:
 - (i) edge ruts or edge scours > 1 linear metre in length; or
 - (ii) running planks on bridges.
- (c) Intervention levels for this Activity are detailed in section 1.2.4 of this Appendix.
- (d) Maintenance standards for this Activity are detailed in section 1.3.2 of this Appendix.

1.1.3 Activity 121 – Correct surface shape

- (a) Subject to section 1.1.3(b) of this Appendix, the Contractor must correct the surface shape of:
 - (i) rigid and flexible pavements;
 - (ii) sealed and unsealed road shoulders;
 - (iii) paved medians;
 - (iv) footways and footpaths; and
 - (v) the wearing surface on bridges.
- (b) The Contractor is not required to correct the surface shape of:
 - (i) depressions, bumps, ruts or shoves > 20 m² in area;
 - (ii) edge break and abrupt discontinuities > 20 linear metres in length; and
 - (iii) unsealed pavement repairs > 20 m² in area.
- (c) Intervention levels for this Activity are detailed in section 1.2.5 of this Appendix.
- (d) Maintenance standards for this Activity are identified in section 1.3.3 of this Appendix.

1.1.4 Activity 131 – Control tree and/or bush

- (a) Subject to section 1.1.4(b) of this Appendix, the Contractor must:
 - (i) lop and trim trees and / or bush (Annexure 25.1/A); and

- (ii) remove saplings and small trees of ≤ 50 mm base diameter, measured 300 mm from the bases of the saplings and trees.
- (b) The Contractor is not required to remove entire trees and shrubs with base diameters > 50 mm, measured 300 mm from the bases of the trees and shrubs.
- (c) Intervention levels for this Activity are detailed in section 1.2.6 of this Appendix.
- (d) Maintenance standards for this Activity are detailed in section 1.3.4 of this Appendix.

1.1.5 Activity 132 – Control ground vegetation

- (a) The Contractor must control ground vegetation both inside and outside the road formation in the following areas
 - (i) Verges- the area bounded by the outer edges of the carriageway shoulder and the greatest distance of:
 - A. 3 metres;
 - B. the carriageway shoulder edge to the line of guideposts or safety barriers;
 - C. 1.5 metres behind safety barriers where space allows; or
 - D. the width necessary to maintain sight distance; and
 - (ii) Medians - the area bounded by the inner carriageway shoulder and the greatest distance of:
 - A. 3 metres;
 - B. the carriageway to the line of guideposts or safety barriers;
 - C. 1.5 metres behind safety barriers where space allows;
 - D. the width necessary to maintain sight distance;
 - E. the full width of the median where the median is ≤ 8 metres wide; or
 - F. the full width of the median where the median is located within a built-up area.
- (b) Intervention levels for this Activity are detailed in section 1.2.7 of this Appendix.
- (c) Maintenance standard for this Activity are detailed in section 1.3.5 of this Appendix.

1.1.6 Activity 141 – Remove detritus and litter

- (a) Subject to section 1.1.6(b) of this Appendix, the Contractor must remove detritus and litter and relocate, but not necessarily dispose of, carcasses from locations that are hazardous to traffic, including:
 - (i) the road formation;
 - (ii) bridge decks;
 - (iii) surface drains functioning predominately to protect the formation either by draining discharge away from the road pavement (including table drains) or prohibiting discharge from entering the road pavement (including catch drains); and

- (iv) drainage structures across private accesses located within the road formation and road reserve.
- (b) The Contractor is not required to remove hazardous spilled or dumped waste.
- (c) Intervention levels for this Activity are detailed in section 1.2.8 of this Appendix.
- (d) Maintenance standards for this Activity are detailed in section 1.3.6 of this Appendix.

1.1.7 Activity 161 – Service small sign

- (a) Subject to section 1.1.7(b) of this Appendix, the Contractor must service small signs (signs $\leq 2\text{m}^2$ only) including:
 - (i) signs installed to warn, direct or inform road users travelling on Other Roads; and
 - (ii) regulatory signs (including stop and give-way signs) located at the traffic holding lines on intersecting roads.
- (b) The Contractor is not required to service the following small signs:
 - (i) street and road name signs of Type G5-1 as identified in AS1742 “*Manual of uniform traffic control devices Set*”; and
 - (ii) special information signs erected by local councils.
- (c) Intervention levels for this Activity are detailed in section 1.2.9 of this Appendix.
- (d) Maintenance standards for this Activity are detailed in section 1.3.7 of this Appendix.

1.1.8 Activity 162 – Replace small sign (Reactive)

- (a) Subject to section 1.1.8(b) of this Appendix, the Contractor must replace small signs (signs $\leq 2\text{m}^2$) including:
 - (i) signs installed to warn, direct or inform road users travelling on Other Roads; and
 - (ii) regulatory signs (including stop and give-way signs) located at the traffic holding lines on intersecting roads.
- (b) The Contractor is not required to replace the following small signs:
 - (i) street and road name signs of Type G5-1 as identified in AS 1742 “*Manual of uniform traffic control devices Set*”.
 - (ii) special information signs erected by local councils.
 - (iii) signs on service roads.
- (c) Intervention levels for this Activity are detailed in section 1.2.10 of this Appendix.
- (d) Maintenance standards for this Activity are detailed in section 1.3.8 of this Appendix.

1.1.9 Activity 163 – Maintain Guide Post

- (a) The Contractor must maintain guide posts including:

- (i) posts required for the purpose of delineating traffic flow; and
 - (ii) delineators on safety barriers located on bridges.
- (b) Intervention levels for this Activity are detailed in section 1.2.11 of this Appendix.
- (c) Maintenance standards for this Activity are detailed in section 1.3.9 of this Appendix.

1.2 Intervention levels, response times and intervention frequencies

1.2.1 General

- (a) This section 1.2 contains the requirements for responding to defects and incidents and specifies the defects that must be rectified by the Contractor.
- (b) The Contractor must comply with the intervention levels specified in sections 1.2.4 to 1.2.11, inclusive of this Appendix.
- (c) Annexure B lists the Identified Records required in accordance with RMS D&C Q6.
- (d) The Contractor must record all identified defects, proposed repairs and timing of repairs on a defect identification and scheduling record form. As a minimum, the form must contain the information detailed in Annexure C Form C.1.
- (e) The Contractor must record all incidents on an incident register which is submitted monthly to RMS Representative. As a minimum, the register must contain the information detailed in Annexure C Form C.3.
- (f) The Quality Plan must detail a procedure for inspecting and recording the condition level of defects prior to the Upper Defect Severity being reached to ensure, as far as practicable, that the Upper Defect Severity is never exceeded. The inspection regime described in the Quality Plan must be amended as required by the Contractor to minimise recurring non-conformities and allow for and accommodate certain events, such as heavy rain that may trigger the need to carry out additional inspections.

1.2.2 Defects, Incidents, Dangers and Hazards

- (a) The action that must be taken by the Contractor for defects is determined by the way the repair standard is defined. The following methods of specifying defect identification and responses for maintenance during construction are used in this Appendix:
- (i) Upper Defect Severity (UDS);
 - (ii) Intervention Level / Response Time (IL/RT); and
 - (iii) Intervention Frequency (IF).
- (b) Defects must be repaired in accordance with the applicable repair standard, within the applicable response time, or at the required intervention frequencies inclusive of this Appendix.
- (c) The UDS is the condition level that a defect must never exceed. If the UDS has been exceeded the Contractor must treat the defect as a non-conformity. If the defect is safety related, the Contractor must attend to the defect in accordance with the

requirements specified for dangers and hazards in this section 1.2.2. The Contractor must rectify the defect as soon as practicable.

- (d) The IL/RT is the condition level at which a defect requires the scheduling of rectification work. When this condition level is reached, the defect must be rectified or emergency measures taken by the Contractor within the response time specified in section 1.2.4 to 1.2.11, inclusive of this Appendix. Where a response time of 'As soon as possible' has been specified the Contractor must attend to the defect in accordance with requirements specified in this section 1.2.2.
- (e) The IF applies to infrastructure, assets, facilities, amenities and areas that are maintained on a cyclical basis and the Contractor is required to rectify defects that have arisen since the last maintenance cycle. The Contractor must ensure that no defect exists for longer than the relevant intervention frequency specified in this section 1.2.2.
- (f) The Contractor's obligations under this section 1.2.2 are ongoing and continuing until the Date of Construction Completion. In particular, but without limitation, the process of identifying and responding to dangerous or hazardous defects under this section 1.2.2 may require repeated attendance at the same defect.
- (g) The Contractor must respond to incidents in accordance with the requirements of this section 1.2.2.
- (h) When a defect or incident is identified (following inspection, complaint, notification by RMS Representative or otherwise), the Contractor must determine whether the defect or incident constitutes an immediate danger or hazard to traffic, road users or other members of the public or is likely to become a danger or hazard before the expiry of the time during which it would be rectified in the normal course of events.
- (i) In determining if a defect or incident is, or is likely, to become a danger or a hazard to road users, the following must be considered, as a minimum:
 - (i) severity and nature of the defect or incident;
 - (ii) extent of defect (combined effect of multiple occurrences of the defect within localised area) or incident;
 - (iii) general road conditions (including geometry, alignment, pavement width, etc.) and prevailing weather conditions;
 - (iv) location of the defect or incident;
 - (v) effect on pedestrians, cyclists and motor cyclists (consider the location of schools, retirement villages, pedestrian crossings etc.); and
 - (vi) traffic volume (normal peak flow and other times of special peak flow).
- (j) The Contractor must assess the need for emergency action within 5 minutes during normal working hours.
- (k) If the defect or incident constitutes an immediate danger or hazard to traffic, the Contractor must take all steps reasonably available to rectify or remove the defect or hazard.
- (l) At the site of any danger or hazard, the Contractor must undertake necessary works to make the site safe and trafficable. If it is not possible to rectify or remove the

defect immediately upon identification, the Contractor must take all measures reasonably necessary to safeguard road users and others (including the erection of warning signs, barriers and the provision of traffic control) until such time as repair or removal can be effected or a relevant Authority directs otherwise. The Contractor must complete the rectification of the defect in accordance with the applicable repair standard as soon as practicable.

- (m) If it is not possible to provide any measure required under this section 1.2.2 at the time when the defect or incident is identified, the Contractor must:
- (i) immediately notify the local Police and request assistance (for a defect or incident constituting an immediate danger or hazard to traffic); or
 - (ii) arrange measures or action within a time frame the Contractor considers reasonable in order to protect persons and property; and
 - (iii) advise RMS Representative of defects or incidents where the Contractor was unable to immediately dispatch the necessary resources.

1.2.3 Activity 100 – Asset Inspection

Activity details:

Activity Code: 100

Units of Measure: Item

Defect / Condition / Intervention Level / Task		Measurement	Performance Standard
(a) Inspection frequency			
(i)	Carry out daytime inspection of the infrastructure, assets facilities, amenities and areas (excluding off-road cycleways):	Nominal frequency	Twice per week
(ii)	Carry out night time inspections of the infrastructure, assets facilities, amenities and areas each year during:	Time of year	March and November
(b) Defects to be identified / joint planning			
(i)	Identify defects	Reference	Sections 1.2 and 1.1.
(ii)	Carry out Pre-Construction Inspection:	Reference	Section 7.14 of Scope of Works and Technical Criteria and Section 1.1.1

1.2.4 Activity 120 – Repair Pothole

Activity details:

Activity Code: 120

Units of Measure: Pothole – Number, Edge scour - metres

Notes:

- (i) 'Pothole' means a hole in the pavement, frequently rounded in shape, resulting from loss of pavement material under traffic.
- (ii) 'Edge drop-off' means rutting or erosion of the shoulder along the edge of the sealed and/or rigid pavement.

Defect / Condition / Intervention Level / Task		UDS	II/RT	IF	Measurement	Intervention Level
(a)	Potholesⁱ / delamination / isolated slab failure					
	(i) Potholes, delamination and isolated slab failures on sealed pavements must not exceed:	Y			Plan dimension	300 mm
	(ii) Potholes, delamination and isolated slab failures on sealed pavements must not exceed:	Y			Depth	30 mm
	(iii) Potholes, delamination and isolated slab failures within Pedestrian Zones and cycleways must not exceed:	Y			Depth	15 mm
	(iv) Potholes within unsealed pavement must not exceed:	Y			Depth	60 mm
	(v) Potholes (of any size) on sealed pavements must be rectified within:		Y		Response Time	7 days
(b)	Edge rut or edge scour (for defects \leq 1 linear metre)					
	(i) Drop off within 0.5 m of carriageway must not exceed:	Y			Drop off	50 mm
	(ii) Drop off more than 0.5 m of carriageway must not exceed:	Y			Drop off	75 mm

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.2.5 Activity 121 – Correct Surface Shape

Activity details:

Activity Code: 121

Units of Measure: Square metre

Notes:

- (i) Rut means the longitudinal vertical deformation of a pavement surface formed by the wheels of vehicles.
- (ii) Shove means the lateral displacement of pavement structure.
- (iii) Depth or height relative to surrounding surface. Assess visually and check using a 1.2 m straight edge and calibrated wedge.
- (iv) Edge break means the fretting along the edge of a sealed pavement and usually associated with rutting or erosion of the shoulder. Edge break is measured from the nominal edge of pavement.
- (v) Abrupt discontinuities include stepping at concrete joints, leading edge of stock grids, bridge abutments and pits, and any isolated 'spot' defect such as vertical projections.
- (vi) Unsealed pavement defects include scour channels, corrugations, depressions, bumps, ruts or shoves.

	Defect / Condition / Intervention Level / Task	UDS	IL/RT	IF	Measurement	Intervention Level
(a)	Depression, bump, rut ⁱ or shove ⁱⁱ (for defects ≤ 20 m ²)					
	(i) Depression, bump, rut or shove must not exceed:	Y			Depth / height ⁱⁱⁱ	50 mm
(b)	Edge break ^{iv} (for defects ≤ 20 linear metres)					
	(i) Edge break encroaching into Carriageway must not exceed:	Y			Edge break ^{iv}	0 mm
	(ii) Edge break encroaching into sealed shoulder must not exceed:	Y			Edge break ^{iv}	300 mm
(c)	Abrupt discontinuities ^v (for defects ≤ 20 linear metres)					
	(i) Temporary repair to ensure difference in level does not exceed:	Y			Height ⁱⁱⁱ	30 mm
	(ii) Within Pedestrian Zones must not exceed:	Y			Depth / height ⁱⁱⁱ	15 mm
	(iii) Stepping at transverse joint attracting noise complaint must be rectified within:		Y		Response Time	7 days
(d)	Unsealed pavement defects ^{vi} (for defects ≤ 20 m ²)					
	(i) defects must not exceed:	Y			Depth / height ⁱⁱⁱ	60 mm
	(ii) Depth of bulldust must not exceed:	Y			Depth	60 mm
	(iii) Height of isolated rock bars must not exceed:	Y			Height ⁱⁱⁱ	40 mm
	(iv) All defects (of any size) must be rectified within:		Y		Response Time	14 days

NOTE: Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2(b), even if the specified intervention level or response time has not been exceeded.

1.2.6 Activity 131 – Control Tree and/or Bush

Activity details:

Activity Code: 131

Units of Measure: Tree

Notes:

- (i) Includes sight visibility to intersections (assessed from a position 5.5 m from the Carriageway), sign faces, traffic signals, lower edge of safety barrier rail, and non-pavement delineators, stopping sight distances on the inside of curves (measured from and to a height of approximately 1.15 m above the road surface).
- (ii) Only includes saplings and small trees currently less than 50 mm diameter and are likely to exceed at any time in the future a trunk base diameter of 150 mm. The trunk diameter is measured 300 mm above the ground level.
- (iii) Maintenance Clear Zone is defined in Annexure A

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(a)	Sight distance ⁱ					
	(i) For speed zones < 50 km/h, maintain sight distance of:	Y			Sight distance	90 m
	(ii) For 50 km/h ≥ speed zone ≤ 60 km/h, maintain sight distance of:	Y			Sight distance	105 m
	(iii) For 60 km/h ≥ speed zone ≤ 80 km/h, maintain sight distance of:	Y			Sight distance	160 m
	(iv) For 80 km/h ≥ speed zone ≤ 100 km/h, maintain sight distance of:	Y			Sight distance	255 m
	(v) For speed zones > 100 km/h, maintain sight distance of:	Y			Sight distance	295 m
(b)	Vegetation-free Areas					
	Vegetation must not be allowed to encroach within the following areas:					
	(i) The area above traffic lanes, shoulders and on-road cycleways for a height of:	Y			Height	5.0 m

Defect / Condition / Intervention Level / Task		UDS	II/RT	IF	Measurement	Intervention Level
	(ii) The area above off-road cycleways and Pedestrian Zones for a height of:	Y			Height	2.5 m
(c)	Maintenance Clear Zone					
	(i) Trees ⁱⁱ located within the Maintenance Clear Zone must not exceed:	Y			Trunk diameter ⁱⁱ	50mm

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2(b), even if the specified intervention level or response time has not been exceeded.

1.2.7 Activity 132 – Control ground vegetation

Activity details:

Activity Code: 132

Units of Measure: Hectare

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(a)	Areas to be controlled					
	(i) Grass and weed must be maintained to ensure compliance with sight distance requirements and to ensure the height of vegetation does not impede delineation on guide posts and barriers:	Y	Y		Reference	25.1.2
	(ii) Maintain firebreaks to ensure height of vegetation does not exceed:	Y			Height	300 mm
	(iii) Ensure there is no vegetation growing down the face of kerbs:			Y	Frequency	120 days
	(iv) Remove vegetation affecting water flow along the gutter within:		Y		Response Time	4 hours
	(v) Ensure there is no vegetation within sealed, concrete/paved areas:			Y	Frequency	120 days
	(vi) Ensure there is no vegetation within granular unsealed pavements or shoulders:			Y	Frequency	120 days
	(vii) Remove vegetation that could potentially damage any Asset within:		Y		Response Time	7 days
(b)	Landscaped areas					
	(i) Weeds, grass or other undesirable vegetation within landscape planting bed for formal planting Areas must not exceed:	Y			Area affected (in any 20 m ²)	5%
	(ii) Weeds, grass or other undesirable vegetation within landscape planting bed for bushland planting must not exceed:	Y			Area affected (in any 20 m ²)	5% ^{vi}
	(iii) Weeds, grass or other undesirable vegetation within landscape planting bed for trees in mown grass areas must not exceed:	Y			Height	150 mm ⁱ

	Defect / Condition / Intervention Level / Task	UDS	IL/RT	IF	Measurement	Intervention Level
	(iv) Remove weeds from within Landscaped Areas (any type) before they are:	Y			Condition of weed	In flower

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.2.8 Activity 141 – Remove Detritus and Litter

Activity details:

Activity Code: 141

Units of Measure: Cubic metre

Notes:

- (i) 'Litter/detritus' means any litter (larger than 75 mm in dimension), obstructing material and / or accumulated debris. It includes but is not limited to such things as minor slips (< 2 m³), sealing aggregate, broken glass, pavement aggregates, dead animals, wind blown sand or grit, fallen leaves, bagged litter, burst truck tyres and other objects that could cause damage or disruption to drainage and other asset elements or sub-elements.

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(a)	Litter/detritusⁱ located within the Carriageway					
	(i) Remove litter / detritus (regardless of size) hazardous to vehicular traffic, pedestrians or cyclists within:		Y		Response Time	4 hours
	(ii) Remove litter / detritus at any section preventing over-edge run-off and / or affecting water flow along the gutter or into bridge scuppers within:		Y		Response Time	4 hours
	(iii) Sweep bridges every:			Y	Reference	3 months
(b)	Litter/detritusⁱ other areas					
	(i) Ensure offensive litter / detritus (eg. Litter / detritus producing a nauseating smell or attracting flies) attracting complaint from the public is removed within:		Y		Response Time	1 day
	(ii) Ensure other offensive litter / detritus is removed within:		Y		Response Time	2 days
	(iii) Ensure non-offensive litter and visible from road or adjacent paths is removed every:			Y	Frequency	3 months

Defect / Condition / Intervention Level / Task		UDS	II/RT	IF	Measurement	Intervention Level
(iv)	Ensure litter within stockpile sites is removed every:			Y	Frequency	3 months
(v)	Ensure litter / detritus creating trip hazard or slippery surface from designated pedestrian underpasses is removed every:			Y	Frequency	2 weeks
(c)	Litter / detritusⁱ and vegetation causing obstruction to surface drains / inlets					
(i)	Remove litter / detritus and vegetation causing water to be redirected out of drain within:		Y		Response Time	4 hours
(ii)	Remove litter / detritus and vegetation causing water to encroach onto road shoulder within:		Y		Response Time	4 hours
(iii)	Remove litter / detritus and vegetation causing water to by-pass pit within:		Y		Response Time	4 hours
(iv)	Remove litter / detritus and vegetation causing water to encroach onto Carriageway within:		Y		Response Time	4 hours
(d)	Other assets					
(i)	Litter / detritus under stock grids must not encroach within steelwork:	Y			Clearance	100 mm
(ii)	Remove from bridges and other structures litter / detritus that is capable of impeding drainage of stormwater, particularly scuppers and downpipes within:		Y		Response Time	4 hours
(iii)	Surface of safety ramps and arrestor beds to be tynd and litter/detritus to be removed, to ensure effectiveness in stopping out-of-control vehicles, every:		Y	Y	Frequency	Once per year

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.2.9 Activity 161 – Service Small Sign

Activity details:

Activity Code: 161

Units of Measure: Sign

Notes:

- (i) Small sign means signs $\leq 2 \text{ m}^2$

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(a)	Service small signs ⁱ					
	(i) Replace missing or non-functional sign supporting structure within:		Y		Response Time	7 days
	(ii) Clean sign face dirty or marked so as to reduce legibility (> 30% sign face or % symbol/legend) within:		Y		Response Time	7 days
	(iii) Adjust sign inclined to line of sight (twisted) more than 30 degrees within:		Y		Response Time	7 days
	(iv) Correct sign reflecting glare back at motorists within:		Y		Response Time	7 days
	(v) Reinstate sign face that has fallen within:		Y		Response Time	7 days
	(vi) Correct post misaligned, inclined to vertical or horizontal by more than 15 degrees:		Y		Response Time	7 days

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.2.10 Activity 162 – Replace Small Sign (Reactive)

Activity details:

Activity Code: 162

Units of Measure: Sign

Notes:

- (i) Small sign means signs $\leq 2 \text{ m}^2$.
- (ii) Excludes normal wear and tear such as fading, loss of reflectivity, and other age related deterioration.

Defect / Condition / Intervention Level / Task		UDS	II/RT	IF	Measurement	Intervention Level
(a)	Replace small signs ⁱ					
	(i) Replace missing or damaged sign faces (rendered non-functional ⁱⁱ) within:	Y			Response Time	1 day

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.2.11 Activity 163 – Maintain Guide Post

Activity details:

Activity Code: 163

Units of Measure: Post

Notes:

- (i) 'Post' means guide posts, snow poles and non-pavement reflectors (safety barrier delineators).
- (ii) 'defective' means: posts or reflectors missing, broken or obscured; reflectors covered with a noticeable build-up of mildew, moss or grime, that have noticeably lost reflectivity or are the wrong colour; reflectors not centrally placed on posts between 50 mm and 100 mm clear distance from the top of the post; posts where more than 20% of the white face is marked or degraded; posts that vary in height from standard by more than 100 mm or are displaced from vertical by more than 15°; posts that are offset inconsistently from the pavement edge (variation in offset for consecutive guideposts must be less than 2 m).

Defect / Condition / Intervention Level / Task		UDS	II/RT	IF	Measurement	Intervention Level
(a)	Postsⁱ on straights					
	(i) Ensure nominal spacing of defective-free ⁱⁱ posts is 150 m, with posts in pairs, one each side of formation:			Y	Frequency	30 days
	(ii) Ensure nominal spacing of defective-free ⁱⁱ posts is 60 m, for areas susceptible to frequent fog:			Y	Frequency	30 days
	(iii) Ensure nominal spacing of defective-free ⁱⁱ posts is 300 m for roads with AADT < 1500 and consisting mainly of long straights in flat terrain.			Y	Frequency	NA
	(iv) Ensure a minimum of two pairs of defective-free ⁱⁱ posts are visible otherwise rectify within:		Y		Response Time	14 days

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(b)	Postsⁱ on curves					
(i)	Ensure spacing of defective-free ⁱⁱ posts comply with Table 3.1 in AS 1742.2 - 1994:			Y	Frequency	30 days
(ii)	Ensure first posts on the curve for each direction of travel is located at the beginning of the curve (ie where curve noticeably starts to deviate from the alignment of the straight):			Y	Frequency	30 days
(c)	Postsⁱ on crests					
(i)	On crests having a straight alignment, defective-free ⁱⁱ posts must be arranged so that the delineators on at least two pairs are visible at all times to a driver, excluding any posts which are less than 40 m ahead of the driver. Where this is not the case rectify within:		Y		Response Time	14 days
(ii)	Where a horizontal curve occurs on or just beyond a crest, 1.2.11(c)(i) need apply only to posts on the outside of the curve. The requirements of 1.2.11(b) also apply. Rectify within:		Y		Response Time	7 days
(d)	Postsⁱ at bridges and culverts located within the edge of formation					
	Where safety barrier or bridge rail not provided and kerbing or headwall is at or inside the edge of formation. The following requirements are not applicable where kerbing or headwall is outside the edge of formation.					
(i)	For structures ≥ 5 m in length, ensure that there are 4 defective-free ⁱⁱ posts (one at each end of headwall or kerbing):			Y	Frequency	30 days
(ii)	For structures > 10 m in length, ensure that there are 4 defective-free ⁱⁱ posts (one at each end of headwall or kerbing), plus additional pairs of posts at spacing of 10 m maximum:			Y	Frequency	30 days
(iii)	For structures < 5 m in length, ensure that there are 2 posts (one on each left-hand approach end of headwall or kerbing):			Y	Frequency	30 days
(iv)	For pipe and single cell box culverts ensure that there are 2 posts (one at each headwall):			Y	Frequency	30 days

Defect / Condition / Intervention Level / Task		UDS	IL/RT	IF	Measurement	Intervention Level
(e)	Segment markers (post or marked on road)					
(i)	Illegible when viewed from vehicle travelling at 80 km/h or marker missing or not visible:			Y	Frequency	180 days

NOTE : Any defect considered to be a danger or hazard to the travelling public must be promptly attended to in accordance with 1.2.2, even if the specified intervention level or response time has not been exceeded.

1.3 Repair Standard

- (a) This section 1.3 sets out the repair standard for maintenance during construction.
- (b) The Contractor must comply with resources and materials requirements in section 1.3.1 of this Appendix and the repair standards specified in sections 1.3.2 to 1.3.9, inclusive of this Appendix.
- (c) Annexure B lists the Identified Records that are required to be created by the Contractor in accordance with RMS D&C Q6.
- (d) The Contractor must record all maintenance work undertaken on a work record form. As a minimum, the form must contain the information detailed in Annexure C Form C.2.
- (e) The Contractor must maintain daily records of maintenance activities on a daily work record form. As a minimum, the form must contain the information detailed in Annexure C Form C.5.

1.3.1 Resources and Materials

- (a) Pavement materials may include asphaltic concrete, cold mix, or road base and bituminous seal with fine aggregate.
- (b) All repairs must comprise materials that are compatible with, or of better quality than the existing pavement.
- (c) Signs must be manufactured and delivered in accordance with RMS D&C 3400. Manufacture, transport and storage of sign support structures must be in accordance with RMS D&C R143 section 3. The size of the sign must be accordance with AS1742 "*Manual of uniform traffic control devices Set*".
- (d) Guide posts must conform to one or both of the following RMS D&C specifications as applicable:
 - (i) RMS D&C 3411; and
 - (ii) RMS D&C 3412.

1.3.2 Activity 120 – Repair Pothole

- (a) The Contractor must repair potholes as necessary to ensure that roads remain open to traffic and provide safe conditions under the prevailing weather conditions, traffic volume and speed zone.
- (b) Temporary repair of pavement using bituminous materials (including cold mix) to eliminate hazardous conditions may be used until such time as more permanent repairs can be made. Temporary repair methods must only be used where:
 - (i) rapid deterioration of the pavement has not allowed sufficient time to schedule permanent repairs, or
 - (ii) defects are associated with rigid pavements.

The work may need to be carried out more than once at the same location in order to maintain safe conditions prior to the completion of permanent repairs.

- (c) For temporary repairs, the Contractor must carry out additional temporary repairs as required in order to maintain safe conditions prior to the completion of permanent repairs.
- (d) For permanent repairs, the Contractor must remove enough of the underlying unsound material to ensure a sound repair. The failed area must be squared up to produce a regular shaped patch.
- (e) Compaction must be provided to achieve a uniformly dense, free from segregation and well bonded repair sufficient to ensure that it is not displaced, shoved, deformed, or picked up by traffic.
- (f) The Contractor must repair localised pavement edge drop off to restore the edges to line and level. The Contractor must ensure the completed repair does not adversely affect lateral drainage across the shoulder.
- (g) Excavated material and debris must not be left on the roadside or placed so as to impede surface drainage. Excess material must be swept from the traffic lanes and bicycle lanes and disposed of legally and responsibly.

1.3.3 Activity 121 – Correct Surface Shape

- (a) The Contractor must correct the surface shape as necessary to ensure that roads remain open to traffic and provide safe conditions under the prevailing weather conditions, traffic volumes and speed zones.
- (b) The Contractor must apply a levelling course using bituminous materials or the profiling to correct badly distorted isolated areas of pavement. This work may involve the trimming of shoved pavement to the level of the surrounding sealed surface to eliminate hazardous conditions. The repair must include the application of asphaltic concrete, coldmix or a bituminous emulsion coat and a small aggregate or grit over the trimmed areas.
- (c) The deviation both within the repair and between the existing pavement and the repair when measured with a 1.2 m straight edge must not be greater than 10 mm with a maximum surface level difference of 5 mm at the perimeter of the repair.
- (d) The surface must provide a uniform water resistant layer to protect the pavement layers from surface infiltration of moisture. The skid resistance of the surface must not be lower than that apparent immediately in front of and beyond the repair area.
- (e) Where surfacing aggregate is used it must remain proud of the binder so that:
 - (f) binder is not picked up by the tyres of traffic, and
 - (g) the surface repair has no exposed bituminous material.
- (h) Repair material and binding agents used must not cause damage to the integrity of the existing bituminous surfacing.
- (i) Excavated material and debris must not be left on the roadside or placed so as to impede surface drainage. Excess material must be swept from the traffic lanes, shoulders and bicycle lanes and disposed of legally and responsibly.

1.3.4 Activity 131 – Control Tree and/or Bush

- (a) The Contractor must lop and trim trees and/or bush as necessary to maintain visibility to road signs, sight distance on curves and at intersections vegetation free areas and Maintenance Clear Zones. Lopping and trimming of trees must comply with AS 4373 Pruning of amenity trees. Pruning cuts must be made cleanly and must be done in a manner to prevent stripping back of bark. Pruned vegetation must be swept from the traffic lanes, shoulders and bicycle lanes.
- (b) The Contractor must organise work and methods to minimise damage to existing vegetation. Protective measures must include:
 - (i) keeping movement of plant and machinery and disturbance to existing vegetation to a minimum. Vehicles must not be parked in vegetated or mulched beds.
 - (ii) keeping deleterious material including oil, petrol, cement, bitumen, spillage from washing operations and similar contaminants clear of trees, shrubs and grass including their root systems.
 - (iii) ensuring that materials are not stockpiled over root systems.
 - (iv) ensuring damage is avoided to overhead tree trunks or canopies by machine or truck operations.

1.3.5 Activity 132 – Control Ground Vegetation

- (a) The Contractor must maintain the areas to be controlled and landscaped areas below the intervention level specified in section 1.2.7 of this Appendix.

1.3.6 Activity 141 – Remove detritus and litter

- (a) The Contractor must ensure that all litter within the general area exceeding 75 mm in dimension at the time litter is being collected is removed.
- (b) The Contractor must either:
 - (i) remove and legally dispose of carcasses from highway roads; or
 - (ii) for all other roads, take carcasses to safe locations and inform the relevant local council so that they can remove it.

In the case of a recent road kill of a pouch bearing native species, the Contractor must check for young and, if any live young are found, arrange for care of the live young by a suitable organisation or facility.

- (c) The Contractor must ensure that:
 - (i) no more than 5% of the cross sectional area of drainage channels remain blocked after clearing.
 - (ii) drains are stabilised and not likely to scour;
 - (iii) up-stream overflow problems are avoided; and
 - (iv) vegetation is removed or trimmed as necessary.

- (d) Sweeping and cleaning must ensure that on completion of the work there is unimpeded passage for water into the drainage system. Sweeping operations must ensure that loose material does not enter the storm water drainage system.
- (e) Deadwood with hollows that may provide wildlife habitat must not be removed unless it is causing a problem.
- (f) Areas must be raked level and must be free of litter and debris.
- (g) All litter, debris, sediment and associated material must be removed from the road reserve and disposed of in a legal and responsible manner. The trays of trucks used to transport the litter, debris, sediment and associated material must be sealed to prevent any leakage of water or sediment.

1.3.7 Activity 161 – Service small sign

- (a) The Contractor must ensure that signs and sign supporting structures are maintained in good condition at all times which may include straightening posts, levelling sign-boards, tightening bolts, cleaning sign faces and undertaking minor repairs.
- (b) The Contractor must ensure that the cleaning method to be employed does not cause damage to the sign. Dirty marks must be removed.
- (c) Generally, a replacement sign or supporting structure should be located in the same position and height as the previous sign or supporting structure. However, the Contractor may request relocation of the sign where the sign is less likely to be damaged by errant vehicles (including behind a safety barrier or offset further from the carriageway). RMS Representative may approve relocation of the sign where sight distance to the sign and the sign's message are not adversely compromised.
- (d) Foundations for sign structures must be in accordance with RMS D&C R143 section 4.3. The Contractor must ensure footings are constructed in accordance with good engineering practice. Concrete for foundation footings must comply with RMS D&C R53.
- (e) Erection of sign support structures must comply with RMS D&C R143 section 4.4.
- (f) Sign panels must be attached to the supporting structure at each extrusion section or bolt hole provided on the sign panel using appropriate mounting hardware to ensure sign is securely fixed.
- (g) Orientation of signs must be in accordance with the requirements of Section C3.1 of AS 1742 *“Manual of uniform traffic control devices Set”*.
- (h) Any trees and undergrowth within three metres of the sign support structure and along a motorist's line of sight to the front of the sign must be cleared and removed.

1.3.8 Activity 162 – Replace small sign (Reactive)

- (a) The Contractor must replace missing and damaged sign faces.
- (b) Generally, a replacement sign or supporting structure should be located in the same position and height as the previous sign/structure. However, the Contractor may request relocation of the sign where the sign is less likely to be damaged by errant vehicles (including behind a safety barrier or offset further from the carriageways).

RMS Representative may approve relocation of the sign where sight distance to the sign and the sign's message are not adversely compromised.

- (c) Foundations for sign structures must be in accordance with RMS D&C R143 section 4.3. The Contractor must ensure footings are constructed in accordance with good engineering practice. Concrete for foundation footings must comply with RMS D&C R53.
- (d) Erection of sign support structures must comply with RMS D&C R143 section 4.4.
- (e) Sign panels must be attached to the supporting structure at each extrusion section or bolt hole provided on the sign panel using appropriate mounting hardware to ensure the sign panel is securely fixed.
- (f) Orientation of signs must be in accordance with the requirements of Section C3.1 of AS 1742 "*Manual of uniform traffic control devices Set*".
- (g) Any trees and undergrowth within three metres of the sign support structure and along a motorist's line of sight to the front of the sign must be cleared and removed.

1.3.9 Activity 163 – Maintain Guide post

- (a) The Contractor must replace missing and damaged guide posts.
- (b) The location of guideposts must be in accordance with the requirements specified in section 1.2.11 of this Appendix. Guide posts must be placed at a uniform distance from the pavement edge in accordance with the following:
 - (i) where the carriageway shoulder is adjacent to an embankment or at the surrounding natural surface level, the guide posts must be placed so that the inside edge of the guide post is in line with the outside edge of the shoulder; and
 - (ii) where the carriageway shoulder is located in a cutting the guide posts must be placed on the pavement side of the table drain in such a manner as not to impede the flow of water in the drain.
- (c) Where guide posts are to be set in the ground they must be either erected in excavated holes which are subsequently backfilled and compacted, or driven, where this method of installation is recommended by the guide post supplier. Timber guide posts must not be driven.
- (d) Guide posts must be set vertically in the shoulder pavement to a minimum embedment depth of 500 mm for rigid and timber guide posts and a minimum embedment depth of 350 mm for flexible and semi-flexible guide posts. To offset shoulder irregularities these depths must be varied slightly so as to give a uniform profile of guide post heights of approximately 1000 mm above ground level.
- (e) The Contractor must install each guide post within the following maximum installation tolerances:
 - (i) vertical – within 25 mm of the uniform profile height (nominally 1000 mm); and
 - (ii) horizontal – within 50 mm from the true vertical position measured 1 m above the base.

- (f) All holes left after the removal of existing guide posts must be backfilled and compacted in layers of maximum depth of 150 mm to the relative compaction of the surrounding shoulder material. Imported backfill material must have similar characteristics to the shoulder material.
- (g) All existing guide posts removed by the Contractor must be removed from the work area. Existing guide posts manufactured from recyclable materials must be recycled.
- (h) The guide posts must be installed so that drivers will see only the following array of coloured delineators when approaching in the appropriate direction of travel:
 - (i) a red delineator on each guide post on their left hand side;
 - (ii) a white delineator on each guide post on their right hand side on two-way carriageways; and
 - (iii) a yellow delineator on each guide post on their right hand side on one-way carriageways and medians separating traffic travelling in opposite directions.
- (i) Guide posts that are to be installed on two-way carriageways are required to be fitted with two delineators (one red delineator on the face visible to drivers in the lane nearest to the guide post and one white delineator on the opposite face).

Annexure A – Vegetation Control Diagrams

Annexure A - I

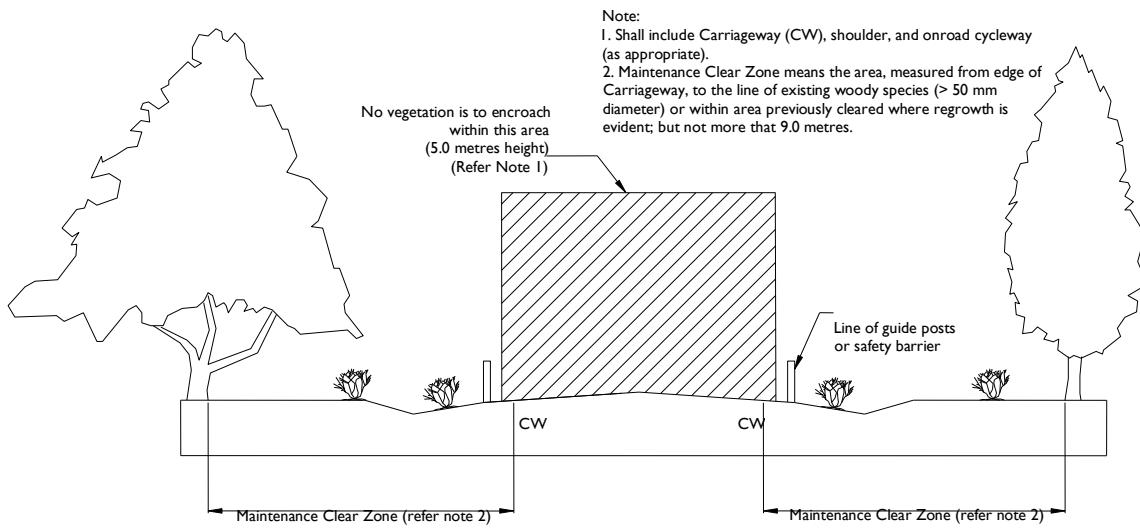
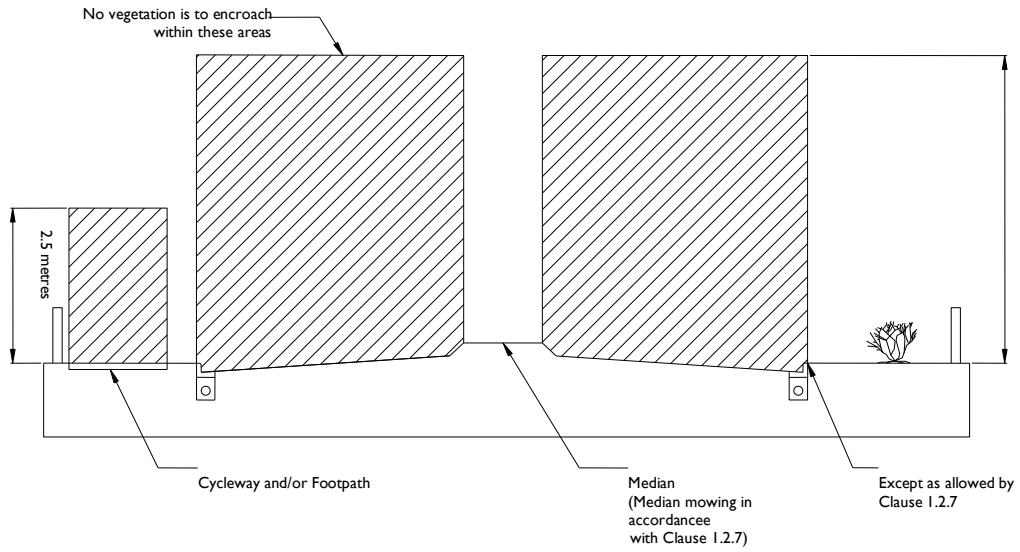
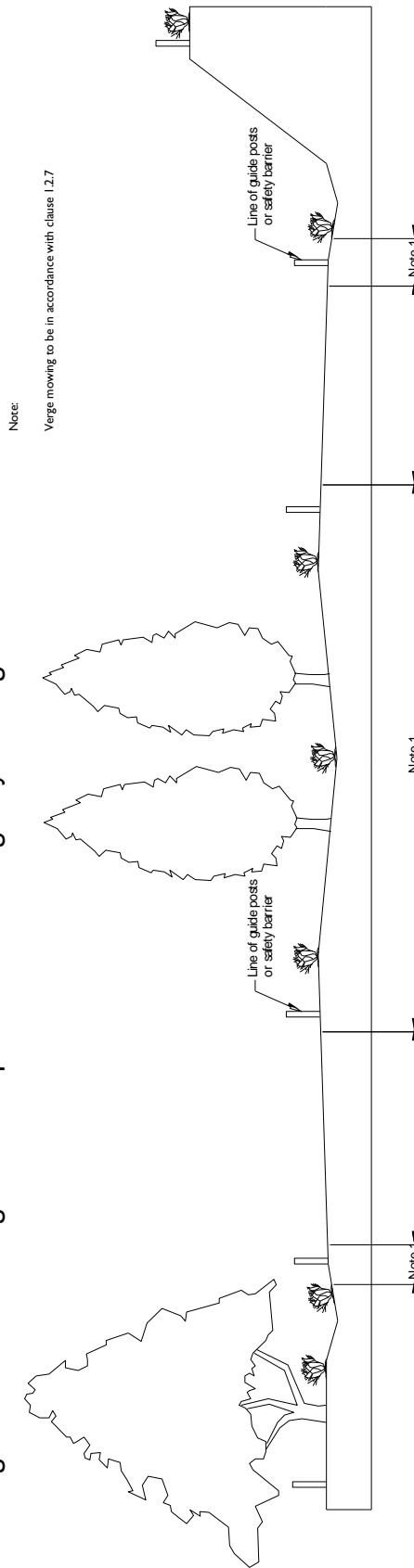


Diagram 25 A-2

Vegetation Control Diagram - Example for Dual Carriageway Mowing



Annexure B – Identified Records

B.1 Schedule of Identified Records

The records listed below are Identified Records in accordance with RMS D&C Q6:

Clause	Description of the Identified Record
1.2.1	Defect Identification and Scheduling Record
1.2.1	Incident Register
1.2.1	Inspection Calendar
1.3	Work Record
1.3	Daily Work Record

Annexure C – Forms

C.1 Defect Identification Record

Road Number:		Segment Range:	From	To
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Inspection Category ✓			Asset Type				Day / Date	Time Range		Weather
Daytime	Night time	Ordered					From	To		

Where		Problem / Defect	Proposed Repair			Action / Programming			Comments
Segment Number	Local Identification / Chainage / Lane		Activity Code	Quantity (Unit)	Response Time	Actioned Immediately (Gang Code)	Two Weekly Schedule (Gang Code)	Maintenance Defects Register (Number)	

Certification: The inspecting officer certifies that this inspection has been carried out in accordance with this Appendix 25 to the Scope of Works and Technical Criteria

 Name Position

Transferred by: _____
 Name Position

 Date

C.2 Work Schedule

Gang: _____

Period Ending: _____

Activity Number	Description of Work	Work Location	TCP No	Date														Work Order, Complaint or Defect Number	Work Done (Yes / No)
				S	M	T	W	T	F	S	S	M	T	W	T	F	S		
				/	/	/	/	/	/	/	/	/	/	/	/	/	/		
				/	/	/	/	/	/	/	/	/	/	/	/	/	/		
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Planned by: _____
 Name Position

Approved by: _____
 Name Position

C.3 Incident Register

Incident Number	Date	Time	Type Code	Location and Description of Incident	Proposed Action			Incident Repair Form Completed (Y/N)
					Action	Who	When by	

Type Code:

A. Accidents/ Spills
B. Flood / Fire / Wind

C. Rock Falls and Sips
D. Pavement / Bridge Failure

E. Vandalism
F. Other

C.5 Daily Work Record

Code	Activity	Reporting Location	Reporting Unit	Measurement of accomplishment
120	Repair pothole	Segment	Pothole	Number of potholes.
121	Correct surface shape	Segment	m ²	Area repaired.
131	Control tree and/or bush	Road No.	Tree	Individual trees or shrub treated.
132	Control ground vegetation	Road No.	Ha	Area treated.
141	Remove detritus and litter	Road No.	m ³	Volume of detritus/litter removed.
161	Service small sign	Segment	Sign	Each sign serviced. This includes replacement of supporting structures.
162	Replace small sign (Reactive)	Segment	Sign	Each sign face replaced.
163	Maintain guide post	Road No.	Job	Each guidepost or reflector treated.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 26 – Information Signs
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 26
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

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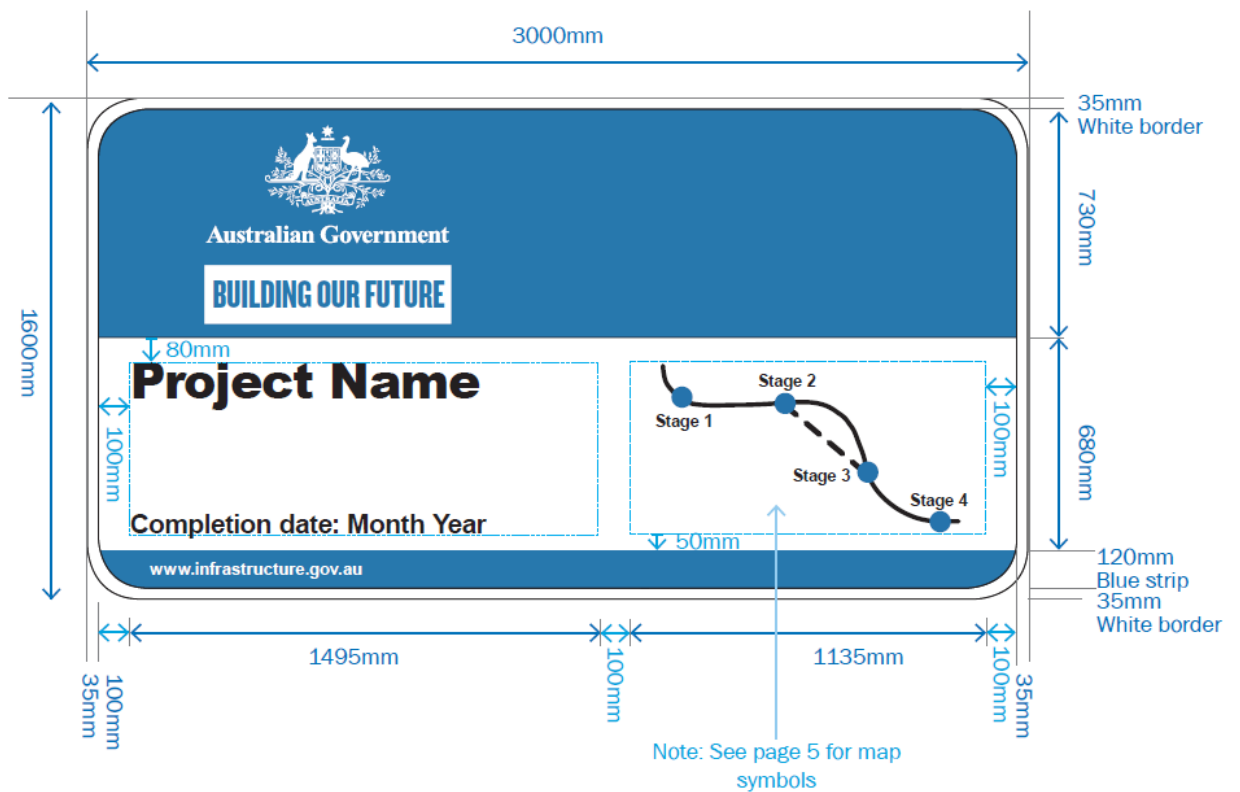
1 Information Signs

- (a) This Appendix contains documents describing the project information signs as listed in Table 26-1.
- (b) The sign faces detailed in this Appendix 26 are templates only, and are subject to confirmation of artwork, project details, and sign dimensions by RMS Representative prior to manufacture of signs.
- (c) Signs are to be supplied and manufactured in accordance with RMS Specification D&C R143. The locations of signs are to be approved by RMS Representative prior to release of the Hold Point specified in RMS Specification D&C R143.

Table 26-1 Information Signs Templates

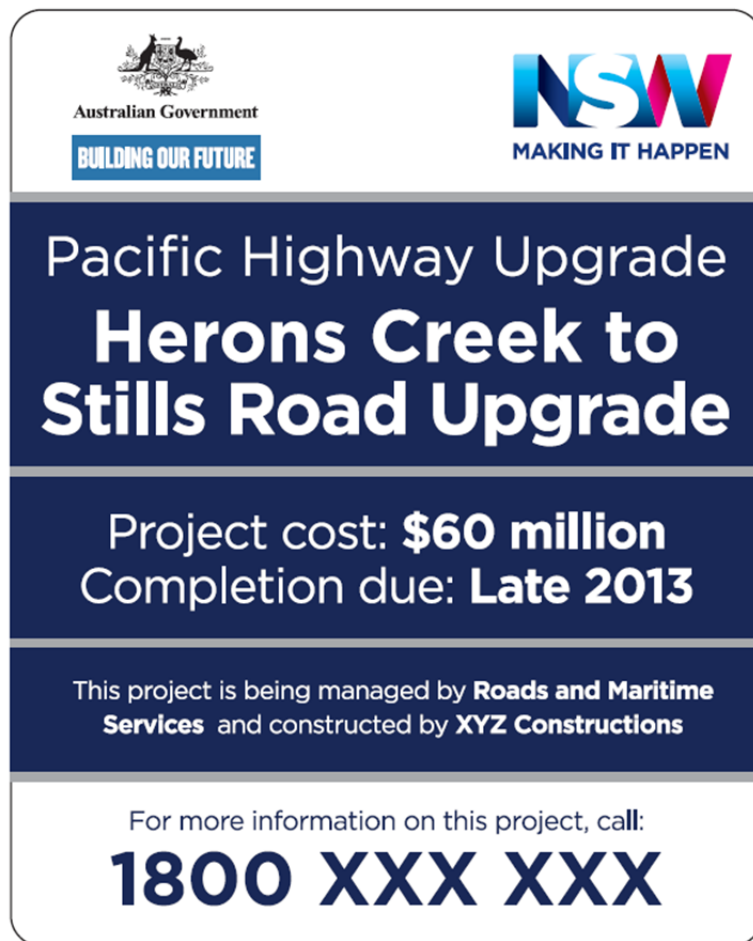
Document	Title
Figure 1	Building Our Future Template
Figure 2	Project Induction Sign Template

Figure 1: Building Our Future Template



(Reference: Australian Government signage Guidelines 2014)

Figure 2: Project Induction Sign Template (for the Project which has Federal and State funding)



(Reference: Infrastructure Project Signage – Style Guide)



**Exhibit A -
Scope of Works and Technical Criteria
Appendix 27 – Road Occupancy
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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1 General

1.1 Introduction

- (a) This Appendix 27 details the requirements for the preparation and submission of Road Occupancy Licence applications by the Contractor and the granting of Road Occupancy Licences by the Transport Management Centre (TMC) on behalf of RMS.

1.2 Definition of Terms

In this Appendix 27:

- (a) 'emergency' is defined as an unforeseen event that requires urgent action to protect life or property, or an occasion when emergency services take control of a portion of the road network;
- (b) 'emergency services' include the New South Wales Police Service, Fire & Rescue New South Wales (FRNSW), New South Wales Ambulance Service and State Emergency Services;
- (c) 'free flow of traffic' is defined as the unimpeded traffic flow conditions on the existing road network prior to the commencement of any of the Contractor's Work;
- (d) 'road occupancy' is defined as any part of the Contractor's Work, including maintenance of the existing road network, that will or is likely to delay, including obstruct, restrict, close, interfere with, slow or stop, the free flow of traffic on any lane or shoulder of the existing road network, the Temporary Works being used by existing road network traffic or any part of the Project Works opened to traffic. Road occupancies include, but are not limited to:
 - (i) shoulder occupancies and/or closures;
 - (ii) lane occupancies and/or closures;
 - (iii) any occupation of the Site by the Contractor's labour, sub-contractors, equipment or plant that requires a traffic control plan under the provisions of RMS D&C G10; and
 - (iv) any other event that causes delays to the free traffic flows.
- (e) 'delay' is defined as the difference between a road users travel time over a section of road under normal conditions and when roadworks are in progress; and
- (f) 'the duration of a delay' is defined as the total period of time during which the free flow of traffic is obstructed, restricted, closed, interfered with, slowed or stopped and includes the time taken to clear all stopped, slowed and queued traffic and return the traffic to free flow conditions.

1.3 Road Occupancy Licence (ROL)

- (a) A copy of any Road Occupancy Licence (ROL), issued pursuant to the provisions of clause 5.14(e) of the deed and including all terms and conditions, must be available:

- (i) at the location of the relevant road occupancy; and
 - (ii) at all times when any activity associated with the ROL is taking place.
- (b) The Contractor must make available to RMS Representative or RMS Surveillance Officers, upon their requests and at the location of the road occupancy, a copy of the ROL.
- (c) All the Contractor's personnel involved in the Contractor's Work associated with the ROL must be:
- (i) inducted in and made familiar with the ROL terms, conditions and requirements prior to the implementation of the road occupancy or their deployment in this element of the Contractor's Work; and
 - (ii) regularly re-trained on the ROL terms, conditions and requirements throughout the period of the road occupancy.

1.4 Periods for Implementation of Road Occupancies

- (a) Road occupancies must not be implemented during the following periods associated with school and public holidays:
- (i) from 5.00am on the Friday prior to the commencement of a State school holiday period until 5.00am on the first Monday of the State school holiday period;
 - (ii) from 5.00am on the last Friday of a State school holiday period until 5.00am on the first day of the new State school term;
 - (iii) from 5.00am on the day prior to a public holiday to 7.00pm on the day following the public holiday; and
 - (iv) notwithstanding (iii) above:
 - A. from 5.00am on the Friday prior to a public holiday Monday, to 5.00am on the Tuesday following the public holiday Monday; and
 - B. from 5.00am on the Thursday prior to a public holiday Friday to 5.00am on the Monday following the public holiday Friday, where State school holiday periods are the gazetted school holiday periods for New South Wales and public holidays are those gazetted in New South Wales.
- (b) Generally a licence will not be granted for occupancies between 5am and 10am and 1pm and 7pm on weekdays.
- (c) The TMC will not grant ROLs to undertake work on the road network over the periods when special events take place. Road occupancies may also be prohibited at other times depending on the potential impacts on the road network, including those associated with occupancies on the road network that are proposed or have been granted to other parties.

1.5 Application for and Authority to Grant Licences

- (a) The Contractor must prepare and submit all ROL applications to the TMC.
- (b) The TMC grants, varies and revokes all ROLs. The TMC will review the ROL applications and will be responsible for their approval.
- (c) The granting or varying of a ROL does not:
 - (i) constitute approval by the TMC of any actions that relate to traffic safety, work health and safety or environmental issues and management;
 - (ii) relieve the Contractor or any person of their responsibility for compliance with legislation, regulations or established operational procedures; or
 - (iii) change any management accountability or responsibility.

2 Considerations in Granting Road Occupancy Licences

2.1 General

- (a) In assessing an application and granting a ROL, due consideration will be given to:
- (i) the type, location, timing and duration of the road occupancy;
 - (ii) special events or other known traffic peaks that may impact on traffic volumes during the period of the proposed road occupancy;
 - (iii) other demands for road space and occupancies; and
 - (iv) compliance of the application with the minimum road network and traffic systems conditions to be maintained, including those detailed in Section 7.18 of the Scope of Work and Technical Criteria during the Contractor's Work.
- (b) ROLs will be granted on a coordinated basis to ensure that road users do not experience excessive delays due to frequent and/or concurrent roadworks.

In general, closure of M4 ramps or the entire M4 carriageway width will not be allowed. Closure may be considered where construction of bridge girders will require access to M4 carriageway during off-peak periods. TMC will only grant ROLs for such work upon review of the Traffic Management Plan, which should be carried out in accordance with SWTC Appendix 43, and provide TMC with sufficient information on timing and task break-down.

2.2 Traffic and Transport Safety and Efficiency Targets

- (a) Road occupancies must comply with the targets, objectives and performance indicators for the road network and traffic systems, including those detailed in Section 7.19 of the SWTC. ROLs will only be granted for those applications that satisfy the specified targets, objectives and performance indicators.

2.3 Capacity

- (a) The work arrangements must provide sufficient roadway capacity to carry the traffic volumes that will pass through the Site during the period of the road occupancy. ROLs will not be granted for works where traffic volumes, including those generated by special events, are likely to exceed the capacity of the work sites at any time during the periods of the road occupancies.
- (b) Roadway capacity will be assessed using the AUSTRROADS Guide to Traffic Engineering Practice Part 2 - "Roadway Capacity". In assessing the capacity requirements, the TMC will consider:
- (i) the AADT and hourly, daily and seasonal variations in traffic volumes;
 - (ii) directional morning and afternoon peak flows;
 - (iii) holiday traffic;

- (iv) local special events, including show days, tourist festivals and sporting events;
 - (v) abnormal local traffic movements; and
 - (vi) traffic and transport network model outputs.
- (c) Output from the traffic and transport network models must be submitted with each ROL for occupancies that involve a change to the road networks and traffic systems of three or more day's duration and must include:
- (i) the output detailed in section 7.19 of the SWTC;
 - (ii) a comprehensive graphic and text based summary of the model output for the core and precinct road networks;
 - (iii) a comparison of all performance indicators between the validated base case, the current and the proposed future operating conditions;
 - (iv) the current and the proposed future operating conditions; and
 - (v) a soft copy of the model that permits viewing of all traffic and transport movements in the whole road network.

2.4 Traffic Control Plans

- (a) Prior to undertaking any planned construction, operation or maintenance activity, the Contractor must prepare traffic control plans, which include details of all provisions for bus, motor vehicle, cyclist, pedestrian and disabled person movements for each stage of the construction activity.
- (b) Traffic control plans associated with any of the Contractor's Work must be developed on the basis of the following documents and in the order of precedence of:
- (i) RMS Specification D&C G10;
 - (ii) RMS Traffic Control at Worksites Manual; and
 - (iii) AS 1742.3 - Traffic Control Devices for Works on Roads.
- (c) Traffic control plans must be included with ROL applications and must be regularly reviewed and modified in conjunction with TMC and emergency services providers.

2.5 Delay

- (a) ROL applications will be assessed and granted based on levels of delay that are acceptable to the TMC and also to the road users affected by the delay, as deemed by the TMC.
- (b) Delay involves an economic cost and the TMC assessment will cover the following considerations in the assessment process:
- (i) the cost of traffic delays relative to the overall cost of the occupancy works;
 - (ii) the cost of traffic control relative to the cost of delays and the overall cost of the occupancy works; and

- (iii) the cost of reducing delays compared with the cost of the delay itself and the overall cost of the occupancy works.

2.6 Coordination

- (a) Applications for ROLs will be assessed together with all other demands, both internal and external to the project, for road space and occupancies. Prior to the submission of all applications, the Contractor must liaise with the Transport Management Centre (TMC), State Transit Authority, local bus companies, relevant Local Councils, the Police Local Road Commands, the Environment Protection Authority, and all other relevant stakeholders to identify and manage issues relating to and resulting from the occupation of a portion of the road network.
- (b) ROLs will be granted on a coordinated basis to ensure that road users do not experience excessive delays due to frequent and/or concurrent roadworks.

3 Applications for Road Occupancy Licences

3.1 Timing of Applications

- (a) In general, applications must be submitted a minimum of ten (10) Business Days prior to the proposed occupation of the road. For partial closure of the M4 carriageway, applications must be submitted a minimum of twenty (20) Business Days prior to the proposed occupation. The TMC will grant or reject applications within this period or grant an approval for a varied road occupancy.
- (b) Applications to extend existing ROLs also require a review period of at least ten (10) Business Days.
- (c) A prompt reply will be given to the Contractor, by the TMC, outlining any issue/s or problem/s to ensure the Contractor has time to rectify any issue/s or problem/s which may inhibit the approval within the approval period.
- (d) Applications for carriageway or full road closures, or works that will result in significant impacts to the traffic and transport network require considerably longer than the 10 business day approval period. Consultation with RMS and TMC should commence months in advance.

3.2 Format and Content

- (a) An application for a Road Occupancy Licence must be by the Contractor to TMC using the "Road Occupancy Licencing Process" identified in the Road Occupancy Manual. The Contractor must provide copies.
- (b) Together with all calculations and workings that have been generated in support of the application, the application must contain:
 - (i) detailed traffic management plans and traffic control plans that are integrated and co-ordinated for the Contractor's Work over the period of the occupancy, showing the proposed changes to the road network for each stage of the occupancy. The traffic management plans must provide information on the location, extent and duration of all traffic changes to the road network during the occupancy. Individual intersection plans, with lane markings, must be provided at a scale of 1:200 to allow for proper traffic assessment of proposed intersection changes;
 - (ii) locations, durations and layouts of existing approved ROLs;
 - (iii) future ROLs that will run concurrently with the proposed ROL;
 - (iv) responses, comments and approvals from the stakeholders identified in section 2.6 (a) above;
 - (v) type of work proposed (deviation, widening, pavement reconstruction, bridge construction, etc.);
 - (vi) location and extent of the work;

- (vii) anticipated start and end dates of the work;
- (viii) areas of road to be occupied;
- (ix) proposed timing of road occupation (times of day, days of week);
- (x) all localised and cumulative impacts, effects and consequences of the occupancy, including the predicted performance indicators and comparisons with the specified targets, expected delays to traffic, proposed stoppages to the traffic flow and the expected duration of the stoppages;
- (xi) type of traffic control;
- (xii) types of information signs to be provided, including variable message signs and the proposed messages;
- (xiii) any proposed alternative routes or side tracks;
- (xiv) existing and proposed temporary speed limits;
- (xv) information management strategy; and
- (xvi) community consultation and liaison strategy.

4 Granting Road Occupancy Licences

- (a) In evaluating Road Occupancy Licence applications, the TMC will consider the effects of the occupancy on traffic flows and will grant licences based on levels of delay that are acceptable to the TMC.

4.1 General Conditions

- (a) Road Occupancy Licences will be granted under the conditions that it is the responsibility of the Contractor to ensure that the works are carried out safely and, as a minimum, in accordance with applicable legislation, regulations, Australian Standards and standard RMS specifications and procedures. The Contractor will be required to coordinate all works and implement strategies to minimise the adverse impact on road users.
- (b) The TMC reserves the right to close any occupancy that has adverse impacts on traffic and to review and alter licence conditions at any stage of the road occupancy.
- (c) The conditions nominated in ROLs must not be varied by the Contractor without the approval of the TMC, except in the case of an emergency. In the case of emergency work, the TMC must be advised of the situation and the resulting actions immediately, and if possible, before the start of the work.

4.2 Conditions

- (a) The TMC will impose conditions on ROLs that are considered necessary to manage the impact of the occupancies at the work site.
- (b) These conditions typically cover:
 - (i) restrictions on the times, dates or days of the week during which road space may be occupied;
 - (ii) traffic capacity to be provided and provisions to accommodate peak traffic volumes at nominated times or nominated days;
 - (iii) measures to minimise queue lengths;
 - (iv) facilities or services to be provided at the sites of the occupancies;
 - (v) recording of road occupancies and traffic control measures used;
 - (vi) monitoring, recording and reporting on traffic and other conditions relevant to the occupancies, including delays experienced by road users, incidents or accidents that occur and complaints received;
 - (vii) community consultation and liaison; and
 - (viii) information management and measures to provide information to road users and local residents and businesses that will be affected by the occupancies, including distribution of the scheduled occupancies to the TMC and affected businesses, advertising circulars, fixed and variable message signage and use of print and electronic media.

5 Management and Monitoring of ROLs

- (a) The Contractor must maintain a current schedule of all approved and proposed road occupancies that will affect the road network over the following six-week period.
- (b) Each week the Contractor must provide a forecast of the proposed road occupancies for the following week to the RMS Representative. The forecast must be in the form of a schedule running from Monday to Sunday and contain full details on the locations and timing of all proposed road occupancies. The forecast must be provided to the RMS Representative by 9.00am on the Thursday of the week preceding the week being forecast.
- (c) Monthly Traffic Coordination Meetings must be arranged and facilitated by the Contractor to discuss all upcoming ROL impacts and traffic staging requirements. Present at the meeting shall be key Contractor staff involved with the planning and implementation of the ROL and Traffic Staging arrangement, along with the Contractor's Traffic Manager and Communications staff members. The Contractor must invite to the meeting, at least one week prior to the scheduled date of the meeting, the RMS Representative, TMC and NSW Police representatives as required.
- (d) A copy of any ROL must be available:
 - (i) at the location of the relevant road occupancy; and
 - (ii) at all times when construction activities associated with the ROL are taking place.
- (e) The Contractor must make available to the RMS Representative or RMS Surveillance Officers, upon their requests and at the location of the road occupancy, a copy of the ROL.
- (f) All the Contractor's personnel involved in the Contractor's Work associated with the ROL must be:
 - (i) inducted in and made familiar with the ROL terms, conditions and requirements prior to the implementation of the road occupancy or their deployment in this element of the Contractor's Work; and
 - (ii) regularly re-trained on the ROL terms, conditions and requirements throughout the period of the road occupancy.
- (g) An auditing program of road occupancies, including regular and frequent audits and inspections, must be implemented by the Contractor to ensure that:
 - (i) no unlicensed road occupancies are occurring;
 - (ii) the conditions of the licence are being met;
 - (iii) there are no late finishing roadwork; and
 - (iv) proper records of the occupancy are being kept.
- (h) The Contractor must also conduct regular travel time surveys for all occupancies to monitor travel times over the affected areas.

- (i) All complaints received in relation to road occupancies must be forwarded to the TMC together with recommendations on appropriate actions to rectify the situation.
- (j) Breaches of an occupation under a ROL may, at the absolute discretion of the TMC, result in the ROL being revoked.
- (k) The Contractor may liaise with the follow Positions in preparing, implementing and notifying of Traffic impacts and ROL Conditions:

NSW Transport Management Centre

- (i) Road Occupancy Unit ph (02) 8396 1513
- (ii) Transport Operations Room ph 1800 679 782

6 Traffic Management Controls

6.1 Variable Message Signs

- (a) Over and above any other requirements in this Scope of Works and Technical Criteria for the provision of variable message signs (VMSs), a minimum of one additional variable message sign must be provided and installed on each approach to all road occupancies.
- (b) During the period of operation of the road occupancy, the VMS must be operated continuously to notify all road users of the road occupancy by displaying appropriate messages to this effect.
- (c) The VMS must have, and the Contractor must operate continuously, a remotely controlled twenty-four hour message change facility to make immediate changes to the messages on the VMS.
- (d) Where required by the conditions of a ROL, the VMS must be installed at least one week prior to the day of the implementation of the road occupancy to provide advance notification to all road users of the future road occupancy.

6.2 Roadworks Speed Limits and Zoning

- (a) Roadwork speed limits and zoning in road occupancies must:
 - (i) comply with section 8.2 of "Traffic Control at Work Sites Version 4.0 - RTA, June 2010" manual;
 - (ii) comply with section 5.6 of "RTA's NSW Speed Zoning Guidelines - RTA Version 3 April 2009" manual;
 - (iii) not be less than 60km/hr, or the existing speed limit, whichever is lesser, at all times, except where approved by an ROL; and
 - (iv) comply with Australian Standard AS 1742.3 "Manual and Uniform traffic control devices - Traffic controls for works on roads".
- (b) Copies of speed zone authorisation applicable to any road occupancies must be available at the road occupancies for the duration of the road occupancies.
- (c) Roadwork speed limit signs must be a minimum Type 'B' size signs, as per the RMS Signs Register, duplicated on both sides of the carriageway at any changes in the posted speed limits. The signs must be supported on two posts.

6.3 Spacing of Traffic Controllers

- (a) Traffic controllers located on each of the approaches to the road occupancy closest to the road occupancy, and within the road occupancy itself, must be positioned no greater than 400 metres apart.

6.4 Closure of Shoulders or Auxiliary Lanes

- (a) Road occupancies involving closure of any shoulder or auxiliary lane, where auxiliary lane(s) exist, must provide a minimum of one travel lane in each direction at all times through the road occupancy.

6.5 Passage of Over-dimension Heavy Vehicles

- (a) Road occupancies must be designed and implemented to allow for and accommodate the passage of over-dimension heavy vehicles through all the road occupancies. The Contractor must liaise with the RMS Representative to establish communication protocols for the passage of over-dimension heavy vehicles through all road occupancies.

6.6 Traffic Manager's Responsibilities

- (a) The Contractor's Traffic Manager must:
 - (i) be responsible for the implementation of ROLs and must continuously monitor the implementation and operation of all road occupancies to ensure that they are compliant with the ROLs, including but not limited to:
 - A. monitoring and quantifying the durations of traffic flow delays;
 - B. monitoring, measuring and recording traffic queue lengths, including the maximum traffic queue lengths in each direction and the total occupancy or stoppage time;
 - C. maintaining and adjusting traffic control measures and devices to assist prevailing traffic flows, minimise lane and shoulder occupancies and any lost traffic flow capacity and minimise traffic flow delay durations and queuing;
 - D. monitoring of over-dimension heavy vehicle movements; and
 - E. updating and keeping the RMS & TMC informed of the status and traffic conditions of all active ROLs in operation.
 - (ii) be contactable at all times (7 days per week and 24 hours per day) during the construction phase of the Contractor's Activities to receive and answer traffic/incident related inquiries from the RMS Representative, RMS Transport Management Centre (TMC) and the Police; and
 - (iii) produce records of all road occupancies and forward records of all traffic flow delays and durations, traffic queue lengths and other ROL related matters to the RMS Representative by 9.00am on the Thursday following the week being recorded.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 28 – Certified AIP Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

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Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

Table of Contents

1 General..... 1

1 General

The Certified Australian Industry Participation Plan is included as Attachment 1

Attachment 1: Certified Australian Industry Participation Plan



Australian Government

Australian Industry Participation Authority

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Email: aij@industry.gov.au
Web: www.industry.gov.au/aij

ABN: 74 599 608 295

Mr Kevin Doherty
General Manager
Western Sydney Program Office
Roads and Maritime Services
20-44 Ennis Road
Milsons Point NSW 2061

Approval of Australian Industry Participation plan under section 18(1) of the *Australian Jobs Act 2013*

Dear Mr Doherty,

I wish to advise that I have approved the Australian Industry Participation (AIP) plan for the Northern Road Upgrade & Bringelly Road Upgrade Stage 2 Project dated 1 September 2016.

I have determined that the AIP plan complies with the *Australian Jobs (Australian Industry Participation) Rule 2014* under the *Australian Jobs Act 2013* and the actions outlined within are adequate.

This AIP plan is now the approved AIP plan for the Northern Road Upgrade & Bringelly Road Upgrade Stage 2 Project. A summary of the AIP plan has been published on our website at: www.industry.gov.au/aij.

The compliance reporting period for the project will be every six months commencing from the date of this letter. The Act provides a maximum period of three months from the end of the compliance reporting period to prepare and submit a compliance report. The compliance report for the first reporting period will be required to be submitted to me by 20 June 2017.

If there are any further questions or issues that arise please contact me on (02) 6213 6404.

Yours sincerely

Gary Richards
Delegate of the Acting Australian Industry Participation Authority

13 September 2016



Australian Government

Australian Industry
Participation Authority

Australian Industry Participation plan

The Northern Road Upgrade & Bringelly Road Upgrade Stage 2

Location: Narellan to Penrith, NSW

Project Identification Number:

051558-13NSW-NP (The Northern Road)

051559-13NSW-NP (Bringelly Road Stage 2)

Proponent: Roads and Maritime Services ABN 76 236 371 088

August 2016

Note : Contractors obligations are highlighted in yellow.

Objective

The key objective of the *Australian Jobs Act 2013* is to ensure Australian entities have full, fair and reasonable opportunity to bid for the supply of key goods or services for the project and, if applicable, the initial operations of the facility.

Completing the AIP plan template will assist you in achieving this objective.

Part A – Title

A.1 Project Proponent Details

Provide details of the designated project proponent for the project. Contact details should be for the officer responsible for developing the AIP plan, these contact details will not be published and are for the Australian Industry Participation Authority's use only.

Business Name of Designated Project Proponent	Roads and Maritime Services
ABN of Designated Project Proponent (if applicable)	76 236 371 088
ACN of Designated Project Proponent (if applicable)	N/A where Roads and Maritime is the proponent
Project Contact Person	Peter Ross
Project Contact Phone Number	02 8849 2117
Project Contact E-mail Address	Peter.Ross@rms.nsw.gov.au
Project Postal Address	27 Argyle Street Parramatta, NSW 2150
Project Proponent/s Type (e.g. single company, joint venture, PPP)	Roads and Maritime Services (this is a NSW State Government Agency)
Project Proponent/s Corporate Structure (e.g. public, private)	Public

Where applicable provide details of all other project proponents involved in the project which have discharged their AIP plan development responsibilities to the designated project proponent.

Business Name of Project Proponent	NA
ABN of Project Proponent (if applicable)	NA
ACN of Project Proponent (if applicable)	NA

A.2 Project Details

Project name

The Northern Road Upgrade & Bringelly Road Upgrade Stage 2

Project location

Narellan to Penrith NSW

Total estimated project value

\$1.8 Billion (Total of The Northern Road Upgrade estimate of \$1.6 billion and Bringelly Road Upgrade estimate of \$172 million)

Project type

Select all applicable facilities for the project

Mine or quarry	<input type="checkbox"/>	Land transport facility	<input checked="" type="checkbox"/>
Wharf or other port facility	<input type="checkbox"/>	Petroleum facility	<input type="checkbox"/>
Electricity facility	<input type="checkbox"/>	Factory	<input type="checkbox"/>
Airport	<input type="checkbox"/>	Passenger Terminal	<input type="checkbox"/>
Water supply facility	<input type="checkbox"/>	Sewage or wastewater facility	<input type="checkbox"/>
Telecommunications network	<input type="checkbox"/>	Other Productive Facility, please specify: _____	

Brief description of the project

This AIP plan covers The Northern Road Upgrade and Bringelly Road Upgrade Stage 2, a program of works, which cater for future traffic from planned residential and commercial developments in time for a western Sydney airport opening in the mid-2020s.

Key Project Features and current status of individual projects in the program, are shown at www.rms.nsw.gov.au/wsip and are summarised below:

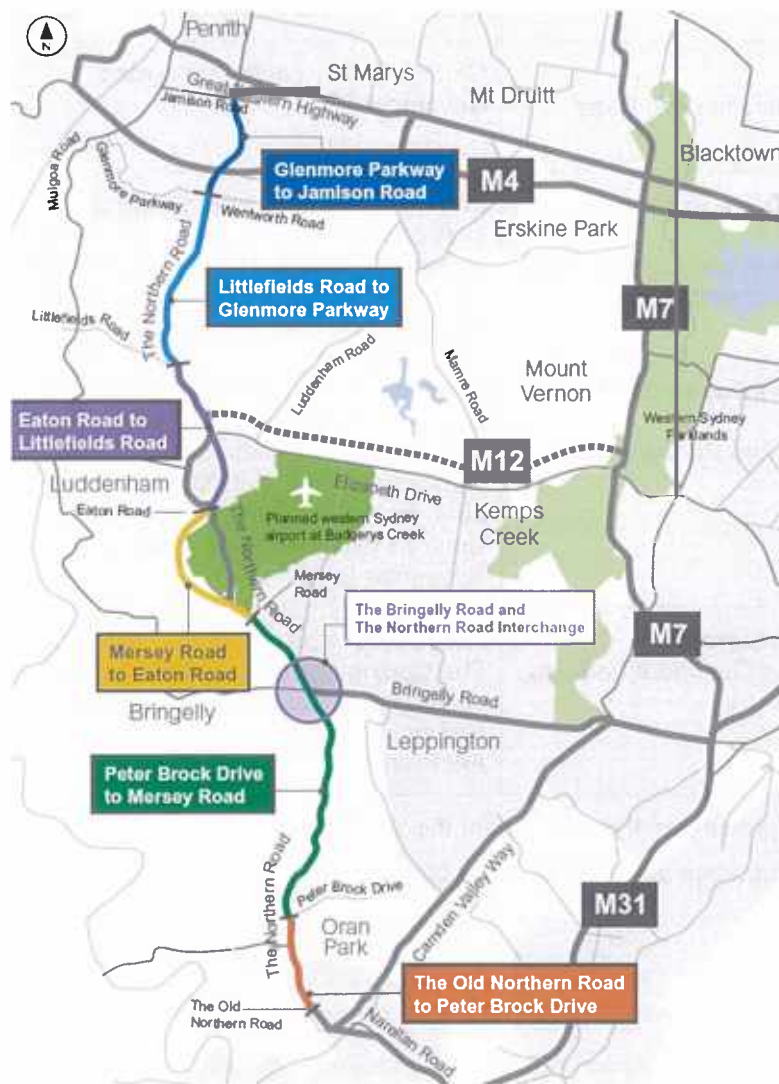
The Northern Road Upgrade

The Northern Road Upgrade, about 35km in length, from The Old Northern Road, Narellan to Jamison Road, Penrith, is being planned in stages. It will cater for future traffic from planned residential and commercial developments in time for a Western Sydney Airport opening in the mid 2020s.

The Northern Road Upgrade stages are:

- Old Northern Road to Peter Brock Drive
- Peter Brock Drive to Mersey Road
- Mersey Road to Glenmore Parkway
- Glenmore Parkway to Jamison Road

Figure 1 – The Northern Road Upgrade



Bringelly Road Upgrade

The Bringelly Road Upgrade will deliver new and upgraded roads to support integrated transport in the region and capitalise on the economic benefits from developing a Western Sydney Airport at Badgerys Creek. It will also improve safety, increase road capacity and reduce congestion and travel times in the future.

Stage 2 of the Bringelly Road Upgrade extends from King Street, Rossmore to The Northern Road, Bringelly.

Indicative Procurement Milestones

Procurement and delivery of The Northern Road Upgrade and Bringelly Road Upgrade Stage 2 will be undertaken in stages. At the date of this AIP Plan, the delivery stages are:

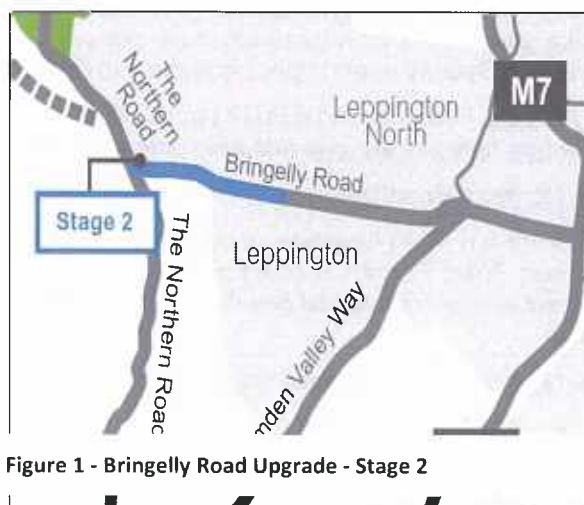


Figure 1 - Bringelly Road Upgrade - Stage 2

Delivery Stage	Procurement of Head Contractors
<i>The Northern Road Stage 1</i> (between The Old Northern Road, Narellan and Peter Brock Drive, Oran Park)	Construct Only contract awarded November 2015
<i>The Northern Road –Peter Brock Drive to Mersey Road and Bringelly Road Stage 2</i> (between Peter Brock Drive, Oran Park and Mersey Road, Bringelly and between King Street, Rossmore and The Northern Road, Bringelly)	Procured as a combined Construct Only contract. Expressions of interest commenced in April 2016, tendering in July 2016 and contract expected to be awarded in November 2016
<i>The Northern Road –Glenmore Parkway to Jamison Road</i> (between Glenmore Parkway, Glenmore Park and Jamison Road, Penrith)	Procured as a Design and Construct contract. Expressions of Interest commenced November 2015. Three contractors were shortlisted in January 2016 for tendering in March 2016. Contract expected to be awarded in November 2016.
<i>Remainder of The Northern Road Upgrade</i> (between Mersey Road, Bringelly and Glenmore Parkway, Glenmore Park)	Anticipated to be procured in stages. The staging and procurement type will be determined as planning progresses and included in a future revision to this AIP Plan.

The head contractors for delivery are procurement entities under this AIP Plan.

Roads and Maritime is both project proponent and procurement entity.

Is this project an upgrade of an existing facility?

If this project involves the establishment of a new facility complete Parts A, B and C of this AIP plan. If the project involves the upgrade of an existing facility complete Parts A and B only.

Yes

Estimated date of completion

If this project involves the establishment of a new facility please provide an estimated date of completion of the establishment of the facility.

Not a new facility, it is an upgrade of an existing road.

A.3 AIP plan authorised person declaration

I, Kevin Doherty, being an authorised person for the project proponent, declare that:

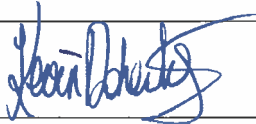
The information contained in Parts A and B of this AIP plan together with any statement attached is true, accurate and complete to the best of my knowledge.

I understand that:

1. The activities outlined in Part B ('the Project') will be implemented to meet the key objectives of the *Australian Jobs Act 2013*.
2. Once an AIP plan for the Project is approved by the Australian Industry Participation Authority ('AIP Authority'), it comes into force and is binding on all project proponents while it remains in force (see s.21 and s.24).
3. The AIP Authority may ask me (or my nominated contact listed in the AIP plan) to clarify any information in this AIP plan about the Project, or provide further information or documentation in order to verify the information already supplied. If we do not provide the information or documentation required, or if the information or documentation that is provided is insufficient or unsuitable for the purpose of the Project, then the AIP plan may not be approved.
4. The AIP Authority collects information on behalf of the Commonwealth of Australia to monitor the performance of its policies. I may be contacted at a future date by the AIP Authority and asked to participate in this process (although I am not required to do so).
5. The AIP Authority will collect and use information on behalf of the Commonwealth about the company and its operations for the purposes of:
 - a. meeting the objectives of the *Australian Jobs Act 2013*; and
 - b. program evaluation and monitoring, policy evaluation and development; and research and analysis; and
 - c. as may be otherwise authorised by law.
6. The AIP Authority and its staff will collect and use the personal information I have supplied in connection with the Project and the AIP plan for purposes of meeting the objectives of the *Australian Jobs Act 2013*, including assessing, implementing and monitoring the AIP plan and the Project.
7. Giving false or misleading information is a serious offence.

I consent to:

- 8. A summary of this AIP plan being published on www.industry.gov.au/aip with a link to our company website.
- 9. The use of the company's confidential information for the purposes outlined at paragraph 5 above.
- 10. The use of personal information outlined at paragraph 6 above.

Signature:	
Position:	General Manager Western Sydney Program Office
Date:	1.9.16

Other project proponents and/or operators declaration

This section is only required to be completed in the event that a project and/or facility involves multiple project proponents and/or operators.

We the project proponents and/or operators named below:

- Are aware of the obligations detailed in this AIP plan and support the implementation of these obligations for the project and/or operation of the facility.
- Will abide by the obligations detailed in the AIP plan if undertaking activities associated with the project and/or operation of the facility.
- Are aware that the consequences of non-compliance with the AIP plan by any project proponent and/or operator shall be applied to all project proponents and/or operators.

Please include for all project proponents and/or operators

Project proponent and/or operator:	N/A
Name:	N/A
Position:	N/A
Signature:	N/A
Date:	N/A

Part B – Project Phase

The key objective of Part B of the AIP plan is that Australian entities should have full, fair and reasonable opportunity to bid for the supply of key goods or services for the project.

All references to “you” in Part B of this AIP plan refer to the project proponent detailed in ‘A.1 – Project Proponent Details’.

B.1 Contact Details

This criterion should provide the contact details of staff responsible for engaging with interested Australian entities and implementing the actions of the AIP plan.

1. Provide the details of the project proponent’s contact officer.

The contact officer’s contact details will be published. Note that the contact officer may be contacted by Australian entities interested in supplying key goods or services for the project. When you call the number below you will be directed to the right person for the project contact.

Contact Officer - The Northern Road Upgrade between The Old Northern Road and Peter Brock Drive	Danny El Salim
Contact officer phone number	02 8849 2984
Contact officer e-mail address	Danny.EL.SALIM@rms.nsw.gov.au

Contact Officer - The Northern Road Upgrade between Peter Brock Drive and Mersey Road and Bringelly Road Upgrade King Street to The Northern Road	Paul Nicholls
Contact officer phone number	02 8849 2451
Contact officer e-mail address	Paul.Nicholls@rms.nsw.gov.au

Contact Officer - The Northern Road Upgrade between Mersey Road and Glenmore Parkway	Kate Lunney
Contact officer phone number	02 8849 2214
Contact officer e-mail address	Kate.LUNNEY@rms.nsw.gov.au

Contact Officer - The Northern Road Upgrade between Glenmore Parkway and Jamison	Alan Sun
Contact officer phone number	02 8874 7051
Contact officer e-mail address	Alan.SUN@rms.nsw.gov.au

2. Provide the contact details for the person responsible for implementing Part B of this AIP plan.

This contact officer should be the officer who will have overall responsibility for implementing and monitoring the actions of the AIP plan. These details will not be published and are for the Australian Industry Participation Authority's use only.

Name:	David Palacio
Title:	Senior Contracts Manager
Contact phone number:	0437609978
Contact e-mail address	David.Palacio@rms.nsw.gov.au

3. Detail how you will ensure procurement entities will appoint a procurement contact officer for project opportunities and promote their contact details.

These contact details will be required to be published on the website identified at question 3 of 'B.3 – Publication of Opportunities'. Procurement entities may be permitted to nominate a single contact for all opportunities or individual contacts for each opportunity. Where you are acting as the procurement entity the officer detailed at question 1 will be satisfactory.

Roads and Maritime is both project proponent and procurement entity.

Contractors awarded the main packages of work as indicated in A2, under 'indicative procurement milestones' are procurement entities.

The nominated Roads and Maritime procurement officer is listed in B.1.

This information is provided at :

For Roads and Maritime: <http://www.rms.nsw.gov.au/projects/index.html> and <https://tenders.nsw.gov.au/>

Roads and Maritime requires procurement entities to appoint a procurement contact officer and promote their contact details on their website. Procurement entity details are to be provided at the commencement of the contract and will be forwarded to the Australian Industry Participation Authority as part of the compliance reporting requirements of this plan.

B.2 Opportunities to supply goods and services

This criterion examines the opportunities which are likely to arise for Australian entities and/or non-Australian entities to supply the project. Information should be provided on the likely supply opportunities as well as how procurement entities will provide opportunities to Australian entities to supply key goods and services to the project.

1. Provide an indicative list of opportunities likely to arise in the project, and whether opportunities are expected for Australian and non-Australian entities.

This should be an indicative list of goods and services to be procured for the project.

A list of all key goods and services (valued above \$1 million) will be required to be published on the website detailed in question 2 of 'B.3 – Publication of Opportunities' at a later date.

Expected opportunities	Opportunities for Australian entities	Opportunities for non-Australian entities
Goods and Services		
Environmental Works	Yes	Yes
Traffic Management and Temporary Works	Yes	Yes
Public Utilities Adjustments	Yes	Yes
Bulk Earthworks	Yes	Yes
Retaining Walls	Yes	Yes
Drainage	Yes	Yes
Bridges	Yes	Yes
Tunnels	Yes	Yes
Pavements	Yes	Yes
Finishing Works	Yes	Yes
Traffic Signage, Signals and Controls	Yes	Yes
Supplementary Items e.g. pedestrian paving, signage, fencing, landscaping	Yes	Yes
Street Lighting	Yes	Yes
Safety Barriers	Yes	Yes

2. Provide a short statement that explains the reason for each item which is not expected to be sourced from an Australian entity.

Reasons should be based on the results of recent investigations into potential suppliers.

N/A

3. Describe how you will ensure all procurement entities will obtain and maintain a current understanding of the broad capability and capacity of Australian entities to supply the key goods and services required to carry out this project?

Where you are acting as the procurement entity detail how you will achieve this objective.

Based on extensive experience procuring roads for NSW, all items are expected to be ordered and supplied by Australian entities except where, due to extremely high level of infrastructure activity in NSW, we have not ruled out some items being supplied by non-Australian entities where local suppliers are unable to meet demand.

Roads and Maritime requires procurement entities to consult with vendor identification agencies, such as the Industry Capability Network at <http://www.icn.org.au/> to gain a current understanding of Australian capability and to identify capable competitive Australian entities suitable to supply goods or services to the project.

4. Detail how you will ensure procurement entities will require Australian or international standards for key goods and services for the project.

Publication of standards will be required to occur on the website(s) detailed in question 3 of 'B.3 – Publication of Opportunities'. Where you are acting as the procurement entity detail how you will achieve this objective.

What form of standards for key goods or services will be used for this project? Do Australian entities have the ability to meet these standards?

Roads and Maritime uses Australian and NZ standards for all specified items in the contract whenever a suitable standard is available. The full list of standards is within the Roads and Maritime specifications at:

<http://www.rms.nsw.gov.au/business-industry/partners-suppliers/index.html>

Roads and Maritime requires procurement entities to provide links to the above link on their websites.

Commonly used Australian Standard are:

- AS 1012.20 Methods of testing concrete
- AS 1597.2 Precast reinforced concrete box culverts -
- AS 1646 Elastomeric seals for waterworks purposes
- AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation
- AS 3600 Concrete structures
- AS 3725 Design for installation of buried concrete pipes
- AS 3735 Concrete structures retaining liquids
- AS 3996 Access covers and grates
- AS/NZS 4058 Precast concrete pipes (pressure and non-pressure)
- AS 4139 Fibre-reinforced concrete pipes and fittings
- AS/NZS 4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
- AS 5100 Bridge design
- AS/NZS ISO 9001 Quality management systems – Requirements
- AS 1289.3.8.1 Methods of testing soils for engineering purposes
- AS 2187 Parts 1 and 2. Explosives – Storage, transport and use
- AS 3725 Loads on buried concrete pipes
- AS 1141 Aggregate Testing

What form of standards for key goods or services will be used for this project? Do Australian entities have the ability to meet these standards?

- AS 1289 Soil Testing
- AS 1379 Concrete Manufacture
- AS 1478 Concrete Admixtures
- AS/NZS 4671 Steel reinforcing materials
- AS/NZS 4680 Hot-dip galvanized (zinc) coatings

Based on 85 years of continuous delivery of major roads, Roads and Maritime has detailed evidence of the ability of Australian suppliers to meet these standards.

If the project does not utilise an Australian standard, or an international standard, provide an explanation why these standards are not used, and the impact this will have on the ability of Australian entities to participate.

Roads and Maritime uses Australian Standard where suitable standards are available. If no suitable Australian standard is available then Roads and Maritime specifies other standards that are in common use e.g. British Standard or US Standard.

Roads and Maritime also uses a number of its own design guides and various technical directions to specify various design requirements in the design briefs for design only contracts and in the Scope of Works and Technical Criteria for the D&C contracts.

This has no impact on the ability of Australian industry to participate.

B.3 Publication of Opportunities

This criterion should detail where you will publish information on the project and the contact details for interested Australian entities to contact you regarding opportunities.

1. Provide the web address of the project proponent and/or project.

This should be the website which will be used to promote the project and provide general information for suppliers and a link to procurement opportunities.

<http://www.rms.nsw.gov.au/projects/index.html>

2. Provide the web address where project opportunities will be published.

This website should communicate details of all available opportunities to supply key goods or services for the project as they arise. This list of key goods and services should be updated on a regular basis to ensure Australian entities are provided up-to-date information on all opportunities.

<http://www.rms.nsw.gov.au/projects/index.html>

Note that there is a link on the above Roads and Maritime site to the "Tenders NSW" site indicated below:

<https://tenders.nsw.gov.au/>

Procurement entities are required to publish details of project opportunities on their websites.

3. Describe how you will ensure that your procurement entities will maintain a publicly accessible website which details:

- requirements potential bidders must satisfy in order to bid to supply key goods or services for the project (e.g. pre-qualification requirements);
- standards for key goods or services for the project (if standards are neither Australian nor international standards an explanation will need to be included); and
- the contact details for a procurement contact officer for Australian entities to approach with enquiries.

In addition, provide the web address of the publically accessible website for each procurement entity (where known).

Where you are acting as the procurement entity detail how you will undertake these activities.

Roads and Maritime's tender/ROI documents are made available to all potential suppliers at the same time, either through the 'Tenders NSW' site or directly to suitably prequalified Contractors.

The Roads and Maritime site provides links to Tenders NSW at :

<http://www.rms.nsw.gov.au/business-industry/partners-suppliers/tenders-contracts/e-tendering.html>

Tenders NSW website is managed by :

NSW Procurement - eBusiness Solutions
Department of Finance, Services and Innovation

Address: 2-24 Rawson Place Sydney NSW 2000

Email: nswbuy@finance.nsw.gov.au

Phone: 1800 NSW BUY (1800 679 289) (International +61 2 9372 8333)

Roads and Maritime manages its own website and lists a forward pipeline of projects at :

<http://www.rms.nsw.gov.au/projects/majorprojects2020/index.html>

Roads and Maritime has a major projects indicating future opportunities at the 'industry hub' at :

<http://www.rms.nsw.gov.au/business-industry/major-projects/index.html>

Roads and Maritime prequalification requirements are at:

<http://www.rms.nsw.gov.au/business-industry/partners-suppliers/tenders-contracts/prequalification-scheme.html>

Roads and Maritime will publish details of project opportunities on its website, including prequalification requirements, standards for the project and the contact details of its procurement contact officer.

Roads and Maritime requires procurement entities to provide publicly accessible websites that include prequalification requirements, standards and contact details of their procurement contact officer.

Procurement entities will publish details of project opportunities on their website, including prequalification requirements, standards for the project and the contact details of its procurement contact officer.

B.4 Communicating and Providing Opportunities

This criterion requires a communication strategy for the early identification of opportunities for Australian entities and effective transfer of information on opportunities for Australian entities, through all tiers of supply (e.g. from procurement entities to lower tier suppliers). This must include detail on

how you will actively seek information on Australian entities' capability and communicate opportunities to Australian entities and the measures undertaken to encourage this in all stages of the project (e.g. through design, procurement, construction and whole-of-life- support).

Project proponents should identify specific methods and/or mediums they intend to use to communicate how Australian entities can find out about available opportunities to participate in the project.

- 1. Describe the activities that you intend to undertake to conduct awareness programmes about opportunities for Australian entities to supply key goods or services for this project. A minimum of four actions should be provided.**

These activities should detail how the project proponent will communicate opportunities to supply key goods or services for the project to Australian entities.

Action 1

Roads and Maritime uses the NSW Government eTendering site ('Tenders NSW') to advertise the main design and construction contracts to the market.

This website lists future tenders, current tenders and results of contracts awarded over \$150,000 in value.

The site is : <https://tenders.nsw.gov.au/rms/>

Potential tenderers are encouraged to register with the NSW eTendering system to receive email notifications of new relevant business opportunities.

The following applies for the Construct Only components of The Northern Road Upgrade and Bringelly Road Stage 2 Upgrade:

Roads and Maritime's tenders for Construct Only contracts (GC21) set out which component of a project is for the head contractor only and which components may be undertaken by the head contractor or sub-contractor. Release of tender documents for Construct Only contracts (GC21) will be made through the 'Tenders NSW' site.

The Roads and Maritime's tender documents for Construct Only contracts (GC21) which are made available in the public domain contain extensive detail of the various components of the project.

The following information is provided on the website for Construct Only contracts (GC21), free-of-charge, about tenders:

- *A detailed description of the contract, the tender closing date and time, and information about the pre-tender meeting*
- *A summary file containing some general information. For construction contracts the summary file may include the Request for Tenders, the Preamble and Locality sketch, General Conditions (G1), the Schedule of Rates and the Schedule of Estimated Quantities.*
- *Invitation to register interest is also advertised on 'Tenders NSW' site. This is to make potential suppliers and subcontractors aware of the upcoming works, which gives them opportunity to directly enquire with the potential ROI Applicants.*

The following applies for the Design and Construct component of The Northern Road.

Roads and Maritime's Design & Construct (D&C) contracts are procured in two stages namely the Registration of Interest Stage (ROI), which results in a shortlist of applicants to be invited to submit tenders, and the Request for Tenders Stage (RFT), which results in a selection of Preferred Tenderer/Contractor, from the shortlisted ROI applicants.

Although applications for the ROI Stage are directly invited from all contractors who are on both the Road and Maritime's F150 PLUS (Financial) and R5 (Roadworks) Register of Prequalified Contractors, the Invitation to register interest is also advertised on 'Tenders NSW' site. This is to make potential suppliers and subcontractors aware of the upcoming works, which gives them opportunity to directly enquire with the potential ROI Applicants.

<p>Action 1 (Cont.)</p>	<p>Contract award notices for all Roads and Maritime's work over \$150,000 are listed at https://tenders.nsw.gov.au/rms/?event=public.CN.search and http://www.rms.nsw.gov.au/business-industry/partners-suppliers/tenders-contracts/contracts-awarded/index.html</p> <p>These results are published in accordance with the Government Information and Public Access Act (GIPA) (2009).</p> <p>The results include name and address of the head contractor (procurement entity) which enables sub-contractors to contact the procurement entity directly.</p> <p>Roads and Maritime requires procurement entities to ensure capable Australian companies have fair and reasonable opportunity to bid for work packages through a publicly accessible website.</p>
<p>Action 2</p>	<p>Roads and Maritime advertised Expressions of Interest for the construction of The Northern Road Stage – Peter Brock Drive to Mersey Road /Bringelly Road Stage 2 project on 27 April 2016 and held a pre-tender meeting on 12 May 2016. This meeting was open to all interested parties including potential head contractors (procurement entities) and sub-contractors.</p> <p>This was advertised at 'Tenders NSW' site at : https://tenders.nsw.gov.au/rms/?event=public.rft.showArchived&RFTUID=82C43C2C-9D8D-FDB3-A42CC1DF345C3DAC</p> <p>Roads and Maritime will advertise opportunities for further stages of The Northern Road using the tenders.nsw.gov website and hold pre tender meetings for all interested parties in the future.</p>
<p>Action 3</p>	<p>Roads and Maritime will engage with Roads Australia and provide future work details for Roads Australia to publish as part of its future pipeline of work on the Roads Australia website at : http://www.roads.org.au/Pipeline</p> <p>This link on the Roads Australia website provides Roads and Maritime contact names and details for specific projects.</p> <p>Roads and Maritime will provide regular briefings to industry, including designers and construction contractors, in relation to current and future works.</p> <p>Chief Executive of Roads and Maritime is currently a member of the Board of Roads Australia and as such enables strong communication flow between the two entities on opportunities for industry.</p>
<p>Action 4</p>	<p>To enable industry to consider its suitability for future opportunities Roads and Maritime provides a 'forward work plan' at: http://www.rms.nsw.gov.au/about/corporate-publications/forward-work-plan.html</p> <p>This plan is dissected by two main work categories: design and construction as well as project value categories of up to \$50 million, \$50-\$150 million, \$150-\$500 million and over \$500 million.</p> <p>The forward work plan extends five years out from the current date and also includes proposed delivery type – Design and Construct or Construct Only where known.</p>

2. Describe how you will train procurement entities to ensure procurement entities achieve your AIP plan obligations.

Where you are acting as the procurement entity detail internal training which will be provided to staff to achieve your AIP plan obligations.

Generally:

When changes are made to the way Roads and Maritime procures and manages its contracts and/or the Roads and Maritime's standard (model) documents which are used to procure the infrastructure contracts are changed, Roads and Maritime communicates these changes to its staff by issuing an "Infrastructure Contract Note (ICN)". Each ICN describes the changed process, provides background to reasons for change and provides guidance as to how to implement the new process. These ICNs are published on Roads and Maritime internal website are accessible by all RMS staff.

Roads and Maritime's Engineering Contracts Manuals (ECMs) are also updated to incorporate the processes to manage these changes. Roads and Maritime arranges regular trainings of its staff in procurement and management of its contracts in accordance with these ECMs.

Any changes to model documents and introduction of new requirements into the Roads and Maritime's contractual arrangements are also discussed in regular internal networking sessions arranged for Roads and Maritime's management staff.

For this AIP plan:

Roads and Maritime will arrange a contract start up workshop (or equivalent) at contract commencement that focuses on this AIP plan and its obligations, with a presentation on the details by senior Roads and Maritime personnel.

This AIP plan will be a standing agenda item at regular project meetings. Participants, including procurement entities, will be required to report against the AIP plan at these meetings.

This AIP plan forms part of the main contracts documentation and as such Roads and Maritime and the procurement entities will be contractually obliged to implement its actions.

3. Describe how you will ensure that procurement entities will publish pre-qualification requirements at a reasonable time prior to approaching the market and include the requirements that potential bidders must satisfy in order to bid for key goods or services, in connection with carrying out this project.

Publication of pre-qualification requirements will be required to occur on the website(s) detailed in question 3 of 'B.3 – Publication of Opportunities'. Where you are acting as the procurement entity detail how you will achieve this objective.

Roads and Maritime participates in the National Prequalification Scheme for Civil Construction enabling companies to gain mutual prequalification across all states of Australia.

Requirements are at :

<https://www.onlinepublications.austroads.com.au/items/AP-R371-10>

Roads and Maritime has prequalification and registration schemes for suppliers. The prequalification scheme is part of the National Prequalification Scheme and details of requirements and applications are available at the Austroads site:

<http://www.austroads.com.au/road-construction/approved-contractors/pre-qualified-contractors>

A list of contractors prequalified under the National Prequalification System for Civil (Road and Bridge) Construction Contracts is included at this site.

The criteria for assessment of the potential suppliers includes financial capacity, organisational capability, company performance, compliance with government requirements, suitability of proposed resources, management system and price.

Roads and Maritime provided an industry briefing in July 2015 and a further industry briefing in November 2015 on requirements for The Northern Road.

Roads and Maritime requires procurement entities to publish prequalification requirements in a timely manner on their website, as indicated in B3.3.

4. Detail how you will ensure that procurement entities will provide equal timeframes to Australian entities in relation to responding to requests for bids to supply key goods or services.

This answer should specify how Australian entities will be provided the same opportunity as other potential suppliers to access all opportunities in the project. Where you are acting as the procurement entity detail how you will achieve this objective.

Roads and Maritime's tender/ROI documents are made available to all potential suppliers at the same time, either through the 'Tenders NSW' site or directly to suitably prequalified Contractors.

Roads and Maritime requires procurement entities to make tender opportunities available to all potential suppliers at the same time.

B.5 Facilitating Future Opportunities

When addressing this criterion you should provide detail on how your actions will assist longer-term participation by Australian entities, including how you will work with Australian entities to encourage capability development and integration into global supply chains. Actions should detail how, by working with you on this project, Australian entities will be better placed to access opportunities to supply key goods or services in future similar projects.

1. Describe how you, or any other project proponent, will encourage capability development for Australian entities.

If you, or any other project proponent, have a global supply chain, this response should include a description of how you will encourage Australian entities supplying key goods and services for your project to develop the capability and capacity to supply key goods and services to your global supply chain.

Roads and Maritime currently provides and will continue to provide training for industry, including small to medium enterprises across a range of activities including traffic management, concrete works, safety in design. Notification of this training is at :

<http://www.rms.nsw.gov.au/business-industry/partners-suppliers/index.html>

In addition, Roads and Maritime currently supports and will continue to support attendance at webinars and live events hosted by Austroads, at :

<http://www.austroads.com.au/event>

Roads and Maritime currently participates and will continue to participate in the National Prequalification Scheme for Civil Construction enabling companies to gain mutual prequalification across all states of Australia.

Refer:

<https://www.onlinepublications.austroads.com.au/items/AP-R371-10>

2. Describe how you, or any other project proponent, will encourage the integration of Australian entities into global supply chains.

If you, or any other project proponent, have a global supply chain, this response should include a description of how you will encourage Australian entities supplying key goods and services for your project to integrate into your global supply chain.

Roads and Maritime allows and will continue to allow joint venture arrangements for tenderers (including between Australian and Overseas companies) enabling Australian companies to develop capability and gain exposure to overseas companies.

In addition Roads and Maritime is an active member of Austroads, the peak body in Australian and New Zealand for roads research and collaboration. Austroads fosters international collaboration by engaging with and supporting international road organisations. Austroads is a member of the World Road association which is primarily interested in issues of road infrastructure planning, design, construction, maintenance and operation.

Austroads provides SMEs access to events, publications, webinars and research papers.

Refer:

<http://www.austroads.com.au/about-austroads/international-collaboration>

Roads and Maritime will encourage suppliers to access Austroads resources.

Roads and Maritime requires procurement entities to engage with the Department of Industry's Entrepreneurs Programme to support the capability of its subcontractors where relevant.

Refer:

<http://www.business.gov.au>

Phone – 13 28 46

3. Describe how you will ensure that feedback, including on any relevant training, skills, capability and capacity development, will be provided by procurement entities to Australian entities unsuccessful in their bid to supply key goods and services to the project.

This answer should specify the type of feedback to be provided, the method of delivery and the intended outcomes. Feedback provided must include recommendations of relevant training and skills, capability and capacity development activities. Where you are acting as the procurement entity detail how you will achieve this objective.

When requested by the tenderers, Roads and Maritime provides a formal feedback to tenderers (including successful) in relation to their tender submission. The purpose of the feedback is to highlight strengths and weaknesses of tender submission and to identify areas for improvement.

Roads and Maritime requires that procurement entities debrief Australian entities unsuccessful in their bid to supply key goods and services to the project.

B.6 Implementation Resources

The intent of this criterion is to ensure that you have the appropriate resources and procedures in place within the project to effectively implement the actions outlined throughout the AIP plan. This should also include, where applicable, monitoring the obligations of procurement entities. You should describe the procedures and resources to implement the strategies to provide full, fair and reasonable opportunity to Australian entities and the internal procedures, resources and systems in place to monitor the implementation of the AIP plan.

1. What records and/or evidence do you intend to maintain in order to prove compliance with Part B of this AIP plan?

Provide examples of the types of records and/or evidence you are intending to collect. These will be examples only, different evidence can be provided at the time of the Compliance Report.

Roads and Maritime will include this AIP plan and compliance report template in tender documents for all The Northern Road/ Bringelly Road 2packages from the time of approval of this plan. Roads and Maritime's Contract Managers will monitor the implementation of this Australian Industry Participation Plan through project meetings. These meetings will be minuted and the minutes (where any actions related to the implementation of the AIP plan are recorded) will be kept on the contract file.

Roads and Maritime requires procurement entities to report in the AIP Compliance Report template and provide evidence such as screenshots, websites, subcontracts and other documents demonstrating that they are implementing this plan.

Roads and Maritime will provide the AIP Authority with these details in the six monthly compliance reports.

2. What procedures/resources will you utilise to ensure the necessary specified steps are achieved in order to comply with Part B of this AIP plan?

Detail the record management system you intend to use to collect the evidence which will be required for the Compliance Report and the staffing available for monitoring and implementing the AIP plan.

The Roads and Maritime Engineering Contracts Manual provides guidance and procedure for monitoring and reporting on the implementation of the AIP plan as part of "Activity Plan for Government Guidelines Compliance".

Roads and Maritime uses 'Objective' as an internal document management system. There are business rules guiding the storage of all project related documents.

Roads and Maritime's Senior Contracts Manager Western Sydney Program Office is to monitor the implementation of the project specific Australian Industry Participation Plan through project meetings.

Roads and Maritime requires procurement entities to provide their procurement website details at commencement of contract and to report on timely publication of supply opportunities. Procurement entities are to report on this activity in six monthly compliance reports.

Roads and Maritime requires procurement entities to provide six monthly compliance reports against this AIP plan to be incorporated in the Roads and Maritime compliance report submitted to the AIP Authority as part of this plan.

The Senior Contracts Manager Western Sydney Program Office will be responsible for maintaining records, preparing compliance reports and submitting them for internal approval prior to submission to the AIP Authority.

3. What specified steps, beyond the provision of training, will you undertake to ensure each procurement entity achieves the objectives required under Part B of this AIP plan?

This should specify how procurement entities will be required to implement the AIP plan actions for all opportunities. Where you are acting as the procurement entity detail how you will achieve this objective.

Roads and Maritime have included a requirement in tender and contract documents to ensure that:

- Roads and Maritime's Contractors implement the Roads and Maritime's AIP plan; and
- They include a provision in their sub-contracts to ensure that their subcontractors comply with and implement the Roads and Maritime's AIP plan.

Roads and Maritime requires procurement entities to report against part B of this AIP plan, to show actual Australian Industry involvement for the project.

Roads and Maritime requires procurement entities to report on any variations to the certified AIP plan, as relevant, during the progress of the Works. The Contractors' reports will be kept on the contract file.

Roads and Maritime requires procurement entities to provide six monthly reports in accordance with the compliance reporting requirements.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 29 – Asset Items and Sub-Items –
Specified Design Lives**

Design and Construction of

**Western Sydney Infrastructure Plan -
The Northern Road Upgrade - Stage 3
North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 29
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

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1 Design Lives

The Design Life of Assets including all Asset Items and Asset Sub-Items must be as specified in Table 29-1 below, except for listed Asset Sub-Items which may have the specified lesser Design Life.

Table 29-1 Asset Items and Sub-Items Specified Design Lives

Item	Asset/Sub-asset Description	SWTC Minimum Design Life	Sub-asset Design Life to First Maintenance
1.0	Drainage		
1.1	Inaccessible drainage elements	100 years	
	RC box culverts		100 years
	RC headwalls, wing walls, aprons and spill ways		100 years
	Drainage pipes		100 years
	Drainage pits		100 years
1.2	Drainage elements that are accessible for refurbishment and maintenance including water quality basins	20 years	
	Precast RC drainage channel		20 years
	In-situ RC drainage channel		20 years
	Grates, covers and accessible fixtures & fitting		20 years
	Sediment basin bund		10 years
2.0	Roadside Furniture, Fences and Other Element		
2.1	Sign Faces	10 year	
2.2	Sign support structures and other roadside furniture including SMART Motorway gantries	40 year	
2.3	Lighting and electrical equipment	50 year	
	Light poles and foundations for light pole		50 year
	Lighting luminaries		20 years
	Mechanical equipment		20 years

Item	Asset/Sub-asset Description	SWTC Minimum Design Life	Sub-asset Design Life to First Maintenance
2.4	Timber Furniture	30 year	
2.5	Fences including fauna fences (excluding fences on bridges)	20 years	
2.6	Safety screens and fencing on bridges		20 years
2.7	Traffic management and control systems		20 years
2.8	Temporary works including pavements		2 years
3.0	Major Structures: Bridges, Retaining Walls, Noise Screens etc		
3.1	Bridges	100 years	
	RC piles		100 years
	RC pile caps		100 years
	RC abutments and headstock		100 years
	RC piers		100 years
	RC Girders		100 years
	RC deck		100 years
	Bridge bearings non-replaceable		100 years
	Laminated elastomeric bearings		35 years
	Mechanical pot bearings		35 years
	Expansion joints - structural components		100 years
	Expansion joints - rubber components		35 years
	Deck wearing surface		20 years
	Deck waterproofing		100 years
	Bridge barriers - concrete elements		100 years
	Bridge barriers guard rails - metal elements		40 years
	Safety screens and fencing - metal elements		20 years
	Approach slabs		100 years

Item	Asset/Sub-asset Description	SWTC Minimum Design Life	Sub-asset Design Life to First Maintenance
	Drainage systems - accessible for refurbishment including those support beneath bridge decks		50 years
	Drainage systems - inaccessible for refurbishment i.e. cast in pipes and scupper		
3.2	Retaining walls including reinforced soil walls	100 years	
	RC slabs and bases		100 years
	RC vertical walls		100 years
	RC capping beams		100 years
	RC facing panels and support system		100 years
	Ground anchor systems, rock bolts, soil nails etc if required		100 years
	Reinforcing straps and connections		100 years
	Concealed drainage systems		100 years
	Barriers and guard rails - metal elements		40 years
	Joint sealants and backing rods		15 years
3.3	Noise barriers, noise attenuation devices and headlight screen	50 years	
3.4	Other Roads Support Structure	100 years	
	See Item 3.2 for sub-asset design lives as they are similar sub-asset type		Refer to 3.2 sub-asset
4.0	Pavements		
4.1	Flexible Pavements		
4.1.1	Main carriageway	40 years	
4.1.2	Rest area	20 years	

Item	Asset/Sub-asset Description	SWTC Minimum Design Life	Sub-asset Design Life to First Maintenance
4.1.3	Cross carriageway access and heavy vehicle stopping bay	40 years	
4.1.4	Other Road Pavement (Category A & B Roads)	40 years	
4.2	Rigid Pavements		
4.2.1	Main carriageway	40 years	
4.2.2	Rest area	40 years	
4.2.3	Cross carriageway access and heavy vehicle stopping bay	40 years	
4.2.4	Other Road Pavement (Category A & B Roads)	40 years	
5.0	Embankments and Cutting		
5.1	Other Road Works embankment and support structure		
	See Item 3.2 for sub-asset design lives as they are similar sub-asset type		Refer to 3.2 sub-asset
5.2	Embankments including reinforced embankment	100 years	
	RC facing panels and support system		100 year
	Ground anchor systems, rock bolts, soil nails etc if require		100 year
	Reinforcing straps and connection		100 year
	Concealed drainage system		100 year
5.3	Cutting batters including batter treatment	100 years	
	Ground anchor systems, rock bolts, soil nails etc if require		100 years
	RC capping beam		100 years
	RC shotcrete facing		100 years



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 30 – Concept Design
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
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Contract number:	15.3662.2254
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Road name:	The Northern Road and M4 Motorway
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Prepared by:	Roads & Maritime Services
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1 Contractors Concept Design

- (a) This Appendix 30 contains the Contractor's Concept Design. The Concept Design consists of the drawings listed in Table 30-1.
- (b) The drawings identified in Table 30-1 below are provided as electronic files on a separate disc titled:

*Design and Construction of
The Northern Road Upgrade - Stage 3 North
Contract No.15.3662.2254
Exhibit F - Electronic Files*

Table 30-1: Contractors Concept Design

Drawings Number	Drawing Title	Date	Revision	Electronic File Name
Geometric Design				
TNR3N-TD-RD-DRG-0001.dwg	GEOMETRIC DESIGN COVER SHEET	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0020.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0021.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0022.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0023.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0024.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0025.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0026.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0027.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0028.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0029.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0030.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0101.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0102.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	C	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-RD-DRG-0103.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TYPICAL CROSS SECTIONS	23/09/2016	C	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
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TNR3N-TD-RD-DRG-0262.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0263.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0264.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0265.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0266.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-RD-DRG-0267.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0268.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0269.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0270.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0271.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0272.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0273.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0274.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0275.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0276.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0277.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0278.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0279.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0280.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0281.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0282.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0283.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-RD-DRG-0284.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0301.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) LONGITUDINAL SECTION	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0302.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0303.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0304.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0305.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0306.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0307.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0308.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0309.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0313.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0314.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0315.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-RD-DRG-0316.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) GEOMETRIC ARRANGEMENT	23/09/2016	B	ROAD-GEOMETRY-CONCEPT-DESIGN-DRGs.pdf
Drainage Design				
TNR3N-TD-SM-DRG-0001.dwg	STORMWATER MANAGEMENT COVER SHEET	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-SM-DRG-0005.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0011.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0012.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0013.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0014.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N)STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0101.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0102.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0103.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0104.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0105.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	C	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0106.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-SM-DRG-0107.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0108.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0109.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0110.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0111.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0112.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N)STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0113.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0114.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0115.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0116.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0117.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-SM-DRG-0118.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-SM-DRG-0119.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTHER (TNR3N) STORMWATER MANAGEMENT	23/09/2016	B	DRAINAGE-CONCEPT-DESIGN-DRGs.pdf
Structural Design				
TNR3N-TD-BR-DRG-0001.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH PART (C) STRUCTURES COVER SHEET	23/09/2016	B	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-BR-DRG-0002.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD STAGE 3 NORTH GENERAL ARRANGEMENT SHEET A	23/09/2016	B	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-BR-DRG-0003.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD STAGE 3 NORTH GENERAL ARRANGEMENT SHEET B	23/09/2016	D	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-BR-DRG-0004.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD STAGE 3 NORTH GENERAL ARRANGEMENT SHEET C	23/09/2016	C	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-BR-DRG-0005.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD STAGE 3 NORTH GENERAL ARRANGEMENT SHEET D	23/09/2016	B	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-BR-DRG-0006.dwg	M4 INTERCHANGE BRIDGE THE NORTHERN ROAD STAGE 3 NORTH GENERAL PIER DETAILS	23/09/2016	B	BRIDGE-CONCEPT-DESIGN-DRGs.pdf
Geotechnical Design				
TNR3N - GT - DRG - 0101	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 1	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0102	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 2	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf

TNR3N - GT - DRG - 0103	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 3	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0104	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 4	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0105	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 5	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0106	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 6	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0107	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 7	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0108	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 8	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0109	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 9	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0110	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 10	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0111	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 11	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0112	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 12	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0113	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 13	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0114	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 14	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0115	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 15	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0116	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 16	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0117	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 17	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
TNR3N - GT - DRG - 0118	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 18	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf

TNR3N - GT - DRG - 0119	GEOTECHNICAL INVESTIGATION LOCATION PLAN - SHEET 19	19/05/2016	1	LL-TNR3N_2-E_GeotechnicalDrgs.pdf
Utility Design				
TNR3N - UT - DRG - 0101	UTILITY LAYOUT - SHEET 1	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0102	UTILITY LAYOUT - SHEET 2	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0103	UTILITY LAYOUT - SHEET 3	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0104	UTILITY LAYOUT - SHEET 4	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0105	UTILITY LAYOUT - SHEET 5	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0106	UTILITY LAYOUT - SHEET 6	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0107	UTILITY LAYOUT - SHEET 7	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0108	UTILITY LAYOUT - SHEET 8	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0109	UTILITY LAYOUT - SHEET 9	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0110	UTILITY LAYOUT - SHEET 10	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0111	UTILITY LAYOUT - SHEET 11	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0112	UTILITY LAYOUT - SHEET 12	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0113	UTILITY LAYOUT - SHEET 13	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0114	UTILITY LAYOUT - SHEET 14	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf

TNR3N - UT - DRG - 0115	UTILITY LAYOUT - SHEET 15	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0116	UTILITY LAYOUT - SHEET 16	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0117	UTILITY LAYOUT - SHEET 17	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0118	UTILITY LAYOUT - SHEET 18	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
TNR3N - UT - DRG - 0119	UTILITY LAYOUT - SHEET 19	10/06/2016	A	LL-TNR3N_2-H_ServicesDrgs.pdf
Intelligent Transport Design				
TNR3N-TD-IT-DRG-0001.dwg	TRAFFIC SIGNALLING COVER SHEET	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0101.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0102.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0103.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0104.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0105.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0106.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0107.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) TRAFFIC SIGNALLING PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0201.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0202.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-IT-DRG-0203.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0204.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0205.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0206.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0207.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0208.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0209.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0210.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0211.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0212.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0213.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0214.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0215.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0216.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0217.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0218.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0219.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS PLAN	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf

TNR3N-TD-IT-DRG-0301.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS SCHEMATIC	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf
TNR3N-TD-IT-DRG-0302.dwg	MR154 THE NORTHERN ROAD STAGE 3 NORTH (TNR3N) ITS SCHEMATIC	23/09/2016	B	ITS-CONCEPT-DESIGN-DRGs.pdf

2 Amendments to the Concept Design Drawings

- (a) The Concept Design Drawings are amended by the amendments and requirements identified in Table 30-2 to this Appendix 30.
- (b) The amendments and requirements are not exhaustive and RMS does not warrant that:
- (i) it has checked the relevant documents for compliance with the requirements of the deed; or
 - (ii) compliance with the requirements of Appendix 30, including Table 30-2, will ensure that the Contractor fulfils all the deed requirements.
- (c) Further to the provisions of clause 4.2(d) of the Project Deed, the Concept Design Drawings are a part of the Scope of Works and Technical Criteria. For the avoidance of any doubt, if there is an ambiguity, discrepancy or inconsistency within the Concept Design Drawings, as amended by the amendments and requirements identified in Table 30-2 to this Appendix 30, the part of the Concept Design Drawings, as amended, which prescribes or requires the highest standard of compliance, without causing any non-compliance with all Approvals, will take precedence.
- (d) The Contractor is required to adopt and make the amendments to the Concept Design Drawings referred to below and such adoption and amendments will not in any way limit the warranty given by the Contractor under clause 12.1 of the deed, including that the concept design included in Appendix 30 to the Scope of Works and Technical Criteria has been prepared by the Contractor and will be fit for its intended purpose.

Table 30- 2: Amendments to the Concept Design Drawings

Item	Amendments to the Concept Design Drawings
1	The design is amended to provide Type B Variable Message Signs (VMS) at Chainages 675 and 1700 to comply with the requirements of section 2.2 of Appendix 18 of the SWTC.
2	The design is amended to provide a maintenance bench with a minimum width of 1.0 m in front of the abutment that provides a minimum vertical clearance of 1.0 m under the soffit of girder and slab type bridges where there is a clear gap between girders of at least 1.0 m or a minimum vertical clearance of 1.5 m for superstructures with a wide soffit.
3	The design is amended to provide a noise wall on the western side of the Main Carriageway between Tukara Road and Aspen Street. As a minimum, the noise wall extends from at least Point 304 to Point 321 (approximately 460m) and has a minimum height of 5.0 m. The maximum separation between edge of adjacent carriageway and front of noise wall is 7m.
4	The design is amended to provide a noise wall on the northern side of the M4 Motorway eastbound exit ramp and continuing north along TNR. As a minimum, the noise wall extends from at least Point 778 to Point 297 (approximately 838m) and has a minimum height of 5.0 m. The maximum separation between edge of adjacent carriageway and front of noise wall is 7m.

5	The design is amended to remove the noise wall on the northern side of the M4 Motorway eastbound entry ramp, which extends from at least Point 90 and Point 94. The noise wall has a minimum height of 3.5 m and the maximum separation between edge of adjacent carriageway and front of noise wall is 7m.
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**Exhibit A –
Scope of Works and Technical Criteria
Appendix 31 – Contractor’s Urban and
Landscape Design
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 31
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

Table of Contents

1 Contractors Urban and Landscape Concept Design 1

1 Contractors Urban and Landscape Concept Design

- (a) This Appendix 31 contains the Contractor's Urban and Landscape Concept Design. The Contractors Urban and and Landscape Concept Design consists of the drawings listed in Table 31-1.
- (b) The drawings identified in Table 31-1 below are provided as electronic files on a separate disc titled:

*Design and Construction of
The Northern Road Upgrade - Stage 3 North
Contract No.15.3662.2254
Exhibit F - Electronic Files*

Table 31-1-1: Contractors Urban and Landscape Concept Design

Drawing Number	Drawing Title	Date	Revision	Electronic File Reference
TNR3N-DG-UD-0001	Analysis - Major Open Space, Watercourses and Special Uses	10 June 2016	01	TNR3N-DG-UD-0001.pdf
TNR3N-DG-UD-0002	Analysis - Geology and Soils	10 June 2016	01	TNR3N-DG-UD-0002.pdf
TNR3N-DG-UD-0003	Analysis - Vegetation and Biodiversity	10 June 2016	01	TNR3N-DG-UD-0003.pdf
TNR3N-DG-UD-0005	Analysis - Land Use Zoning	10 June 2016	01	TNR3N-DG-UD-0005.pdf
TNR3N-DG-UD-0006	Analysis - Topography + Views	10 June 2016	01	TNR3N-DG-UD-0006.pdf
TNR3N-DG-UD-0007	Analysis - Heritage	10 June 2016	01	TNR3N-DG-UD-0007.pdf
TNR3N-DG-UD-0008	Analysis - Transport Network and Road Network	10 June 2016	01	TNR3N-DG-UD-0008.pdf
TNR3N-DG-UD-0009	Analysis - Bicycle Network	10 June 2016	01	TNR3N-DG-UD-0009.pdf
TNR3N-DG-UD-0010	Analysis - Built Form incl Height of Building controls	10 June 2016	01	TNR3N-DG-UD-0010.pdf
TNR3N-DG-UD-0011	Analysis - Floor Space Ratio	10 June 2016	01	TNR3N-DG-UD-0011.pdf
TNR3N-DG-UD-0012	Analysis - Scenic Landscape Value Map	10 June 2016	01	TNR3N-DG-UD-0012.pdf
TNR3N-DG-UD-0013	Analysis - Road Edge Character	10 June 2016	01	TNR3N-DG-UD-0013.pdf
TNR3N-DG-UD-0014	Analysis - Flooding	10 June 2016	01	TNR3N-DG-UD-0014.pdf
TNR3N-DG-UD-0050	Analysis - Constraints and Opportunities	12 October 2016	02	TNR3N-DG-UD-0050.pdf
TNR3N-DG-UD-0051	Strategy Plan	12 October 2016	02	TNR3N-DG-UD-0051.pdf

Drawing Number	Drawing Title	Date	Revision	Electronic File Reference
TNR3N-DG-UD-0052	Corridor Character Zones - Key Plan	10 June 2016	01	TNR3N-DG-UD-0052.pdf
TNR3N-DG-UD-0100	Urban Design Concept - Key Plan	10 June 2016	01	TNR3N-DG-UD-0100.pdf
TNR3N-DG-UD-0101	Urban Design Concept Plan - 01	10 June 2016	01	TNR3N-DG-UD-0101.pdf
TNR3N-DG-UD-0102	Urban Design Concept Plan - 02	12 October 2016	02	TNR3N-DG-UD-0102.pdf
TNR3N-DG-UD-0103	Urban Design Concept Plan - 03	12 October 2016	02	TNR3N-DG-UD-0103.pdf
TNR3N-DG-UD-0104	Urban Design Concept Plan - 04	10 June 2016	01	TNR3N-DG-UD-0104.pdf
TNR3N-DG-UD-0105	Urban Design Concept Plan - 05	10 June 2016	01	TNR3N-DG-UD-0105.pdf
TNR3N-DG-UD-0106	Urban Design Concept Plan - 06	12 October 2016	02	TNR3N-DG-UD-0106.pdf
TNR3N-DG-UD-0107	Urban Design Concept Plan - 07	10 June 2016	01	TNR3N-DG-UD-0107.pdf
TNR3N-DG-UD-0108	Urban Design Concept Section CH 325	10 June 2016	01	TNR3N-DG-UD-0108.pdf
TNR3N-DG-UD-0109	Urban Design Concept Section CH 650	10 June 2016	01	TNR3N-DG-UD-0109.pdf
TNR3N-DG-UD-0110	Urban Design Concept Section CH 1000	10 June 2016	01	TNR3N-DG-UD-0110.pdf
TNR3N-DG-UD-0111	Urban Design Concept Section CH 1475	10 June 2016	01	TNR3N-DG-UD-0111.pdf
TNR3N-DG-UD-0112	Urban Design Concept Section CH 2075	10 June 2016	01	TNR3N-DG-UD-0112.pdf
TNR3N-DG-UD-0113	Urban Design Concept Section CH 2675	10 June 2016	01	TNR3N-DG-UD-0113.pdf
TNR3N-DG-UD-0114	Urban Design Concept Section CH 3150	10 June 2016	01	TNR3N-DG-UD-0114.pdf

Drawing Number	Drawing Title	Date	Revision	Electronic File Reference
TNR3N-DG-UD-0115	View North of Glenmore Parkway - Existing	10 June 2016	01	TNR3N-DG-UD-0115.pdf
TNR3N-DG-UD-0116	View North of Glenmore Parkway - Proposed	10 June 2016	01	TNR3N-DG-UD-0116.pdf
TNR3N-DG-UD-0117	Residential Area North of Maxwell Street - View North Existing	10 June 2016	01	TNR3N-DG-UD-0117.pdf
TNR3N-DG-UD-0118	Residential Area North of Maxwell Street - View North Proposed	10 June 2016	01	TNR3N-DG-UD-0118.pdf
TNR3N-DG-UD-0201	M4 Interchange - Sectional-Elevation - Central Pier Detail	12 October 2016	02	TNR3N-DG-UD-0201.pdf
TNR3N-DG-UD-0202	M4 Interchange - Sectional-Elevation - North & East	12 October 2016	02	TNR3N-DG-UD-0202.pdf
TNR3N-DG-UD-0203	M4 Interchange - Aerial View Northwest - Existing	10 June 2016	01	TNR3N-DG-UD-0203.pdf
TNR3N-DG-UD-0204	M4 Interchange - Aerial View Northwest - Proposed	10 June 2016	01	TNR3N-DG-UD-0204.pdf
TNR3N-DG-UD-0205	M4 Interchange - Driver's View West - Existing	10 June 2016	01	TNR3N-DG-UD-0205.pdf
TNR3N-DG-UD-0206	M4 Interchange - Driver's View West - Proposed	12 October 2016	02	TNR3N-DG-UD-0206.pdf
TNR3N-DG-UD-0301	Typical Retaining Wall - Abutment	10 June 2016	01	TNR3N-DG-UD-0301.pdf
TNR3N-DG-UD-0302	Typical Retaining Wall - Block Wall	10 June 2016	01	TNR3N-DG-UD-0302.pdf
TNR3N-DG-UD-0303	Typical Retaining Wall - Retaining Wall underneath Noisewall	10 June 2016	01	TNR3N-DG-UD-0303.pdf
TNR3N-DG-UD-0401 & 0402	Section Cutting & Embankments	12 October 2016	01	TNR3N-DG-UD-0401-0402.pdf
TNR3N-DG-UD-0404	Typical Treatments for slope stabilisation on batters and embankments	10 June 2016	01	TNR3N-DG-UD-0404.pdf
TNR3N-DG-LA-0511	Landscape Masterplan - 01	10 June 2016	01	TNR3N-DG-LA-0511.pdf

Drawing Number	Drawing Title	Date	Revision	Electronic File Reference
TNR3N-DG-LA-0512	Landscape Masterplan - 02	12 October 2016	02	TNR3N-DG-LA-0512.pdf
TNR3N-DG-LA-0513	Landscape Masterplan - 03	12 October 2016	02	TNR3N-DG-LA-0513.pdf
TNR3N-DG-LA-0514	Landscape Masterplan - 04	10 June 2016	01	TNR3N-DG-LA-0514.pdf
TNR3N-DG-LA-0515	Landscape Masterplan - 05	10 June 2016	01	TNR3N-DG-LA-0515.pdf
TNR3N-DG-LA-0516	Landscape Masterplan - 06	12 October 2016	02	TNR3N-DG-LA-0516.pdf
TNR3N-DG-LA-0517	Landscape Masterplan - 07	10 June 2016	01	TNR3N-DG-LA-0517.pdf
TNR3N-DG-UD-0601	(Reference) Images/sketches feature lighting and lighting fixtures	10 June 2016	01	TNR3N-DG-UD-0601.pdf
TNR3N-DG-UD-0603	Bus Shelter Plan	10 June 2016	01	TNR3N-DG-UD-0603.pdf
TNR3N-DG-UD-0604	Bus Shelter Perspective	10 June 2016	01	TNR3N-DG-UD-0604.pdf
TNR3N-DG-UD-0710-A-B	Noise Wall North South (where patterned) - Typical Floorplan and Elevation P90 to P94	10 June 2016	01	TNR3N-DG-UD-0710-A-B.pdf
TNR3N-DG-UD-0710-C	Noise Wall North South (where patterned) - Typical Section P90 to P94	10 June 2016	01	TNR3N-DG-UD-0710-C.pdf
TNR3N-DG-UD-0710-D	Noise Wall North South (where patterned) - Typical Detail P90 to P94	10 June 2016	01	TNR3N-DG-UD-0710-D.pdf
TNR3N-DG-UD-0711-A-E	Noise Wall (where patterned) - Typical Elevation - Esthetics and Sloped	10 June 2016	01	TNR3N-DG-UD-0711-A-E.pdf
TNR3N-DG-UD-0712	Noise Wall North South (where patterned) - Typical Floorplan and Elevation P90 to P94 Start and Termination	10 June 2016	01	TNR3N-DG-UD-0712.pdf
TNR3N-DG-UD-0713	Concrete Noise Wall	12 October 2016	02	TNR3N-DG-UD-0713-A-B-C-D.pdf

Drawing Number	Drawing Title	Date	Revision	Electronic File Reference
TNR3N-DG-UD-0714	Noise Wall Along Ramp M4 - Typical Floorplan and Elevation P243 to P321 Start and Termination	10 June 2016	01	TNR3N-DG-UD-0714.pdf
TNR3N-DG-UD-0716	Noise Mounds - Typical Section	10 June 2016	01	TNR3N-DG-UD-0716.pdf
TNR3N-DG-UD-0721	Noise Wall - 3D Visualisation (sketch or rendering)	10 June 2016	01	TNR3N-DG-UD-0721.pdf

Table 31-2: Contractors Landscape and Urban Design Supporting Figures and Tables

Item	Title	Electronic File Reference
Figure 18	Figure 18: Endemic Cumberland Shale Plain Woodland Community	TNR3N-UD-Figure18.pdf
Figure 19	Figure 19: Interchange Planting to include some native wildflower species for visual interest	TNR3N-UD-Figure19.pdf
Figure 20	Figure 20: Dense Cumberland Plain Woodland planting to help screen neighbouring properties	TNR3N-UD-Figure20.pdf
Figure 21	Figure 21: Planting Type 1 - Typical Cumberland Plain Grassland	TNR3N-UD-Figure21.pdf
Figure 22	Figure 22: Planting Type 3 - Planting at Noise Walls	TNR3N-UD-Figure22.pdf
Figure 23	Figure 23: Planting Type 2 - Low Shrub median planting	TNR3N-UD-Figure23.pdf
Figure 24	Figure 24: Planting Type 4 - Low Riparian Planting	TNR3N-UD-Figure24.pdf
Figure 25	Figure 25: Planting Type 6 - Grass Verge Planting	TNR3N-UD-Figure25.pdf
Figure 26	Figure 26: Planting Type 7 - Enclosed Cumberland Plain Woodland - Screen Planting	TNR3N-UD-Figure26.pdf
Figure 27	Figure 27: Planting Type 8 - Feature Trees	TNR3N-UD-Figure27.pdf

Item	Title	Electronic File Reference
Figure 28	Figure 28: Planting Type 5 – Planting at Intersections	TNR3N-UD-Figure28.pdf
Figure 29	Figure 29: Eucalyptus crebra in seeded Cumberland Plain understorey	TNR3N-UD-Figure29.pdf
Figure 30	Figure 30: Dense Cumberland Plain seeding will provide screening around the M4 Interchange	TNR3N-UD-Figure30.pdf
Table 1	Table: Planting Table South (Feature Trees, Type 1, Type 2 and Type 3)	TNR3N-UD-PlantingTableSouth-A.pdf
Table 2	Table: Planting Table South (Type 4, Type 5 and Type 6)	TNR3N-UD-PlantingTableSouth-B.pdf
Table 3	Table: Planting Table North (Feature Trees, Type 1, Type 2 and Type 3)	TNR3N-UD-PlantingTableNorth-A.pdf
Table 4	Table: Planting Table North (Type 4, Type 5 and Type 6)	TNR3N-UD-PlantingTableNorth-B.pdf
Table 5	Table: Seeding Schedule - South	TNR3N-UD-SeedingScheduleSouth.pdf
Table 6	Table: Seeding Schedule - North	TNR3N-UD-SeedingScheduleNorth.pdf
Section 1	Section: B, B1 and B2 - Urban Design Objectives	TNR3N-UD-Section1.pdf
Section 2	Section: B3 – Road User Experience	TNR3N-UD-Section2.pdf
Section 3	Section: B4 – Urban Design Strategy	TNR3N-UD-Section3.pdf
Section 4	Section: B5 – Corridor Character Zones	TNR3N-UD-Section4.pdf
Section 5	Section: C and C1 – Urban Design Concept	TNR3N-UD-Section5.pdf
Section 6	Section: C2 – CPTED Principles	TNR3N-UD-Section6.pdf

Item	Title	Electronic File Reference
Section 7	Section 7: M4 Interchange (including Introduction, Principles, Strategies, Precedent Study, M4 Interchange Bridge - Throw Screen Artwork, A Elevation/Section, B Cross Sections and C Perspectives)	TNR3N-UD-Section7.pdf
Section 8	Section 8: Retaining Walls (including Introduction, A Retaining Structures, Principles, Strategies and Aesthetic Considerations)	TNR3N-UD-Section8.pdf
Section 9	Section 9: Earthworks (including Introduction, Principles, Strategies and Section/Details)	TNR3N-UD-Section9.pdf
Section 10	Section 10: Landscape Design (including Introduction, Principles and Landscape Strategies)	TNR3N-UD-Section10.pdf
Section 11	Section 11: Planting Design and Planting Mixes	TNR3N-UD-Section11.pdf
Section 12	Section 12: Planting (including Type 4, Type 5, Type 6 and featured Trees)	TNR3N-UD-Section12.pdf
Section 13	Section 13: Existing Trees to be retained or protected, safety clearance distances, topsoils, site topsoils and imported topsoil and soil mixes	TNR3N-UD-Section13.pdf
Section 14	Section 14: Weed management, Landscape Maintenance Plan and Ongoing Maintenance	TNR3N-UD-Section14.pdf
Section 15	Section 15: Road Furniture (including Introduction, Principles and Lighting)	TNR3N-UD-Section15.pdf
Section 16	Section 16: Bus Shelters, Paths and Balustrades & Fences	TNR3N-UD-Section16.pdf
Section 17	Section 17: Noise Barriers (including Introduction, Principles, Strategies, Aesthetic Conditions and Mountain Pattern)	TNR3N-UD-Section17.pdf

2 Amendments to the Contractor’s Urban and Landscape Design Drawings

- (a) The Contractor’s Urban and Landscape Design drawings are amended by the amendments and requirements identified in Table 31-2 to this Appendix 31.
- (b) The amendments and requirements are not exhaustive and RMS does not warrant that:
 - (i) it has checked the relevant documents for compliance with the requirements of the deed; or
 - (ii) compliance with the requirements of Appendix 31, including Table 31-2, will ensure that the Contractor fulfils all the deed requirements.
- (c) The Contractor is required to adopt and make the amendments to the Contractor’s Urban and Landscape Design drawings referred to below and such adoption and amendments will not in any way limit the warranty given by the Contractor under clause 12.1 of the deed, including that the Contractor’s Urban and Landscape Design included in Appendix 31 to the Scope of Works and Technical Criteria has been prepared by the Contractor and will be fit for its intended purpose.

Table 31-2

Item	Amendments to the Contractor’s Urban and Landscape Design
1	The design is amended to provide vertical reinforced soil walls.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 32 – Contractor’s Specifications
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

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Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

Table of Contents

1 Contractors Specifications..... 1

1 Contractors Specifications

- (a) This Appendix 32 contains the Contractor’s specifications. The Contractors specifications consist of the specifications listed in Table 32-1.
- (b) The specifications identified in Table 32-1 below are provided as electronic files on a separate disc titled:

*Design and Construction of
The Northern Road Upgrade - Stage 3 North
Contract No.15.3662.2254
Exhibit F - Electronic Files*

Table 30-1: Contractors Specifications

Specification Number	Specification Title	Date	Revision	Electronic File Reference
No items				



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 33 – Not Used
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

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Version and date:	Contract Execution V1
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1	Not Used.....	4
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1 Not Used



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 34 – Not Used
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

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Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

Table of Contents

1	Not Used.....	4
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1 Not Used



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 35 – Initial Project Management
Plan**

for

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
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Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 35
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
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Table of Contents

Initial Project Management Plan

Volume 3-A: Initial Project Management Plan

Our suite of plans support certainty of delivery for RMS that Lendlease can deliver on our design, construction methodologies and programme safely, with minimal impact on the community and the travelling public. This PMP demonstrates our commitment to strong proven processes that will ensure consistent delivery across all disciplines.

This Initial Project Management Plan (PMP) forms the basis of SWTC Appendix 35 and sets out the governance framework for the delivery of the design and construction of The Northern Road Upgrade Stage 3 North Project. It is a quality assurance document prepared in accordance with AS/NZS ISO 9001:2008 *Quality Management Systems – Requirements*.

This PMP will be prepared as a site-specific Project Plan, operating under the umbrella of the relevant Lendlease Management System Manual and System Procedures Manual. A copy of the Manual and Procedures will be available in electronic and hard copy format, and will be accessible via the local area network of a dedicated file control server to be established specifically for the project, which will be operated and maintained on the construction site until Construction Completion.

Initially this PMP responds to the requirements of the Request for Tender Appendix 2 – Tender Submission Requirements to then be developed into the Management Plans that will be implemented to manage the project. The purpose of this PMP and its associated plans is to identify how the Contractor will manage the delivery of the works including:

- Outline of the management team structures;
- Nomination of management and supervisory personnel;
- Position statements that detail accountability and responsibility for leading and achieving outcomes in:
 - Service and product quality;
 - Work Health and Safety;
 - Environmental management;
 - Traffic management;
 - Community management;
 - Lines of communication;
 - The minimum experience and skill levels of each position;
- The strategy for managing risk;
- The management interfaces of the PMP with other Project Plans;
- The performance milestones for the management team for each of the design and construction phases of the Contractor's Work;

- Outline of the processes to identify and manage work to be subcontracted, including quality, safety, environmental and communication aspects of the Contractor's Work;
- Outline of the processes to ensure integration of the Contractor's personnel with designers and subcontractors, and RMS personnel;
- Outline of how independent project verification and proof engineering will be provided;
- Outline of the methods of dealing with Services and any associated Authorities;
- Outline of the strategies for obtaining all necessary Approvals; and
- Outline of how risks as a result of processes and measures implemented under other initial Project Plans will be identified and incorporated into the processes in 3-G Initial Work Health and Safety Management Plan or 3-C Initial Design Plan, including safe work method statements and procedures, or safety in design processes.

The PMP and the suite of Project Plans provide guidance and direction to ensure conformity to Standards and Regulations, the Project Deed and the SWTC with a totally integrated project delivery process in accordance with:

- The Project Deed;
- The Design and Construction Programme;
- REF Determination Requirements;
- The SWTC; and
- RMS Specification Q6.

(i) Managing Delivery of the Works

A. Management Team Structures

The management team structure has been developed from extensive experience on similar projects. The proposed Lendlease management structure includes those personnel listed in Schedule 19 of the Project Deed and additionally those considered essential to efficiently control the delivery of all facets of the project including the interface with various agencies, Authorities, stakeholders and the community.

Governance of the project is provided by the NSW General Manager (GM), and the Operations Manager. The Operations Manager, whom the Project Director reports to, will be the senior representative in the Management Review Group in the first instance, with the NSW GM involvement as required.

The management team (Project Control Group) comprises the Project Director, Construction Manager, and Functional and Discipline Managers as identified on the Project Team Organisational Chart, who will be supported by the project personnel.

The Project Director has eight direct reports:

- Engineering Design Manager;
- Construction Manager;
- Community and Stakeholder Manager;
- Quality Manager;
- WHS Representative;
- Environmental Manager;
- Commercial Manager; and
- Property Works Engineer.

The Project Director also has direct links with:

- The Employment and Training Coordinator; and
- Project Performance Coach.

The Construction Manager has eight direct reports:

- Bridge & Approaches Manager;
- Earthworks & Paving Manager;
- General Superintendent;
- Utilities Manager;
- Traffic Manager;
- Project Planner;
- Survey Manager; and
- Landscape Representative.

Our Project Director, Construction Manager and Functional and Discipline Managers collectively will have the following responsibilities:

- Uncompromising safety leadership;
- Accountability to stakeholders for the performance of the project team;
- Establishing the principles and set challenging objectives;
- Championing and supporting vision, principles and objectives;
- Ensuring optimal programming of works;
- Challenging the project team to constantly strive for outstanding performance;
- Agreeing / approving cost, time and other performance targets;
- Implementing policy, delegating and providing leadership to the project team;
- Achieving Employment and Training;
- Reviewing / approving the management plans;
- High-level support and stakeholder interface;
- Reviewing and directing the progress and performance of the project works;
- Reporting progress and performance of the project teams to senior management; and
- Administering the Project Deed.

The management team structures are clearly identified in the Appendix 1: Organisational Chart located at the end of this PMP.

B. Nomination of Management & Supervisory Personnel

Lendlease recognises the minimum requirements of key personnel for RMS Projects as set out in Schedule 19 of the Deed and in all cases seeks to exceed the requirements in selecting personnel we deem to be best for the project. Key (management and supervisory) personnel are selected on the following capabilities and experience:

- Direct relevant experience to the project scope;
- Performed the role before on previous relevant projects;
- Experience working in live traffic environments;
- Understanding of RMS expectations working in an environment where community and stakeholders are a key consideration and must be managed to achieve positive outcomes;
- Proven commitment to the projects they are working on;
- Desire to put the client's objectives first; and
- Where possible, project background in the region.

In order to secure the most suitable management team and supervisory staff for the project, the Project Director has worked with the Operations Manager and NSW HR Manager to determine availability of staff for the project from the Lendlease resource pool. This process commenced in the EOI phase to secure suitable senior personnel to deliver the project.

A succession plan will be implemented on the project by the Project Director to identify key roles and successors, ensuring suitable development for those personnel are in place.

C. Duty or Position Statements

Lendlease has an extensive library of Position Descriptions. Project-specific Position Statements will be developed and implemented for each role and staff member on commencement of the project that will identify lines of reporting, accountabilities and responsibilities. Appendix 2 at the end of the plan captures the summary of these requirements as well as required skills and performance milestones.

D. Risk Management Strategy

At Lendlease, risk is defined generally as an uncertain event or condition which if it occurs, has the potential to impact on achieving one or more of our objectives. Effective risk management facilitates the anticipation of uncertainties that could impact the project, Lendlease and RMS in the future.

Lendlease manages project-based risks on a daily basis through experienced, competent and professional site-based personnel.

A Risk and Opportunity Management System (known as 'ROMS') has been developed by Lendlease to ensure that:

- We undertake a consistent and uniform approach to risk management; and
- Standards of Risk Management are maintained, including communications of lessons learnt and transfer of clear accountabilities across the management structure.

Formal and informal risk and opportunity management processes are embedded within the business as set out within our 'ROMS' procedures. Our approach to risk management is guided by the International Standard on Risk Management ISO 31000:2009. Lendlease's system procedures will respectively address safety, environmental, quality, and plant and equipment risks. The appropriate risk assessment processes will be detailed in the Risk Management Plan and specifically in the Construction Plan, Design Plan (including safety in design), Workplace Health & Safety (WHS) Management Plan, Chain of Responsibility Management Plan, Construction Environmental Management Plan (CEMP), Quality Management Plan and Traffic Management & Safety Management Plan.

To ensure consistency in managing risk, a Risk Manager will be appointed. In the first instance, the Commercial Manager is the nominated Risk Manager.

E. Management interfaces with other Project Plans

The PMP is the overarching management document and references all the management plans that are the suite of Project Plans to be implemented on this project.

The following figure shows the hierarchy of the PMP with the various Project Plans as well as plans that are considered sub-plans due to their link with key project plans.

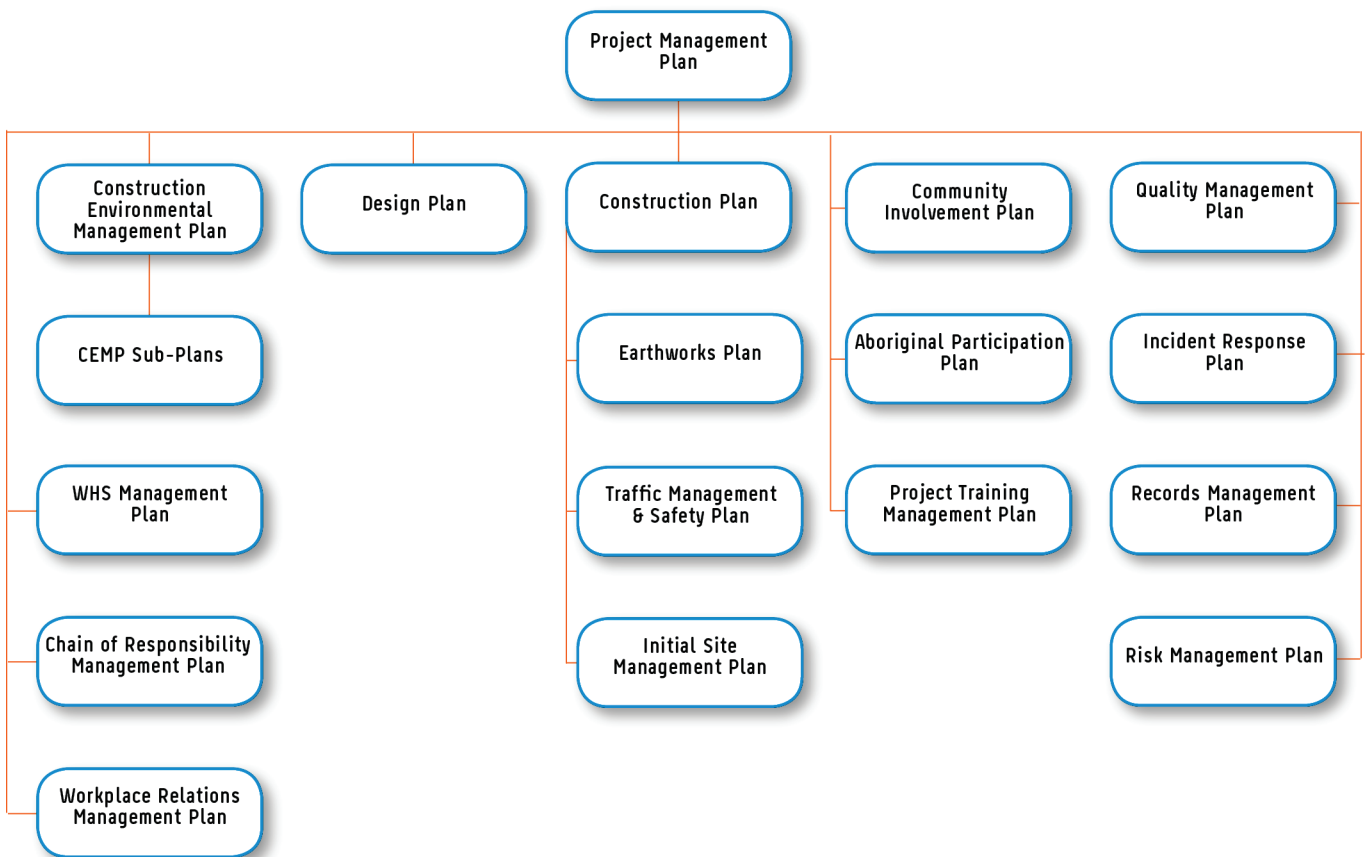


Figure 1: Project Management Plan & Project Plans Hierachy.

F. Performance Milestones for the Management Team for Each of the Design & Construction Phases of the Contractor's Work

Lendlease is recognised in the industry, by both clients and peers, for our investment in our people. This investment takes the form of succession planning and training as well as the "P4P" personnel development plan, performance goal setting and review process. Our management staff are all required to attend Leadership

programmes that have been developed over a number of years by Lendlease with leading Management Training institutions.

Every employee has a P4P personal development plan that is regularly reviewed and assessed via a specific schedule based on a 12 month process. This process is a shared responsibility between individuals and the management team.

Each individual, including those in management positions, has a set of measurable goals in four categories: Operational Excellence; Financial; People & Leadership; and Strategic & Business.

To monitor and measure the attainment of these goals, Lendlease maintains a comprehensive library of Project and Management Performance Indicators. From this extensive library, we have identified a number of specific performance indicators that will be the responsibility of Lendlease Management team

members for the TNR3N Project (shown in Table 1). These will be assessed and refined (with input from RMS) to define the details and metrics applicable to this project and suitably applied to individual management roles.

Whilst some will be purely internal measures, Lendlease will develop a suite of management performance indicators that will be reported to RMS via the monthly report.

Table 1: Standard Lendlease Performance Indicators to be applied to TNR3N

Work Health & Safety performance indicators	Time performance indicators
<ul style="list-style-type: none"> • Display active involvement and uncompromising leadership • Running of “Next Steps” and “Back to Basics” campaign • Striving toward “Error Tolerant” workplace • Lost Time Injury Frequency Rate of two or less and Zero Lost Time Injuries 	<ul style="list-style-type: none"> • Forecast final date vs Completion Date on a monthly basis • Ensure accurate monthly update of project programme • Completion of Interface Milestone • Completion of Project Works as per Project Programme
Cost performance indicators	Design performance indicators
<ul style="list-style-type: none"> • Timely, accurate and complete monthly reporting • Tracking Final Forecast costs to Budgets • Implementation of “CLEAN” (Construction “LEAN”) and continuous improvement 	<ul style="list-style-type: none"> • Achievement of design milestones in accordance with the Design programme • % of RFIs responded and closed within the required timeframe • As-built documentation on Project Completion
People & Leadership performance indicators	Community & Stakeholder performance indicators
<ul style="list-style-type: none"> • Staff Retention – turnover to be less than 5% • Demonstrate and drive a culture on the project that aligns with Lendlease’s Code of Conduct and Core Values • Training achieved in accordance with Project Training Management Plan 	<ul style="list-style-type: none"> • Community contact response times • Community issues resolution response time • Innovations for community involvement • Work to build and maintain a positive relationship with key stakeholders
Environment performance indicators	Traffic & Road Safety performance indicators
<ul style="list-style-type: none"> • Zero Environmental Incidents • Zero Environmental Infringements / Penalty Notices • Number of Audits Scheduled completed • Number of Inspections scheduled completed 	<ul style="list-style-type: none"> • Compliance with Traffic Control Plans • No uncontrolled Pedestrians movements • No incidents of working outside the TMC Road Occupancy Licence (ROLs)
Quality performance indicators	Employment & Training performance indicators
<ul style="list-style-type: none"> • % of NCRs use as is • % NCRs greater than 30 days old (maximum limit to apply) • Target number of Audits in Audit Schedule completed • Ensure lot and NCR closure rate maintained above 80% 	<ul style="list-style-type: none"> • Learning Workers • Employment of Female workers and People under 25 years • Aboriginal or Torres Straight Islanders employment in accordance with Reconciliation Action Plan (RAP) • Long Term unemployed or social housing clients • Trade Qualifications, all based on percentage of Workforce

(ii) Processes to Identify & Manage Work to be Subcontracted

Lendlease’s procurement strategy includes a process to assess potential subcontractor and consultant suitability for working with Lendlease across a number of aspects such as financial capability, previous projects and their management systems. This is done via capability statements and questionnaires during the procurement period, which starts during the tender period.

During the tender period the types of works that are necessary for the project works are identified. These areas of work are assessed for whether they will be self-performed by Lendlease, or if a specialist subcontractor is necessary. This assessment includes consideration across:

- Commercial benefit;
- Critical programme activity risk;
- Quality requirements;

- Critical work activities associated with the scope;
- Communication aspects of the works in relation to interfacing with other trades, exposure to residents and key stakeholders; and
- Availability of a suitable subcontractor to perform the work considering the above items and the current industry climate.

The process of appointment and agreement of subcontractors during the project will follow Lendlease’s established system procedure AR503, which will incorporate the applicable requirements of the Project Deed and the SWTC. Assessment of subcontractors includes their commitments to the project requirements as well as Lendlease’s values and cultures in terms of quality, safety, environmental and community relations.

The selection of subcontractors will require input from discipline managers captured via the Lendlease system form AR503B.

Our consultants and specialist subcontractors operate in accordance with their own Management Plans which align with Lendlease’s Management and Project Plans. This alignment in most instances has occurred prior to the tender process for this project, based on previous collaborations on other projects and tenders.

Subcontractors are required to submit their project plans, risk assessment and process plans such as Safe Work Method Statements and Inspection and Test Plans (ITPs) for approval prior to works commencing.

Lendlease has a system whereby the project team may introduce KPIs on key subcontractors reflecting the KPIs that are to be developed from the Head Contract by RMS and Lendlease. This has been adopted successfully on recent projects to assist alignment of subcontractors with project objectives and performance indicators. The management team will consider this initiative to promote subcontractor performance and align their aspirations with those of the project.

Where considered suitable, due to the type of works or the capacity of the subcontractor, the subcontractor will work under the Lendlease Management Plans (such as WHS, environmental, quality, employment and training) and directly with Lendlease Engineers and functional representatives to ensure compliance.

Through the audit process, the Management Plans of subcontractors and consultants will be regularly reviewed for suitability, implementation and compliance.

During the works, the performance of subcontractors will be assessed by Lendlease via our AR503C *Subcontractor Performance Report*. This is an important tool for managing on-site performance as it provides an opportunity for the project team to give direct feedback to the subcontractor on their performance. In order to get maximum value out of the process, it should be facilitated in a collaborative manner, with the subcontractor provided an opportunity to suggest ways in which the project team can assist them to better deliver their scope of works in alignment with the needs of the project.

The records of the Performance Report are maintained at Lendlease’s Head Office to facilitate the sharing of information between projects. The regular performance rating of subcontractors is designed to lift their performance over time for the benefit of the industry.

(iii) Processes to Ensure Integration of Contractor’s Personnel with Designers, Subcontractors & RMS Personnel

The integration of Lendlease’s project team personnel with designers and subcontractors as well as RMS and stakeholder personnel is fundamental to the effective progression of the design and works and prompt resolution of issues during the project. The communication and integration of these groups is essential and is led by the Lendlease management team members represented in Figure 2 below.

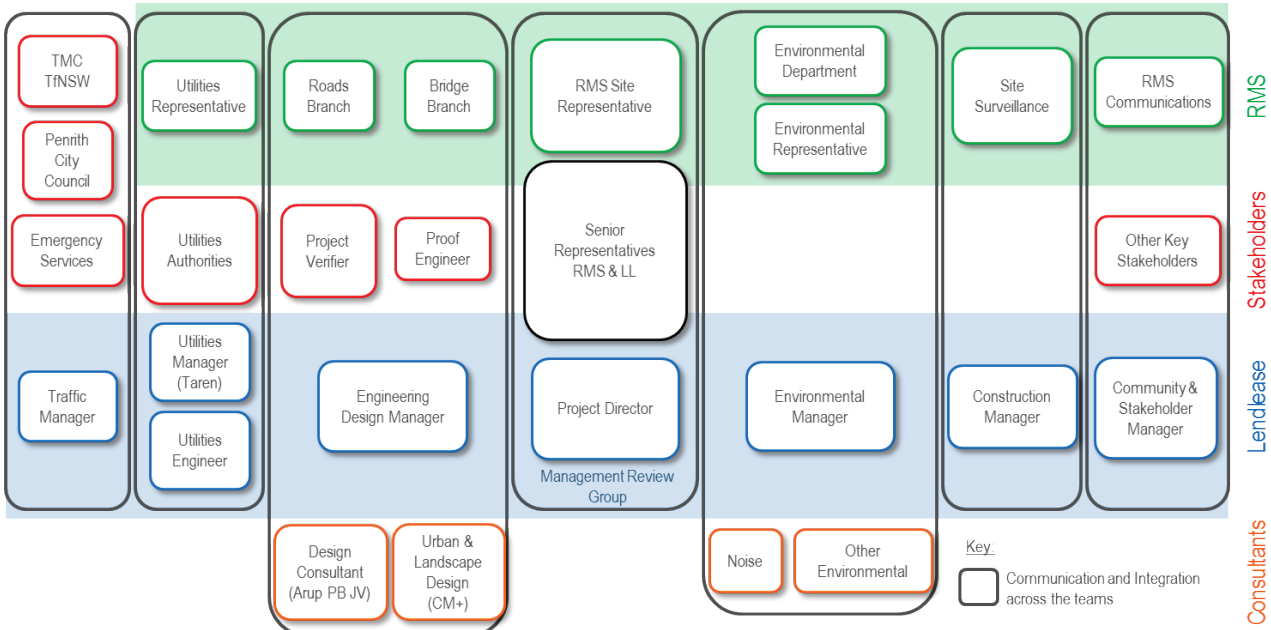


Figure 2: Representation of key relationships and communications across the wider RMS, key stakeholders and Lendlease.

Specific communication and integration processes are summarised below

Lendlease & Designers

The designers are managed by the Engineering Design Manager (EDM) with the assistance of the Geotechnical Design Manager and any other Design Managers that are deemed as required. They will be managed on a daily basis throughout the detail design phase. To ensure communication lines are maintained, the Lendlease Design Managers will be colocated with the designer's staff, along with key Lendlease construction staff to drive Safety in Design, constructability and maintainability within the design.

The Lendlease EDM will facilitate constructability reviews of significant design packages during the detail design development stages. Construction personnel will attend and provide direct input into the design at critical stages to ensure that the best design solution is delivered with minimal design rework. The construction and maintenance personnel are also involved in the Safety in Design and safety risk processes.

The Lendlease and designers integration processes will be championed by the Engineering Design Manager.

Lendlease & Subcontractors

There are two streams of interaction with subcontractors that need to be considered and addressed:

1. Managers; and
2. Site supervision and workforce.

It is evident from our vast experience across relationship-structured projects including alliances like Inner West Busway along Victoria Road, BridgeWorks Alliance (Sydney Harbour Bridge), BridgeSolutions Alliance (ANZAC Bridge) and CBD Alliance as well as other contracts such as Windsor Road Upgrade, M5 West Widening and North West Rail Link Early Works that integration of subcontractor personnel through planning stages, inspections and reviews, results in outstanding outcomes.

Throughout the process of engaging with a subcontractor, commencing at project start up, delivery and completion it is important that consistent relationships are maintained. As such, each subcontractor will have one point of contact from the construction team.

Communication will be well structured with project inductions, induction into work processes, daily tool-box talks and weekly meetings with key subcontractors.

The Lendlease and subcontractor's integration processes will be championed by the Construction Manager and Site Superintendent.

RMS & Lendlease

We recognise that a harmonious collaborative relationship with RMS (including their agencies) is a key

success factor for the project. Integration between RMS and Lendlease will be assisted greatly by the collaborative approach we are able to contribute to this project.

The integration of our personnel with RMS is fundamental to the effective progression of the works and prompt resolution of issues throughout the project.

From the beginning of the contract we will convene a series of workshops to establish key principles and to create an environment that facilitates effective communication and integration between all parties. Further, RMS will be invited to attend construction planning sessions where RMS' input or suggestions will be welcomed, as well as invited to attend and participate in routine inspections and meetings.

At the governance level, communication and integration is via the Management Review Group (MRG), which will comprise members from RMS and Lendlease authorised to make decisions on behalf of their respective organisations. The MRG will operate under a defined set of rules (included in the Project Deed) and provide guidance and instruction to the Project Control Group.

At the project level, communication and integration will be via the Project Control Group, in particular the Lendlease Project Director and the RMS Representative. Our underlying collaborative principles will ensure that all parties opt for informal, direct communication before any formal communication is implemented.

Day-to-day communication regarding to design documentation (i.e. development, submission and review) will be between the Lendlease EDM and the RMS technical team managers / leads. Communication between the Geotechnical and other design managers and RMS' technical design management will include the EDM.

Communication in relation to construction will be between the equivalent personnel from Lendlease and RMS such as the Lendlease foremen and engineers with RMS surveillance officers and engineering staff.

It is important that regular health checks are conducted on the integration of the personnel. This will be done formally via monthly reviews of project performance indicators that will be developed during the early workshops. The Project Director will work closely with RMS' Representative to ensure that communication and integration is working and that any concerns RMS may have are being addressed.

The RMS and Lendlease integration processes will be championed by the Project Director.

(iv) Provision of Independent Project Verification & Proof Engineering

In accordance with Item 12 of Schedule 1 of the Project Deed, RMS will nominate their preferred Project Verifier (PV) (from the two nominated by Lendlease in the Tender submission). The responsibility of the PV is to

independently verify that the works have been executed in accordance with the terms of the Contract (Deed and SWTC) and in compliance with the specifications. The PV shall provide the Project Verification Plan prior to commencement of project works for the approval of RMS and Lendlease. The plan will provide the detailed methodologies and processes which the PV will adopt to progressively verify the works.

The PV is responsible for certifying the various schedules pertaining to payment schedules and others at intervals or times required by the Contract. Part of the verification process will be to release Hold and Witness Points and to insert Hold Points when appropriate, surveillance of the works and to ensure that works are completed in accordance with the specifications, drawings and other process documents. The PV shall audit Lendlease regularly to ensure that the proper system has been followed.

An independent Proof Engineer (PE) will be engaged in accordance with the Deed, and approved by RMS. The function of the PE will be on specific elements of works identified in Item 12 of Schedule 1 of the Project Deed.

The PE must undertake design checking and modelling, as well as reviewing the safety, durability and functional requirements of the identified items. The Proof Engineer must submit the Proof Engineering Plan to Lendlease and RMS for approval prior to work commencing.

Integration of Lendlease & the PV

The PV will be requested to attend work planning sessions to ensure that they understand the project team's constraints, and to ensure the PV has the opportunity to communicate their concerns / issues for any designs or tasks.

During the detail design phase the PV will be requested to attend design workshops and design review meetings to ensure their input is gathered and considered. This will also assist with the design review process timelines as the PV will be aware of the design documentation that they will be receiving to review.

During the construction phase the PV will be invited to work method planning sessions, site inspections and other reviews. This allows the team to address any concerns in advance of the works, reducing the potential for non-conforming works and avoiding potential quality, time and cost implications for the project.

Integration of RMS & the PV

Integration between RMS and the PV is important to ensure timely and efficient resolution of issues. Lendlease will ensure communication lines are maintained between RMS and the PV via regular meetings and workshops.

During the detailed design phase the integration of the PV with Lendlease and RMS will be championed by the Engineering Design Manager. During the delivery phase this will be the responsibility of the Construction Manager.

(v) Methods of dealing with Services & Associated Authorities

To mitigate risks associated with services and dealing with utility authorities, Lendlease has integrated Taren Infrastructure Management into our project team. The Principal of Taren will be our Utilities Manager on the project, supported by an experienced utilities engineer.

The impact on services has been investigated during the tender to determine what adjustments or protection work is required. Whilst some key utilities have been converted to provisional sum, Lendlease working with Taren has determined a suitable concept design for these works. The investigation included analysis of horizontal and vertical differences in alignment to identify changes in cover and associate impacts on services.

The approach taken to identifying and determining the extent and scope of the Service Works for the project is summarised as follows:

- Tender concept designs as required have been developed to minimise impacts on known services infrastructure;
- Investigations to physically identify and survey existing services and update information on combined services drawings (this will be done at the start of the works and where possible done under an REF during Initial Works);
- Where impacts on services are determined to be unavoidable, Lendlease has first considered to provide protection for the assets in their current location rather than relocate them; and
- Where services are required to be relocated, Lendlease has allowed for replacement of the utility on a "like for like" basis and in accordance with the service provider's guidelines.

There are several major utility assets that will be impacted by the proposed works. The protection or relocation of these assets will be thoroughly planned so that the works have minimal impact on the Utility Authority asset and the users.

Lendlease will work with the Utility Authorities to ensure that all proposed relocation designs are compatible with the final approved road alignment design.

There is always considerable programme risk associated with works on any Utility Authority's asset; therefore these works are targeted to be carried out early in the construction programme or early in the stage of work.

Non-contestable works such as those for telecommunications and gas will be carried out under a contract between Lendlease and the Authority by authority-nominated specialist subcontractors. The design of the works is also done by the Authority. Lendlease will develop the concept design which will then be developed by the Authority for construction. Contestable works will be designed by a suitable specialist designer engaged by Lendlease: a water services coordinator for water and an ASP3 for

electrical. These designers will obtain all approvals from the relevant Authority for the design. Services Works associated with these relocations will only be undertaken by authority-approved contractors directly for Lendlease.

Our strategy is to advance the Service Works design as early as possible in the programme (commencing in the Initial Works) to ensure the impact on the critical path is minimised. This strategy includes:

- Early interaction and coordination meetings with our Utilities Manager, DJV Utilities Design Leader, RMS Services Representative(s) and the relevant Utility Authorities;
- For non-contestable works, issue of preliminary design and alignment to allow design by the relevant service authorities to commence;
- For contestable works, the relevant consultant will be engaged in the Initial Works phase to develop the design in consultation with the DJV and the relevant Authority; and
- Development of a Service Works Issue Register for every service type. This will maintain and control issues / changes associated with the original issued design and the design's development.

The management and coordination of the Utility Authorities is recognised as critical to the timely design development, approvals and completion of the Services Works. Our Utilities Manager will utilise his relationships with senior management of the Authorities to maintain contact and convene regular meetings with their relevant staff (whether their works are contestable or non-contestable) to ensure our designs are progressing and our construction programme needs are being addressed.

For all Services Works relocations to be undertaken, the following will be carried out by Lendlease in the construction staging arrangements:

- Implementation of a Permit to Excavate / Disturb (PTE) system prior to any excavation work within an area commencing. The PTE will identify all known services within an area and procedures to be followed when working near these services;
- Restrict the use of machinery by the use of hand digging or sucker trucks in the first instance; and
- Follow safe work practices, including tagging or fencing services, Safe Work Method Statements and tool box talks.

(vi) Strategies for obtaining all Necessary Approvals

Between the announcement of preferred contractor and contract award, in order to assist RMS in the REF determination process, Lendlease will have suitable design, construction, environmental and community relations personnel available. During this time, we will take the advantage to develop 3-B Initial Environmental Management Plan and sub-plans to ensure they remain current with the content and status of the REF, particularly during the preparation of the submissions

report. The Environmental Protection Licence will also be developed during that time. Following contract award, Lendlease will increase the dedicated team of professional environmental resources required to continue to develop these documents under direction of the nominated Environmental Manager, including engaging necessary specialist consultants for their development.

To facilitate the approval process, Lendlease will liaise closely with the RMS Environmental Representative, regarding the development of the CEMP, and will offer a series of review workshops to expedite the review / approval process where possible. These workshops are designed to review the documents in a collaborative manner and quickly address any comments / feedback provided by the client.

During construction, the Environmental Manager will be responsible for acquiring any further licences and approvals required to enable construction activities. This will be managed through the CEMP audits / review process during construction and through periodic review of the Compliance Tracking Program approval pathways (i.e. REF Consistency Review or REF Addendum).

For significant amendments to initial design that have not been considered within the REF nor communicated to the wider community, Lendlease may be required to amend the Environment Protection Licence (EPL) issued by the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*. To facilitate this process, we will liaise with the EPA about the proposed amendment prior to submitting an EPL Variation Request for consideration. RMS will be advised of any amendments to the EPL via a Hold Point release in accordance with RMS Specification G36.

Works of this nature will not commence on-site until approval has been issued by RMS and the EPA (as applicable) through the approval pathways (i.e. REF Consistency Review or REF Addendum). Further details on approvals are provided in 3-B Initial Environmental Management Plan.

vii) Outline how Risks as a Result of Processes & Measures Implemented under other Project Plans will be Identified & Incorporated into the WHS Management Plan or Design Plan

With reference to Section E of this PMP, it is important that risks identified via any means during the design and construction of this project are captured and managed via the most applicable project plan.

Risk management will be championed by the Risk Manager. A monthly risk meeting will be convened by the Risk Manager or the Project Director which will be attended by the Project Control Group (refer Section (iii) of this Plan) and other key personnel. These meetings will be the forum to review identified risks and their required actions and mitigations as well as identifying

new risks. These new risks will be discussed with actions and mitigation measures determined including which is the best project plan to manage the risk.

Where risks are to be managed via the WHS Management Plan, the mitigation risks will capture the use of Safe Work Method Statements and procedures, where elimination should be considered and what controls are necessary to minimise the risk. Where risks are to be managed via the Design Plan, the mitigation measures will capture the use of Safety in Design processes or whether construction personnel need to be further involved.

Monthly risk register updates will be made available to RMS.

Appendix 2: Key Roles: Minimum Experience, Accountability, Skills & Performance Milestones

Position (Min Exp.)	Leadership and Responsibility	Skills	Performance Milestones
All Key Personnel	<ul style="list-style-type: none"> Project Deed requirements RMS Objectives Safety 	<ul style="list-style-type: none"> Proven project experience and delivery in similar large-scale infrastructure projects Strong project management and leadership skills Ability to work as part of a multi-disciplinary project team Experience in working with RMS and knowledge of RMS objectives 	<ul style="list-style-type: none"> Safety Project Completion Project Deed conformance
Project Director <i>(Min. 20 years professional experience on construction projects)</i> <i>Reports to: Operations Manager and Leaders within the Management Review Group</i>	<ul style="list-style-type: none"> Authority to act on behalf of Lendlease Display uncompromising leadership in safety and environmental Total project delivery and compliance Community and Stakeholders Environmental compliance Industrial relations 	<ul style="list-style-type: none"> Proven project experience in leading and delivery of similar large-scale infrastructure projects Extensive experience with the design and construction project delivery method Ability to ensure implementation of management systems Understanding of environmental issues associated with major projects Experience in consultation with stakeholders and local communities Understanding of road design issues Understanding of urban design and landscaping issues on major projects Understanding of construction issues on major projects 	<ul style="list-style-type: none"> Safety leadership, campaigns and Error Tolerance focus Achievement of Community and environmental targets Achievement of programme milestones Achievement of Employment and training requirements Staff retention Employment and Training requirements achieved
Engineering Design Manager <i>(Min. 15 years of professional experience in construction projects)</i> <i>Reports to: Project Director</i>	<ul style="list-style-type: none"> Design Programme Safety in Design Design constructability and optimisation 	<ul style="list-style-type: none"> Ability to lead and coordinate a multi-disciplinary design team and interface / coordinate with construction teams Management and coordination of Design documentation Extensive experience with the design and construction project delivery method Experience with Safety in Design process Strong technical understanding of road infrastructure projects Understanding of urban design and landscaping issues on major projects 	<ul style="list-style-type: none"> Integrate RMS reviewers and PV into review process Design deliverables and milestones on programme Minimise design risks Incorporation of RMS design requirements As-built documentation on Project Completion
Construction Manager <i>(Min. 8 years of professional experience in the management of large construction projects)</i> <i>Reports to: Project Director</i>	<ul style="list-style-type: none"> Safety Leadership and Performance Environmental conformance Project construction programme Community and stakeholder management Traffic Management Product Quality – defect-free delivery 	<ul style="list-style-type: none"> Understanding of urban design and landscaping issues on major projects Experience with the design and construct project delivery method Extensive knowledge of road and bridge construction Experience in consultation with stakeholders and local communities Background in ensuring construction works are undertaken safely and in accordance with Safety Plans Understanding of environmental and quality issues associated with major projects 	<ul style="list-style-type: none"> Safety leadership Project delivery with Compliance to Project Deed Achievement of programme milestones No incidents of working outside the TMC ROLs Defect-free completion Environmental indicators (Zero incidents / Zero infringements) Product quality Stakeholder management – Achievement of Community targets

Position (Min Exp.)	Leadership and Responsibility	Skills	Performance Milestones
<p>Quality Manager</p> <p><i>(Min. 5 years of professional experience in quality management on construction projects)</i></p> <p>Reports to: Project Director</p>	<ul style="list-style-type: none"> • RMS primary contact on matters of Quality • Provide RMS Representative access to information on quality matters • Encourage a culture of disclosure and communication at all levels • Authority to act freely and to stop progress where non-conformity with Project Deed exists • Collaboration 	<ul style="list-style-type: none"> • Extensive knowledge of quality assurance issues in relation to roads and bridges • Experience in preparation and implementation of Project Management Plans • Extensive knowledge of relevant RMS and Australian Standards • Track record of implementing collaborative systems on similar projects • Ability to communicate effectively (written and oral) • Proven ability to act freely and to stop progress where non-conformity with Project Deed exists 	<ul style="list-style-type: none"> • Management systems implementation • Compliance to Deed requirements on quality matters • Documentation on Project Completion
<p>Community & Stakeholder Manager</p> <p><i>(Min. 5 years of experience in community liaison consultation and communications on major infrastructure projects)</i></p> <p>Reports to: Project Director</p>	<ul style="list-style-type: none"> • Community involvement, liaison and consultation • Public affairs and stakeholder management • Contact for local residents and other community representatives 	<ul style="list-style-type: none"> • Experience in preparation and implementation of community involvement plans and communications strategies • Knowledge and understanding of all aspects of community involvement and liaison • Ability to communicate effectively (written and oral), and resolution of issues using conflict resolution skills • Experience and understanding of government public affairs process • Experience in understanding and appreciating RMS processes and requirements, including approvals and media liaison requirements • Experience in design and construction phases for major road infrastructure projects • Experience in the requirements, needs and opportunities to seek and obtain community feedback • Experience in the identification and requirements for appropriate or alternative methods for communication and consultation with stakeholders 	<ul style="list-style-type: none"> • Community contact response times • Community issues resolution response time • Innovations for community involvement • Positive relationship with key stakeholders
<p>Environmental Manager</p> <p><i>(Min. 8 years of professional experience in the field of environmental and sustainability management)</i></p> <p>Reports to: Project Director</p>	<ul style="list-style-type: none"> • Champion of Lendlease environment culture • Development and implementation of Environmental Management Plans – CEMP and subplans • Authority by the Contractor to act freely and independently, to stop the Works as required • Environmental Management • Obtaining relevant approvals • Environmental compliance 	<ul style="list-style-type: none"> • Extensive experience in the preparation and implementation of environmental management plans and environmental systems • Experience in regulatory liaison and consultation • Experience in working with requirements of road authorities and environmental authorities • Experience with RMS REF process • Detailed understanding of environmental issues associated with major road and bridge projects • Experience with Aboriginal and Archaeological Heritage • Strong administrative skills 	<ul style="list-style-type: none"> • Environmental compliance reporting • Number of Audits Scheduled and completed • Number of Inspections scheduled completed • Induction and training program for all construction personnel

Position (Min Exp.)	Leadership and Responsibility	Skills	Performance Milestones
<p>WHS Representative</p> <p><i>(Min. 10 years of professional experience in the field of safety management on large projects)</i></p> <p>Reports to: Project Director</p>	<ul style="list-style-type: none"> Leadership, acting as champion of Lendlease safety culture Authority to act freely and independently Authority where safety compliance is at risk to stop the Works progress 	<ul style="list-style-type: none"> Proven ability to lead and champion the safety culture of Lendlease Proven experience in road and bridge construction projects Extensive knowledge of road construction safety risks Capability to undertake safety induction and training of company employees and workforce (Lendlease and subcontractors) 	<ul style="list-style-type: none"> Safety Leadership Development and implementation of WHS Plan Running of “Next Steps” and “Back to Basics” campaigns “Error Tolerance” focus Facilitate project work health and safety induction and training for all personnel
<p>Traffic Manager</p> <p><i>(Min. 5 years on-site traffic management experience)</i></p> <p>Reports to: Construction Manager</p>	<ul style="list-style-type: none"> Traffic Safety and Management Appropriate delegated authority to act on behalf of the Contractor Act freely and independently Available at all times for matters regarding Road Occupancy Licences 	<ul style="list-style-type: none"> Extensive experience in the preparation and implementation of Traffic Management Plans and Traffic Control Plans Strong understanding of traffic safety Experience in regulatory liaison and consultation Ability to facilitate a traffic management and safety induction Understanding and empathise with community issues related to traffic and management of changing traffic conditions Experience in coordinating multiple stakeholders, including TMC, RMS, Councils, Police and emergency services 	<ul style="list-style-type: none"> Implementation of Traffic Management Plans and Traffic Control Plans Compliance with Traffic Control Plans Road Safety Audits and inspections performed
<p>Landscape Representative</p> <p><i>(Min. 5 years experience in design and implementing landscaping)</i></p> <p>Reports to: Construction Manager</p>	<ul style="list-style-type: none"> Delegated authority to act on behalf of Lendlease Compliance of landscaping 	<ul style="list-style-type: none"> Experience in management of performance of landscaping activities, including ground preparation, seeding, planting and mulching operations Experience in construction of road projects 	<ul style="list-style-type: none"> Landscaping completed in accordance with design, defect-free Maintenance performed to specification requirements
<p>Geotechnical Design Manager</p> <p><i>(Min. 8 years experience in geotechnical design management)</i></p> <p>Reports to: Engineering Design Manager</p>	<ul style="list-style-type: none"> Geotechnical Design deliverables Optimising geotechnical design Design Programme 	<ul style="list-style-type: none"> Experience on road and bridge projects Knowledge of geotechnical design and construction issues Understanding of local ground conditions including permeability and absorption 	<ul style="list-style-type: none"> Design deliverables and milestones on programme Minimise design risks Incorporation of RMS design requirements

Position (Min Exp.)	Leadership and Responsibility	Skills	Performance Milestones
<p>General Superintendent</p> <p><i>(Min. 15 years site management experience on large scale road and bridge projects)</i></p> <p><i>Reports to: Construction Manager</i></p>	<ul style="list-style-type: none"> • Safety Leadership and Performance • Leader of safety, quality and Lendlease culture • Environmental conformance • Project construction programme • Community and stakeholder management • Traffic Management • Product Quality – defect-free delivery • Industrial relations • Maintaining site resources 	<ul style="list-style-type: none"> • Extensive knowledge of safety and industrial relations requirements. • Extensive knowledge of road and bridge construction • Plant and equipment requirements, labour and ability to manage subcontractors and suppliers • Extensive knowledge of relevant RMS and Australian Standards • Extensive site management experience including planning and implementing project delivery, plant and equipment requirements, labour and ability to manage subcontractors and suppliers • Knowledge and understanding of safety, quality and environmental management systems • Understanding of community attitudes and requirements to manage interactions 	<ul style="list-style-type: none"> • Safety leadership • Project delivery with Compliance to Project Deed • Achievement of programme milestones • No incidents of working outside the TMC ROLs • Defect-free completion • Environmental indicators (Zero incidents / Zero infringements) • Product quality • Stakeholder management – Achievement of Community targets
<p>Project Performance Coach</p> <p><i>(Min. 10 years coaching experience of a major contractor)</i></p> <p><i>Reports to: Project Director</i></p>	<ul style="list-style-type: none"> • Proactive role in performance coaching of Lendlease's personnel • Assist in the development of improvement plans of key personnel 	<ul style="list-style-type: none"> • Extensive experience in coaching a major contractor organisation where the teams have performed similar works • Knowledge and understanding of the Lendlease's overall leadership plan • Knowledge and understanding of RMS' values and objectives in relation to the Contractor's Work 	<ul style="list-style-type: none"> • Performance Reporting against its leadership strategy and alignment with RMS' values and objectives



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 36 – Initial Environmental
Management Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
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Prepared by:	Roads & Maritime Services
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Initial Environmental Management Plan

3-B: Initial Environmental Management Plan

Lendlease is the partner of choice for the urban environment, and this Initial Environmental Management Plan has been prepared to outline the processes and measures we shall implement on the project that thoroughly align to our strong environmental culture.

The key differentiators that help us achieve outstanding environmental performance are:

- Our dedicated and experienced team of environmental professionals including our Environmental Manager Grant Fletcher who has over 10 years of RMS experience;
- Our constructive and collaborative relationship with the Environmental Regulators (i.e. EPA, DP&I and Councils) exemplified by the successful delivery of projects within NSW with no environmental infringements;
- Our attention to detail during the design and implementation of best practice environmental control measures as demonstrated through several recent industry awards;
- Our strong focus on training and development to ensure that environmental and community obligations are understood by all personnel involved in the delivery of the project;
- Our emphasis on the identification and recognition of innovations and innovation sharing throughout the company; and
- Our approach to maintaining the community's expectations during delivery by proactive community consultation and quick response times to community enquiries or concerns through our experienced Community & Stakeholder Management Team.

(i) Team Integration

Integration of environment, design and engineering teams to work together to identify and manage potential environmental risks, environmentally sensitive areas and upcoming construction works.

Lendlease acknowledges the importance of collaboration as a key component of team success and project delivery. This is recognised through the inclusion of “Collaboration” as one of Lendlease’s core company values, which underpin the way Lendlease aspires to undertake business, interact with clients and operate within the community. Establishing a strong culture of collaboration is critical during the design phase as it is acknowledged that several environmental and community impacts can be identified and mitigated through innovative design solutions prior to occupying site.

Team Integration & Collaboration during Design

Recognising the importance of environmental and community awareness early in project design,

Lendlease has strategically included an Environmental Manager and a Community & Stakeholder Manager within the tender team at start-up to advise on key environmental and community constraints, opportunities, lessons learnt from previous projects and to ensure that adequate provisions have been included within the tender to deliver sustainable environmental and community outcomes.

These representatives liaise daily with the various functional teams, review and challenge construction methodologies, attend key meetings and participate in design and construction workshops (i.e. risk and opportunity workshop) to ensure that environmental and community considerations are identified and communicated early.



Furthermore, Lendlease has appointed an Environmental Design Lead within the Design Team to ensure that nominated design requirements (as specified within the Review of Environmental Factors, SWTC, Appendix 4 – Additional Environmental Requirements and associated RMS Specifications) such as operational noise, drainage, scour protection and afflux requirements are understood and incorporated into the design submission. The Environmental Design Lead is also responsible for optimising the design to minimise environmental impacts wherever possible. This optimisation is documented in the Environmental Design Report provided with the tender submission.

Collaboration and integration of the various functional teams (i.e. engineering, design, environment, community, traffic, etc.) has already commenced during The Northern Road Stage 3 North (TNRN3) upgrade tender period, including implementation of the following initiatives:

- The tender team is situated within one office to facilitate collaboration, promote meaningful discussion and facilitate quick resolution of issues;
- Weekly team meetings are scheduled each Monday to discuss design progress and highlight any key constraints that need further consideration. This meeting is attended by both the Environmental Manager and Community and Stakeholder Manager to ensure that both the environment and community are well represented and key issues are openly discussed;
- Regular design package reviews are facilitated by the Design Manager to allow consideration and input from the wider functional teams; and
- The tender team members are nominated within the project delivery team to facilitate continuity of information between the design and delivery phases.

It is intended that these initiatives will continue during the detailed design phase of the project.

Examples of where this collaboration has resulted in a positive outcome during the tender design of the TNRN3 upgrade include:

- Areas of mature vegetation have been clearly identified in our design documents including our Urban Design and Landscape Plan. Consideration has been given to minimise the impact on mature vegetation where possible;
- In certain sections noise wall heights have increased in order to provide effective noise protection and prevent the need for any residential house treatments. Additionally, a large section of noise wall on the eastbound off ramp from the M4 has been changed to a noise mound in order to improve the environmental and visual outcomes on the project; and
- As a result of improvements in our road design, the existing box culvert under Glenmore Parkway has been retained eliminating disturbance within Surveyors Creek.

Team Integration & Collaboration during Construction

The ongoing integration and collaboration of the environment, design and engineering teams during construction is fundamental to the timely identification and management of potential environment and community impacts during delivery. Techniques and strategies that will be implemented by Lendlease to sustain integration of the teams with respect to environment and community management include:

- The Environmental Manager, Community and Stakeholder Manager and the Environmental Design Lead involved during the tender submission will continue to support the design team during detailed design;

- Key representatives from the various functional teams will attend environmental design review meetings to review constructability of the design and optimise environmental performance where possible;
- The Environment and Community teams delivering the project will be established early during detailed design to enable collaboration as early as possible and foster strong working relationships from the onset;
- Project Risk and Opportunity Workshops (including the Environmental Risk Assessment Workshop as nominated in RMS Specification G36 – Environmental Protection and the Environmental Workshops nominated with SWTC Appendix 4 – Additional Environmental Requirements) will include key representatives from the various functional teams' (i.e. engineers, designers, safety, environment, community and traffic) to identify project risks and opportunities and implement an appropriate management response to address the risk or take advantage of the opportunity;
- The above workshops will result in the further development of the project Risk and Opportunities Register where environmental and community risks and opportunities are identified, categorised and appropriate mitigation measures identified for implementation (where required);
- The Environmental Manager and the Community and Stakeholder Manager will form part of the Project Control Group to enable environmental and community issues to be elevated and discussed by senior management for resolution;
- The Construction Environmental Management Plan (CEMP) (including Environmental Sub-Plans) and the Community Involvement Plan, will be reviewed by the Project Control Group and approved by the Project Director to ensure that all senior management are aware of the project's environmental and community obligations and commitments. Similarly, training will be implemented on-site to ensure that all other site personnel (i.e. Engineers, Foremen, Leading Hands, etc.) are also aware of the project's environmental and community obligations and commitments;
- Weekly planning meetings will be conducted on-site to prepare for upcoming works (e.g. out-of-hours work) and ensure that appropriate management measures are planned and implemented to mitigate environmental and community risks identified. These meetings will be attended by site personnel responsible for delivering the package of work and the various functional teams (i.e. environment, community, safety, quality, etc.);
- The development of Environmental Work Method Statements (EWMS) for specific high risk activities and Erosion & Sediment Control Plans (ESCP) will occur in consultation with personnel responsible for undertaking the work (including subcontractors where applicable) to ensure that all personnel are aware of the associated environmental and community risk and management measures to be implemented during construction to mitigate these risks;

- Pre-start meetings will include the identification of environmental / community risks on any given day and implemented controls to ensure that all personnel (including subcontractors) involved in the work activity are aware of their responsibilities and obligations;
- As nominated within the SWTC, Lendlease will establish an Environmental Review Group (ERG) during the construction to ensure that all relevant stakeholders are kept well informed of construction activities, environmental matters and community management during delivery. These ERGs will include representatives from the regulatory authorities (e.g. Environment Protection Authority [EPA], Office of Environment and Heritage [OEH] and Department of Primary Industries [DPI]), Penrith Council, RMS and the Project Soil Conservationist. Representatives from the Project Control Group along with key construction personnel (i.e. Superintendent and Foreman). The Representatives will participate in the ERG meetings used to explain the construction activities occurring on-site, the implemented management controls and to hear first-hand any feedback from regulatory stakeholders;
- Personnel responsible for the delivery of works (i.e. Foreman, Engineers, etc.) will participate in environmental inspections and audits. This will ensure that site personnel are held accountable for their respective work areas and have a detailed understanding of any additional management measures identified to address environment / community risks;
- Environmental Toolboxes will be regularly delivered by the Environmental Team, Foreman and Superintendent on key environmental and community risks appropriate to the construction activities occurring on-site; and
- An Environmental Notice Board will be established to facilitate the communication of relevant environmental information such as weather forecasts, environmental monitoring results, sensitive area plans, stakeholder feedback and ERG results.

(ii) Proposed Document Control System to Manage Environmental Information

Lendlease procedure *LLE104 – Document and Data Control* has been certified to AS/NZS ISO 9001 and will be implemented on the project to control the flow of documents and data within the company as well as between Lendlease and the client, stakeholders and subcontractors.

Controlled documents will be uniquely identified and will bear a defined revision number recorded on each page of the document. Obsolete documents and data will be kept for contractual or record purposes, but will be clearly marked as ‘superseded’ to prevent unintentional use.

A “Controlled Document Revision Register” and “Controlled Document Distribution Register” will be maintained on the project to kept track of document

control and distribution. These registers will be maintained by the Document Controller.

Controlled documents will include, but are not limited to:

- The CEMP and associated Environmental Sub-Plans;
- EWMSs;
- Sensitive area plans;
- REF Consistency Review and Addendums;
- Environmental permits and forms; and
- Erosion & Sediment Control Plans.

(iii) Location of Ancillary Sites & Compounds

Determination of the location of ancillary sites, construction compounds, including the location of any acoustic sheds and stockpile sites and processes to be undertaken to allow for efficient approval of these ancillary sites.

Lendlease has utilised the “available land” provided by RMS for the location of construction compounds and laydown areas associated with the project hence no additional land is required to support construction. There are currently three construction compound locations and six laydown areas that have been nominated to facilitate construction. All of these locations are within the nominated project boundary or available land provided by RMS. No acoustic sheds are proposed however, noise mitigation measures such as hoarding or noise mounds will be implemented when in close proximity to sensitive receivers. The locations of these ancillary facilities are provided in **Table 1** below for reference.

Table 1 Proposed Location of Ancillary Facilities

TNR3N Ancillary Facilities		
Item	DP/Lot No.	Proposed Use
1.0	40/DP853672	Materials Laydown Area
2.0	5/DP548308	Main Site Compound and Materials Laydown Area
3.0	21/238741	Materials Laydown Area
4.0	2/DP238339	Materials Laydown Area
5.0	13/DP831409	Materials Laydown Area
6.0	19/DP1028818	Materials Laydown Area
7.0	11/DP236368	Minor Satellite Office / Crib Sheds and Materials Laydown Area
8.0	26/DP247948	Materials Laydown Area
9.0	10/DP236368	Minor Satellite Office / Crib Sheds and Materials Laydown Area

Ancillary Facility Mitigation Measures

Impact on the surrounding community will be a key consideration when establishing construction compounds to ensure that there is minimal impact during construction and operation of the facility. Where construction compounds are in close proximity to

sensitive receivers, necessary mitigation measures will be rolled out, including:

- Compounds and crib sheds will be positioned in a manner that provides visual and acoustic screening to adjacent properties;
- Hoarding or noise mounds will be installed along the property boundary to provide visual screening and noise attenuation;
- Where feasible, construction compounds will utilise mains electricity instead of generators to minimise operational noise impacts. Where a generator is required, consideration will be given to its placement and insulation to minimise noise impact;
- Disturbed areas will be stabilised as quickly as possible to prevent dust emissions. This may include sealing exposed areas with a bitumen seal (e.g. parking areas) and stabilising disturbed areas with hydro-seed / hydro-mulch (i.e. catch drains, batters, etc.);
- Lighting will be installed in accordance with AS 4282-1997 – *Control of the obtrusive effects of outdoor lighting* to mitigate lighting impacts on adjacent properties;
- Stabilised access points will be established at entrances and exits to prevent sediment tracking onto public roads and associated dust impacts; and
- Adjacent properties will be kept aware of compound operations through proactive community consultation particularly if the construction compound is required to be operated outside of standard construction hours to facilitate night works.

Approval of Sites

To facilitate efficient approval of the sites, it is anticipated that the location and use of each ancillary facility will be nominated within the Review of Environmental Factors (REF) for public consideration and consultation. To facilitate this process, Lendlease can provide RMS with the following information during detailed design for inclusion into the REF:

- Location and footprint of the site;
- Site access requirements;
- Likely activities to be undertaken within the sites;
- Hours of operation;
- Location relative to sensitive receivers; and
- Any other special features.

Temporary Stockpiling Locations

It is anticipated that the project will have a surplus of spoil as a result of the widening works. Despite the narrow construction corridor, there is an opportunity along the alignment to integrate surplus spoil into the overall landscaping scheme. It is proposed that the noise wall on the north side of the eastbound M4 exit ramp be replaced with a vegetated landscape noise mound. This design amendment will negate the need for excess spoil to be removed off-site while softening the visual landscape and maximising the planting of native vegetation. This is a value for money outcome

and is typically a preferred option with local communities as long as noise attenuation requirements can still be achieved.

Temporary stockpiles will be required during construction to store material and preserve mulch / topsoil for landscaping activities. The areas which Lendlease has identified as potential temporary stockpile locations are provided below in **Table 2** for reference.

Table 2 Temporary Stockpile Locations

TNR3N Temporary Stockpile Locations		
Item	DP/Lot No.	Proposed Use
1.0	40/DP853672	Proposed Temporary Stockpile
2.0	5/DP548308	Proposed Temporary Stockpile
3.0	21/238741	Proposed Temporary Stockpile
4.0	2/DP238339	Proposed Temporary Stockpile
5.0	13/DP831409	Proposed Temporary Stockpile
6.0	19/DP1028818	Proposed Temporary Stockpile
7.0	11/DP236368	Proposed Temporary Stockpile
8.0	26/DP247948	Proposed Temporary Stockpile
9.0	10/DP236368	Proposed Temporary Stockpile
10.0	220/DP260512	Proposed Temporary Stockpile
11.0	12/DP220581	Proposed Temporary Stockpile

(iv) Proposed Processes if Unforeseen or Additional Ancillary Sites are required during Construction to Enable Sites to be Approved

Changes to location, or the need for additional ancillary / stockpile sites may arise during design development and/or the construction phase to facilitate work. If this occurs, the Environmental Manager will initially undertake a REF Consistency Review (utilising RMS Resource 18 – *Review of Environmental Factors Consistency Review* template) to determine if the proposed amendment is consistent with the information contained within the existing REF. In some instances minor amendments may be consistent with the REF and therefore, are permissible under the existing approval pending the implementation of nominated management and mitigation measures identified in the REF and CEMP.

RMS will be consulted during development of the REF Consistency Review and will ultimately review and approve the document (as the Determining Authority under the *Environmental Planning and Assessment Act 1979*) prior to implementation on-site. Once approved by RMS, the REF consistency review will be marked as a “controlled document” and communicated to the delivery team prior to implementation on-site.

In some instances, amendments to the ancillary site may be so significant (e.g. proposal for a completely new ancillary facility) that there impact has not been

considered within the original REF nor communicated to the wider community. In these instances, the Environmental Manager will document the proposed amendment within an REF Addendum (utilising RMS *Resource 19 – Addendum Review of Environmental Factors* template) for RMS consideration as the Determining Authority.

The REF Addendum will provide sufficient information of the proposed amendment to enable RMS to carefully consider the potential impacts and nominated mitigation measures prior to determination. Depending on the nature and scale of the proposed amendment, the REF Addendum may also need to be supported by additional supplementary environmental assessments to identify potential environmental impacts and proposed management strategies to mitigate the impact. These may include additional assessments around archaeological impacts, ecological impacts, noise and vibration impacts and contamination constraints associated with additional ancillary sites if not previously assessed within the REF. As per the REF Consistency Review, RMS will be consulted during development of the REF Addendum and will ultimately review and approve the document prior to implementation on-site.

Further to the above RMS approval requirements under the *Environmental Planning and Assessment Act 1979*, depending on the nature of the proposed amendment, Lendlease may also be required to amend the Environment Protection Licence (EPL) issued by the EPA under the *Protection of the Environment Operations Act 1997* (POEO Act). To facilitate this process, we will liaise with the EPA about the proposed amendment prior to submitting an EPL Variation Request for consideration. RMS will be advised of any amendments to the EPL via a Hold Point release in accordance with RMS Specification G36.

Lendlease will not commence works on-site until approval has been issued by RMS and the EPA (as applicable) through the approval pathways (i.e. REF Consistency Review or REF Addendum).

(v) Management of Erosion & Sediment Control

A. Identification of any High Risk Erosion & Sediment Areas & What Controls would be Needed

Effective management of erosion risk is attributed to the detailed planning of construction activities to facilitate the identification of erosion and sedimentation risk areas, as well as the timely implementation and maintenance of erosion and sediment controls on-site.

To facilitate the identification of these risk areas, the following measures will be implemented:

- Review of the design and construction methodology during detailed design to identify opportunities to reduced erosion risks and exposure;
- Establishment of periodic risk and opportunity workshop to identify key erosion risks and appropriate mitigation measures;

- Coordinate an environmental risk assessment workshop with the appropriate regulatory authorities (i.e. EPA, DP&I, Council, etc.) in accordance with RMS Specification G36 to identify key environmental risks and develop risk mitigation strategies to eliminate or reduce the risk exposure;
- Development of an EWMS for all high risk activities (e.g. clearing and grubbing, topsoil stripping, works adjacent to waterways) which clearly articulates environmental mitigation measures to be implemented during construction;
- Development of an ESCP for all areas impacted by construction activities in accordance with *Managing Urban Stormwater: Soils and Construction – Volume 1 and 2D* (Landcom, 2004; DECC, 2008). An ESCP will be developed in consultation with the Project Soil Conservationist and personnel responsible for delivering the work (i.e. Foreman, Engineer, etc.);
- Hold points as specified in RMS Specification G38 will be adhered to, providing RMS with the opportunity to assess and comment on proposed erosion and sedimentation controls prior to works commencing; and
- Pre-start meetings / toolboxes to be held prior construction commencing to identify any new environmental risks and any additional environmental controls required to facilitate works.

Lendlease has successfully delivered several projects similar to TNR3N with elevated erosion and sedimentation risks including:

- Windsor Road Upgrade Box Hill;
- Lawson Alliance on the Great Western Highway;
- Woodford to Hazelbrook Upgrade on the Great Western Highway;
- M5 West Widening Project; and
- The Northern Road Upgrade (Jordan Springs).

We will build on our experience developed on these projects to ensure that erosion and sedimentation risks are identified and managed during construction. This will include collaboration with RMS, the Project Soil Conservationist and any relevant regulatory authorities during the planning phases to draw on past experiences and lessons learnt from similar construction projects.

Erosion and sediment control risks that have been identified during the RFP stage for the project, and their proposed management approaches are outlined below.

Temporary Construction Sediment Basins & Land Management Areas

Due to the limited space available within the alignment, opportunities to install temporary construction sediment basins in accordance with the *Landcom Managing Urban Stormwater: Soil and Construction Guideline* (the Blue Book) are limited. To overcome this constraint, Lendlease will utilise temporary land provided by RMS to install temporary sediment basins and will investigate the potential to utilise permanent sediment basins as temporary sediment basins during construction by installing them as early as possible. This methodology

was successfully implemented on the M5 West Widening (M5WW) project where there was insufficient room to install temporary sediment basins. Where temporary construction sediment basins cannot be installed, alternative erosion and sediment controls in accordance with the Blue Book requirements will be installed.

Section 6.3.2 of the Blue Book notes that some small and/or flat sites may not warrant construction of a sediment basin. Where soil loss from the disturbed area is less than 150m³ per year, the building of a sediment retention basin can be considered unnecessary. In such circumstances, alternate measures may be employed to protect any receiving waters.

Based on the above recommendation, where a temporary construction sediment basin cannot be implemented, the Project Soil Conservationist will assess each catchment and develop catchment-specific 'Land Management Areas' where the level of soil loss is maintained below the criteria for a temporary sediment basin.

These Land Management Areas will detail alternative erosion and sediment controls to be implemented on-site. This may include for example:

- Sediment sumps / traps;
- Sediment fencing;
- Mulch bunds or rock checks;
- Geo-fabric shrouding;
- Pit bags; and
- Roll-over banks to reduce flow length.

These catchment management methods have been effectively used on previous Lendlease projects in consultation with the EPA with no concerns. Examples of methods are provided on the following page.

To demonstrate our awareness of erosion and sediment control management on the site, concept ESCP have been developed for the project during the tender phase. These have been provided for reference in LL-TNR3N_2-G_Environmental-Drwgs.pdf. These concept plans will be reviewed by the Project Soil Conservationist prior to the commencement of work and updated as required.

As per RMS G36 3.1.1 Hold Point requirements, these revised plans will be submitted to RMS 10 working days prior to the commencement of works and implemented on-site in preparation for the Witness Point review and release.



Figure 1: Mulch bund utilised on the M5WW project to manage construction runoff. Source: M5WW Project.



Figure 2: Sediment trap implemented to capture course sediment in confined spaces. Source: M5WW Project.



Figure 3: Triple controls installed to protect inlet pits along the M5WW project comprising of sediment fence, sandbags and a pit bag. Source: M5WW Project.



Figure 4: Operational basin utilised to collect construction runoff during construction following consultation and approval from the EPA. Source: M5WW Project.



Figure 5: Temporary diversion pipe installed to facilitate access over drainage lines while still maintaining clean water drain. Source: M5WW Project.



Figure 6: Temporary diversion pipe to divert clean water from the carriage directly into the stormwater network while working in the median. This reduced the amount of construction runoff within the median that required treatment. Source: M5WW Project.

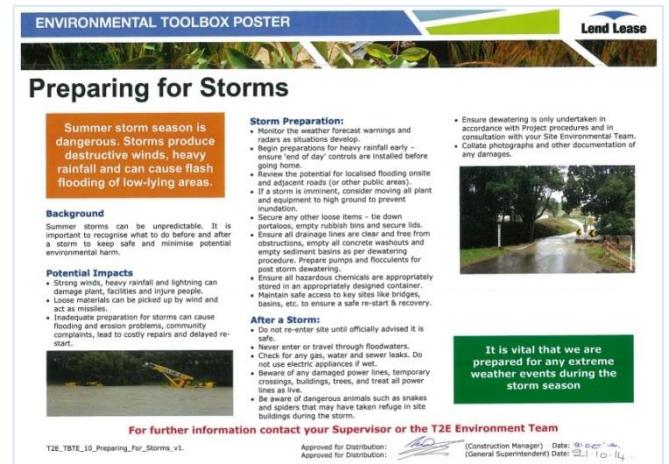
Planning for Rain Events including Heavy / Intense Rainfall Periods

Following topsoil stripping and during earthworks, disturbed areas are more vulnerable to rainfall events and can result in erosion and sedimentation impacts if not managed effectively. The Bureau of Meteorology forecast and weather radar will be regularly monitored by the Environmental Team, Engineers, Foremen and Superintendents in order to identify impending rainfall events and allow for site preparation. Notification of inclement weather will be communicated to site personnel via an environmental notice board, toolbox talks and pre-start meetings. The Environmental Team will conduct an inspection in conjunction with the Foremen and/or Leading Hands prior to large rain events to ensure all appropriate controls are installed as nominated within the ESCP.

Typical controls to be implemented prior to rain events include:

- Graded diversion drains are to be cut to basins;
- Contour drains are to be cut to slow flows down long and steep slopes;

- Any required temporary ‘clean’ water drains are to be reinstalled and lined appropriately;
- Any final surface protections with geo-fabric, hardstand materials or mulch will be implemented;
- Temporary bunds, traps and batter chutes will be reinstated; and
- As a good practice, gypsum will be placed in basins and inlets prior to rain to allow for self-flocculation.



Post rainfall inspections will be conducted by the Environmental Team to assess the efficiency of implemented controls and coordinate any identified maintenance requirements or improvements.

Management of Erosion and Sediment Controls in accordance with EPL & RMS Specification G38 Requirements

It is acknowledged that an EPL will be required to conduct works associated with the project and that this EPL will contain requirements associated with the management of erosion and sediment controls. Lendlease currently hold and implement six EPLs across NSW. We have a strong understanding of the requirements contained within the EPL particularly associated with the implementation of erosion and sediment controls in accordance with the Blue Book; the management of dust during construction; and the treatment and discharge of temporary sediment basins in accordance with specified water quality criteria.

Compliance with EPL requirements is discussed with the EPA during regular ERG meetings and the implementation of controls is assessed during subsequent site inspections. Issues raised by EPA and/or the client will be documented and actioned within nominated timeframes.

Lendlease are also experienced in the implementation of requirements contained within RMS Specification G38 Soil and Water Management particularly with regards to Hold Point and Witness Point obligations. These obligations will be included with the Soil & Water Management Plan developed for the project and communicated to site personnel for awareness. The Environmental Team with the assistance of the Project Soil Conservationist will drive best practice erosion and sediment control management on-site.

Construction Activities in the vicinity of the Flower Power Pond

Culvert C8960 south of Aspen Street will be replaced and extended to suit the widened road alignment. This extension and all construction works in the vicinity of the Flower Power boundary and pond including site environmental management controls must be maintained within the project boundary. No works must extend into the Flower Power property, nor impact the pond.

Due to the sensitivity of the work area, a detailed EWMS will be developed for the activity and an ESCP will be developed with the Project Soil Conservationist to prevent impacts to the existing pond.

Maintaining Clean and Dirty Flow Separation during the Installation of new Drainage Network

One of the largest challenges associated with upgrading an existing road is associated with the separation of clean and dirty water during drainage upgrades. Our experience and innovations implemented on the M5WW Project to address this challenge will be applied to this project. This includes:

- Ensuring that all resources required to undertake the task are present prior to commencing works to avoid installation delays;
- Avoiding the commencement of works when the long-range forecast indicates long periods of inclement weather;
- A detailed assessment of each drainage line with the Project Soil Conservationist to develop a site specific ESCP to protect the works;
- The isolation of drainage lines during upgrade works by diverting clean water to adjacent infrastructure where there is sufficient capacity; and
- The use of temporary pipes to divert water around the works area.

Stabilisation of Disturbed Areas

Excessive areas of soil disturbance significantly expose the project to erosion and sedimentation issues. As per Blue Book requirements, all disturbed areas will be rapidly and progressively stabilised and/or rehabilitated as they are completed. Rehabilitation of completed works will focus on providing both short and long-term ground cover to reduce the erosion hazard permanently.

In areas with temporary cessation of work, where required, temporary ground covers will be used. These might include (but are not limited to):

- Biodegradable polymer soil binders;
- Geotextile fabrics;
- Erosion control blankets;
- Temporary seeding with cover crops; and
- Mulching.

Sediment controls are to remain in place until at least 70% of their upslope catchments are stabilised (i.e. practically – 70% or 90% of the unsealed areas) and

revegetated areas will be regularly maintained in accordance with the RMS Specification.



Figure 7: Stabilisation of exposed batters to prevent erosion and dust impacts. Source: NH2U.

B. What ESC Training would be Implemented & How

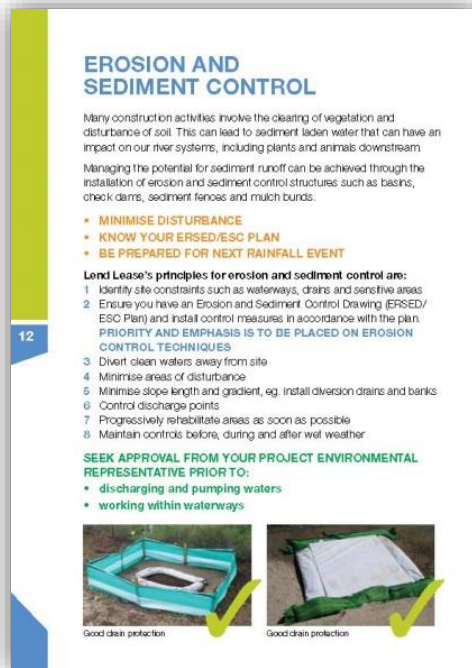
All of Lendlease's Environmental Team has completed the four-day Blue Book training course administered by the International Erosion Control Association (IECA) which provides participants with key competencies associated with the management of erosion and sediment controls. This training provides an elevated awareness of erosion and sediment control risk on-site and facilitates the identification of appropriate erosion and sediment control measures. Sharing environmental knowledge will be accomplished through active communication on-site with personnel responsible for works (i.e. Superintendent, Foreman, Leading Hand) and when collaborating during the development of EWMS and ESCP for construction activities.

All personnel involved in the installation and maintenance of erosion and sediment controls on-site will undergo fundamental erosion and sediment control training. This training will be delivered by the Project Soil Conservationist prior to the commencement of substantial construction on-site. Training will focus on:

- Legislative requirements (e.g. POEO Act);
- Requirements contained within the REF associated with the management of erosion and sediment control and water quality impacts;
- Key requirements from the CEMP (particularly the Soil and Water Management Plan)
- Applicable RMS Specification G38 requirements;
- The environmental impacts of ineffective erosion and sediment controls;
- Principles and techniques for effective erosion and sediment controls, including how, when and where to use them;
- Maintenance of erosion and sediment controls (including sediment basin flocculation); and
- Effective stabilisation and revegetation.

General awareness of erosion and sediment control (especially notification of any ineffective controls) will be included within the project induction which is delivered to all personnel (including subcontractors) working on the project. Lendlease will also reinforce awareness of

erosion and sediment controls through regular toolbox meetings and pre-start meetings.



Further, an Environmental Handbook has been prepared to provide an overview of sound environmental management practices that can be applied on the project to minimise environmental harm. The Handbook is seen as a useful tool for communicating key environmental and community requirements to field-based staff.

Outcomes and lessons learnt from any environmental incidents associated with ineffective erosion and sediment controls will be communicated to the wider project team. The cause of the incident, impact and preventative measures will be communicated to increase awareness across the project and, where required, prompt the review and implementation of additional management measures to prevent occurrence on this project.

C. Specific Site Measures for Avoiding & Managing Mud Tracking onto Public Roads

Considering the number of access / egress points along the alignment and the interaction with traffic on The Northern Road, sediment tracking onto public roads is considered a key issue. It is acknowledged that sediment tracking onto public roads can significantly contribute to fugitive dust impacts, motorist risk and community complaints if not managed effectively on-site.

As a high level mitigation measure we will limit vehicular access to sites to only those essential for construction work, where required. This will be planned and coordinated by the Traffic Manager. Personnel (including heavy vehicle operators) will be trained on the use of access and egress points to ensure that no unauthorised access / egress points are used.

All access and egress points will be planned and designed in accordance with the Blue Book to minimise mud tracking onto public roads. Where there is a risk of sediment tracking onto public roads, access and egress points will be stabilised to ensure an all-weather access using 75mm aggregate. Where this is not considered preferable, consideration will also be given to the stabilisation of access / egress points with reused asphalt profiling. Reuse of any available asphalt profiling is ideal for stabilising haul roads prior to exit points along the alignment to remove any excess sediment from tyres prior to entering public roads.

Additional controls previously implemented by Lendlease to mitigate sediment tracking on public roads include:

- Washing down vehicle tyres after wet weather;
- Use of wheel wash facilities at main site access gates;
- Minimising vehicle movements from site during wet weather if the tracking of mud may become an issue;
- Retention of existing pavement where possible;
- Layout and design of work sites to reduce mud tracking;
- Gravelling and maintenance of turning circle areas;
- Reducing ponded water on vehicle access areas; and
- Reducing major load deliveries and work access in very wet periods.



Figure 8: Stabilised access point constructed from geo-fabric and recycled concrete to facilitate access to site along nominated local roads. Stabilised access points are maintained during construction and removed when no longer required. Source: M5WW Project.

The feasibility of these additional controls will be assessed during construction if sediment tracking is observed.

D. Consultation Process with Relevant Agencies with regard to Erosion & Sediment Control Measures & How Issues Raised by the Agencies will be Addressed & Communicated

Prior to the commencement of construction, Lendlease will hold an environmental risk assessment workshop in accordance with RMS Specification G36 to further develop the risk items identified during the tender period and identify all environmental risks (including high risk erosion and sedimentation areas). Risk

mitigation strategies will be developed to reduce or eliminate the risk exposure. This environmental risk assessment workshop will include representatives from the relevant regulatory authorities to provide an opportunity to raise any environmental concerns and suggest potential management and mitigation measures that have been previously implemented on other projects effectively.

Outcomes of erosion and sediment control risks identified in the Environmental Risk Workshop will be included within the Soil & Water Management Plan along with proposed mitigation measures. If requested, the Soil & Water Management Plan can also be provided to the EPA for comment prior to finalisation.

In addition to the Soil and Water Management Plan, EWMSs will be developed for high risk activities, (e.g. culvert removal and installation) and provided to the relevant regulatory authority (where deemed appropriate) for comment / feedback. Comments and feedback from the authorities will be considered by Lendlease prior to finalising the document. Where comments are not adopted, we will provide justification for the decision to the relevant regulatory authority and detail the alternative approach that is adopted to manage the identified risks. Lendlease will discuss any upcoming high risk activities during the regular ERG meetings along with the proposed management approach to seek endorsement and feedback on the ERG members.



Figure 9: ERG group undertaking a guided inspection of the project at T2E.

During construction, regular feedback on the selection and implementation of erosion and sediment controls will be facilitated through regular ERG meetings and associated site inspections which will be attended by the relevant regulatory agencies. Actions identified during the ERG meetings will be documented in the meeting minutes / inspection report and addressed on-site within nominated timeframes. A copy of the close-out inspection report will be provided to the relevant ERG members to demonstrate ongoing management of the site.

(vi) Working Within or Above Waterways

Approach to construction work within / above waterways including details on processes to identify, consider, assess and address the risks and impacts of

the design and construction of the Temporary Works in the sensitive catchments, including environmental, construction activity, health and safety risks.

All works in the vicinity of, or within, a waterway is considered by Lendlease to have an elevated risk and therefore, warrants a higher level of environmental management. The detailed design will be reviewed to mitigate impact to waterways where feasible. Where this is not possible, construction methodology will be reviewed to minimise duration of exposure particularly during wetter periods of the month. The design methodology will also nominate temporary works required to maintain functionality of the waterway / drainage line while undertaking the works. This may include the need for a temporary diversion of the waterway around the work area.

Initially, the Project Risk Register will identify the need for works to be conducted in the vicinity of a waterway (or significant drainage line) and will assess / determine the environmental risk based on the consequence and likelihood of environmental impact. It is anticipated that works in the vicinity of a waterway will trigger a high / significant risk and require the preparation of an activity specific EWMS prior to the commencement of work.

EWMSs are prepared collectively between the Environmental Team, Engineers, Foreman and subcontractors conducting the activity to ensure that all key steps in the construction methodology are nominated and associated environmental risks at each step are identified and mitigated. EWMSs will be toolboxed prior to the commencement of work to ensure that all personnel are aware of their environmental obligations and commitments while undertaking the work.

EWMSs will be communicated at the ERG meetings to gain feedback from the relevant regulatory authorities. Any feedback will be considered and included within the EWMS where reasonable and feasible.

The Project Soil Conservationist will be engaged to prepare a detailed Erosion & Sediment Control Plan for the works area in accordance with the Blue Book Guidelines and environmental controls will be implemented prior to the commencement of works.

Acknowledging that the activity is a high risk, site inspections will be conducted daily at these sensitive areas by the foreman and formal weekly environmental inspections will be conducted by the Environmental Team. The Project Soil Conservationist will also inspect these areas and provide guidance / advice as deemed appropriate.

(vii) Proposed Measures & Controls to ensure Native Fauna are protected during Clearing & during the Full Extent of Construction Works

Construction activities such as vegetation clearing have the potential to impact native fauna if management and mitigation measures are not implemented to proactively manage the risk of injury and/or death. Acknowledging this risk, Lendlease will engage a Project Ecologist to

facilitate the management of native fauna during clearing and during the full extent of construction works as required. This Ecologist will have necessary qualifications to fulfil the requirements contained within the SWTC.

The management of native fauna during construction will be documented within the Flora and Fauna Management Plan developed in accordance with the REF requirements and the *RMS Biodiversity Guidelines: Protecting and Managing Biodiversity on RMS Projects*. This document will include a Nesting Box Management Plan, Fauna Handling & Rescue Procedure, and a Bat Management Plan (if required).

Wherever possible, Lendlease will aspire to reduce impact to native vegetation and fauna habitat through optimising the design and/or refining construction methodologies during construction. Where native vegetation and/or fauna habitat are not impacted by the project, appropriate delineation and signage will be installed to prevent unintentional impact.



Figure 10: Project Ecologist releasing a possum captured during the two stage clearing process.

The Project Ecologist will facilitate in the development of the Flora & Fauna Management Plan, fauna rescue procedures and the clearing and grubbing EWMS to ensure that appropriate management measures are implemented on-site to protect native fauna during construction.

Prior to the commencement of clearing, the Project Ecologist will undertake a pre-clearing survey of the vegetation to be cleared to identify the presence of native fauna and/or suitable habitat which may contain native fauna. If identified, the Project Ecologist will facilitate the relocation of fauna and/or mark the habitat tree to prevent unintentional impact.

The Project Ecologist will also undertake flora and fauna surveys of any areas which are scheduled to be

impacted but have not been previously assessed during the original environmental assessments. The objectives of the pre-clearing survey include:

- Confirm the location of hollow-bearing trees identified during the REF;
- Check for the presence of fauna and/or suitable habitat immediately prior to clearing;
- Locate suitable areas to facilitate the relocation of fauna (if required);
- Clearly identify and delineate hollow-bearing trees or habitat that may contain fauna;
- Facilitate the planning of a staged clearing process to enable fauna to relocate autonomously; and
- Determine if any additional precautions are required prior to the commencement of clearing.

Following confirmation of the number of habitat trees, nesting boxes will be installed in adjacent vegetation to accommodate for displaced fauna. In accordance with the SWTC, Lendlease will install 70% of nesting boxes prior to the commencement of construction and the remaining 30% following completion of clearing. The location of the nesting boxes will be advised by the Project Ecologist based on the targeted species and availability of suitable locations adjacent to the project. A Nesting Box Tracking Report will be provided to RMS with the type and location of nesting boxes along the alignment. The Nesting Box Tracking Report will include GPS coordinates and a photo of the nesting box installation for reference.



Figure 11: Nesting box installed prior to clearing activities on the M5WW project under the guidance of the Project Ecologist. Source: M5WW Project.

This clearing process will be guided by a Clearing and Grubbing EWMS and the implementation of a Clearing Permit. The Clearing Permit will ensure the appropriate steps are followed and that all clearing is approved by the Environmental Manager prior to commencement. It provides a structured approach to clearing from the approval and planning phase, prior to commencement of clearing and following clearing activities. The EWMS and Clearing Permit process will be communicated to all personnel involved in vegetation clearing. Additionally, they will be included in the project induction and toolbox sessions to ensure general awareness by all personnel.

Prior to the commencement of clearing operations, clearing limits and protected vegetation will be clearly delineated on-site. This process will occur through the implementation of a Fencing & Signage Protocol

on-site. This protocol has been included within the Clearing Permit to ensure that all personnel involved in clearing activities are aware of protected vegetation and/or habitat areas.

Once all the ecological constraints have been identified and delineated on-site, Lendlease will implement a staged clearing approach to minimise potential impacts on native fauna. Clearing will commence with the removal of all non-habitat vegetation. This will include the clearing of non-hollow bearing trees, undergrowth, feed-trees, regrowth and grasses. The remaining habitat trees will be left for a period of 48 hours to allow fauna to relocate naturally. At the discretion of the Project Ecologist, fauna may need to be trapped or manually relocated where considered feasible.

Following 48 hours, habitat trees will be carefully felled under the supervision and direction of the Project Ecologist. Felling of habitat trees will typically utilise a “cut and place” methodology where a set of mechanical grabs are used to gently place the felled vegetation on the ground. Once the vegetation has been felled, the Project Ecologist will inspect the habitat tree for the presence of fauna. Any animals that are either located or emerge from the felled vegetation should be captured, inspected for injuries and then relocated to a pre-determined location. At the discretion of the Project Ecologist, captured wildlife may be securely stored and released at a later time (i.e. evening / night) if it is considered appropriate and in the best interest of survival. Felled vegetation will be left for a short period of time, as prescribed by the Project Ecologist, to allow any remaining fauna opportunity to relocate. Lendlease will keep suitable records of the clearing process and any fauna relocation as applicable.

In the event that a threatened species is identified during the pre-clearing survey or post felling inspection, the “unexpected threatened species find procedure” detailed within the RMS Biodiversity Guidelines (2011) will be enacted. If the presence of a threatened species is confirmed, the Project Ecologist will undertake an assessment of significance to determine the likely impact of the project on the species. If it is determined that the project will have a significant impact on the species, further consultation will occur between RMS and the relevant regulatory authorities to determine an appropriate course of action. In some instances, this may include the development of a specific Management Plan (e.g. Bat Management Plan specified in SWTC Appendix 4) developed by the Project Ecologist in consultation with the relevant regulatory authorities.



Figure 12: Habitat tree identified and delineated by the Project Ecologist during pre-clearing inspections.

Lendlease is experienced in managing threatened fauna in accordance with the RMS Biodiversity Guidelines. Our experience includes the M5WW Project where in consultation with OEH we developed and implemented management plans for threatened Microbats and the Green and Golden Bell Frog which is protected under the *Environment Protection and Biodiversity Conservation Act 1999*. Mitigation measures within these management plans included a detailed ecological assessment of potential habitats prior to construction (including Anabat surveys), the protection of habitats in close proximity to the works, and the installation of frog-exclusion fencing.

In accordance with SWTC Appendix 4, Lendlease will develop and implement an ecological monitoring programme to assess the effectiveness of management and mitigation measures implemented on the project.

Education and training will be provided to all personnel (including subcontractors) on the protection and management of native fauna and associated habitat. This will include the management of snakes and other reptiles which are commonly encountered by construction workers.

(viii) Native Vegetation Clearing

A. Proposed Control Measures, Systems & Responsibilities to ensure Compliance with Clearing Limits

Lendlease proposes the following measures and procedures to be implemented to ensure compliance with the clearing limits:

- A Clearing and Grubbing EWMS will be prepared and submitted to the RMS Representative for review at least 21 working days prior to the commencement of clearing operations. The EWMS will include procedures for managing and monitoring the clearing and grubbing operations to ensure that trees, other vegetation and sensitive areas are not unnecessarily cleared or otherwise disturbed. Further, the EWMS will:
 - Identify the species and location of any weeds growing anywhere within the area to be cleared and grubbed;

- Include measures to minimise clearing impacts and not clear any areas that haven't had project refinements accepted;
- Identify all locations of threatened flora species, Endangered Ecological Communities and trees which have been marked or otherwise identified for preservation;
- Be based on advice from the Project Ecologist, and identify any trees outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property;
- Identify barriers and marking systems to be used to denote the limits of clearing; and
- Include the internal permit system to ensure compliance with the clearing limits;
- The Sensitive Area Plans will be immediately updated and reissued if there are any newly identified areas requiring protection. Old Plans will be superseded on the system, and printed versions destroyed;
- The Design Team will be aware of the environmentally sensitive areas and approved construction boundaries through the inclusion of this information in the technical design programmes during the design process. The Design Team will be notified of any updates to the sensitive areas, and will be updated in the design programmes to ensure the most up to date information is used during design. The sensitive areas and construction boundary lines will be included in the check prints so that reviewers can check that all the works are within the approved boundaries for the road alignment, drainage, fencing and clearing packages. The Environmental Manager will be included in the check print review process to ensure that all plans are based on the correct information and there are no works scheduled in no-go zones;
- The limits of clearing will be clearly delineated on-site prior to clearing by the survey team. The survey team will develop and implement a consistent identification and delineation procedure that defines the various boundaries (clearing line, construction footprint, etc.) and will implement and communicate globally on the project;
- Temporary fencing of sensitive areas (e.g. Endangered Ecological Communities, threatened flora) and areas of vegetation identified to be retained will be installed prior to clearing. This fencing will be consistent and of robust construction and will display clearly labelled no-go signage at regular intervals;
- A pre-clearing permit system will be implemented which will include:
 - The completion of a pre-clearing permit. The clearing permit will include a final approval process which requires multiple signatories instead of one. These are the Engineer in charge of works, the Survey Manager and the Environmental Manager;
 - The permit signatories, including the Project Ecologist, will walk the approved extent of clearing nominated on the permit ensuring sensitive areas are protected, clearing limits are clearly identified

- and all personnel involved in the clearing works are aware of the limits and areas to protect;
- The Project Ecologist will remain on-site during selected clearing operations to ensure clearing limits are adhered to and any fauna are rescued;
- Training will be provided to all project personnel, including relevant subcontractors on flora and fauna requirements, including the requirements to stay outside of the no-go zones, obtain approval from the Environmental Manager for any clearing works (including pruning) and are made aware of the importance of compliance and consequences of any non-compliances. This training will be delivered through inductions, toolboxes and targeted training; and
- Clearing required for utility and fencing installations will also be required to comply with the above procedures.

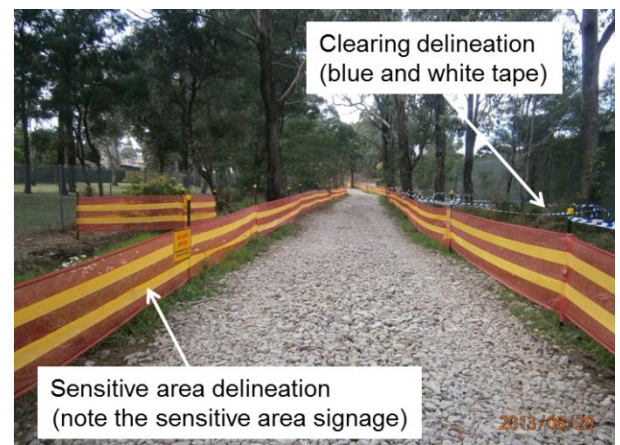


Figure 13: Delineation of clearing limits and protected vegetation. Source: M5WW Project.

The limits of clearing, project boundaries and environmentally sensitive areas will be clearly delineated on-site prior to clearing by the survey team.

As a part of this the survey team will develop and implement a consistent identification and delineation procedure that defines the various boundaries (clearing line, construction footprint, etc.) and will implement and communicate globally on the project.

Clearing limits, project boundaries and environmentally sensitive areas will be delineated using highly visible barrier or tape such as bunting, nightline or other similarly robust and durable material as appropriate. Markers at not greater than 15m intervals will be installed on each side of the road formation and bridges. 'Environmental Protection Area' signs will be erected in a prominent position at a minimum of 50m intervals along each section of exclusion fencing.

The location of markers and highly-visible barrier or tape must be checked and verified before clearing and grubbing can commence. All delineation and signage will be maintained for the duration of the works. During the weekly environmental inspections, the Environmental Team will monitor the no-go areas to ensure the delineation and signs remain clear and effective.

The Northern Road 3N Clearing Permit				
Purpose: This Clearing Permit must be completed and approved by the Construction Manager prior to the commencement of any clearing operations on-site. "Clearing" for the purpose of this permit is defined as any impact to vegetation (including trees, shrubs and grasses).				
Proposed Commencement Date:	Permit No:			
Description of Location: Attach sensitive areas map with proposed clearing limits.				
Chainages: Attach sensitive areas map with proposed clearing limits.				
Engineer Responsible for Works:				
Foreman Responsible for Works:				
Environmental Representative Responsible for Works:				
#	Part A - Planning & Approvals	Yes	No	Comments / Actions
1	Is the proposed vegetation clearing approved within the Project Approval or equivalent approval document?			
2	Has the proposed clearing been delineated on the project sensitive areas plans for reference?			attach plan for reference
3	Does proposed clearing impact nominated sensitive areas as defined on the sensitive areas plan?			
4	Have all adjacent sensitive areas been clearly identified and delineated on the ground in accordance with the project Fencing and Signage Protocol (i.e. para-web fencing and signage)?			
5	Have clearing limits been clearly delineated on site in accordance with project Flora and Fauna Management Plan and/or project specifications?			
6	Has the project ecologist undertaken a pre-clearing survey of the nominated area?			
7	Have all hollow bearing trees, potential hollow bearing trees, trees containing nests, bush-rocks and hollow logs been clearly marked by the Project Ecologist prior to the commencement of clearing?			
8	Have all trees / vegetation to be retained been identified by survey and exclusion areas fenced off and sign-posted?			
9	Has weed management been undertaken, if required?			
10	If soil disturbance is to occur, has a PESCP Plan been created and have these controls been installed?			
11	Has an ITP's for the clearing lot been opened to ensure all relevant requirements are met prior to the commencement of clearing?			200-000
Permit Reviewed By:				
Name:	Position:	Signature:	Date:	
	Engineer			
Permit Approved By:				
	Environmental Manager			
	Construction Manager			

#	Part B - Immediately Prior to Clearing	Yes	No	Comments
9	Are clearing limits still clearly delineated on-site?			Project ecologist
10	Are sensitive areas still clearly delineated on-site in accordance with the project Fencing and Signage Protocol (i.e. para-web fencing and signage)?			Environmental Representative signature
11	Is the project ecologist on-site for any clearing/impact within sensitive areas?			Environmental Representative signature
12	Have all personnel (including sub-contractors) involved in clearing operation been toolboxed on the Clearing and Grubbing activity, extent of clearing and location of sensitive areas in the vicinity of work?			Project Ecologist signature, attach toolboxing start records
13	Have there been any changes to the proposed clearing which may require additional assessment/ review?			Clear change management review & approval process
#	Part C - Immediately After Clearing	Yes	No	Comments
14	Was any fauna displaced/captured/injured during clearing activities?			
15	Has the project ecologist provided relevant documentation such as reports and checklists?			attach relevant ecologist report
16	Have survey confirmed the quantity cleared for tracking purposes?			

LENLEASE FENCING & SIGNAGE PROTOCOL			
	CLEARING LIMITS	MUST BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING. DO NOT CLEAR OUTSIDE OF DELINEATED AREA.	
	PROTECTED VEGETATION	DELINEATED LANDSCAPE VEGETATION CRUISE. DO NOT IMPACT BEYOND DELINEATION (I.E. DO NOT ACCESS OR PLACE POOL, PLANT, EQUIPMENT, ETC. BEYOND DELINEATED AREA).	
	PROTECTED ENVIRONMENTAL SENSITIVE AREA	IDENTIFY ENVIRONMENTALLY SENSITIVE AREAS CRUISE INCLUDING GREEN AND GREYER HILL, ROCK HABITAT, HERBAGE, WETLANDS, THREATENED SPECIES AND ENDANGERED ECOLOGICAL COMMUNITIES. ABSOLUTELY NO IMPACT BEYOND OR WITHIN DELINEATED AREA. DO NOT REMOVE PROTECTIVE FENCING OR SIGNAGE. CONTACT ENVIRONMENTAL REPRESENTATIVE WHEN WORKING IN VICINITY OF PROTECTED ENVIRONMENTAL SENSITIVE AREA. Environmental Manager - 0000 000 000 Environmental Coordinator - 0000 000 000 Environmental Advisor - 0000 000 000 Foreman - 0000 000 000	

Figure 14: Clearing permit implemented on Lendlease project to manage clearing in accordance with contractual requirements and environmental obligations. The clearing permit also includes Fencing and Signage Protocol to ensure site personnel are aware of the various types of delineation on-site.

B. Management of Threatened Flora Species

The Project Ecologist will undertake a pre-clearing survey once the clearing line is marked by surveyors prior to the start of clearing operations. During this survey, the ecologist will ensure all individuals of

threatened and rare flora are tagged with flagging tape, recorded with a GPS and tagged with a unique ID number.



Figure 15: Delineation of Acacia Pubescens along the M5WW corridor. Source: M5WW Project.

No-go zones will be designated at all in-situ threatened species locations within 10m of the construction footprint. Temporary fencing will be installed around the perimeter of each in-situ threatened species location (clear of its canopy line) before the start of vegetation clearing. A sign identifying the site as an Environmental Protection Area will also be attached to the fence. The fencing will be kept in good repair during the construction period.

Unexpected encounters of threatened flora species / Endangered Ecological Communities will be managed in accordance with the RMS Biodiversity Guidelines (2011) and the procedures detailed within the Flora & Fauna Management Plan.



Figure 16: Para-web and signage installed on-site to identify and protect retained vegetation for unintentional impact.

In addition to the above, the following management measures will be implemented during construction to protect threatened flora:

- Ensuring that no materials are stockpiled and no vehicles are parked under the canopy of protected vegetation;
- Avoiding excavation or the placing of fill near any threatened plant without advice from an ecologist;
- Locating haul roads and access tracks clear of the canopy;
- All no-go zones and Environmental Protection Areas (that include threatened flora locations) will be clearly

marked on Sensitive Area Plans and all relevant design drawings;

- All personnel will be informed at the induction and toolbox sessions about the importance of observing protective measures for threatened plant species and the consequences if any damage occurs; and
- Ongoing monitoring will be carried out to determine the effectiveness of protective measures and provide feedback to management on any need for corrective measures if required.

C. Measures & Controls to ensure Native Fauna are Protected during the Full Extent of Construction Works

The REF identifies the potential for bat roosts to be present in the culverts at Glenmore Parkway and the existing M4 Motorway bridge which requires demolition.

Through design improvements the culverts at Glenmore Parkway no longer require demolition, hence the impact to potential bat populations have been mitigated entirely.

Nevertheless, prior to commencing work in the vicinity of these areas an inspection will be conducted by the Project Ecologist to determine whether bats are roosting in these areas. If not bats are present, works will commence unimpeded.

If bats are identified, consultation will occur with the Project Ecologist and RMS to determine the appropriate mitigation measures that need to be implemented to protect the population while also facilitating work. These will be documented within a Bat Management Plan reviewed and approved by RMS. If the bats identified are threatened or endangered, the ‘*unexpected threatened species find*’ procedure will be implemented and RMS will be notified of the discovery. In this instance it will be required to further assess the impacts of works on the bat population. This will also require consultation with OEH and in extreme circumstance may require referral to the Department of Environment under the *Environment Protection and Biodiversity Conservation Act 1999*.

Our experience with the management of microbats during construction is demonstrated through the implementation of the following plans / strategies on recent projects:

- Microbat Management Plan on the M5WW Project;
- Microbat Management Strategy on the Oxley Highway to Kundabung Project; and
- Microbat Management Strategy on the Nambucca Heads to Urunga Project.

Measures and controls for the protection of native fauna during native vegetative clearing are included previously in this plan at “Proposed Measures & Controls to ensure Native Fauna are protected during Clearing & during the Full Extent of Construction Works”.

(ix) Any Proposed Measures & Systems in relation to Potential Extraction, Usage, Storage & Treatment of Ground Waters

Lendlease will conduct an initial water study into the water requirements of the project and during the delivery stage will further investigate options including bore holes for groundwater. For example, groundwater after appropriate treatment could be used as a source of construction water for compaction and dust suppression.

The potential for changes in the groundwater table will be investigated before any major use of groundwater sources. Where a potential for change is identified, we will:

- Assess the significance of the change and any resultant effects within and outside the road reserve, including on ground dependent ecosystems and neighbouring licenced bores;
- Where necessary, design and implement measures to manage the changes;
- Apply for a groundwater bore extraction licence from the NSW Office of Water; and
- Management measures will be determined in consultation with the NSW Office of Water including water testing requirements.

(x) Our Approach

A. Creating a Positive Environmental Culture on the Project & Proactive Attitudes & Behaviours

We foster a culture that is conducive to achieving outstanding environmental performance. This culture is driven by our positive values, proactive attitude and behavior of our people. Put simply, this is achieved by following Lendlease’s core values of Respect; Integrity; Innovation; Collaboration; Excellence and Trust.

Establishing a strong environmental culture on the project is a primary objective for the Project Control Group which is led by the Project Director and Construction Manager. This group will be responsible for implementing strategies during delivery to develop and maintain a strong focus on environmental management.

The strategies employed by Lendlease and the project team to create and maintain positive environmental cultures and attitudes are:

- To communicate behavioural expectations clearly and openly from project award. This helps to establish a standard upon which attitudes can be built and expected outcomes can be identified and met;
- To require active participation and active listening at all times. For example, (work) planning meetings are attended by a broad cross section of the project team so that experiences and ideas are shared and discussed;
- To make ‘environment and community’ key considerations in all aspects of project planning and implementation. For example, the Project Risk

Register, EWMSs, Erosion and Sediment Control Plans as well as other key planning documents are prepared as a collaborative effort and are integrated into construction and staging plans;

- To identify and monitor the achievement of individual and project KPIs. This process is proven to increase environmental awareness, drive proactive behaviour and enable the assessment of performance by Management;
- To communicate and reinforce environmental and compliance expectations at every opportunity. Joint inspections, site noticeboards, training programmes, awareness campaigns, meetings, social “do’s” and even crib-room discussions are recognised as invaluable opportunities to discuss performance and compliance and make it an inherent focus of the team;
- To integrate environmental professionals in all aspects of the project. Collaboration of environmental and engineering personnel in planning, compliance monitoring and training achieves holistic, agreed and accepted outcomes. Involving Engineers and Foremen in the development of key documents (such as EWMSs) creates a level of ownership within the site team and results in commitment to the delivery of key actions;
- To maintain an environmental presence in the field. Actively engage construction staff in discussions regarding the planning, implementation and evaluation of environmental controls;
- To communicate key result areas, environmental wins and innovations. Good news and pride in achievements promotes positivity in attitude and behaviour;
- To reward good behaviours. Recognising champions is a chance to celebrate positive performance;
- To collaborate with project stakeholders regularly and openly. Joint inspections and ERG meetings can help to establish relationships and common expectations;

- To develop and deliver targeted environmental toolboxes and training. The communication of expectations, the bringing together of work mates and the open discussion of ideas and issues promotes action and participation. The follow-on effect commonly being a refreshed or new attitude to work; and
- To give people responsibility and challenge them to be better or to do something better. Involving work crews, foremen and engineers in planning and evaluation processes promotes respect, confidence and self-worth. It also provides an opportunity for constructive feedback and a pat on the back where it is deserved.

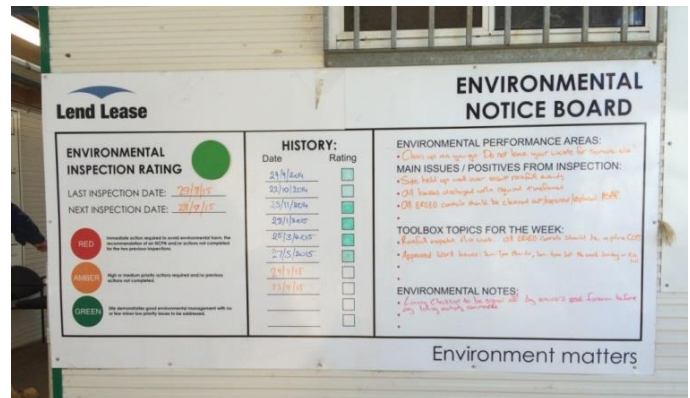


Figure 17: Environmental notice board used to communicate important information to the construction team. Source: Pacific Highway T2E Upgrade.

Awards for Environmental Excellence

Lendlease’s commitment to developing a strong environmental culture has been recognised through multiple awards for environmental excellence. Detailed in the following table.

Year	Award	
2015		Banksia Sustainability Award, Buildings, Landscape and Infrastructure Category – Barangaroo Reserve
2014		The CCF Earth Awards New South Wales Branch Winner, Category 4: \$20m to \$75m – Bridge Solution Alliance, ANZAC Bridge Maintenance Project
		The CCF Earth Awards ACT Branch Winner, Category 5: Project Value over \$75m – Bulk Water Alliance, Cotter Dam Expansion
		ISCA Award Infrastructure Sustainability Council of Australia – North West Rail Link Early Works

Year	Award	
		ISCA Award Infrastructure Sustainability Council of Australia – Enlarged Cotter Dam
2013	 International Erosion Control Association	IECA Award for Environmental Achievement – IECA Australasia – Bulk Water Alliance – Enlarged Cotter Dam
	 THE CCF EARTH AWARDS EXCELLENCE IN CIVIL CONSTRUCTION	CCF Earth Award: Bulk Water Alliance – Enlarged Cotter Dam
2012	 International Erosion Control Association	IECA Award for Environmental Achievement – IECA Australasia – Banora Point Upgrade Alliance
2011	 International Erosion Control Association	IECA Contractor of the Year – for outstanding accomplishments demonstrated on a single or multiple projects or for the development of new practices – Lendlease Contractors
	 International Erosion Control Association	IECA Environmental Achievement Award – Banora Point Upgrade Alliance
	 International Erosion Control Association	IECA Award for Environmental Achievement – Hume Highway Woomargama Alliance. This was awarded in the US, at the international level and is their pre-eminent environmental award

B. The Management of Poor Performers / Behaviours

If employees or subcontractor environmental performance is found to be below the standard that Lendlease and RMS expect, poor performers may be removed from site for the day, made to be re-inducted to the project, re-trained in the specific element of deficiency or removed from the project entirely.

These, and other performance management measures such as environmental KPIs, will ensure that the level of subcontractor environmental performance is maintained to a high standard.

Poor performance is managed through a number of tools including:

- Environmental Incident Reports (EIR) and Environmental Improvement Notices (EIN);
- Toolboxes, retraining and project management intervention;
- Include environmental KPI incentives in contracts with major / high risk subcontractors to drive the desired performance. Monthly coordination meetings between Lendlease and subcontractors are then held to review performance against the KPI; and

- Removal of individuals or subcontractors from site for recklessness or continued poor performance.

C. Management of Environmental Non-Conformances

Non-conformances are resolved according to Lendlease Management System Procedure [LLE107 Non-conformance, Corrective and Preventive Action](#) and the management details contained within the CEMP. This procedure identifies several levels of response depending on the seriousness and type of non-conformance or incident and may include the completion of:

- **An EIR:** This form is used to document observations that could result in environmental harm of low to moderate consequences arising from poor or inappropriate work methods, deficient environmental controls, inappropriate equipment selection, poor maintenance of controls, or other identified concerns. It is issued to the area Foreman to communicate, action and close; and
- **An EIN:** This form is used to document a more serious issue, 'near miss' or an actual event where rectification is needed immediately to prevent environmental harm or community complaint. An EIN may also be completed for repeated

non-conformances where a warning is required for poor performance.

In the event of a non-conformance:

- The nature of the event will be investigated by the Environmental Manager;
- Advice may be sought from a specialist (if required);
- Monitoring may be undertaken;
- The effectiveness or need for new / additional controls will be reviewed;
- Appropriate corrective actions will be implemented;
- Strategies will be identified to prevent reoccurrence;
- Environmental documentation will be reviewed and revised as required;
- In extreme cases hold points may be placed on the area until appropriate actions have been undertaken;
- RMS will be notified where required; and
- If the non-conformance is significant it will be documented on the project database and/or Enablon (Lendlease's Incident / Event electronic risk management and reporting system).

Learning from Incidents

We strongly believe that incidents, despite often resulting in negative outcomes for the project, environment and community, provide a valuable learning opportunity. To facilitate the critical evaluation of incidents and the documentation of 'key learnings', incidents will be:

- Reported and managed in accordance with the RMS Environmental Incident Classification and Reporting Procedure and Lendlease Management System Procedure [LL702 Environmental Incidents and Emergencies](#);
- Methodically documented using RMS Environmental Incident Report 624 and within 'Enablon';
- Investigated to determine the cause of the incident and prevent a reoccurrence;
- For "critical incidents" a formal ICAM investigation may be initiated by the Environmental Manager to determine the root cause of the incident and preventative measures;
- Discussed during ERG Meetings; and
- Communicated to site personnel via weekly meetings, notice boards and toolbox talks.

Where lessons are learnt from the investigation process, the CEMP and/or EWMS relevant to the works will be revised and communicated to site personnel. Further training of personnel may also take place as required to prevent a reoccurrence.

Lendlease Corporate also facilitates the communication of lessons learnt between projects through the development of Environmental Alerts and regular teleconference meetings with the Environmental Managers.

Environmental Alerts are developed to communicate lessons learnt following significant incidents which may be beneficial to our other projects which have similar risks. These Environmental Alerts are developed by the NSW Environment and Sustainability Manager and toolboxed across all Lendlease projects. These Environmental Alerts are not only developed following incidents which occur on Lendlease projects but also significant incidents which occur outside of the business.



Figure 18: Environmental Alert issued to all engineering projects following a PIN issued to Contractor on the Pacific Highway. The Environmental Alert focuses on increasing awareness of the risk and reinforcing management measures implemented projects.

Furthermore, environmental incidents and lessons learnt are discussed between Environmental Managers during monthly environmental teleconferences to increase awareness between projects.

D. Establishing Relationships with other Authorities

Lendlease is committed to establishing a proactive and co-operative approach to working with regulatory authorities and project stakeholders and will strive to develop and nurture positive relationships and discussions.

We will seek opportunities to:

- Meet with relevant authorities during the design phase to discuss concepts and obtain feedback;

- Invite authority representatives to participate in planning sessions and/or review environmental documents;
- Invite authority representatives to attend environmental inspections and community meetings;
- Provide comment and/or openly discuss potential issues or concerns so they can be addressed in planning meetings or immediately as required. This may reduce the risk of surprises during critical approval periods or the delivery of potentially sensitive works;
- Resolve issues in a collaborative manner with minimal conflict; and
- Regularly meet with authority representatives at a high level (Lendlease Corporate Management).

Lendlease's project teams and in particular our environmental managers, have developed very positive and effective working relationships with regulatory authority representatives on many projects, including the M5WW Project, Woodford to Hazelbrook Great Western Highway Upgrade, NorthConnex and Inner West Busway along Victoria Road. This has resulted in agreed and acceptable outcomes being achieved in response to a range of construction challenges and issues.

Nambucca Heads to Urunga Project

A good example of how developing positive relationships can lead to excellent project outcomes is the recent consultation that occurred between the Lendlease project team on the Nambucca Heads to Urunga Project and regulatory authority representatives. Regulatory authorities were engaged early in a series of meetings to discuss possible bridge construction methodologies, environmental risks and controls associated with the construction of the Kalang River Bridge.

A cost benefit analysis was conducted on three different methodologies and involved authority representatives in every step of the assessment and decision making process. Once selected, the authority representatives were involved in reviewing and developing the preferred design and the control measures that would be documented in the EWMS for bridge construction.

During construction, representatives were involved in regular inspections of the work and the development of additional environmental controls or processes as works progressed. Authority representatives also collected video footage and photographs which are now used to communicate this 'best practice' example to other projects and industry representatives.

The following comment has been made by the Project EPA Representative about the process and outcomes we achieved through this consultative process:

"The project has consistently performed at an excellent standard in a number of areas. Agency consultation has been thorough, open and conducted in a collaborative fashion which has improved fauna connectivity for aquatic species and reduced risk to the environment through workshops and refinements to EWMSs. The

project has consistently implemented robust environmental controls in a timely and competent fashion."

(xi) Ensuring High Standard of Environmental Reviews

Minor changes to design or construction methodologies are inevitable as design development progresses. To facilitate the process of identifying design changes and associated impacts, and ensuring that the changes are consistent with the REF, Lendlease will undertake a REF Consistency Review (utilising the RMS *Resource 18 – Review of Environmental Factors Consistency Review* template). Where proposed changes are not consistent with the REF, Lendlease will document the proposed change within an REF Addendum (utilising RMS *Resource 19 - Addendum Review of Environmental Factors* template) for RMS consideration as the Determining Authority.

Utilising these templates will ensure that a consistent approach to consistency reviews is applied to the project and will facilitate RMS review and approval of any design changes.

REF Consistency Reviews and REF Addendums will be completed by either the Design Team and/or the Environmental Team depending on the nature and timing of the design change. Both these teams have experience in the development of these documents and understand the intent and rationale behind them. This ensures that the appropriate information is contained within the document to facilitate an efficient review and approval process by RMS. Once the document is developed it will be reviewed by the Environmental Manager for accuracy and completeness prior to submission to RMS.

To ensure that an appropriately high standard report is provided to RMS well in advance of the dates required to undertake any proposed changes, we will:

- Minimise changes and combine the assessment design changes (where possible) to reduce the review workload for RMS;
- Establish early agreement on what aspects of the project would require the development of a consistency assessment;
- Provide draft copies of reports to RMS well in advance of the required approval date, to allow adequate review time and response to reviewer's comments and provide copies of completed reviewer's comments sheets;
- Ensure reports are prepared by personnel suitably qualified and competent in environmental construction management and impact assessment;
- Ensure that planned reports are communicated to RMS in advance of their submission;
- Toolbox all relevant personnel on the requirements of the Consistency Review or REF Addendum; and
- Undertake works in accordance with the requirements of the Consistency Review or REF Addendum and track compliance.

(xii) Management of Environmental Incidents

A. Processes that would be used to Quickly Report Incidents

All construction personnel, subcontractors and visitors are required to report all incidents immediately to their Lendlease supervisor and/or a representative from the Environmental Team. This requirement will be communicated via regular toolboxes and within the project induction.

All incidents will be managed and reported in accordance with the CEMP developed in accordance with the *RMS Environmental Incident Classification and Reporting Procedure* and RMS Specification G36 requirements.

RMS will be verbally notified immediately and then in writing within 24 hours, of any pollution incident which has been assessed by Lendlease as notifiable under Part 5.7 of the POEO Act. All other environmental incidents will be reported to RMS verbally and in writing within 24 hours of becoming aware of the incident.

Following consideration of the incident, we will notify the relevant regulatory authorities of any incident notifiable under the POEO Act. RMS will be advised of any environmental incident which has been notified to the relevant regulatory authority.

In accordance with RMS Specification G36, RMS may request additional information in relation to any environmental incident. This information will be provided within the agreed timeframe but no later than three working days after the request.

All incidents will be documented on the *RMS Environmental Incident Report Form – 624* and within Enablon for reference.

In some instances the EPA may request an incident report in accordance with the EPL requirements. In these instances Lendlease will develop the incident report following an incident investigation and forward the findings to RMS and EPA within the nominated timeframes.

B. Processes for Learning from Incidents, Avoiding Repeat Incidents & Training

Lendlease's "Learning from Incidents" culture is detailed within Section (x)C of this document.

We are committed to reducing the likelihood and occurrence of environmental incidents on-site and ensuring that an efficient and effective management response is implemented in the event of an environmental incident. To achieve this aspiration, Lendlease firmly believes that planning and preparation are key components to any incident response strategy. As a result, incident and emergency training will be provided during delivery of the project.

An example of this is the Environmental Team on the Pacific Highway – Oxley Highway to Kundabung Project who periodically simulated environmental incidents to facilitate training and awareness amongst project

personnel and subcontractors. These simulations enabled the Environment Team to assess the efficiency and effectiveness of environmental incident response measures and identify opportunities for improvement. This includes appropriate notification and reporting requirements.



Figure 19: Emergency spill response procedures being tested at the Oxley Highway to Kundabung Project over a waterway. Source: Oxley Highway to Kundabung Project.

The picture above shows a spill simulation that was conducted by Lendlease on the Hasting River to test the incident response time of subcontractors working on the bridge. The oranges pictured represented a hydrocarbon spill and the subcontractor can be seen installing a hydrocarbon containment boom.

The benefit of such a simulation includes:

- Demonstrating how the incident (in this case, oranges) is influenced by environmental factors. This provides personnel with an appreciation of how a real hydrocarbon spill may react in the natural environment;
- Personnel are required to physically implement spill containment measures and can identify aspects that may delay implementation of incident response measures (e.g. time it takes to launch response boat or put on required PPE);
- Other personnel can observe the incident response process and familiarise themselves with the process protocol; and
- Management can determine whether there is sufficient incident response measures (i.e. hydrocarbon booms, boats, etc.) in the event of an actual incident.

Environmental Investigation

All incidents will be documented, investigations conducted and an action plan established in order to prevent or minimise reoccurrence. Where there are lessons learnt from an investigation or current procedures are identified as being ineffective, the CEMP and/or EWMS will be revised to include the improved procedures or requirement.

An environmental investigation includes the following basic elements:

- Identifying the cause, extent and responsibility of the incident;

- Identifying and implementing the necessary corrective action;
- Identifying the personnel responsible for carrying out the corrective action;
- Implementing or modifying controls necessary to avoid a repeat occurrence of the incident;
- Toolboxing with the site team on the reasons why the incident occurred and the changes made to prevent a repeat occurrence of the incident;
- Recording any changes in written procedures required and communicating them to the wider team;
- Advising environmental authorities if any substantial pollution has occurred; and
- Ensuring that Lendlease's NSW Environmental Manager is aware of the incident and lessons learnt so that these can be communicated to other sites and teams, and discussed at the regular Environmental Managers Teleconference to transfer the knowledge gained.

For more significant incidents, Lendlease may initiate an Incident, Cause, Analysis, Method (ICAM) investigation to determine the root cause of the incident.



The ICAM methodology of investigation provides a framework to assess the events leading to the incident and determine whether the incident occurred as a result of organisational factors, task and environmental conditions, individual and team actions, or absent / failed defences. Where there are organisational deficiencies which resulted in the root cause of the incident, these will be further investigated and rectified. This may include an update to the CEMP to account for the lesson learnt.

(xiii) Environmental Innovations

Details on environmental innovations that improved environmental outcomes on recent projects and how they will be applied to this project.

By way of our extensive experience in road construction, we have identified several innovations which, where feasible, could be used on the project to improve environmental outcomes. These innovations include:

- Development of the CEMP and associated environmental sub-plans following "preferred contractor" nomination to expedite submission of the

documents to RMS for approval following execution of the contract;

- Early liaison with the EPA following execution of the contract to prepare a draft EPL and associated conditions so the EPL can be issued shortly after REF Determination;
- Implementation of an early works programme to facilitate the installation of erosion and sediment controls and protection of sensitive areas prior to the commencement of construction. These low risk works have been previously undertaken prior to approval of the CEMP utilising an EWMS approved by RMS;
- Development of a robust Out-of-Hours Protocol in consultation with the EPA which will manage works outside standard construction hours to the expectation of the regulator. On NorthConnex, reference to the out-of-hour works (OOHW) protocol was included within the EPL which facilitate the fast approval of OOHW where required;
- The use of temporary PVC pipes to manage the flow of existing storm water drainage through site during installation of new drainage infrastructure. This is to control flow and facilitate the management of clean water;
- The investigation of non-potable water sources to replace the use of potable water for construction activities. This includes the use of water captured within temporary sedimentation basins. On previous projects, this investigation resulted in the use of non-potable water from a local source (paper mill) for construction activities and dust suppression;
- The uses of solar powered lighting towers to replace petrol driven units which result in less noise and energy efficiency;
- The use of electric equipment during night works where feasible. For example the use of electric concrete cutting saws to replace petrol concrete cutting saws;
- The use of a dust suppressant to stabilise disturbed areas prior to hydro-seeding / mulching;
- The use of low-carbon-concrete for non-structural concrete elements where feasible (following approval from the RMS) to reduce the projects carbon footprint;
- The use of an alternative flocculate to treat sediment basins prior to discharge following approval from the EPA and RMS;
- The use of pump tags to remind site personnel of their environmental obligations prior to discharging water from the site; and
- Beneficial reuse of waste on-site in accordance with the EPA's Waste Exemptions and Orders and the NEPM Guideline.

Many of these innovations have now become standard practice for Lendlease. For example, the use of an alternate flocculant to gypsum, endorsed by the EPA on Pacific Highway – Tintenbar to Ewingsdale (T2E) Project, will again be investigated and proposed to RMS and the EPA for this project.

Several of the above innovations will be considered during the delivery of this project and implemented where considered appropriate.

Innovations and good news stories are continually identified on Lendlease projects. To facilitate the communication of innovations and good news to the wider business, we actively collect and distribute “*Good News Stories and Innovations*” on a regular basis.

These innovations are distributed amongst environmental management and displayed around the site compounds on projects to generate awareness.

An example of an innovation that has been collected and distributed as a “*Good News Story and Innovation*” is provided below for reference.



Figure 20: Notification tags installed on all pumps at T2E to remind personnel about the requirement to have an approved environmental discharge permit prior to dewatering.

• NOISE ENCLOSURE SYSTEM – CBD ALLIANCE (NSW)
1

Good News Story / Innovation

The CBD Alliance, formed between NSW Roads and Maritime and Lendlease, has been contracted to undertake a number of road capacity improvement works throughout the Sydney City Centre in accordance with the Sydney City Centre Access Strategy.

KEY POINTS

- Works are predominantly undertaken outside standard construction hours due to limited access to the roads during the day and associated Road Occupancy Licence (ROL) restrictions.
- A highly sensitive environment to noise exists throughout the Sydney CBD due to the number of people residing in apartment buildings and other accommodation directly adjacent to work areas.

ENVIRONMENTAL ISSUES

- Activities such as pavement cutting works frequently reach noise levels up to 85 dB(A) or more measured at close distances to the works.
- High noise levels generated during out of hours works have the potential to cause significant disturbance to local residents resulting in community backlash and project delays if not managed appropriately.

THE SYSTEM

- To ensure noisy activities are managed to minimise the impact to nearby sensitive receivers, the CBD Alliance construction team has developed an innovative and unique noise enclosure system.

- The enclosure is made up of panels of temporary ATF fencing bracketed together to form an enclosed work space insulated on all sides and on the roof with a double layer of noise mats. This has been certified by the project’s temporary works designer.
- For evening and night time works up until midnight, a petrol operated saw is used as this is more productive than a quieter battery operated saw. In this case one panel of noise mats is left open to allow for adequate ventilation during construction activities. The location of the opening is selected to ensure the opening faces away from the nearest sensitive receivers.
- For paving works after midnight a quieter battery operated saw is used within the enclosure in order to avoid fumes thus allowing full enclosure and further reducing noise in line with noise mitigation measures.

THE OUTCOME

- The CBD Alliance noise enclosure system provided a reduction of up to 10 dB(A) at 3 metres when trialled during paving activities.
- Use of the battery operated saw has seen an additional reduction of between 5-10 dB(A).
- This system helps minimise the impact of noisy cutting activities at nearby sensitive receivers during evening and night time works thereby reducing the likelihood of noise complaints and sleep disturbance.
- Given the significant reduction in noise, this method also allows paving activities to continue past the project’s midnight curfew for ‘noisy works’ thus increasing productivity of paving works during the night shift.

PROJECT BENEFIT:
Innovative noise enclosure system for noisy cutting works undertaken within a sensitive receiving environment during night-time works





Selecting, Managing & Training Subcontractors

Lendlease acknowledges it has a responsibility to ensure that all persons on the project, including subcontractors and their employees, comply with the relevant environmental requirements. Project-specific environmental management requirements will be included in the selection and management of subcontractors working on-site. Subcontractor selection is not based on price alone, and the subcontractor's previous environmental record will be an important consideration during the selection process. As a minimum, subcontractors and their employees will be required to comply with both the environmental requirements and the CEMP, and subcontractor personnel will be included in the site induction process.

Subcontractors working on the project will be required to:

- Observe subcontract and statutory requirements relating to environmental protection and other environmental legislation and to follow instructions issued by the project management and supervisory personnel;
- Nominate site representatives to liaise with the project representatives with respect to, and take responsibility for, environmental requirements for the site activities;
- Adhere to Lendlease's management system as it applies to their operations on the site;
- Co-operate fully with site emergency incident procedures and consultative arrangements; and
- Follow procedures incorporated in the CEMP.

Depending upon the complexity of the subcontractor's work, Lendlease may require the subcontractor to produce documentation detailing their own proposed environmental management systems and, where necessary, to prepare their own Environmental Management Plan (EMP) and/or EWMS to supplement Lendlease's environmental requirements. Details within any subcontractor's EMPs will be consistent with the CEMP and the environmental requirements.

Lendlease will ensure that the work of subcontractors is monitored through the site inspection process. Observations will be made by relevant personnel to assess the effectiveness of the environmental protection measures being used on-site by the subcontractor and to determine compliance with the requirements of the CEMP.

As is the approach to managing performance amongst the regular project team, subcontractors will be provided with appropriate training and information to enable them to complete their tasks to an appropriate environmental standard. Training and supervision by Lendlease personnel will often improve their environmental knowledge and subcontractors may be recognised, as appropriate, through a rewards and recognition system for superior environmental performance.

Lendlease may introduce financial KPIs on key subcontracts. This has been adopted successfully on recent projects to assist alignment of subcontractors to project objectives or KPIs, including safety, quality and environmental.

Managing Poor Performing Subcontractors

If an employees or subcontractors environmental performance is found to be below the standard that Lendlease and RMS expect, poor performers may be removed from site for the day, made to be re-inducted to the project, re-trained in the specific element of deficiency or removed from the project entirely. These, and other performance management measures, will ensure that the level of subcontractor environmental performance is maintained to a high standard.

Poor performance is managed through a number of tools detailed above including:

- EIR and EIN;
- Toolboxes, retraining and project management intervention;
- Environmental KPI incentives in contracts with major / high risk subcontractors to drive the desired performance. Monthly coordination meetings between Lendlease and subcontractors are then held to review performance against the KPI; and
- Removal of individuals or subcontractors from site for recklessness or continued poor performance.

Other Key Considerations – Measures to Manage Out of Hours Work & Associated Approvals

It is anticipated that OOHW will be required during the course of construction to safely facilitate delivery of the project works. The following OOHW requirements have been identified during the tender phase:

Works outside of standard construction hours are typically seen as a high risk activity due to the likelihood of community complaints. As a result, OOHW are heavily scrutinised by RMS and the EPA. To manage OOHW and to ensure compliance with both REF and EPL requirements, we will further develop our Out of Hours Work Protocol as an annexure to the Noise and Vibration Management Plan. The methodology to manage and approve OOHW will be workshopped with RMS and EPA to ensure all expectations are met during construction.

Lendlease successfully developed a robust Out of Hours Work Protocol on NorthConnex in consultation with RMS and the EPA. Ultimately this protocol was included within the EPL which facilitated the quick assessment and approval of OOHW during construction pending the implementation of nominated management measures and appropriate community consultation.

Item	Description	Location	Duration
STAGE 1			
1.0	Site Establishment <ul style="list-style-type: none"> • Traffic Barrier and Screen Installation • Temporary Pavement Construction • Linemarking 	The Northern Rd M4 Glenmore Pkwy	1-2 months
2.0	Intersection Construction <ul style="list-style-type: none"> • Pavement Removal • Earthworks • Drainage • Kerb and Gutter • Pavement • Asphalt • Traffic Switches 	Wentworth Rd / Glenmore Pkwy / The Northern Rd Homestead Rd / The Northern Rd Frogmore Rd / The Northern Rd Castle Rd / The Northern Rd Bringelly Rd / The Northern Rd Smith St / The Northern Rd Jamison Rd / The Northern Rd	2 months per intersection
3.0	Service Relocations <ul style="list-style-type: none"> • Road Crossings • Cutovers 	Glenmore Park Drive Wentworth Rd Homestead Rd Garswood Rd Frogmore Rd Tukara Rd Aspen St Castle Rd Bringelly Rd Maxwell St Smith St	Isolated nights over a 3 month period at each location
STAGE 2			
4.0	Site Establishment <ul style="list-style-type: none"> • Traffic Barrier and Screen Installation • Temporary Pavement Construction • Linemarking 	The Northern Road	1-2 months
5.0	Intersection Construction <ul style="list-style-type: none"> • Pavement Removal • Earthworks • Drainage • Kerb and Gutter • Pavement • Asphalt • Traffic Switches 	Wentworth Rd / Glenmore Pkwy / The Northern Rd Garswood Rd / The Northern Rd Tukara Rd / The Northern Rd Aspen St / The Northern Rd Maxwell St / The Northern Rd Smith St / The Northern Rd Jamison Rd / The Northern Rd	2 months per intersection
STAGE 3			
6.0	Site Establishment - <ul style="list-style-type: none"> • Traffic Barrier and Screen Installation • Temporary Pavement Construction • Linemarking 	The Northern Road	1-2 months
7.0	Intersection Construction <ul style="list-style-type: none"> • Pavement Removal • Earthworks • Drainage • Kerb and Gutter • Pavement • Asphalt • Traffic Switches 	Wentworth Rd / Glenmore Pkwy / The Northern Rd Garswood Rd / The Northern Rd Tukara Rd / The Northern Rd Aspen St / The Northern Rd Maxwell St / The Northern Rd Smith St / The Northern Rd Jamison Rd / The Northern Rd	2 months per intersection
8.0	Asphalt Works – Wearing Course	The Northern Rd	1-2 months
Bridge Works			
9.0	Bridge girders & planks Bridge parapets Bridge demolition Precast planks	M4 Interchange	3-4 months

The Out of Hours Work Protocol includes the use of an Out of Hours Work Permit that will be implemented on-site to ensure that all OOHW are approved and appropriate community consultation is undertaken. The OOHW Permit will be reviewed and signed by both the Environmental Manager and Community and Stakeholder Manager to ensure that all commitments and requirements are implemented prior to authorising the OOHW. RMS and the EPA will be kept informed of OOHW via the ERGs and monthly reporting.

If OOHW are predicted to be less than 5dB(A) above background levels at relevant sensitive receivers, OOHW works may take place in accordance with the Interim Construction Noise Guidelines (ICNG). This pathway will require the Out of Hours Work Permit to be completed and approved by the Environmental Manager and Community and Stakeholder Manager. An assessment tool such as SoundAdvice will be used to conduct a noise assessment prior to the OOHW to confirm the works will be less than 5dB(A) above background. Representative noise monitoring will be conducted at the sensitive receivers during the works to assess compliance with noise restrictions (i.e. ensure works are below 5dB(A) above background).

Where OOHWs are anticipated to exceed the noise management level detailed within the ICNG, the procedures and mitigation measures detailed and approved within the Out of Hours Work Protocol will be implemented prior to undertaking the works. Depending on the severity of noise impact, the following management and mitigation measures will be investigated and implemented.

Impact Classification	Exceedance of RBL (dB)
A	1-5
B	6-10
C	11-20
D	21-30
E	>30

Management Measure	A	B	C	D	E
Programming / Scheduling of Works	✓	✓	✓	✓	✓
Alternative Construction Methodology / Technique	✓	✓	✓	✓	✓
Alternative Plant and Equipment	✓	✓	✓	✓	✓
Community Consultation (i.e. letterbox drops, etc)		✓	✓	✓	✓
Noise Monitoring			✓	✓	✓
Receiver Specific Notifications				✓	✓
Respite Periods				✓	✓
Offers of Good Will				✓	✓
Reasonable Temporary Relocation Offer					✓

In addition to the methodology detailed above, OOHW may take place if a negotiated agreement between Lendlease and representatives of potentially affected noise stakeholders have been reached. For example, there may be a preference from the local community to undertake bridge demolition in larger blocks as opposed to abiding by the working constraints nominated within the ICNG.

Any agreement(s) between Lendlease and the affected receivers will be recorded in writing and a copy of the agreement(s) kept on the premises for reference. This method of undertaking key night work activities is preferred by Lendlease as it results in enhanced community consultation and engagement. Negotiated agreements with affected noise sensitive receivers will be managed by the Community and Stakeholder Manager in consultation with the Environmental Manager.



Figure 21: Signage installed at the Enlarged Cotter Dam Project to remind personnel of reducing noise impacts during construction.

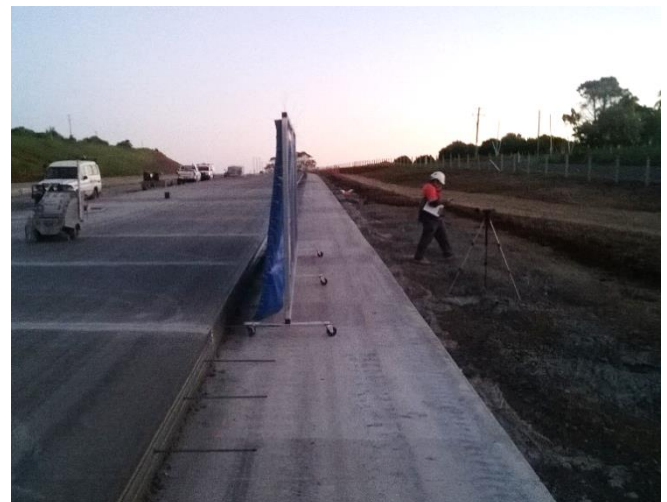


Figure 22: Noise screen utilised to minimise the impact of concrete saw cutting on adjacent sensitive receivers.

OOHW Community Consultation

Where OOHW is approved through the Out of Hours Work Protocol, the following community notification strategy shall be implemented, to allow proactive management of potential issues from construction noise and vibration.

The objective of the strategy is to inform potentially affected noise sensitive receivers and identify any requirements for additional noise and vibration management measures prior to the commencement of works. The notification strategy will be compliant with requirements of the project EPL.

Notification will be posted on the project website and be distributed through a letterbox drop. The notifications must contain the following information:

- The reason that the work is required to be conducted outside of standard business hours;
- A diagram that clearly identifies the location of the proposed works;
- Details of relevant time restrictions that apply to the proposed works;
- A clear outline of the location, nature, scope and duration of the proposed works;
- Description of the expected noise impacts at sensitive receiver locations;
- Clearly state how further information may be obtained; and
- Clearly state how complaints may be made, including the number of the telephone complaints line, an after-hours contact phone number specific to the works and the project website address.

Other Key Considerations – Expediting Project Approvals

Lendlease's capability to successfully deliver civil infrastructure within NSW extends to the planning and approval phase where we work in collaboration with the client to deliver a robust planning assessment and expedite the acquisition of approvals required to facilitate works. This has been recently demonstrated on the NorthConnex Project where Lendlease worked with RMS during development of the Environmental Impact Statement and the Submission and Preferred Infrastructure Report to successfully gain approval of the project under the *Environmental Planning and Assessment Act 1979*. Furthermore, Lendlease also collaborated with RMS and relevant stakeholders during development of the CEMP and associated management plans and implemented a series of management strategies to efficiently develop and review these documents prior to submission for approval. Further details on these strategies are provided later in this section.

In addition to our successful approval strategy implemented on the NorthConnex Project, Lendlease has also worked in collaboration with RMS to develop six REF's associated with the CBD Alliance project in Sydney as well as Planning Approval for Inner West

Busway along Victoria Road where the Alliance was responsible for gaining the Approval.

Our success within the planning and approval phase can be attributed to the following unique factors:

- Our experienced Corporate Environment Team who integrate themselves into the planning and approval phases to ensure that the appropriate resources and expertise are assigned to the planning and approval process. During the NorthConnex planning period, these personnel were involved in the review of the EIS and provided constructive feedback for RMS consideration. This support also extended to the Submission and Preferred Infrastructure Report where stakeholder concerns were investigated and suggested responses provided to RMS for consideration;
- Lendlease believe that the management team delivering the project should be involved in the planning process to ensure continuity of information and to ensure familiarisation with commitments made to community and regulatory stakeholders. Lendlease will integrate the nominated Environmental Manager, Grant Fletcher, into the delivery team following preferred contractor nomination to facilitate these aspirations;
- During the NorthConnex planning phase, Lendlease were required to provide quick responses to RMS to facilitate development of the EIS, Submission and Preferred Infrastructure Report. Often these responses were required within 24 hours. Lendlease successfully provided these comments through the Corporate Environment Team and Environmental Manager to maintain RMS' overall submission scheduling; and
- Lendlease can offer experienced personnel during community consultation sessions to present project details to the community and to answer any community enquiries.

Once the project has been approved, Lendlease will continue to work with RMS and relevant stakeholders to quickly develop the CEMP and associated Management Plans required for works to commence.

The following strategies have been proposed to expedite this process:

- Utilisation of the RMS CEMP template and associated management plans. Lendlease will make all amendments in track changes to expedite the review process;
- Development of these Plans will commence during detailed design as Lendlease believes there is sufficient information within the REF to develop a draft document. This Plan will be reviewed based on feedback and comments received during the submissions phase and responses contained within the Submission Report. It is anticipated that RMS can review the document prior to project approval to facilitate submission of a final document shortly after REF Determination on 9 January 2017; and
- A CEMP development programme will be provided to RMS to facilitate the allocation of resources to review

documents prepared by Lendlease. This will also provide an opportunity for RMS to advise Lendlease of heavy workload commitments which may delay the review of documents so that appropriate actions can be implemented early to avoid excessive workloads.

Lendlease are aware that in addition to the CEMP, an EPL will be required from the EPA to commence works on-site. Lendlease currently holds six EPLs across NSW and none of these EPLs has hindered the commencement of construction on a project.

At a corporate level, Lendlease has discussed the process for EPL acquisition with the EPA and have been advised that EPA is happy to issue a draft EPL for consideration prior to REF Determination. As a result, it is anticipated that Lendlease will have a draft EPL during the REF Submissions Phase ready for execution shortly after REF Determination.

All of these strategies detailed above will be implemented on the TNR3N project to expedite project assessment and approvals to facilitate the timely commencement of construction on-site.

Summary

This Initial Environmental Management Plan demonstrates the instilled culture and commitment to delivering projects with strong environmental performance and community outcomes.

Lendlease possesses demonstrated expertise in the successful management of complex projects and associated environmental and community impacts. Recognised for our environmental performance through various environmental awards, RMS can have confidence that if selected, Lendlease will deliver the project in a timely manner with full consideration of potential environmental impacts and associated community expectations.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 37 – Initial Design Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

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Initial Design Plan

3-C: Initial Design Plan

This plan demonstrates the value in design Lendlease will contribute to the project. Our accredited systems and procedures will ensure a thorough and dynamic design conversation throughout the process.

(i) Design Team Structure

The Design Team for the project will consist of both external consultants engaged by Lendlease and internal resources. An outline of the Design Team structure with reporting and communication lines is provided in Figure 1. This structure shows that all designers, both internal and external, report to Lendlease’s Critical Member, the Engineering Design Manager who in turn reports directly to the Project Director.

Interfaces between the designers and other parties involved in the design process such as the RMS design reviewers, the Project Verifier, Proof Engineer and external stakeholders will be also managed by the Design Engineering Manager to ensure consistency of process and actions are clearly communicated to the Design Team.

Design Team Integration

To ensure maximum integration across all designers, design disciplines and external reviewers the Design Team will be co-located in a dedicated project design office which will be established at the commencement of the project. The office will include dedicated facilities for the Project Verifier, the Proof Engineer and RMS personnel in accordance with the SWTC.

Lendlease has learnt from its recent experience on the Nambucca Heads to Urunga (NH2U) and Oxley Highway to Kundabung (OH2K) projects that the integrated design office approach provides significant benefits. These benefits include improved communications within the Design Team; greater understanding of and participation in decision-making processes; and also greater efficiencies in the design review and verification process.

Regular constructive communication within the Design Team can facilitate highly productive relationships and superior results for the project. Lendlease encourages open communications between members of its Design Team, RMS and Project Verifier design review teams.

Conversations of this nature, while beneficial, need to be coordinated by the design management personnel of all organisations involved. In the absence of careful management, miscommunications and inappropriate influences on the design development and review process can result in poor outcomes. Therefore, all formal technical and design review process matters shall be managed and controlled through Lendlease’s Engineering Design Manager.

To ensure that communications between the parties is properly managed, we will arrange regular Project Design Group meetings (ref. Deed Clause 3.6) and Lendlease design coordination meetings, which will be held to formally facilitate the interchange of information between relevant design team members. Minutes of all meetings will be taken and distributed to all relevant personnel.

Figure 1: Design Team Structure

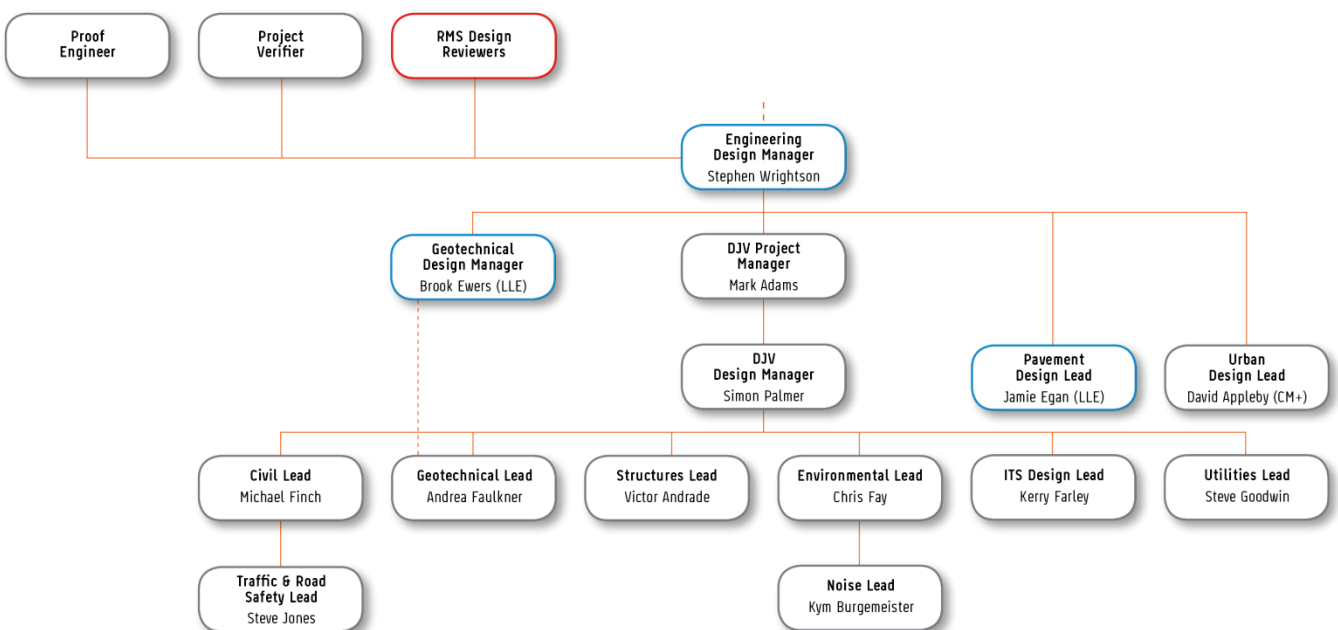
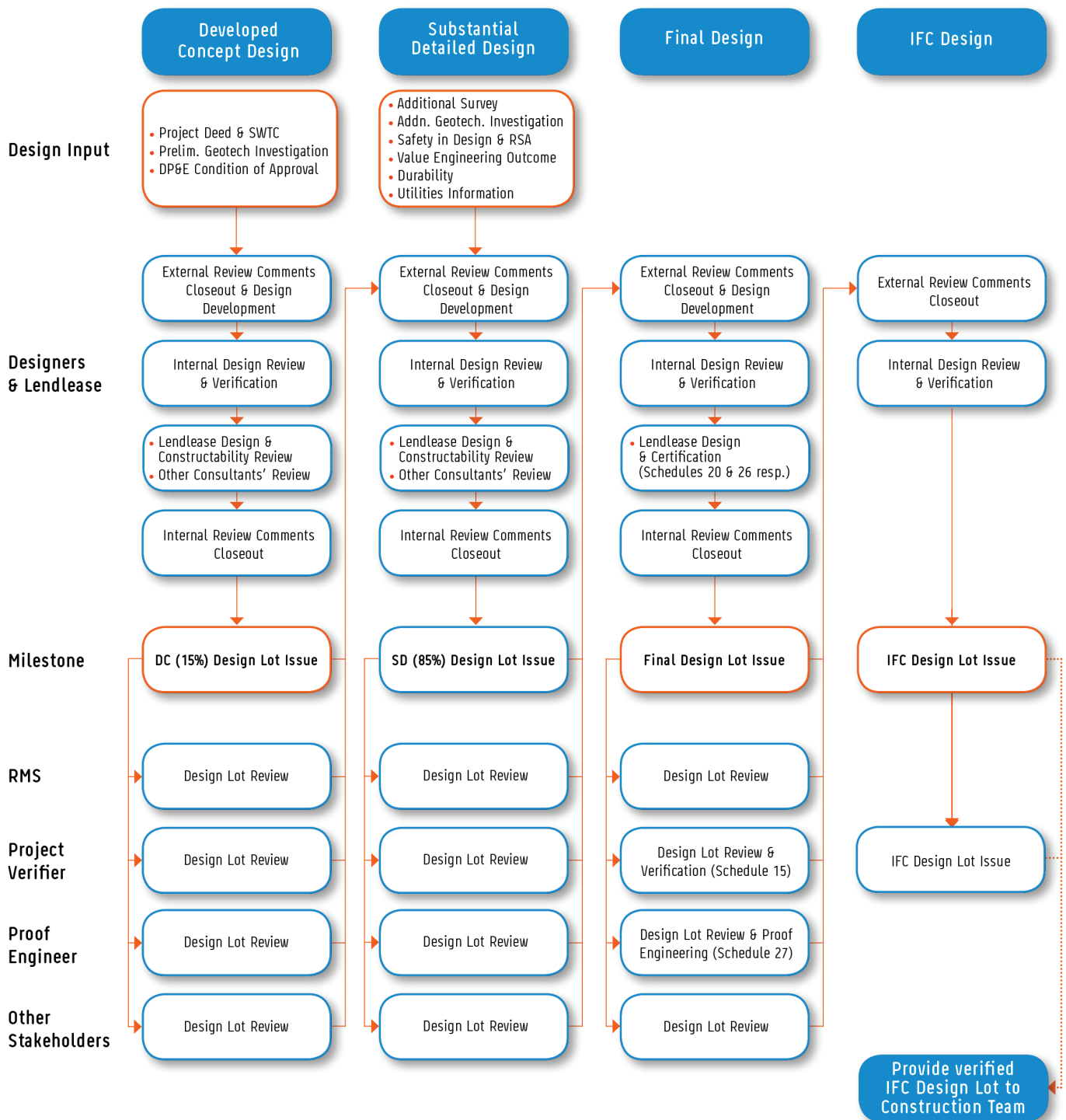


Figure 2: Design Development, Review & Verification Process Flow Chart



Lendlease understands that RMS' preferred approach for delivering these projects is for the Contractor and the Project Verifier to be pro-active in managing the detailed design. Critical members of the Design Management Team will develop and set strategies early in the design phase to ensure responsibilities are established including levels of authority and that lines of communication have been clearly identified.

We will also implement a formal RFI process to manage all design and technical queries between Lendlease and RMS.

(ii) Management Processes

A Design Development, Review & Verification Process flow chart (refer Figure 2) has been produced that addresses:

- Detailed design development and documentation through the specified design completion stages / milestones;
- Internal Lendlease and Design Team reviews;

- Issuing of design documentation at each of the specified design completion stages / milestones; and
- RMS, Project Verifier, Proof Engineer and other stakeholder reviews.

Lendlease has divided the design effort into a series of design packages (or design lots) scheduled for progressive delivery to meet the scope of the project, the requirements of the Project Deed and the Construction Programme. The design lot structure has been used to inform the Design Programme presented in LL-TNR3N_3-M-iv_FullProgram.pdf of this tender submission.

Typically, each design lot will be developed, documented, reviewed and ultimately verified by the Project Verifier at the following stages of design as specified in Deed Clause 12.2 and in accordance with SWTC Appendix 24:

- Developed Concept Design stage (approx. 15% complete);
- Substantial Detailed Design stage (approx. 85% complete);
- Final Design Documentation stage (100% complete); and
- IFC Design Documentation stage.

In order to expedite the commencement of construction, Lendlease may propose using certain Design Documentation for construction prior to achieving IFC Design verification as contemplated by Project Deed Schedule 1 (Item 25A).

A key aspect of the process will be ensuring that all design review comments relating to a particular Design Documentation package (at any stage or milestone) will be promptly considered, responded to and/or addressed by Lendlease prior to finalisation and issue of the Design Documentation package for the subsequent stage or milestone.

Key to making this process function effectively will be strong design management by Lendlease's Design Managers to ensure comments are captured in a timely manner and responded to efficiently.

To facilitate the progressive close out of review comments and the receipt of the Project Verifier's Certificate (Schedule 15) for the IFC Design Documentation, regular meetings with RMS, Project Verifier and relevant stakeholders (refer Figure 2) will be arranged by the Lendlease Design Management Team throughout the design development process.

This includes tracking the design development in accordance with the Design Programme provided in LL-TNR3N_3-M-iv_FullProgram.pdf.

To control the formal release and distribution of Design Documentation for design review, Lendlease will implement the web-based correspondence management and document control system such as Aconex or TeamBinder.

Lendlease and each Designer will have dedicated personnel responsible for document control using the web based system on behalf of their company. The web based system will handle formal project correspondence and document transmission between Lendlease, RMS, Project Verifier, the Proof Engineer, relevant stakeholders and the design consultants. The system will provide a record of all design transmittals.

Lendlease's Project Director has ultimate responsibility for the overall review and compliance of the document management procedures. The Design Manager will be specifically responsible for the review and acceptance all design inputs and outputs.

The Engineering Design Manager must authorise all design outputs prior to their release to parties external to Lendlease and its designers. This includes design outputs for issue to RMS, the Project Verifier, the Proof Engineer and external stakeholders.

(iii) Internal Design & Review Process & Design Discipline Integration

Lendlease will ensure the design is developed to a high quality and thorough level through each of the design development stages. Lendlease will achieve this through implementation of comprehensive and well established quality assured procedures as shown in Figure 2 and discussed in further detail below.

Lendlease and Design Consultant procedures focus on discipline integration and effective review processes.

Internal Verification in accordance with AS/NZS 9001

Lendlease will implement the Lendlease Quality Management System. Lendlease is committed to implementing and maintaining a quality management system that complies with the Standard AS/NZS ISO 9001. Lendlease systems are continuously reviewed and assessed for areas of improvement all of which will be implemented on this project.

The Designers will prepare their own Project Management Plans for the project of which they will be expected to comply. These will refer to Lendlease's Management Plans, including the Lendlease Design Plan. The Designers will be audited against their respective Project Management Plans.

The Designers' Project Management Plans will also be project-specific drawing upon their individual quality management systems which are certified to AS/NZS ISO 9001.

Internal design and verification procedures will be included in the respective Project Management Plans. The Designers will be responsible for planning verification activities within their design teams and respective organisations as well as assigning the activities to qualified personnel equipped with adequate resources. Evidence of the completion of the Designers' verification activities will be by

signature of the Designer's nominated person on the design output, e.g. on each drawing, report or on the cover of the specifications.

The Designers' verification activities will be audited by Lendlease and details and timing of these audits will be advised by Lendlease to the designers. An audit will be undertaken mid-way through the Developed Concept Design stage and then another audit closer to Final Design. Further audits may be undertaken as considered necessary.

Consultant Design Internal Review Process

Design deliverables (lots) will be completed according to the following process:

- Design and documentation, including input from Technical Reviewer and Requirements Management;
- Self-check by Designer and drafter;
- Team review by Team Leader and Drafting Lead;
- Cross Discipline review;
- Team Leader sign-off; and
- Design Manager sign-off.

Documentary evidence of the review for all deliverables including design reports and drawings is to be provided by the internal Check Print Cover Sheet.

The package will be placed in a specified 'Review Room / Location' for cross discipline review. The reviewers nominated by the Design Manager will be notified by the Document Controller via email.

Following the review the Team Leader signs off the incorporation of comments; and the Design Manager will verify completeness of the documents at the end of the review process by signing the Check Print Cover Sheet.

Consultant Design Internal Verification Process

The schedule of design deliverables (lot register) has been compiled and while the deliverables in their final format are not necessarily required to be verified, the content will be verified by the appropriate Technical Reviewer. This information is included at LL-TNR3N_3-M-iv_FullProgram.pdf.

Mandatory Requirements for Verification

- The output complies with the project requirements;
- The output complies with relevant standards and codes;
- The output complies with applicable local and statutory (including safety and environmental) requirements; and
- Demonstrate that outputs from disciplines have been coordinated and checked to minimise geometrical errors and that constructability and safe design have been considered where appropriate.

Non-mandatory Requirements for Verification (to be confirmed in detailed design)

- The project inputs are adequate and consistent;
- The output complies with and is traceable to the inputs;
- The output is constructible in an economical and safe manner;
- The output is consistent with other design and construction activities on the project;
- The interfaces on multi-discipline projects have been coordinated;
- The output is of a satisfactory standard and appropriate to the project requirements;
- Carry out independent proof calculations / estimates;
- Carry out independent spot calculations / estimates;
- Check calculations / estimates; and
- Compare outputs with proven design.

Formal evidence of verification during design development shall be provided as supporting information to the Design Manager when signing off any 'Final' Tender Design Advice packages and a Verification Form will be used to record the checking and verification undertaken and the actions arising.

Lendlease Internal Reviews

To ensure all documents are of a high quality and standard all reports, drawings and other documents will undergo a formal review cycle prior to approval and issuing externally. The review will be carried out on all lots at all design development stages.

The review of the design lots will be coordinated by the Design Manager and be conducted to confirm that objectives have been met and appropriate standards used. Objectives, acceptance criteria and details of the design checking process will be prepared and documented for guidance in the review process.

The timing for reviews will be as outlined in the Design Programme (refer LL-TNR3N_3-M-iv_FullProgram.pdf) and the Design Flowchart described in Figure 2 above.

As noted previously a dedicated "Review Room / Location" will be established where the latest drawings will be checked by Lendlease, including a cross-discipline and integrated design review. All review comments by Lendlease will be captured in hand or electronic marked-up drawings and/or on a Review Comment Sheet. The comments will be addressed by the Design Consultants prior to formal issue to the RMS Representative, Project Verifier and stakeholders.

Hard copies of the marked-up documents returned from Lendlease, with confirmation of the Design Consultants actions, will be retained on file to demonstrate the process.

(iv) Safety in Design (SiD) & Risk Integration & Optimisation

In accordance with the requirements of the Project Deed, SWTC Section 2.9 and the Lendlease Management System, risk management will be used to identify, analyse, assess and rank hazards and risks and opportunities, and to develop and implement strategies and action plans to manage those hazards, risks and opportunities.

The Lendlease Management System includes a procedure for risk management in accordance with AS4360. This included the development and approval of a project-specific Risk Management Plan.

This Plan will provide procedures and a systematic approach to the identification and assessment of risks and opportunities including strategies and action plans to treat and monitor those risks and opportunities.

The risk management procedures include the following process elements:

- Risk identification (what can happen, why, how);
- Risk hierarchy (categorisation / risk areas / specific risks / opportunities);
- Risk assessment (likelihood / consequence / rankings); and
- Risk management strategies (action plans).

In addition to the day to day risk management process formal risk management workshops will be held at appropriate stages throughout the detail design phases of the project including Temporary Works design development.

The findings of the risk workshops will be summarised in a risk matrix. Items with unacceptably high rankings will be assigned to a person or a group for resolution and incorporation of the resolution into the design documentation.

Throughout the design, construction, operation and maintenance phases of the project, the Risk Management Plan, its risk management strategies and Action Plans will be reviewed and revised, as appropriate, to reflect specific circumstances and issues.

During the detailed design a project wide risk register will be created into which risks are entered as they are identified on the project. The register will include all design disciplines and each Team Leader will ensure mitigation measures are adopted to address each risk in the detailed design documentation.

Tender Design SiD Process

The Safety in Design (SiD) process must satisfy Lendlease management procedures, WHS Laws and Regulations, Project Deed requirements including Clause 5.3 of the SWTC and more importantly to ensure the safety of people during construction, operation and maintenance phases is maximised by

developing all elements of the design with safety in mind.

To satisfy these requirements the Tender Design incorporated SiD principles throughout its development including conducting a formal SiD workshop during the tender period. This workshop was held on 22 April 2016 and included representatives from construction, safety, maintenance, design management and design discipline leads.

Each element of the project was examined and the risk, cause and consequence identified throughout the project life cycle. An initial risk assessment was made of each risk and responsibilities were assigned. These risks were then addressed during the tender design development and others added throughout the tender period as appropriate.

Site-specific Risk Issues

Key risks associated with the project include working alongside live traffic, sharing the road corridor with the travelling public in terms of access and egress points, working at heights, and limiting impacts on the environment.

These issues have been addressed by means of a thorough site access, traffic management and staging design which has been carried out for the tender and is included in 3-1 Initial Traffic Management and Safety Plan during the Works. These staging plans address the D&C G10 Traffic Management requirements during the temporary case.

The permanent design has been developed to facilitate traffic flow during the construction of the works. This includes extending permanent drainage works under temporary roads and adjustments to the alignment to minimise the number of traffic switches required. The design has been reviewed by construction staff to ensure it is constructible and by Traffic Engineers to ensure adequate traffic flow is maintained.

Risk to the environment will be minimised in terms of achieving an approved Construction Environmental Management Plan which will require specific water quality controls and will address fauna and flora issues.

A summary of the key risks relevant to each design discipline is provided in the respective design reports under Section 3.2 Safety in Design which are included in Volume 2: Technical Details of this submission. A copy of the full Safety in Design Register can be provided on request.

Detailed Design SiD Process

SiD will continue to be addressed throughout the detailed design, construction and landscape maintenance phases of the project, in accordance with the Project Deed and the Lendlease Management System.

This will also include site access and egress points, traffic management and temporary works issues.

In accordance with SWTC Section 5.3.2 (c) SiD workshops with representatives from relevant design disciplines, construction team and stakeholders will be held throughout detailed design development in order to identify safety in design issues.

As an integral part of the detail design and safety management processes audits for SiD will be used on all aspects of the project.

The formal design review process will specifically address the design methodology used by Lendlease in order to action and close-out the SiD issues and identify any residual risks.

The project will use the CHAIR process (Construction Hazard Assessment Implication Review) to ensure appropriate risks are assessed at the concept design through to detailed design and construction stages.

This involves a workshop with relevant personnel attending from RMS, Project Verifier, the design team and construction staff and stakeholders (as required).

CHAIR 1 Study

In the Developed Concept stage, one or more SiD workshops will be undertaken to identify significant construction, maintenance and operation risks inherent in the design (ref. SWTC Section 5.3.2 (c)). By identifying and understanding these risks early in the project, risk controls can be established to ensure that, if the risks cannot be eliminated, they can at least be managed so that they are as low as reasonably practicable.

CHAIR 2 Study

Early in the Substantial Detailed Design phase, a further workshop will be undertaken to confirm that the developed design has taken account of the safety risks previously identified. Appropriate reports will be prepared, documenting the actions and outcomes of the workshops.

In the Final Design phase the Project Risk Register will form the basis for confirming the migration of risk treatments into the design component and will be included in the WHS Development Plan (ref. SWTC Section 5.3.5 (d) and SWTC Appendix 21). At each design stage for each design component, the Design Documentation will include the agreed risk treatments and status.

Road Safety Audits

During the detailed design and construction phases, independent Road Safety Audits will be undertaken in accordance with SWTC Section 5.2 and RMS Road Safety Audit Policies. Copies of Road Safety Audits will be submitted to the RMS Representative and the Project Verifier as required.

Lendlease will consider and respond to recommendations from the independent road safety audits, and any road safety audits by RMS. Recommendations will be incorporated into the design, construction and maintenance processes, if deemed appropriate.

The design reports issued at 85% and 100% Final Design (FD) stage will include SiD issues considered and adopted in design.

(v) Incorporation of Constructability Inputs throughout the Design Life of the Project

In order to develop a constructible design, collaboration and involvement of the design process is needed early by the Construction Team. This process has been recently demonstrated on the NH2U and OH2K projects where relevant Lendlease construction personnel have been instrumental in providing construction input into the developed design.

This process requires an established understanding and acceptance which commenced during the tender between the designers, key construction personnel and the design management team.

A key to the success of this project will be to minimise any variations in construction methods proposed during the tender and implementing a rigid review process to determine the effect of any engineering change proposals (refer below). It is noted, however, that the methods proposed will require some refinement.

Constructability Review Process

In accordance with Lendlease design management procedures and SWTC Appendix 21 Section 5(m) the Design Plan will clearly define the process for constructability review of each design package. This will also clearly define the role, required experience and responsibility of each of the construction personnel involved in the review process.

In order to minimise any significant change from the tender Lendlease will maintain key members from the tender team including construction personnel consisting of Project Managers and Senior Project Engineers working full time for the first six months to further develop and refine any construction methods proposed.

Having this consistent involvement from the start will prevent and minimise any changes that may arise (from new construction personnel).

The construction personnel involved in the design review will be required to provide significant input into a constructability report which will be submitted with each design package (ref SWTC Appendix 21 Section 5(h)) and will form an integral part of the design of that package.

Value Engineering

In pursuing a refined tender design and implementing Value Engineering techniques, the optimisation of design solutions will be analysed with regard to whole-of-life cost, fully meeting the requirements of the Project Deed and representing best value.

Given that overall construction concepts and methods will have been determined as part of the tender process, the Value Engineering sessions will relate more to details of construction methodology and efficiency and their impact on the detailed design.

Attendees will include the Lendlease Design Managers, designers, construction personnel, RMS Representatives, the Project Verifier and other stakeholders as appropriate. In this way, the optimum design solution will be arrived at having regard to all of the influences on design including constructability, maintenance and hence whole-of-life cost.

By having the designers involved in the construction method planning the developed design will incorporate any methods proposed and hence meet the design intent.

Engineering Change Proposal

Once the design package has been issued as IFC, changes required by the Construction Team, such as an alternative construction method requiring a design change, will require the submission of an Engineering Change Proposal (ECP).

An ECP would require a detailed analysis of the proposed change including programme benefits, effect on the design intent, design cost, approval time and resources required to carry out the change.

After completion of the ECP analysis and when the Design Manager, the Project Director and RMS (where applicable) have agreed and signed off on the proposal, then the change may be actioned.

The changes will also be assessed in accordance with clause 12.2 (m) of the Deed and the appropriate actions taken as defined in this clause.

Constructability throughout the Life of the Project

Key members of the construction team will continue to develop and provide construction input into the methods and confirm with the Designers that the design intent is maintained.

The Designers will as required provide construction phase services attending to the following issues:

- Responding to RFIs and update design drawings to reflect RFI outcomes;
- Incorporating Engineering Change Proposals to the approved design as required;
- Carrying out site inspections as directed and issue reports; and

- Responding to Non-Conformance Reports as required.

Design elements such as temporary works designs, site access and egress points, including traffic management and staging will continue to be developed throughout the life of the project requiring RMS, Project Verifier and relevant stakeholders input and approval.

The Lendlease experience in road and bridge construction, the experienced design resources and the design management processes developed to integrate the design and construction teams will ensure all constructability requirements of the project will be embedded into the design at an early stage.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 38 – Initial Construction Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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Initial Construction Plan

3-D: Initial Construction Plan

Lendlease creates the best places, and this Initial Construction Plan showcases the innovative design and construction processes that we will use to achieve the very best on this project.

(i) Achieving & Satisfying Processes

A. Durability

During the TNR3N design and construction process, the durability of the Project Works and the Temporary Works will be addressed to ensure that they achieve or exceed the requirements for all project assets and work elements.

The durability requirements are detailed in the Design Deliverables Documentation and the Project Plans, including the Design Plan and Maintenance Plan, and comply with SWTC Sections 2.12 and 5.9.

This section demonstrates how the selected design, materials, construction and maintenance will achieve the durability requirements for each Asset including Design Life (SWTC Section 5.5 and Appendix 29). For each Asset, this will:

- Define the characteristics of the environment;
- Identify the potential deterioration mechanisms in that environment;
- Determine the likely rate of deterioration;
- Assess the material life;
- Define the required material performance;
- Assess the need for further protection;
- Develop procedures for replacement of Asset Items and Asset Sub-Items at intervals consistent with the Design Lives specified in Section 5.5 of the SWTC;
- Determine inspection and monitoring requirements for both critical and non-critical Assets; and
- If appropriate, outline possible remedial measures.

Lendlease is aware that it makes its own determination of whether the performance criteria are satisfied by RMS D&C specifications or if additional controls are required. Where additional controls are required, these will be identified in the design and deliverables documentation and will be incorporated into the Works.

Conformance with these requirements is achieved through compliance with the Integrated Quality Plan and associated ITPs. This plan incorporates reporting and assessments of non-conformances influencing durability requirements.

During the detailed design phase, a Durability Assessment Report will also be developed to ensure full conformance with the requirements of the SWTC, RMS Bridge Technical Directions and AS5100.

Additional testing of material and groundwater will be undertaken to ensure that all required data is available.

B. Construction Programme

As required by the RFT, the TNR3N Tender Programme is provided in 3-M Program. This programme has been prepared using Primavera Project Planner version 6 release 8.1 for submission in accordance with RFT details key procurement works, and demonstrates activity precedence, critical path, float, contingencies and key milestones.

The programme baseline will be established on award. The Contract Programme will be updated as required and issued to the construction team, RMS Representative and Project Verifier. It will be reviewed on a regular (minimum monthly) basis to:

- Assess opportunities realised through construction progress and design development;
- Assess any realised risks and determine the effects;
- Assess any affects from any contractual advice; and
- Monitor current progress.

Critical activities will be managed in the construction programme to ensure work is completed in the required timeframe. One such example includes the reinforced earth walls at bridge abutments where two crews are programmed to work concurrently.

Self-performance of Critical Path Activities



Nambucca to Urunga Pacific Highway Upgrade – Concrete Paving.

To ensure that Lendlease can satisfy the construction programme, it has historically and actively maintained direct control and responsibility over all critical path activities. For this project, the major activities that lie on or near the critical path include:

- *Design* – The design development will be managed to ensure all delivery milestones are met and submitted to RMS and the Project Verifier on time to meet the Construction Programme;
- *Structures* – The bridge structures proposed for this project include main spans using pre-cast concrete Super-T bridge girders. Lendlease owns a pre-casting yard at Macksville which will supply the Super-T bridge girders and other precast elements where

required and manages its own bridge construction crews;

- *Services Relocation* – Service relocations will be managed by Lendlease with Taren Infrastructure Management as a consultant to assist with the development and approval of all service relocation works; and
- *Earthworks and sub-base* – Under the supervision of our experienced field supervisors, Lendlease will utilise our own internal plant (graders and compactors) to manage and place earthworks formation including Select material and bound base course.

Continual Improvement Programme Review Process

Within each nominated area of works, the Senior Project Engineer and Superintendent of that area will develop a short-term (three-week) look-ahead programme. This programme will be based on the published Construction Programme and reflect the actual work progress achieved on the project. These programmes would be generated and reviewed collaboratively on a weekly basis, in preparation for the weekly meetings that will include all key field personnel, supervisory staff, the Project Verifier and RMS.

Lendlease has developed an enhanced appreciation and understanding of the need to maintain clear focus on the programme objectives. Accordingly, the programmes will be generated with the inclusion of short-term milestones or goals. This programme is also used in management for the wider project team to communicate and coordinate:

- Significant works that may affect the existing The Northern Road (TNR) and other roads;
- High risk activities – such as mobilisation of equipment, deliveries and traffic switches;
- Construction that may affect the local residents and surrounding community; and
- Critical Shift programmes where works are on the M4 and TNR.

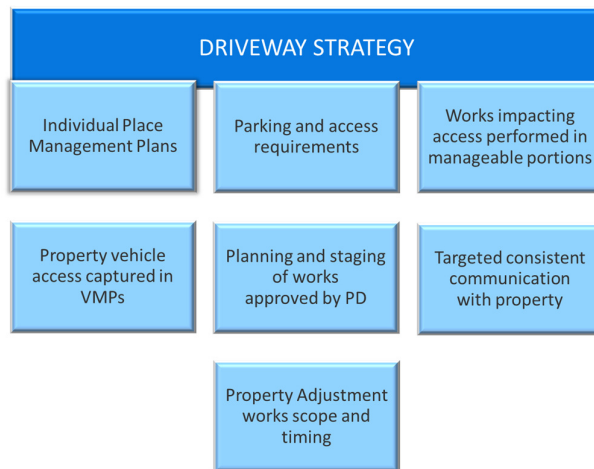
C. Access to Affected Properties

Lendlease has developed a comprehensive traffic staging solution that enables the construction of the TNR3N Upgrade while maintaining access for residents and business owners and their customers. We have considered each work activity separately to determine whether access across property boundaries can be maintained. Where access is restricted or prevented, alternative solutions or mitigation measures have been allowed for. For smaller residential properties with minimal access requirements, we have provided alternative nearby parking. For larger unit complexes and commercial properties, we have staged our works or provided an alternative access when no secondary access can be utilised. Lendlease will work closely with each property owner / resident to finalise the solution that best meets their requirements while still enabling our activity to proceed.

The following steps describe the processes to be employed during all stages for the properties within TNR3N project boundaries.

General

- Extensive community consultation with affected residents is undertaken prior to the commencement of works;
- The maintenance and timing of access, either existing or temporary, will form a key aspect of site specific Community Involvement Plan development, and the community consultation programme. The construction, community and traffic teams will engage with the residents and business owners and develop an understanding of their individual needs. We will then mitigate impact by addressing, where possible, individual needs before notifying of the final solution;
- Where changes are required to access, additional access information such as signage will direct customers and residents, these measures will form part of Traffic Management Plans (TCPs) and Vehicle Movement Plans (VMPs). Notification of forthcoming changes to property owners and businesses will be conducted by the Community and Stakeholder Team in the manner and with the timing outlined in Communications Involvement Plan;
- Limited short duration driveway closures will also occur during the course of the project for events such as tree lopping, crane lifts and positioning of traffic barriers. These will be coordinated with the residents and commercial property owners to minimise disruption;
- A 24 hour contact number will be provided to all property owners to ensure any unforeseen obstruction or inconvenience is quickly addressed;
- Pedestrians are relocated from the footpath onto a delineated walkway on the old carriageway behind the traffic barriers;
- Where possible, adjacent driveways are consolidated into the one crossing point through the work area from the live traffic lanes; and
- The work area between driveways is fenced.



Driveway Strategy

Individual Place Management Plans

As part of the initial consultation process and as detailed in 3-F Initial Community Involvement Plan all residents and businesses that have access affected by the project will be consulted and a database created to capture details.

The relevant project activities that impact access to residential properties will be limited to minimum durations in accordance with the proposed access solutions developed from the consultation process.

Parking & Access

Reasonable alternative access provisions will be put in place to maintain vehicular access to individual properties or alternate parking arrangements will be made during these works. All temporary access arrangements will be removed within seven days of the completion of the associated works.

Vehicular and pedestrian access for commercial properties will be maintained during their relevant trading hours unless contrary written agreement of the owner and occupier is granted. To achieve continual vehicular access modifications to driveways or construction of alternate driveways may be required. Our initial assessment of these requirements is in SWTC Appendix 3. Pedestrian access will be provided at all times.

Lendlease shall provide parking for the main workforce within the main site compounds and use mini vans / buses to transport them around the site to minimise the need for parking on-site. Where construction vehicles are required on-site they will be parked in designated areas to avoid blocking access to adjacent properties.

Works Performed in Manageable Portions

Work areas will be broken down to manageable areas, enabling the work activity to be completed progressively through the area and to minimise the number of residents or businesses impacted at any one time. Once the activity has been completed on a section the next activity will commence. All works will be completed prior to demobilising site barriers to avoid workers returning to the area and completing works in an uncontrolled environment.

Property Access Captured in Vehicle Movement Plans

VMPs will be developed specifically for each site and stage detailing the access for residents, business and construction vehicles. These VMPs will be communicated to the residents via the Community and Stakeholder Team.

Planning & Staging of Works

Detailed planning of each stage of works will be completed looking at activities scope and durations to develop detailed programmes. These programmes will highlight activities that will affect residents and businesses and be communicated to residents and businesses to ensure minimal disruption. This will allow sufficient time to enable possible alternative

arrangements to properties adjacent and within the work zones.

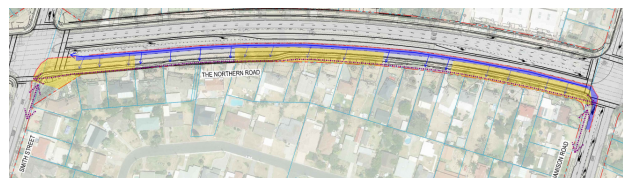
Consistent Communication with Property

The Community and Stakeholder Team will continually communicate the staging programmes and progress of works to ensure minimal disruption to residents and businesses.

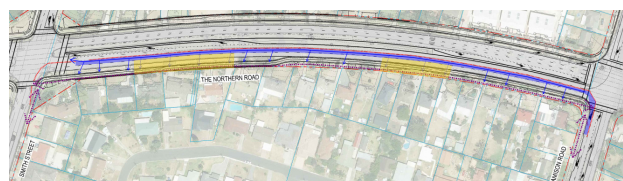
Property Adjustments Scope of Works

The Community and Stakeholder Team will consult with property owners to fully develop and understand the scope of works for property adjustments required at each property. This information will be included in a database, reviewed regularly, and updated with status of works complete, issues and changes.

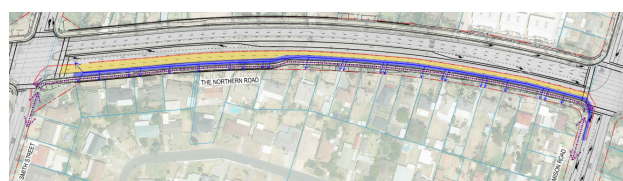
Prior to commencing works at each property the owner will be consulted to agree on works commencing and any access requirements or issues.



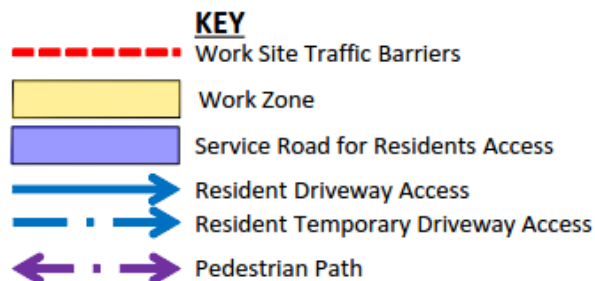
Driveway Strategy Stage 1



Driveway Strategy Stage 2



Driveway Strategy Stage 3



Key to Driveway Strategy Diagrams

D. Methods, Resources, Sequencing & Staging

1 Road Construction

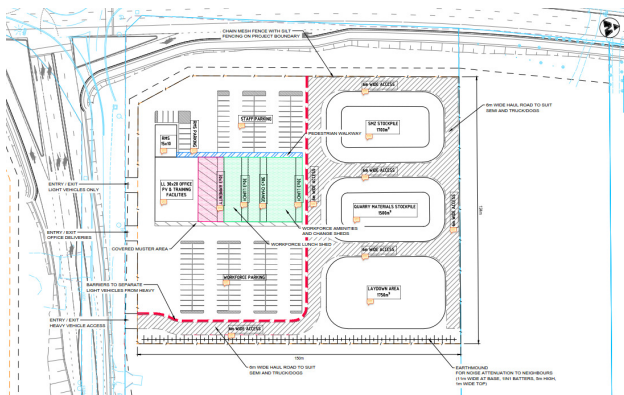
The TNR3N road construction will be constructed using conventional methods for:

- Earthworks – A fleet of medium sized plant, excavators, bogie and truck and dog trucks, pad-foot and smooth drum rollers, will be utilised to carry out earthworks for embankments, cuts and shallow fills as outlined in 3-H Initial Earthworks Plan.
- Drainage – excavate and lay precast pit and pipe drainage system, backfilling progressively and temporarily tying into existing structures to maintain temporary drainage. Pit and pipe drainage has been replaced with a continuous slip formed slot drain in the median.
- Pavements – Pavements outlined in 2-D Pavement Design, will be constructed in layers with each layer being tested and surveyed as per the RMS Specifications. Select and Base Material will be placed using a grader and compaction equipment and asphalt layers placed using a paving machine.

Methodologies

Site Establishment

The main site office and compound will be constructed on the property located on the north-eastern corner of the intersection of Glenmore Parkway and TNR. This site will provide office space and amenities for RMS, Project Verifier and Lendlease staff with lunch facilities and amenities for site staff.



Main Site Office & Compound – Cnr of Wentworth Road & TNR.

Initial works on-site will involve the facilitation works to establish the main work areas on the project. These works will be carried out using traffic control out of peak travel times to maintain the safety to the public and workers.

Clearing of existing vegetation within medians, roundabouts and shoulders would be done by hand using chainsaws and mulched on-site for use as environmental controls within the works. Grubbing works will be carried out using small mechanical plant due to the small work areas.

The roundabout at Glenmore Parkway will be removed and replaced with a temporary, movable roundabout with an internal radius of 15m and external radius of 25m. Where temporary pavement is required, existing median islands will be removed with temporary pavement constructed in accordance with G10.

The M4 shoulders will have temporary pavements constructed at the site entry and exit gates to ensure suitable area and length is provided for deceleration and acceleration to minimise disruption to the M4 traffic.

Existing TNR traffic lanes will be realigned with temporary waterborne line marking and reflectors as per the Staging Drawings, 3-I Initial Traffic Management Plan. Lanes will be reduced to a width of 3.2m and maintain a 0.5m shoulder to barriers.

Barriers will be placed out during night shifts under traffic control to delineate and protect the public from the works and maximise the construction activities that can be carried out during normal working hours, minimising the disruption to the community.

Barriers and site access gates will be as per the drawings attached in 3-I Initial Traffic Management Plan.

Once work sites have been established, all known services will be located and protected as required. At site access gates minimum height clearance gates will be established. All Over Head Wiring within the project will be clearly signposted as exclusion zones using flagging delineated.

Property Adjustment

Property adjustments along the length of the project will commence in Stage 1 following the following initial community consultation.

Works will be coordinated with property owners through our Community and Stakeholder Team to identify full scope of works, including but not limited to retaining walls, fences, driveways, landscaping and service relocation. Works will be coordinated to minimise disruption and completion sign off will be obtained from the property owner.

Services

Existing services, identified from Dial Before You Dig (DBYD) drawings, will be positively located, and protected, with fragile end-of-life live services kept operational at all times. The services that have been identified on the project include but are not limited to:

- Endeavour Energy 33kVa, 11kVa and 415V OHW network;
- Telstra CC and DA network include both copper and fibre optic main cables, on the eastern side of TNR;
- Sydney Water – water supply relocation and sewer line protection;
- Optus – overhead and underground fibre optic and mobile phone tower;
- Pipe Networks – optic fibre within the Telstra network;
- NBN Co – existing NBN fibre optic located within the Telstra network;
- Jemena – gas main; and
- RMS – ITS and TCS cabling.

Taren Infrastructure Management has been engaged to provide methodology to ensure the integrity of all

services is maintained during construction. Additionally they will coordinate protection or relocation of any impacted services with authorities to ensure all processes are followed and that approvals are received to meet the Construction Programme.

Sydney Water, Endeavour Energy, Telstra, Jemena, Optus, NBN Co and Pipe Networks have been identified to have assets affected by the TNR3N upgrade works and require relocation.

Services will be relocated along the route of the new shared path. Where services cross property accesses, the following strategy will be adopted:

- Residential Properties – each driveway crossing, the service trench is either reinstated at the end of the shift or made trafficable using road plates in order to minimise disruption for residents. Should driveway access be removed during the day for residential properties, alternative parking is provided on the old carriageway. Access across the services trench can also be provided at short notice by laying steel plates over the trench.
- Commercial Properties – Vehicular and Pedestrian access will be maintained at all times through a variety of means as detailed in 3-F Community Involvement Plan. Where only one access is available this typically involves the widening of the driveway to enable works to be staged across the entrance or the creation of an alternate entrance.

Following completion of all services in an area (typically a block), the earthworks for the pavements will commence.

Additional details of Services works are provided in 2-H Services.

Earthworks

For more details regarding the TNR3N earthworks refer to 3-H Initial Earthworks Plan.

All excavation works carried as part of the project will follow the Lendlease Ground Penetration Permit Process as detailed in 3-A Initial Project Management Plan.

All services identified on DBYD will be located prior to potholing works to positively identify services located within the work areas to develop a combined service drawing showing details of all identified services within or adjacent to the construction site. These drawings will be used as reference documents for Ground Penetration Permits that will be completed prior to all ground penetration works.

Excavation for the project will be carried out using a range of sized mechanical plant from 1 tonne to 30 tonne machines. Where works are required within exclusion zones around utilities, approval will be obtained from the authority and a non-destructive excavation technique will be utilised as per the authorities' guidelines.

Utility	Exclusion zone for mechanical excavation
Low Voltage Electricity	150mm
High Voltage Electricity	600mm
Traffic Signals and Systems	150mm
Telecommunications	150mm
Low Pressure Gas	300mm
High Pressure Gas	600mm
Water	150mm
Sewer	150mm
Stormwater	150mm

100,000m³ of excavated material will be processed on-site and reused within the site as general fill, landscaping or in noise mounds to minimise the material to be disposed off-site, as detailed in Spoil Management Section of 3-H Initial Earthworks Plan.

Excavation for drainage works will be carried out using conventional machinery. Where trenches are deeper than 1.5m, the excavation will be benched where possible or shored using an approved shoring system as directed by a Geotechnical Engineer.

Unsuitable material will be used in landscaped areas or noise mounds where possible and surplus removed off site to an approved tip site.

Despite Lendlease maximising the reuse of materials available on-site the project will be required to import over 200,00m³ of material including general fill, upper zone and select material zone material. Lendlease will procure this material from a project within the Sydney Region and carry out suitable testing to ensure the material meets the specifications relevant for its intended use.

Pavement

The TNR road pavement will be fully reconstructed across the entire length of the project. This new pavement requires boxing down an average of 1m and constructing new road pavement with the required 40 year design life.

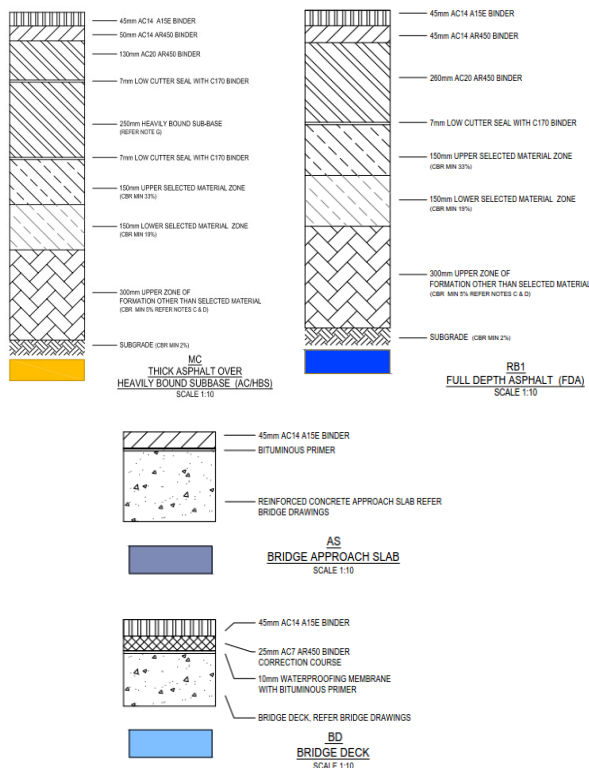
Pavement subgrade will be inspected and tested, and should it be identified as unsuitable, it will be either removed for reuse on other sections of the project or in-situ stabilisation will be carried out to a nominated 300mm depth to achieve minimum CBR for the pavement subgrade.

Heavily Bound Base (HBB) will be placed in two layers in accordance with RMS specification R73. Following the placement of the HBB traffic will be limited to resident access only until a 7mm seal is applied to protect the pavement sub-base layer.

The use of HBB will minimise limited access time for properties.

Intersections of TNR / Smith Street and TNR / Jamison Road will be constructed during night shifts with further

detailed staging to be developed, with either full depth asphalt or AC with HBB incorporated into the works, depending on night shift Road Occupancy Licence (ROL) approvals and the need to reopen to traffic at the end of each shift.



Lendlease Pavement Profiles for use on TNR.

Asphalt shall be placed using asphalt paver and compaction equipment in accordance with RMS Specification R116. Works shall be staged to minimise disruption to property access. Asphalt will be placed in layers with access returned to properties at the end of each shift.

Kerbs

Standard RMS kerb types, SA, SF, SO will be slip formed using approved profiles where suitable kerb lengths can be achieved to warrant machine mobilisation. Where slip-forming cannot be utilised kerbs will be placed by hand using conventional formwork.

Vehicle crossovers, pram ramps and pit transitions will be hand poured.

Local residents and businesses will be consulted as per 3-F Initial Community Involvement Plan to ensure minimal disruption during the works and curing when direct vehicle and pedestrian access will be affected.

Traffic Signals

Intersections along TNR from Glenmore Parkway to Smith Street will be signalised to facilitate the new turning and access arrangements as part of the project.

- Glenmore Parkway – a new fully functioning signalised intersection allowing right turns from TNR

into both Wentworth Road and Glenmore Parkway, right turns out of Glenmore Parkway and Wentworth Road onto TNR, and left turns in and out of Glenmore Parkway and Wentworth Road;

- M4 – upgrade existing signalised intersection to facilitate the new lane configurations. There will be no changes to the traffic movements permitted at this intersection;
- Frogmore Road – a new signalised intersection to enable a right turn off TNR northbound into Frogmore Road and a right turn out off Frogmore Road onto TNR, as well as signalised pedestrian crossing.
- Bringelly Road / Maxwell Street – upgrade existing intersection including new alignment and new signals to facilitate the new lane configurations. There will be no changes to the traffic movements permitted at this intersection;



Existing intersection of Bringelly Road, Maxwell Street and TNR

- Smith Street – upgrade existing signalised intersection to facilitate the new lane configurations. There will be no changes to the traffic movements permitted at this intersection; and
- Jamison Road – upgrade existing signalised intersection to facilitate the new lane configurations. There will be no changes to the traffic movements permitted at this intersection.

Driveways

As construction of each driveway is anticipated to take around three days to complete, the following strategies will typically be adopted in consultation with the residents / managers of the affected properties:

- Provide parking for the residents nearby on the adjacent carriageway of the old road and ensure that pedestrian access is available at all times to the affected properties. Special needs of individual residents will be considered and alternate mitigation measures will be adopted to cater for these when required;
- For commercial and multi-unit properties with two entries, ensure that only one entry point at a time is impacted and provide traffic control to manage the change;

- For commercial and multi-unit properties with a single wider driveway, construct the new driveway in two halves such that one half remains operational at all times;
- For commercial and multi-unit properties with narrow driveways, Lendlease intends to provide alternate temporary driveway access to the property. This typically will require modification to private property and will require the owner's consent; and
- Alternate solutions may become apparent following the consultation process with each property owner / occupier.



Current resident property access arrangement onto TNR – east side of TNR, Jamison Road to Smith Street

Landscaping

Landscaping will be completed progressively as areas become available to minimise risk of damage to earthworks and reduce requirements for temporary basins. Lendlease will propose to hand over completed landscaped areas to RMS to facilitate the commencement of the operational maintenance period.



Nambucca to Urunga Pacific Highway Upgrade – Batter Protection

Prior to topsoil being placed the ground will be broken to enable suitable bond. The topsoil will be placed in stages to ensure that at end of each shift, the work area is covered by mulch or temporary geo-fabric to minimise risk of erosion.

Planting will commence shortly after an areas topsoiling and mulching has been completed.

Planned Resource Levels

The labour force will be enlarged as the programme starts up with Lendlease employing leading hands to manage work crews on-site and a Supervisor to manage a number of leading hands within an area of the project. Details for labour, supervision and engineering can be seen in 3-A Initial Project Management Plan.

The programme and methodologies have been developed and the programmed levelled to provide continuity of work for crews across the project. The Construction Manager will be responsible for regularly reviewing the number and type of work crews on-site to ensure programme and efficiencies are being maintained.

Specialist subcontractors will be used for some activities to ensure maximum efficiency and productivity is achieved. These subcontractors will be directly managed by Lendlease leading hands and supervisors to ensure the programme is maintained.

Lendlease has had discussions with major material suppliers to better understand the current Sydney market, the upcoming requirements and to plan for sufficient quantities to be provided for the project.

Lendlease has secured a supplier of both general fill and SMZ material for use on the project to meet the requirements of 200,000m³ of import. Discussions have taken place with both asphalt and concrete suppliers to understand aggregate supplies and security to ensure the quantity is available for Lendlease on this project.

Sequencing & Staging

The project will be constructed in three main stages (refer to detailed staging drawings as part of 3-1 Initial Traffic Management and Safety Plan):

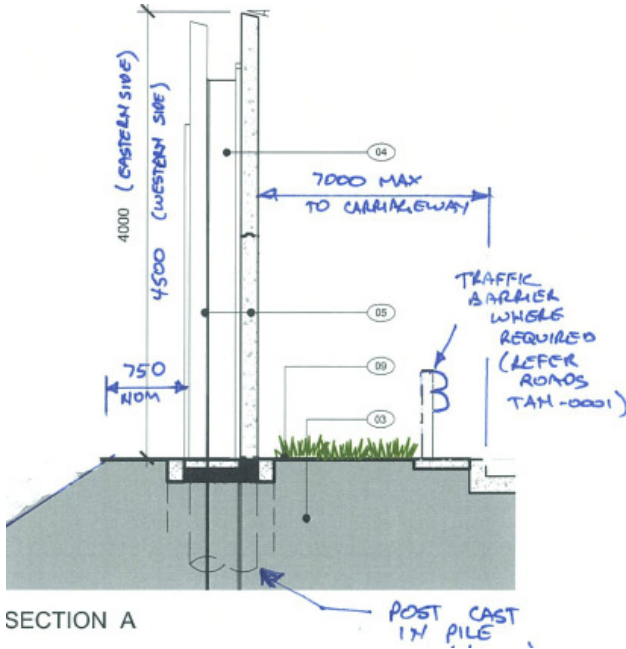
- Stage 1 – From Jamison Road to Bringelly Road the kerbside two lanes will be constructed. From Bringelly Road to Glenmore Parkway the full southbound carriageway will be constructed. Works will commence on the construction of the new bridge over the M4;
- Stage 2 – From Jamison Road to Bringelly Road centre lanes and median will be constructed. From Bringelly Road to Glenmore Parkway the northbound carriageway will be constructed with traffic switched onto the existing bridge as the new M4 bridge is still being constructed; and
- Stage 3 – From Jamison Road to Glenmore Parkway traffic will be on the new southbound carriageway to enable completion of the northbound carriageway, demolition of the existing bridge over the M4 and tie in of the new M4 entry and exit ramps.

Detailed staging drawings are included in 3-1 Initial Traffic Management and Safety Plan.

2 Noise Treatments

Sequencing & Staging

Noise treatments will consist of both earth mounds and precast concrete walls and will be completed as part of the main construction staging. The majority of noise walls are designed to sit on the top of the embankment and as such will be completed in the later stages of pavement construction.



Sketch – Typical Noise Wall section on an embankment.

Individual walls and their stages are shown in the table below.

Noise Wall / Mound Location	Start Ch	End Ch	Length	Construction Stage
M4 EB Entry Ramp	300	625	325m	Stage 1
M4 EB Exit Ramp	-140	530	670m	Stages 2 & 3
M4 EB Exit Ramp	530	775	245m	Stages 2 & 3
M4 EB Exit - Tukuran Rd (Combined Retaining Wall)	1330	1775	445m	Stages 2 & 3
Tukuran Rd - Aspen St	1810	2275	465m	Stages 2 & 3

Commencement of the noise mound on the M4 Eastbound Exit ramp as a part of Stage 1 will provide a use for any unsuitable material encountered without the need for double handling.

Methodologies & Resource Levels

Noise walls are designed in a post-and-panel arrangement, with posts being supported by a bored pile foundation.

Two crews will be used to install noise walls on the project.

Piles and posts will be installed by the first crew with boring and pouring of piles taking place on the same day to manage the hazard associated with open holes. Posts will be cast into the piles as they are poured.



Pacific Highway Upgrade – Bulahdelah Bypass: Noise wall post installation after embankment construction.

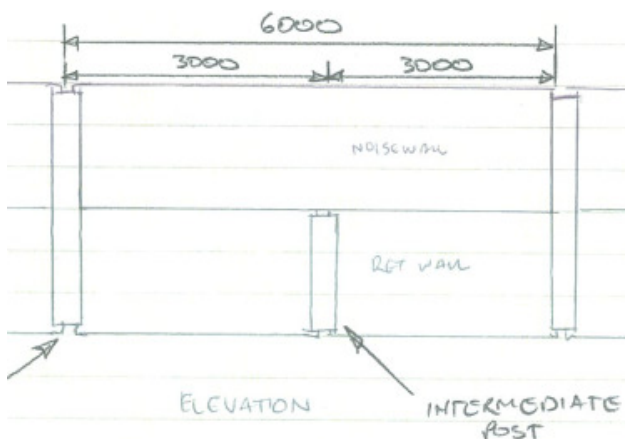
Panels will be installed by a second crew using a mobile crane that will sit on the completed pavement.



Pacific Highway Upgrade – Bulahdelah Bypass: Noise wall panels being lifted in using a mobile crane.

There is one interface between the retaining walls and noise walls which will be managed by combining the two walls into a single post and panel wall.

The M4 Eastbound Exit Ramp to Tukuran Road noise wall will be built as a combined noise / retaining wall to incorporate RW02 between Ch1670 to Ch1759. RW02 has a maximum visible height of 1.9m and falls within a cutting.



Sketch – Combined Noise & Retaining Wall between Ch1670 to Ch1759.

3 Retaining Walls

Sequencing & Staging

Retaining walls are required in both cut and fill areas, and consist of block walls and post and panel walls. All walls will be completed progressively as part of the main construction staging, and in line with adjoining earthworks activities.

Methodologies & Resource Levels

With only two types of wall being constructed, there is increased opportunity for continuity of work.

Block walls will be used in “fill” locations, and their concrete strip footings will be poured prior to construction of the adjacent embankment.

It is anticipated that several crews will be required to install block walls, and these crews will work concurrently with embankment construction. While the crews will work concurrently, work lots will be managed longitudinally to ensure there are no interface issues.

Several crews will also be required to install post and panel retaining walls, with the first crew installing piles and posts and a follow on crew installing panels.

In cut locations, temporary batters will be assessed for stability by the Geotechnical Representative. Any necessary protection will be provided in the form of benching, soil nails or shotcrete.

Panels will be lifted in by crane and progressively backfilled.

4 Reinforced Concrete Box culverts

Sequencing & Staging

There are three box culverts on the project and these will be completed progressively as a part of main construction staging, and in line with adjoining earthworks activities.

Culvert Location	Culvert Size	Length (m)	Construction Stage
C7115 on Cross Rd	3x1800x600	14.64	Stage 1
C7860 on Cross Rd	1500x300	24.99	Stage 1
C6730 on TNR	3000x1500	56.55	Stages 1 & 2

Methodologies & Resource Levels

A single crew will install RCBCs before the adjacent earthworks activities commence.

Culvert cells and link slabs will be lifted in by crane and progressively backfilled.

In the case of C6730, construction will be in two stages. In Stage 1, the upstream section will be constructed and temporarily tied into the existing pipe. Stage 2 will involve demolition of the existing pipe once traffic is switched onto the new southbound pavement. The culvert will then be extended and completed.

C7860 on Cross Road will be completed in two halves but as part of a single construction stage. Half of the road will be closed at a time to allow construction of the other half, with work being completed under traffic control.

5 Bridge Construction

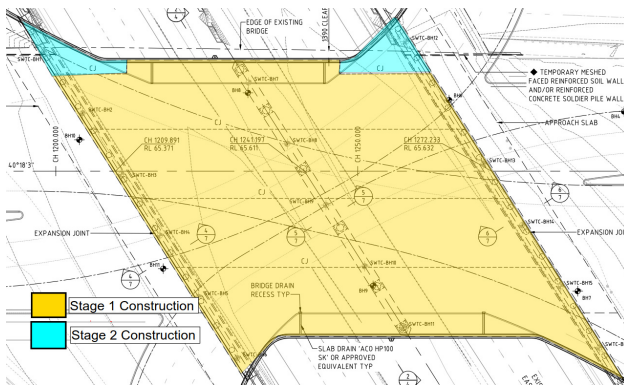
Sequencing & Staging

The new bridge over the M4 will be constructed in two stages that will be carefully planned to minimise impact on traffic. All piling and substructure work will be completed behind traffic barriers at ground level. Traffic barriers will be placed along the length of the worksite with dedicated deceleration / acceleration lanes allowing safe access and egress to the worksite from the M4. For the initial site set-up and traffic barrier placement, lane closures on the M4 will be required overnight. Further details are provided in *Section E. Ensuring Safe Access & Egress*.

The design phase geotechnical investigation boreholes will be completed as Initial Works, working behind concrete barriers.

Occupation of the full M4 carriageway will be required for several activities to provide safety exclusion zones beneath heavy lifting operations. These works include girder and plank erection, precast parapet installation and the demolition of the existing bridge.

When occupation of a full M4 carriageway is required, it has been programmed to occur between the hours of 10.00 p.m. and 5.00 a.m. only, and traffic will be detoured off the M4, around the worksite.



Deck layout showing staging

Stage 1 involves construction of the substructure that is of a sufficient width to land all girders as well as precast planks on the eastern ramps. Once Stage 1 has been completed, traffic will be switched onto the new bridge allowing the existing structure to be demolished. After this, Stage 2 will commence where the remaining width of the abutment substructure will be constructed as well as completing retaining walls to the west of the new structure to support the western ramp connections.



Pacific Hwy Upgrade – Bulahdelah Bypass: Construction of 1200mm bored piles for Myall River Bridge Abutment

Methodologies & Resource Levels

Stage 1

Once traffic control measures have been established, clearing will be done around the abutment and central pier. The reinforced earth block will then be excavated behind the abutment, for preparation as a piling pad.

Temporary protection in the form of soil nails will be provided to the batter adjacent to the existing bridge structure to ensure its stability during wall construction.

The median pier area will also be prepared as a piling pad, ready for construction of bored piles.

A single crew will complete all Stage 1 piling work.

Once piling has been completed, the abutment piles will then be extended into concrete columns. A steel sleeve will be placed over the columns to provide separation against lateral loading from the reinforced earth wall that is to be built around them.



Pacific Highway Upgrade – Oxley Hwy to Kundabung: construction of reinforced earth walls (soil walls) around sleeved column extensions.

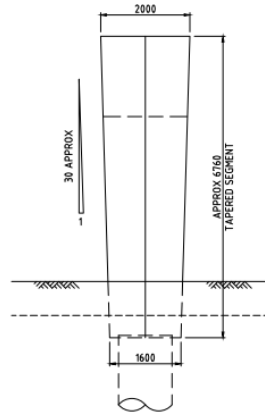
The northern and southern reinforced earth abutment retaining walls will then be built concurrently by two separate crews. Temporary walls will be required to retain fill material placed adjacent to the existing bridge.



Pacific Hwy Upgrade – Oxley Hwy to Kundabung: reinforced earth walls (soil walls) nearing completion.

In the M4 median, an elongated “Pants Pier” has been designed to satisfy the urban design requirement that headstocks are not visible in the vertical elevation. The design is similar to what is frequently used on Pacific Highway overpasses.

Worker access to the M4 median will be by a stair tower connected to the footway of the existing bridge. Public access will be restricted using a lockable gate.



Pants Pier elevation, as viewed by approaching M4 traffic

The 32 degree skew of the new bridge design has necessitated a 2m wide headstock to provide sufficient width for the bearings. This width tapers down to the pier, slimming the structure as far as is acceptable under SWTC clause 13.5.3b. Both the pier legs and headstock will therefore require thermal monitoring in accordance with SWTC 13.2.5 (b) as the minimum dimension will be greater than 1000mm.

Concrete temperature differentials during construction may need to be managed by using a low heat concrete mix as well as using chilled water to batch concrete.

The dedicated acceleration / deceleration lanes connecting the worksite to the M4 will enable concrete to be delivered into the median area without delay.

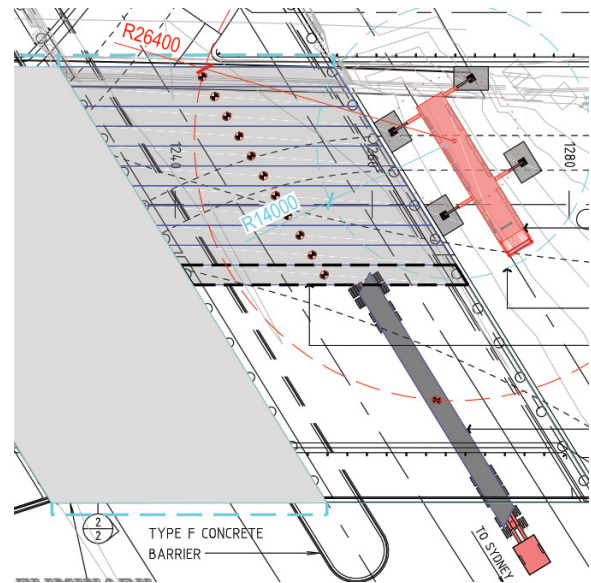
Once the retaining wall backfill reaches the underside of the abutment, the sill beam and curtain walls will be formed and poured.



Pacific Hwy Upgrade – Oxley Hwy to Kundabung: installing bridge girders from reinforced earth walls (soil walls)

Girders will be landed at night using a mobile crane that will sit behind the abutments on the completed Reinforced Earth Walls. Jinkers will deliver girders either beneath the new bridge on the M4, or reverse onto the abutment as available space dictates. The crane may need to be placed on the M4 to place several of the edge girders. M4 traffic will be detoured between the hours of 10.00 p.m. and 5.00 a.m. to complete this work. The initiative to set the mobile crane up on the abutments for most of the girder works allows us to be flexible to TMC needs, and maximises available working time.

Once landed, girders will be secured in position by propping to ensure stability.



Extract from Lift Study – girder being delivered and installed over the M4.

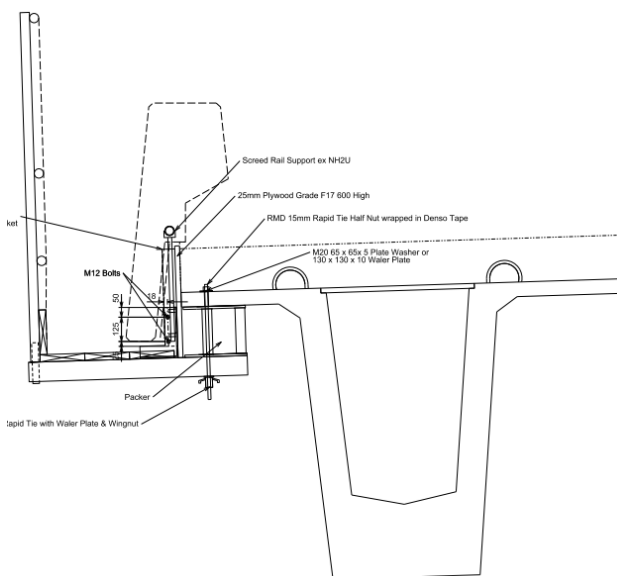
Ramp connections will be constructed using precast concrete planks that bear on the edge girder. These will also be installed during a night time M4 occupation.

Prior to the planks being landed, diaphragms will be poured to provide stability to the edge girder.

Planks and girders on the structures extremities will have “fully encapsulated” edge protection measures installed prior to reopening the carriageway, as shown below. This will allow deck construction work to be completed without impacting traffic below.

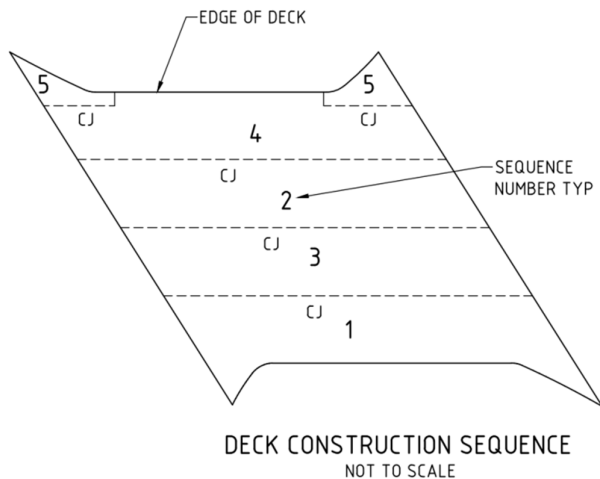
Parapets will be installed at night and will require the M4 to be detoured between 10.00 p.m. and 5.00 a.m. This is to ensure public safety, providing an exclusion zone beneath the lifting operation.

The temporary walkway and temporary throw screens will be removed from below using an elevated work platform placed on the M4. This will occur concurrently with the M4 closing for demolition of the existing bridge.



Parapet with construction screen encapsulation in place (prior to permanent screens).

Each deck span will be poured in five stages, as shown in the sketch below. Standard methods will be used, although longitudinal construction joints will be required to manage shrinkage and will be placed on the crown of the bridge, and also midway between the crown and parapet.



Deck Construction sequence showing longitudinal construction joint locations. Construction joints will also be located transversely either side of the link slab.

An additional longitudinal construction joint will be required for the connection of the eastern ramps due to staging. Each deck will be water tested prior to pouring concrete to ensure no slurry is able to escape and drip onto the traffic below. A boom pump will sit on either the retaining walls or median during the concrete pour.

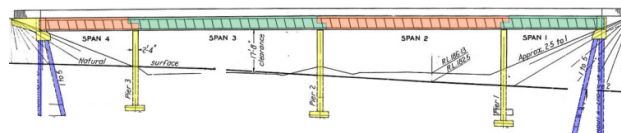


Pacific Hwy Upgrade – Oxley Hwy to Kundabung: pouring a 22m wide bridge deck.

The temporary “encapsulation” has been designed to allow precast parapets, barrier rails and throw screens to be installed with the encapsulation in place. It will only be removed once the permanent controls have been installed.

Bridge Demolition

The existing bridge will be demolished using a cut and lift method. This will be completed at night under similar traffic arrangements used to lift in the girders. Traffic from one carriageway at a time will be detoured between the hours of 10pm and 5am.



Existing bridge over the M4, coloured to emphasise the sequence by which I-beams spans are to be removed.

As the bridge has been built with half joints, it must be demolished using a sequence that is the reverse of that used for construction. The girders that were installed last will be removed first.

Span 2 will be removed first, followed by Span 1 then Span 3 and Span 4.

Girders will be separated from the existing structure using a combination of road saws and wire saws, with multiple crews working concurrently.

Prior to any cutting, temporary supports will be placed around the pier and also between girders on the deck to ensure stability.

The majority of saw cutting will be completed to partial depth during the day. It will not fully penetrate the deck to ensure slurry is not lost onto the carriageway below.

At night, the partial saw cuts will be taken to full depth through the deck and the diaphragms will be cut using wireline. Cores will be drilled through the flanges of separated girders to allow chains to wrap under the girders for lifting.

Girders will be lifted out using a crane and placed in the median and shoulder for processing with pulveriser excavators.

Processing will take place during the day shift, with rubble being loaded into trucks for disposal and recycling in accordance with environmental requirements.

The remaining substructure will be mechanically demolished using excavators and hydraulic hammers.

Solid screens will be placed around all demolition areas in accordance with Australian Standards.

Stage 2

Once the bridge has been demolished, the substructure cycle defined in Stage 1 will be repeated. The piling, column extensions, reinforced earth walls and abutment sill beam / curtain walls will be constructed on the footprint of the existing bridge.

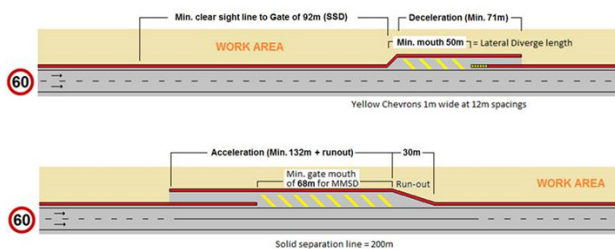
Planks will be landed to form the western ramps, and the deck will be poured to stitch into the previously constructed Stage 1 deck. The bus lane adjacent to the longitudinal construction joint will not be opened until the deck reaches its required strength to ensure that a minimum of 7m clearance is provided to live traffic.

E. Ensuring Safe Access & Egress

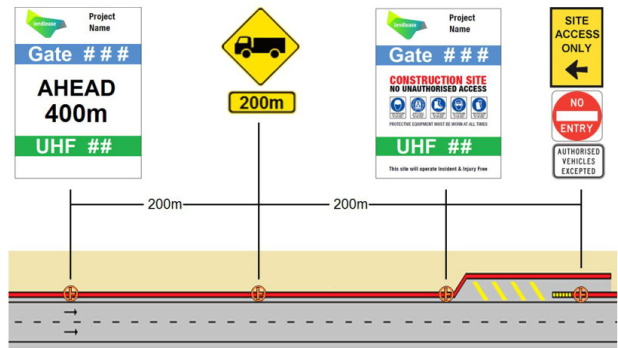
Construction Access

The following will be considered when selecting gate locations for construction vehicles to enter and exit the site:

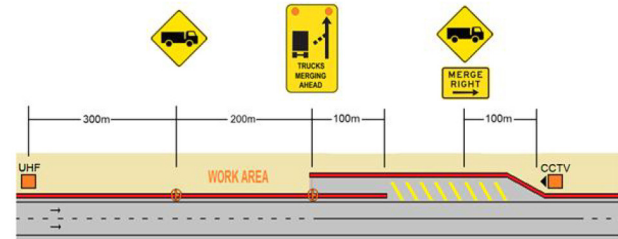
- Approaching sight stopping distance;
- Mutual merging sight distances;
- Lateral merge or diverge lengths;
- Acceleration and deceleration characteristics of site vehicles;
- Road geometry; and
- Ambient road conditions.



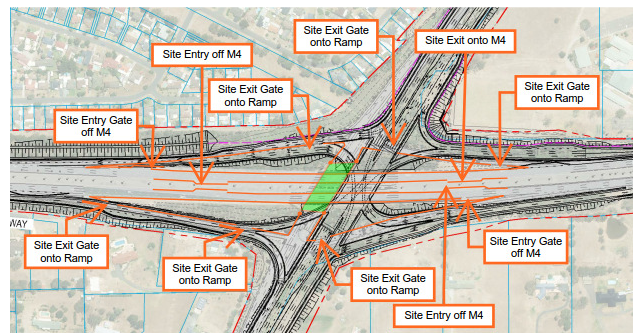
Minimum Site Access Geometry for Entering off TNR or Entering onto TNR when speed limit is reduced to 60km/h.



Site Entry Gate Signage.



Site Exit Gate Signage.



Proposed bridge access gates: Vehicle access to the bridge construction areas will be directly from the M4 through gates located within the existing shoulders of the M4. These gates will be arranged to minimise impact on M4 traffic.

Resident & Business Access

During the construction staging adjustments will be made to how residents and businesses access their properties. All changes will be carried out following consultation and advertisement with temporary signage to clearly delineate the new access route.

Additionally, work sites and activities will be managed so that:

- Impacts on access to residential and commercial properties will be limited to minimum durations, reasonable alternative access provisions will be put in place to maintain vehicular access to individual properties or alternate parking arrangements will be made. Pedestrian access will be provided at all times;
- Temporary access arrangements will be removed within seven days of the completion of the associated works; and
- Vehicular and pedestrian access for commercial properties will be maintained during their relevant trading hours unless contrary written agreement of the owner and occupier is granted. To achieve continual

vehicular access modifications to driveways or construction of alternate driveways may be required.

Refuse Collection

Principally during all stages of the works the current access arrangements for the collection of refuse will be disrupted as the kerb line will be temporarily relocated away from its current line in front of businesses and residents. New refuse collection points will need to be established in consultation with the appropriate supplier of this service.

Where the collection point is a significant deviation from the current location or increases risk to the property owner in delivering the bins, Lendlease will undertake to transfer the bins from the existing kerbside location to the temporary location for collection and then return the bins to the relevant property following collection. This will be undertaken following consultation with the individual property owner, body corporate or business.

Australia Post & Courier Deliveries

Postal and courier deliveries must be maintained during construction. In consultation with Australia Post, access to letterboxes will be maintained either via pedestrian access, scooter or truck. This consultation must be dynamic due to the changing activities that will take place outside each premise over time.

Appropriate signage placed along the alignment detailing access arrangements for local residents and businesses will guide couriers and postal agents to the appropriate access points.

Where letterboxes must be relocated as part of the accommodation works, the new letterboxes will be established first. Where long term disruption is unavoidable, consideration will be given to providing a postal box at a location convenient to the resident.

Emergency Services

Key emergency services personnel (including NSW Police, NSWFS, and NSW Ambulance) will be contacted to ascertain appropriate levels of communication with regard to traffic changes. The established points of contact will be notified well in advance of any planned traffic rearrangements. Emergency Services personnel will be updated on all proposed changes and other relevant issues at briefings prior to any major rearrangements.

F. Vegetation Clearing Limits

Lendlease is aware that, in accordance with SWTC Appendix 21.6 (h) (xx), the Construction Plan must identify the processes to achieve and satisfy “vegetation clearing limits”. For the TNR3N project, the extent of clearing works is required to be in accordance with the REF and SWTC. Clearing limits, cadastral boundaries and the Construction Site boundary must be identified on all relevant Design Documentation drawings as well as Sensitive Area Plans.

At each stage during the detailed design process, the clearing strings and areas will be reviewed to minimise

the extent of clearing and ensure compliance with applicable clearing limits nominated within the REF and associated SWTC requirements.

The resulting clearing strings and sensitive area plans will be utilised on-site to define the applicable clearing limits and delineation of vegetation to be retained / protected. Additionally, in accordance with G40 Clause 2.4, Lendlease will ensure that all of the following clearing limit requirements are complied with during the project:

- Before clearing commences, clearing limits are to be identified on-site by clearly visible markers placed at 25m intervals on each side of the road formation and bridges as shown on the Design Documentation drawings;
- A Clearing Report on the presence of weeds and unsound trees is to be provided which:
 - Includes a statement / report from the Project Ecologist that identifies the species and location of any weeds growing anywhere in the road reserve over the length to be cleared and grubbed;
 - Identifies all locations of threatened flora species / trees which have been identified for preservation;
 - Lists any trees outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property – these must be marked and identified in the Clearing and Grubbing Plan in a manner which allows them to be clearly identified including whether pruning or removal is recommended; and
 - Identifies, clearly marks and lists all hollow bearing trees, or trees and other areas which contain the potential for habitat within the areas to be cleared.

A Hold Point also applies for the clearing of any area of work. This also requires the submission of the following documentation at least seven days before starting any clearing works:

- The Clearing Report (as noted above);
- The Clearing and Grubbing Plan in accordance with G40 Annexure G40/D; and
- Before commencing clearing and grubbing, all soil erosion and sedimentation controls required for this phase of construction must be installed in accordance with Specification RMS D&C G38.

Lendlease will also implement protective measures as detailed within 3-B Initial Environmental Management Plan during clearing operations to avoid damaging or destroying threatened flora species and trees which have been marked or otherwise identified for preservation.

These measures include fencing around trees clear of the canopy line; ensuring no materials are stockpiled and no vehicles are parked under the canopy; avoiding excavation or the placing of fill near any tree without advice from an ecologist; and routing haul roads and access tracks clear of the canopy. All vegetation clearing operations will be controlled on-site by adopting a clearing permit process controlled by the Environmental Manager. This process has been

successfully utilised by Lendlease on other recent projects such as CBD Alliance, Lawson Alliance and Pacific Highway projects.

As part of this process, a clearing and grubbing Environmental Work Method Statement will be developed to identify the work-flow sequence of clearing activities, assess the risks at each work-flow step, and nominate appropriate controls and mitigation measures to manage identified risks. In particular, clearing limits will be defined using the following steps:

- Prior to clearing, a temporary fence or bunting will delineate the edge of the clearing boundary and areas of vegetation to be protected or identified as being retained;
- A joint inspection of the clearing limit area will be undertaken with the Project Ecologist and the RMS Representative to inspect the clearing limit and exclusion fencing and to identify opportunities to preserve habitat trees; and
- The Clearing Hold Point required as per the RMS D&C Specification G40 will be released.



Clearing required at the southern abutment to facilitate the new bridge alignment.

G. Interface Works

TNR3N Interfaces:

- **Penrith City Council:**
 - The TNR main alignment ties into existing or upgraded local roads including Jamison Road, Smith Street, Bringelly Road, Maxwell Street, Castle Road, Aspen Street, Frogmore Road, Tukara Road, Homestead Road, Garswood Road, Wentworth Road and Glenmore Parkway;
 - Upgraded drainage tying into the existing drainage assets owned and maintained by Council;
 - Design and installation of street furniture to meet the Council Urban Design Plan;
 - Temporary work sites on Council owned land;
- **Local Community** – refer to 3-F Initial Community Involvement Plan for detailed information on local community groups;
 - Local residents;
 - Businesses;

- School groups;
- Universities; and
- Religious Groups;
- **Road Users** – Construction sites will work closely with local road users to ensure minimal impact on road user travel times during the construction works;
- **Adjacent Residents and Businesses** – Lendlease will work closely through our Community and Stakeholder Team with all adjacent residents and businesses, as detailed in the Community Plan, to ensure minimal disruption and ensure needs are met and a quality end product is provided by Lendlease;
- **Service Authorities** – Taren Infrastructure Management has been engaged by Lendlease to maintain a healthy relationship between the project and Service Authorities:
 - Endeavour Energy;
 - Telstra;
 - Optus;
 - Jemena; and
 - Sydney Water.

Traffic Management Centre – Throughout the project Lendlease will work with TMC to develop programmes and methods to minimise the disruption to existing road users. Prior to submitting ROL applications Lendlease will conduct workshops with TMC and RMS to review risks associated with works being conducted during the ROL and to ensure suitable mitigation measures are in place to minimise potential for ROL over runs and impacts on the road user.

TNR3N Interface Works:

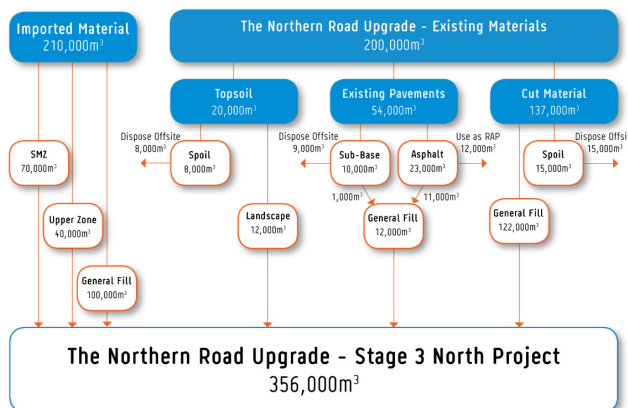
The processes to achieve and satisfy Interface Works are as follows:

- Planning and programming of activities to ensure that the Interface Completion date is achieved. This has been detailed within the Contract Program submitted in "LL-TRN3N_3-M-iv_FullProgram";
- Interface meetings will be convened by Lendlease with The Interface Contractor, RMS and the PV. These meetings will be held initially on a monthly basis and then on schedule deemed necessary by all parties. These meetings will include the Earthworks and Pavement Manager, the Project Engineer and the Foreman for the Southern Works, at a minimum. The Construction Manager and any other Functional Manager will be included as required. All parties will receive the meeting minutes;
- Lendlease will nominate a single point of contact (being the Project Engineer for the Southern Works) with the Earthworks and Pavement Manager being kept completely informed.

(ii) Outline of the Spoil Management Plan

The TNR3N Construction Plan will include a detailed Spoil Management Plan detailing the excavation, spoil disposal and haulage methodology and the management measures to avoid, reduce, reuse and

recycle waste, including details of proposed beneficial reuse of excavated material.



Mass Haul – Summary of Quantities

An outline of these aspects of the proposed Spoil Management Plan follows below.

Spoil Management Plan

Spoil material is defined as any surplus material from excavations which is not required to complete the works. As detailed within 3-H Initial Earthworks Plan, it is Lendlease's intention to mitigate the amount of spoil generated by the project by designing the road and bridge works to minimise the potential for surplus materials.

Throughout the construction duration of the project, there may be unsuitable materials found that require identification and processing per the requirements of RMS D&C Specification R44. For example, unsuitable material is material that may occur below the nominated depth for stripping topsoil beneath embankments, which is deemed to be unsuitable for embankment or pavement support in its present position.

Lendlease's proposed strategy for ground treatments under embankments eliminates the requirement for topsoil stripping and hence the potential incidence of unsuitable materials being encountered. Small quantities of materials which would otherwise be classified as spoil will be disposed of on-site in non-structural earthworks (e.g. batter flattening) or landscape mounds.

Minimising the Generation of Spoil Materials

- Existing pavement from TNR makes up the majority of the spoil material. We propose to reuse this material in embankment and upper zone fills;
- In Stage 3 a quantity of materials which would otherwise be classified as spoil will be disposed of on-site in non-structural earthworks or landscape mounds, along the M4 median and exit ramp, that will add to the urban design. Where further opportunity exists, and subject to appropriate approvals, Lendlease will consider reshaping existing RMS or Penrith City Council properties outside the project boundary, including improving local community assets;

- Unsuitable material may be encountered (e.g.: under existing pavements) and will be identified during inspections of proposed embankment foundations and in accordance with RMS D&C Specification R44 Hold Point Clauses 3.2 and/or 3.4; and
- Prior to commencing embankment construction, all unsuitable material / non-contaminated spoil will be treated or removed and incorporated into the works on-site within stockpile / permanent mound locations.

Spoil Handling & Disposal

- The handling and disposal of spoil materials will be minimised / eliminated as detailed in 3-H Initial Earthworks Plan; and
- At the conclusion of the project, all surplus material used for site access roads and ancillary facilities will be incorporated into non-structural earthworks or landscaped mounds.

Excavation

Lendlease will use mechanical excavation methods.

Spoil Disposal

- Asphalt will be removed using either a milling machine or excavator and sent to an asphalt plant for reuse as RAP (Reclaimed Asphalt Pavements) or stockpiled and blended on-site with site won material to use in earth embankments;
- Concrete pavements – will be removed using mechanical excavation and blended with site won material to use as SMZ or drainage backfill;
- General Fill – will be removed using mechanical excavation and reused on-site in fill zones;
- General Solid Waste – removed from site to an approved tip site;
- Materials will be stockpiled on-site in compounds within the project boundaries at the intersection of Wentworth Road, Maxwell Street and TNR and Council lands nominated by RMS;
- Redundant materials will be used in noise mounds on the M4 eastbound exit ramps; and
- Bridge demolition – concrete and steel will be generated from the demolition of the existing bridge. This material will be cut / crushed on-site and taken by road to recycling plants.

Material Movement

- Rigid bogie trucks will be utilised for movements of spoil material within the project boundary;
- Where export of spoil is required either rigid bogies or truck and dogs will be utilised to remove material to an Environment Protection licenced and approved tip site; and
- Material import of select material, drainage backfill, and road pavements will be imported using truck and dogs accessing the sites from the main arterial roads – M4 and TNR within minimal use of minor local roads.

It is anticipated that, once on-site, the Construction Plan and Earthworks Plan will be further developed to

incorporate a full Spoil Management Plan and the spoil management measures below will be further explored.

Spoil Management Measures to Avoid, Reduce, Reuse & Recycle Waste

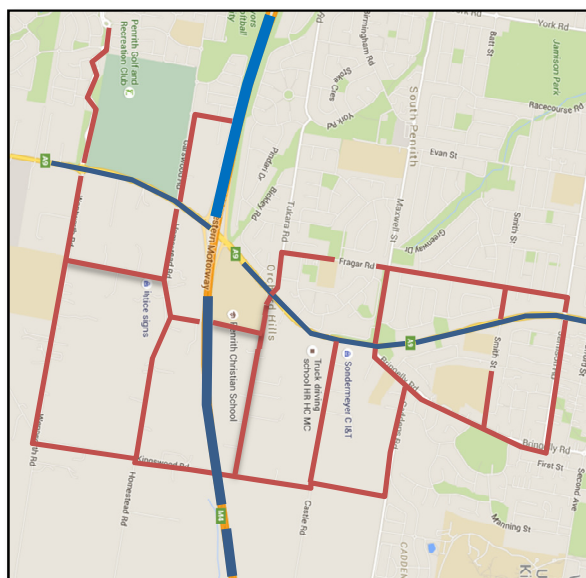
The management measures that may be used to reduce the impact of spoil on the TNR3N project include:

- On-site processing of site won material to enhance and maximise possible reuse opportunities;
- Incorporating spoil into the works e.g. increasing the slope of fill batters to 4:1, which will decrease the exposure to scour, potentially remove the requirement for safety barriers and reduce whole-of-life costs; and
- Reshape natural ground on RMS land, including minimising scour damage and improving natural drainage surface flow or making a landscaped feature mound or bunds. Alternatively, material could be utilised to provide flood mounds for the adjacent community and farmers which are above expected flood levels.

Full details regarding the management and handling of spoil are also provided as required in 3-H Initial Earthworks Plan.

(iii) Heavy Vehicle Routes, Frequency & Quantity

The map below identifies our proposed heavy vehicle routes, and the table lists the frequency and quantity.



KEY	
—	Site Construction Vehicle Movements
—	Material Import Vehicle Movements

Potential Construction Vehicle Impacts on Local Roads surrounding TNR3N.

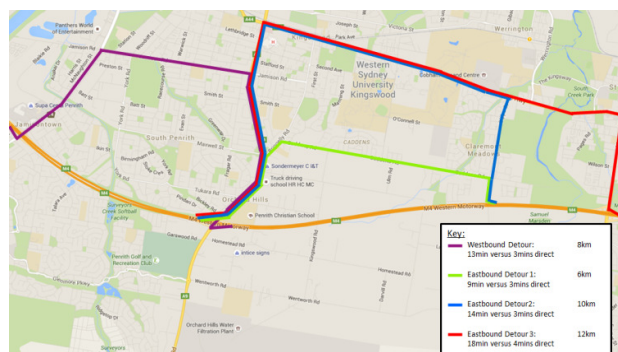
Earthworks Import	30 T&D / Day via TNR and M4
On-site Earthworks Movements	80 Rigid Truck / Day on Local Roads
HBB Pavement	27 T&D / Day via TNR and M4
Bridge Concrete	10 6m ³ Concrete Agitators / Day via TNR, M4 and local Roads
Super T Erection	4 Jinkers / Day via TNR and M4
Bridge Demolition	13 T&D / Day via TNR and M4
Asphalt	17 T&D / Day via TNR and M4

Detouring traffic

Prior to seeking agreement from any relevant authority Lendlease will undertake a traffic analysis of the road and demonstrate to the Council’s Representative that the road(s) and intersections to be utilised as a detour have adequate capacity to meet traffic demands.

For proposed detours utilising local authority roads, a documented agreement must be obtained by Lendlease from the relevant authority(s) detailing the conditions associated with the use of local roads / streets.

A minimum of 14 calendar days of the proposed detour route will be provided to the Council’s Representative, motorists and other road or corridor users. Notification via VMS, media advertising and letter box drops shall be implemented in accordance with the Community Involvement Plan.



Proposed detour routes for M4 Closures.

During critical construction activities with potential safety risk to M4 traffic, Lendlease plans to consult with TMC to close a single carriageway at a time, during nightshifts 10:00 p.m. to 5:00 a.m. and to detour traffic onto local roads, to enable the installation of bridge deck girders and parapets and demolition of the existing bridge.

Local road intersections with TNR will be required to be closed throughout the project to facilitate the construction of pavements. Depending on the works required closure length will be one shift to multiple shifts. Penrith City Council and TMC shall be consulted prior to any closures to minimise the impact on road users.

Over-dimensional, Over-weight & Dangerous Goods

The Traffic Manager will liaise with TMC to ensure:

Activity	Vehicle Numbers / Day
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- TMC are aware of the status of the project site;
- Advise of movements of excess-mass or over-dimensional vehicles;
- A route through the project is available for excess-mass or over-dimensional vehicle movements; and
- The Traffic Manager is responsible for excess-mass or over-dimensional vehicle movements through the project site.

The project will provide an efficient process for:

- Receiving notification from TMC regarding wide loads on the M4 and TNR;
- Issuing information to TMC to advise of road closures / traffic changes;
- Managing the interface with excess-mass or over-dimensional vehicles; and
- Managing the movements of excess-mass or over-dimensional vehicle movements through the project site.

If a wide load movement is not in accordance with the permit, a Compliance Improvement Form is completed by the Traffic Manager, and will be forwarded to the Council's Representative and TMC for further action as warranted.

(iv) Bus Facilities

Lendlease has reviewed and incorporated all requirements detailed in the SWTC "Bus Stop

Requirements". Lendlease has identified several bus routes that travel through the project and service several stops throughout the TNR3N project. These bus routes and bus stops are to be maintained within requirements for maintaining existing facilities until the new stop is constructed. Our staging solution provides for all required bus stops along the alignment and provides safe STA compliant access to each.

Any proposed traffic changes will be communicated to and agreed with STA and the local bus operator throughout the project at regular meetings and prior to any major changes to bus stop requirements.

The following minimum infrastructure will be installed for all temporary bus stops:

- Temporary Bus Bay Geometry – 15m long, 3.5m wide with 20m tapers at each end;
- Bus Stop Signage;
- Pedestrian queue area; and
- Clearly marked pedestrian paths to direct public to bus stop.

The existing number of bus stops will be maintained with minimal changes to locations. Where changes are required due to staging of works the operator and customers will be informed, through 3-F Initial Community Involvement Plan as outlined in advance of relocation. Any bus stops that require relocation will adhere to the details outlines in the SWTC.

Bus Route	Name of Route	Bus Stop Locations within TNR3N	Approx. Chainage	Frequency Per Day
794	Penrith to Mulgoa Rise & Glenmore Park	TNR before Bringelly Rd, Kingswood (2747)	2650	25-Mon – Fri 16-Sat 12-Sun
		TNR after Bringelly Rd, Orchard Hills	2500	25-Mon – Fri 16-Sat 12-Sun
		Garden Barn, TNR, Orchard Hills	2300	25-Mon – Fri 16-Sat 12-Sun
		TNR near Frogmore St, Orchard Hills	1750	25-Mon – Fri 16-Sat 12-Sun
	Glenmore Park to Penrith via Mulgoa Rise	TNR near Flavel St, South Penrith	1900	25-Mon – Fri 16-Sat 12-Sun
		John Cootes, TNR, South Penrith	2350	25-Mon – Fri 16-Sat 12-Sun
TNR after Maxwell St, South Penrith		2650	25-Mon – Fri 16-Sat 12-Sun	
789	Penrith to Luddenham via TNR	Medical Centre, Bringelly Rd, Orchard Hills	2600	1-Mon – Fri
		TNR before Bringelly Rd, Kingswood (2747)	2650	1-Mon – Fri

Bus Route	Name of Route	Bus Stop Locations within TNR3N	Approx. Chainage	Frequency Per Day
		TNR after Bringelly Rd, Orchard Hills	2575	2-Mon – Fri
		Garden Barn, TNR, Orchard Hills	2300	2-Mon – Fri
		TNR near Frogmore St, Orchard Hills	1750	2-Mon – Fri
	Luddenham to Penrith via TNR	TNR near Flavel St, South Penrith	1900	2-Mon – Fri
		John Cootes, TNR, South Penrith	2400	2-Mon – Fri
		Bringelly Rd after TNR, Kingswood (2747)	2650	2-Mon – Fri
		Kingswood South PS, Smith St, Kingswood (2747)	3400	2-Mon – Fri
791	Penrith Loop via South Penrith & Jamisontown	Maxwell St near Greenway Dr, South Penrith	2600	37-Mon 9-Tues – Fri 25-Sat 13-Sun
		Fragar St near Wardell Dr, South Penrith	2590	37-Mon 9-Tues – Fri 25-Sat 13-Sun
793	Penrith to Jamisontown Loop	Maxwell St near Greenway Dr, South Penrith	2600	21-Mon – Fri 11-Sat
770	Penrith to Mt Druitt via Claremont Meadows & St Marys	Jamison Rd near Parker St, Penrith	3925	34-Mon – Fri, 18-Sat, 12-Sun
		Jamison Rd near Jean St, Kingswood (2747)	3925	34-Mon – Fri, 18-Sat 12-Sun
	Mt Druitt to Penrith via Colyton & St Marys	Jamison Rd near Parker St, Kingswood (2747)	3925	34-Mon – Fri 18-Sat 12-Sun
781	Penrith to St Marys via Glenmore Park & Claremont Meadows	None	200	4-Mon – Fri
	St Marys to Penrith via Claremont Meadows & Glenmore Park	None	200	3-Mon – Fri

(v) Parking, Pedestrian & Cycle Facilities

Parking

There is currently no kerbside parking on either side of TNR through the project. Adjacent property owners and visitors currently utilise the large grass verge for parking, car sales and break downs. As works progress these shoulders will be removed and barriers setup to facilitate the construction of the project.

Lendlease appreciate that these are significant changes to how property owners have operated for many years and therefore realise the importance of consultation and communication prior to these changes.

All changes to the site will be communicated to the community, as outlined in 3-F Initial Community Involvement Plan.

During the construction stages when access to properties will be disrupted for extended periods (i.e. for more than one shift) a sufficient number of safe and accessible parking spaces shall be created as close as possible to the effected properties. Pedestrian access to these parking spaces shall be maintained, well-lit and signposted. Works shall be staged to ensure parking is as close as possible and for the shortest period of time possible to minimise the disruption to the property owner.

Lendlease will utilise a site mini bus to transport the site based workforce from the main site compounds, where

sufficient parking will be provided, at the beginning and end of each shift to minimise the requirements for on-site parking of construction vehicles and ensure access is maintained.

Pedestrians

The current pedestrian paths along TNR vary in standard both in surface finish and in width. The quality of the surface also varies with several sections being broken due to long term use, tree root pressure and installation of utilities. Damage has often been patched with asphalt. In carrying out the numerous maintenance and construction activities required to complete the upgrade to TNR, changes to the road and pedestrian network will be required.

In developing the Construction Traffic Control Plans required for the project, analysis of the current use of the network will be considered and particular attention given to sight distances at driveways, intersections and construction gates.

Approval for alternative connections will be obtained by the relevant authority before commencement of construction and will be equivalent in standard, width, surface, user safety and convenience to the existing connections at all times during the performance of the Project Activities.

Glenmore Parkway to Bringelly Road / Maxwell Street

There is currently no formalised footway from Glenmore Parkway to Bringelly Road, pedestrians use the wide shoulder or grass verge.

- Stage 1 – a suitable temporary pedestrian path will be created and clearly signposted to clearly delineate public pedestrians around our works. Particular attention to site distances will be considered at intersections of TNR with local roads; and
- Stages 2 & 3 – pedestrians will be directed to use the new shared path on the eastern side of TNR.

Bringelly Road / Maxwell Street to Jamison Road

Existing footpaths will be maintained for as long as the staging permits to avoid the construction of temporary footpaths.

- Stage 1 – pedestrian footway will be maintained on both sides of TNR during works and the existing signalised intersections will be utilised to direct pedestrian crossings;
- Stage 2 – a new shared path will be open for pedestrians and cyclists on the eastern side of TNR. The existing pedestrian footway on the western side of TNR will be maintained during this stage; and
- Stage 3 – the shared path on the eastern side will be operational with a temporary footway on the west to be managed to direct pedestrians around the works.

Cyclists

Lendlease recognises that cyclists will be affected during the upgrade of TNR. Lendlease will incorporate

several measures aimed at improving the safety of cyclists during the construction. These measures will include:

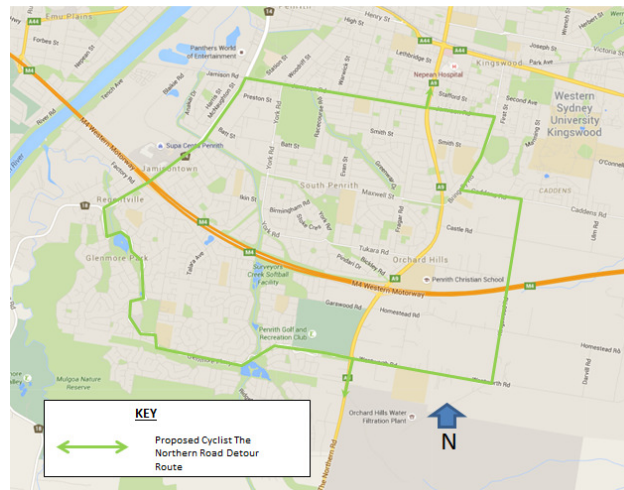
- Awareness campaigns targeting motorists to highlight the laws concerning the protection of cyclists through provision of a 1m overtaking buffer, in line with current NSW legislation;
- Prior notification will be displayed warning motorists and cyclists of pending changes to the road;
- Information signs will be installed as part of the traffic control plans highlighting the changes to the road networks specifically as it relates to cyclists; and
- Cycle path information such as that posted online by the Council indicating a bike trail will be reassessed and altered as the various staging is implemented and lane widths and footpaths are altered.

When developing Construction Traffic Control Plans, Lendlease will ensure that they comply with Austroads criteria and pass a Road Safety Audit carried out by an independent third party. Following this the plans will be submitted for approval to the Council acting as the authority. Approved changes will be notified to the public at least 14 days ahead of implementation. Once a new route is constructed, an audit will be undertaken to ensure that it has been constructed in accordance with the approved plan.

Currently there is no dedicated cycle lane on TNR or the M4, through the project site, however there is wide shoulders to facilitate cyclists. This shoulder is planned to be closed, on both TNR and M4, from Stage 1, therefore requiring Cyclists to be detoured around the project, via an advertised and signposted route as follows.

The Northern Road

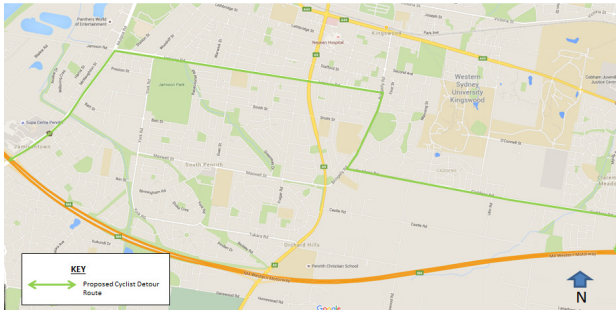
- Stage 1 – Northbound and Southbound Cyclists will be detoured around the project utilising Mulgoa Road or Kingswood Road.
- Stages 2 & 3 – Cyclists will be able to utilise the new shared path on the eastern side of TNR until the additional shared path is completed on the western side.



TNR Cyclist Detour Route during Stage 1.

M4

- Stages 1, 2 & 3 – Cyclists will be detoured off and on the M4, on the eastern side of TNR, at Kent Road road access ramps, currently being constructed and on the western side of TNR at Mulgoa Road.



M4 – Cyclist Detour Route during TNR3N project.

(vi) Plant & Equipment

Plant	Site Establishment	Property Adjustments	Service Relocations	Earthworks	Drainage	Pavements	Kerbs	Signals	Driveways	Landscaping	Noise Walls	Retaining Walls	Culverts	Bridge Foundations	Bridge Deck	Bridge Demolition
1-5t Excavators with auger, hammer and bucket attachments	X	X	X	X	X				X	X		X				
6-20t Excavators with auger, hammer and bucket attachments			X	X						X	X	X	X			
21-40t Excavators with bucket, hammer, pulverising, grab attachments				X	X								X	X		X
Wheeled loaders	X			X								X				
Posi track loaders	X			X		X				X		X				
Back Hoe	X	X		X	X				X	X		X				
Rigid trucks	X	X	X	X	X	X			X	X	X	X	X	X		
Truck and dogs				X	X	X				X				X		
Graders				X		X				X						
2-15t Compaction Equipment	X	X	X	X	X				X		X	X	X	X		
Track mount drilling rig											X			X		
Truck mounted drilling rig												X		X		
Piling rig											X			X		
40ft concrete boom pump												X		X	X	
Road Saw	X	X	X		X	X	X	X	X						X	X
10-30t Articulated Crane	X				X			X			X	X	X	X	X	X
20-500t Mobile Crane														X	X	X
300-500t Crawler cranes															X	X
Slip form paver						X	X									
Slip form kerb machine							X									



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 39 – Initial Chain of
Responsibility Management Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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Project data

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Initial Chain of Responsibility Management Plan

3-E: Initial Chain of Responsibility Management Plan

Lendlease is leading the infrastructure construction industry in relation to chain of responsibility with best in class controls for management, ensuring strict legislative compliance and safety of all as our priority.

(i) Compliance with Statutory Requirements

A. Chain of Responsibility Provisions of the Heavy Vehicle National Laws

Lendlease will comply with all provisions of the Heavy Vehicle National Laws. Further information on how Lendlease intends to comply is located in this summary which forms part of a comprehensive Lendlease Chain of Responsibility (CoR) Management System.

Lendlease Specific Chain of Responsibility Compliance Measures

The project will ensure specific CoR compliance measures for load, mass, dimension, loading, restraint, fatigue, speed, heavy vehicle inspection and maintenance. This information is summarised in this section and will be implemented in accordance with the requirements of the Heavy Vehicle National Law.

Lendlease management system forms and procedures referenced throughout this section are available on request.

Loading & Unloading of Heavy Vehicles

Lendlease will ensure adequate facilities are provided on the project for loading / unloading vehicles safely.

This may include safe parking, loading and unloading areas, safe tarping capability and amenities.

Operators of mobile plant used for loading and unloading of heavy vehicles will be appropriately licensed and qualified.

Refer to [LLE626 Attachment 1 CoR Matrix](#) for information on the specific measures that Lendlease may undertake as a Loader / Unloader / Loading Manager within a road transport chain.

Mass, Dimension, Loading & Restraint

The overarching principles for the Lendlease compliance approach in relation to mass, dimension, loading and restraint issues (regardless of its specific role in a particular road transport chain) are as follows:

- Lendlease will take reasonable steps to ensure compliance with the prescribed mass and dimension requirements where they have direct responsibility for affecting either:
 - The mass of components of heavy vehicles or of the mass of the heavy vehicle; or

- The dimension of the heavy vehicle (together with its equipment), the components of a heavy vehicle or of the heavy vehicle's load.

Where Lendlease has direct responsibility for a load on a heavy vehicle, we will take reasonable steps to ensure that the load is placed, secured and restrained in a manner that complies with the prescribed loading requirements.

Outside of direct responsibility, Lendlease will further seek ongoing assurances and evidence from Service Providers within the relevant road transport 'chains' that mass, dimension and loading requirements are being complied with. This includes, but is not limited to, obtaining evidence from the Service Provider about the:

- Load capacity of the vehicle;
- Mass and dimension requirements of the heavy vehicle; and
- Total allowable mass on tyres, axles or axle groups of the heavy vehicle.

Route mapping of the local roads and infrastructure has been carried out for the project to identify any dimensional restrictions for heavy vehicle deliveries to and from site. Where restrictions are identified, this information in particular will be communicated to Service Providers.

Refer to [LLE626 Attachment 1 CoR Matrix](#) for information on the specific measures that Lendlease may take as a Consignor, Loading Manager, Loader and Consignee within a road transport chain in respect of mass, dimension, loading and restraint.

Container Weight Declarations

Where Lendlease is consigning (or otherwise arranges) a freight container for road transport using a heavy vehicle, a declaration of the weight of the container including its contents is to be provided to the Operator / Prime Contractor or owner-driver for transport by placing a [LLE626I Container Weight Declaration sticker](#) on the container. This must occur prior to the freight container leaving the Lendlease site.

The declaration must include the:

- Weight of the container including its contents;
- Container number and other details necessary to identify the container;
- Name and residential address or business name and address in Australia of the responsible entity for the freight container; and
- Date of declaration.

Load Mass Stickers

A [LLE626H Load Mass Sticker](#) will be issued to heavy vehicles to identify maximum mass requirements for vehicles operating within the project. The sticker will

identify the registration number, load capacity and any mass / dimension requirements for the heavy vehicle.

This will correspond to the mass and dimension requirements set out in the [LLE903D Hired Plant Register](#). Further detail may also be required to confirm the relevant axle loads for the vehicle (if the axle load exceeds the total allowable mass). The sticker must be fitted to each side of the truck and trailer.

LLE903D Hired Plant Register

The [LLE903D Hired Plant Register](#) will be used on the project to record heavy vehicle load details. Details of truck and trailer configurations, axle codes, gross vehicle mass, tare weight, load weight and variances to legal weight will be recorded onto the register. Refer to [LLE626 Attachment 1 CoR Matrix](#) and [LLE626 Attachment 5.2 CoR Guideline Mass, Dimension and Loading](#) for further information on load mass, dimension, loading and restraint.

Heavy Vehicle Inspection & Maintenance

Heavy vehicles operating on the project will meet the relevant registration and compliance standards and will be maintained in accordance with the manufacturer's specifications.

Heavy Vehicle Plant Induction Checklist

Heavy vehicles operating on the project will undergo a check by Lendlease, prior to undertaking any works using the [LLE626F Plant Induction Checklist](#) with copies of all registration, load capacity, servicing and maintenance records for the vehicle provided by the Service Provider.

Where identified in the [LLE626A Integrated CoR Project Risk Register](#), a third-party verification of vehicle inspection and maintenance may also be required prior to undertaking any works from heavy vehicle accredited mechanical Service Providers approved by the project. This may also include further inspections throughout the duration of the works on the project at frequencies as determined by the project in the [LLE626A Integrated CoR Project Risk Register](#).

Upon successful completion of the [LLE626F Plant Induction Checklist](#) the vehicle is to be recorded on the [LLE903D Hired Plant Register](#) (including the mass and dimension requirements of the vehicle). This Plant Register will be used to ensure that heavy vehicles operating on the project remain properly maintained throughout the life of the project.

Mobile Plant Identification Number

Upon successful completion of the [LLE626F Plant Induction Checklist](#), a [LLE626G Plant Identification Sticker / magnetic plate](#) will be issued for the heavy vehicle and will be clearly displayed on the vehicle in the positions nominated by the plant manager.

The Plant Identification Sticker / magnetic plate will include a plant identification number which will correspond with the number allocated on the [LLE903D](#)

[Hired Plant Register](#). This will be retained by the heavy vehicle for the entire duration of the project and the number is not transferrable.

Heavy Vehicles Returning to Site

Where a heavy vehicle is returning to site following a period greater than 30 days, the heavy vehicle must be reinspected using the [LLE626F Plant Induction Checklist](#) prior to operation. The [LLE903D Hired Plant Register](#) is to be reviewed to ensure the maintenance and service records provided and the [LLE626G Plant Identification Sticker / magnetic plate](#) attached to the vehicle are correct. Refer to [LLE626 Attachment 5.3L CoR Guideline Heavy Vehicle Inspection and Maintenance](#).

Heavy Vehicle Maintenance

The [LLE903D Hired Plant Register](#) will be used to verify that heavy vehicles operating on the project remain properly maintained throughout the life of the project.

All heavy vehicle Operators are to conduct regular inspections and maintenance at a standard that ensures compliance with the Heavy Vehicle National Law minimum requirements and to a standard not less than that recommended by the vehicle manufacturer and / or serving agent.

Updated maintenance and service records are to be provided for heavy vehicles following maintenance and servicing or at any other time at the request of the project. Daily pre-start checks are to be carried out by all heavy vehicle drivers in accordance with the manufacturer's requirements.

Where any maintenance non-conformances come to the attention of Lendlease, we will:

- Seek assurances from the affected Operator that steps have been taken to properly maintain that particular vehicle, and to confirm that any maintenance issues do not affect the whole of the relevant heavy vehicle fleet; and
- CoR events are recorded in the company database (Enablon) which allows incidents to be analysed. This information will be used to make changes to procedures and train employees on their responsibilities in relation to CoR.

Fatigue & Speed

Regardless of our role in a particular road transport chain, Lendlease will act in accordance with the following principles:

- Lendlease will not cause, incentivise or encourage any Driver to drive while impaired by fatigue;
- Where Lendlease has direct responsibility for a matter which may impact a Driver's work and rest hours option, we will ensure that we take reasonable steps to assess and minimise any negative impact of any of our activities on a Driver's work and rest hours option;
- Lendlease will not cause, incentivise or encourage any Driver to exceed speed limits; and

- Where Lendlease has direct responsibility for a matter which may impact a Driver's speed, such as a Driver's schedule, Lendlease will take reasonable steps to ensure they do not impact on a Driver's ability to drive within the speed limit.

The Project Team will ensure that appropriate fatigue management plans are developed and schedules are managed (by Lendlease where appropriate, or otherwise the Service Provider) to prevent Drivers driving in breach of their work and rest hours option and in excess of the relevant speed limit.

Where a heavy vehicle driver is delayed more than one hour on the project, the Driver is to complete the [LLE626E Fatigue Management Declaration Form](#) to confirm that the Driver has sufficient driving hours remaining to continue driving.

Refer to [LLE626 Attachment 1 CoR Chain of Responsibility Matrix](#) and [LLE626 Attachment 5.4 CoR Guidelines Fatigue](#) for information on the specific measures that Lendlease may take as a Consignor, Scheduler, Loading Manager, Loader and Consignee within a road transport chain in respect of fatigue management.

Fatigue Management

Work & Rest Hours under Standard Fatigue Management

Time Period	Working Hours	Required Rest
<i>In any period of</i>	<i>Employee must not work more than</i>	<i>And must have a rest period of no less than</i>
5.5 hr	5.25 hours	15 continuous minutes
8 hr	7½ hours	30 Minutes rest time in blocks of 15 continuous minutes
11 hr	10 hours	60 Minutes rest time in blocks of 15 continuous minutes
24 hr	12 hours	Seven continuous hours stationary rest
7 days	72 hours	24 continuous hours stationary rest time
14 days	144 hours	Two night rest breaks and Two night rest breaks taken in consecutive days

All Drivers including subcontractors are only allocated work under standard hours, unless they have been trained in basic fatigue management and the associated documentation has been provided to Lendlease.

Work & Rest Hours under Basic Fatigue Management

Rest time must be out of the cabin of the heavy vehicle or actual rest time while the heavy vehicle is stationary.

Rest time does not include driving or unloading time, or time waiting in line up.

Time Period	Work	Rest
<i>In any period of</i>	<i>A driver must not work for more than a maximum of...</i>	<i>And must have the rest of that period off work with at least a minimum rest break of...</i>
5½ hours	5¼ hours work time	15 continuous minutes rest time
8 hours	7½ hours work time	30 minutes rest time in blocks of 15 continuous minutes
11 hours	10 hours work time	60 minutes rest time in blocks of 15 continuous minutes
24 hours	12 hours work time	7 continuous hours stationary rest time*
7 days	72 hours work time	24 continuous hours stationary rest time
14 days	144 hours work time	2 x night rest breaks and 2 x night rest breaks taken on consecutive days

*Long / night work time is any work time in excess of 12 hours in a 24 hour period or any work time between midnight and 6.00 a.m. (or the equivalent hours in the time zone of the base of a driver).

Work & Rest Hours under Advanced Fatigue Management

Advanced Fatigue Management accreditation imports a risk management approach to managing driver fatigue. Rather than setting work and rest hours, Advanced Fatigue Management offers the flexibility to apply for extended hours as part of an Advanced Fatigue Management Plan that takes into account the fatigue risks of those hours are offset by sleep, rest and other management practices.

B. Requirements of the Project Deed

Lendlease will comply with all aspects of the Project Deed regarding the importance of managing the chain of responsibility legislation with respect to clause 5.16 Heavy Vehicle National Law – Chain of Responsibility Provisions.

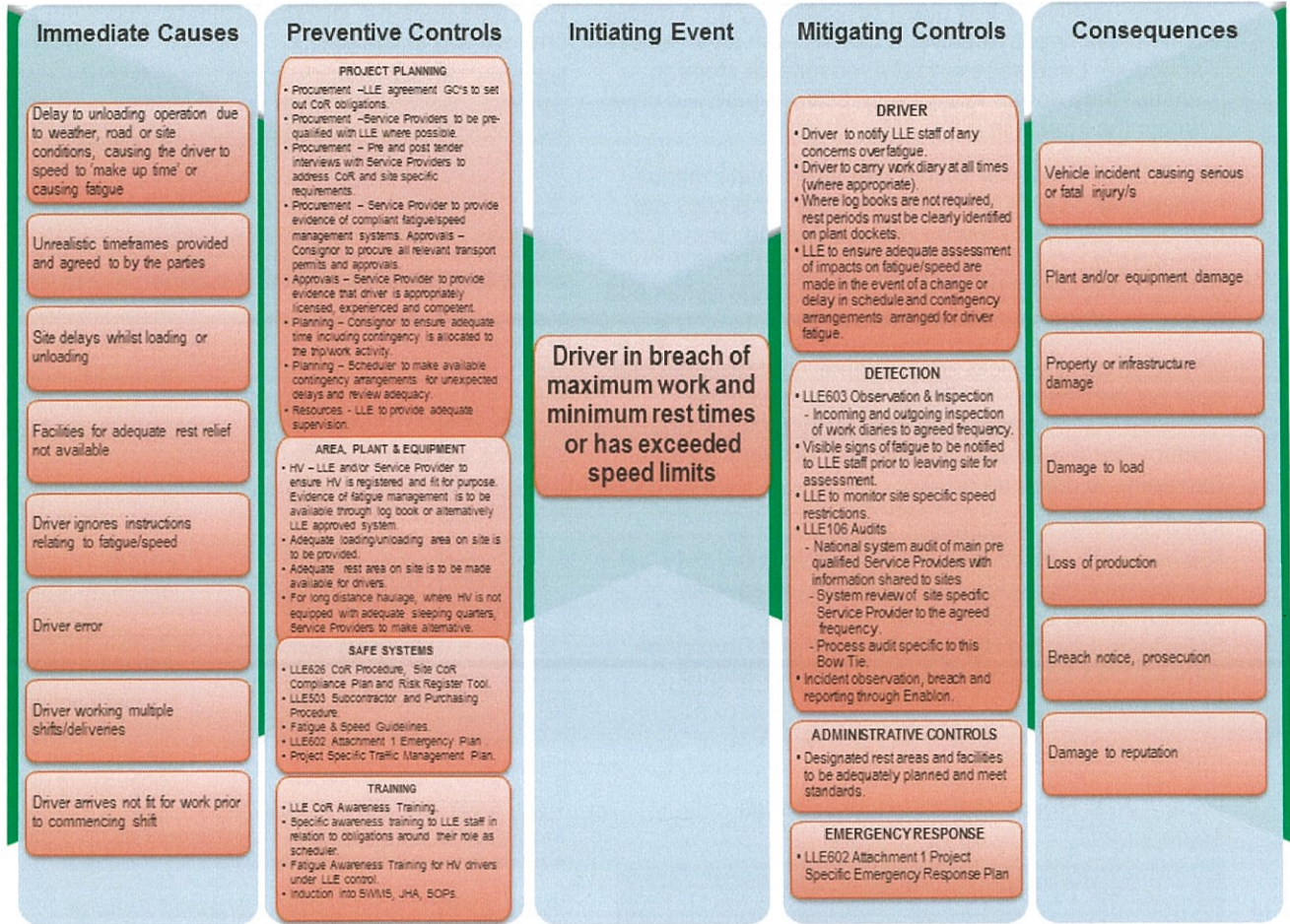
(ii) Initial Project CoR Risk Assessment

The CoR 'Bow-tie' Risk Assessment for the project is provided below and identifies project-specific CoR risks and how they will be addressed through our project delivery approach during construction.

Also included is the Risk Matrix and sample Risk Register.

These documents will be developed upon successful bid.

CoR 'Bow-tie' Risk Assessment for TNR3N (LLE626 Attachment 4.4 COR – Fatigue & Speed)



Risk Matrix

		LIKELIHOOD				
Risk Analysis		5	4	3	2	1
R = C X L		Extremely Likely Almost certain to happen	Very Likely Could happen anytime	Likely Could happen sometime	Unlikely Could happen	Rarely Could happen but probably never will
CONSEQUENCE	5 Catastrophic Fatality Critical structural damage to major infrastructure Critical traffic impact > road closure Critical business impact >\$1m	25 Class 1 / H	20 Class 1 / H	15 Class 1 / H	10 Class 2 / M	5 Class 3 / L
	4 Serious Serious injury Major damage to infrastructure Major traffic impact Major business impact \$500k - \$1m	20 Class 1 / H	15 Class 1 / H	12 Class 2 / M	8 Class 2 / M	4 Class 3 / L
	3 Moderate Medical treatment injury Moderate damage to infrastructure Moderate traffic impact Moderate business impact \$20k - \$500k	15 Class 1 / H	12 Class 2 / M	9 Class 2 / M	6 Class 2 / M	3 Class 3 / L
	2 Minor First aid needed Minor damage to infrastructure Minor traffic impact Minor business impact <\$20k	10 Class 2 / M	8 Class 2 / M	6 Class 2 / M	4 Class 3 / L	2 Class 3 / L
	1 Insignificant No injury No damage to infrastructure No traffic impact No business impact	5 Class 3 / L	4 Class 3 / L	3 Class 3 / L	2 Class 3 / L	1 Class 3 / L



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 40 – Initial Community
Involvement Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

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Initial Community Involvement Plan

3-F: Initial Community Involvement Plan

Lendlease are committed to working closely with local communities to create the best places. We leverage off our extensive experience and surpass expectations in all areas of community and stakeholder engagement.

(i) Community & Stakeholder Team

Roles & Responsibilities

A Community and Stakeholder Team has been appointed for the project consisting of:

- Our full-time Community and Stakeholder Manager, (CSM) Candice Camacho with over seven years of RMS experience. This position reports to the Project Director, is a member of the Senior Management Team and will lead and manage community and stakeholder engagement for the project.
- A full-time Community and Stakeholder Officer (CSO) known as the Property Works Liaison Officer. This position will report directly to the CSM and will support community and stakeholder engagement activities for the project particularly regarding property works.

The CSM and CSO will be based at the main site full time as well as being available on call 24/7. They will be available for the duration of the project up to two months after the date of construction completion.

The CSM roles and responsibilities include, but are not limited to:

- Develop, implement and manage the Community Involvement Plan, protocols and systems in line with all RMS goals, policies and legislative requirements;
- Liaise with the project team and RMS on all project, community and stakeholder matters;
- Provide leadership and direction for other project team members to ensure effective community engagement;
- Build positive relationships through proactive liaison with the community and stakeholders;
- Develop, edit, review and provide information for a range of communication collateral;
- Attend community meetings or other activities as arranged or requested by RMS;
- Provide information on planned construction activities which may have an impact on the community;
- Manage the 24-hour community information phone and email to ensure enquiries, issues and complaints are managed in a timely manner in line with the complaints management system;
- Devise, facilitate, evaluate and report on all communication and engagement activities; and
- Enhance the reputation of RMS as a valued community participant by providing innovative opportunities to engage the community and ensuring RMS presence at events of regional importance.

Given the importance of the works north of Bringelly Road in relation to interaction with properties and driveway access, Lendlease will appoint a Property Team who will report directly to the Project Director. The CSO is part of this team which will ensure consistency of approach and focus on communication with these property owners during roadworks, property adjustments and architectural treatments.

A & B. Hours of Work & Work Location

The CSM and CSO will be available to stakeholders as required. They will be available during standard construction hours, Monday to Friday, excluding public holidays and rostered days off when a full site closure is implemented.

A 24-hour community information phone line will be managed to ensure enquiries and issues are addressed appropriately.

(ii) Working with Impacted Businesses

We have a commitment to best practice and considerate and meaningful engagement to support local business throughout our projects. Our strategy is tried and tested and has been proven successful in densely populated urban areas like the Sydney CBD through the CBD Alliance and on Victoria Road during Inner West Busway along Victoria Road.

Individual & Personal Engagement

We will adopt a place management approach to work with businesses that require a high level of individual engagement. The CSM and CSO will operate as relationship managers with businesses that are identified as high priority, providing them with a dedicated point of contact throughout the project.

The CSM or CSO will work in partnership with each business owner to develop an individual, tailored Place Management Plan, working with the stakeholders to minimise and mitigate both design and construction impacts. This includes:

- Developing a case file and plan that identifies the specific impacts, adjustments and issues for the business including: who works at the property; working arrangements (shift work); access requirements; deliveries; parking; business visibility and signage; construction; traffic; noise; dust; and vibration;
- Regular face to face and direct phone / email contact with businesses directly impacted by the works;
- Aligning expectations of the project and its impact on the business;
- Developing a plan and process to identify and implement pragmatic solutions to minimise construction impacts including consultation lead times, areas of responsibility, legal and regulatory frameworks;

- Enabling the business to plan for impacts through visibility of upcoming work;
- Outlining a clear issues resolution procedure;
- Establishing a mechanism for ongoing dialogue to meet the needs of the business; and
- Identifying and outlining delivery of positive impacts.

The benefits of the place management approach are:

- Relationships with key businesses can be developed and trust established before construction starts;
- Business issues and concerns can be clarified and resolved as early as possible in the delivery;
- Access and operational issues can be incorporated into the construction staging and management planning from the beginning; and
- Urgent or critical issues can be responded to efficiently, based on a detailed understanding of the specific circumstances of the business, reducing the risk of escalation to media or the formation of action groups.

Lendlease anticipates there will be special requests or unique, one-off events that the construction team will need to respond to. These might include a business opening, closing or refurbishment; delivery schedules; and annual events. Where this occurs we will engage with the relevant stakeholders at the earliest practical time to mitigate the impact of construction activity.

We will apply the same principles and level of diligence outlined here to all other community and stakeholders interacting with the project, where necessary.

(iii) Providing Best Practice Community Engagement

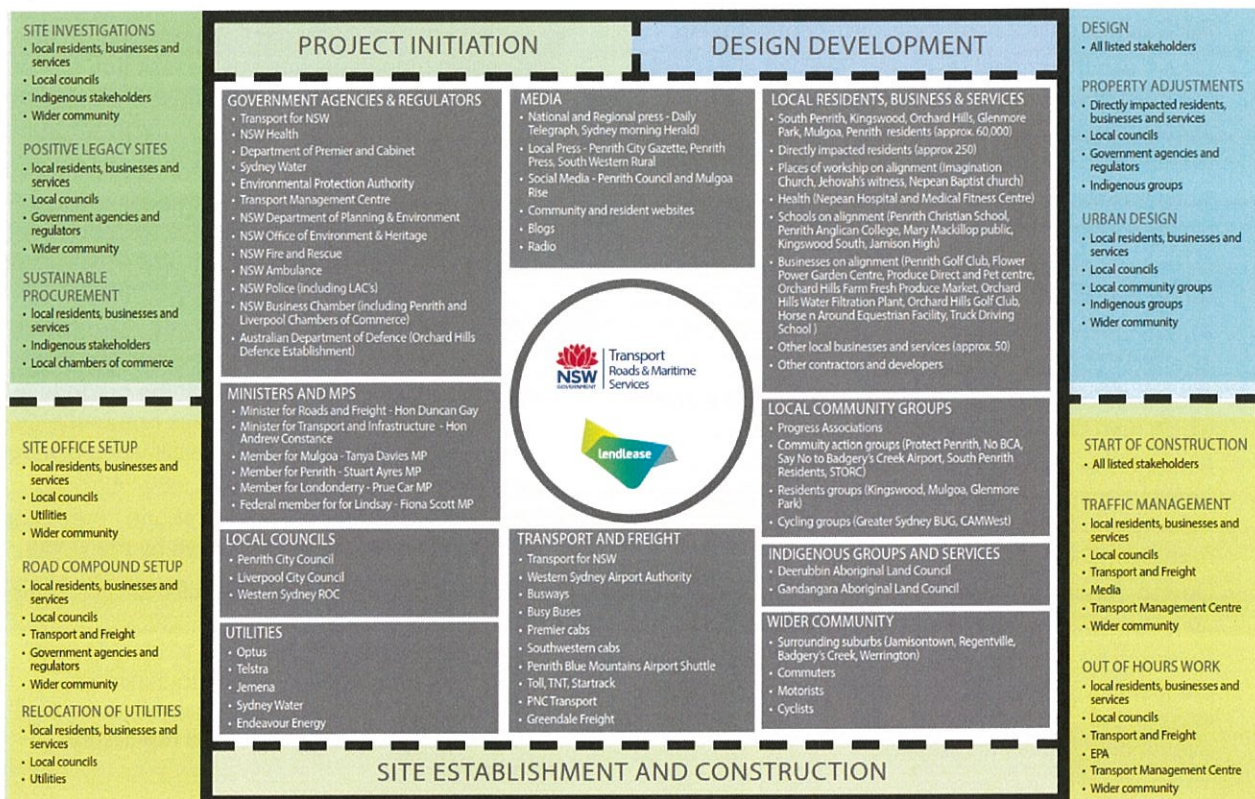
Lendlease is the partner of choice for efficiently and effectively managing communities. We are developing this Community Involvement Plan to exceed the requirements of NSW State Government and RMS legislation, guidelines, policies, processes and procedures as outlined in the SWTC.

Our approach to community engagement on the project will be guided by the following principles:

- **Integrity:** engagement will be transparent and clear in purpose.
- **Inclusiveness:** engagement will be accessible, balanced, respectful and aim to capture a full range of values and perspectives.
- **Sustainable decision making:** aiming to deliver good community outcomes while still balancing the needs of the project, program and RMS. Understanding that decisions need to be made that will benefit and not detriment the projects in the wider Western Sydney Infrastructure Plan program.
- **Influence:** engagement will be reflected in outcomes – the community should be able to see and understand the impact of their involvement.

Our focus will be on early, proactive and relationship based engagement to ensure the interests, needs and concerns of all stakeholders can be understood, balanced and considered as the programme, construction and methodology are prepared. Throughout the project we will aim to build strong relationships in the start-up and detailed design phases that will carry through project delivery to project completion.

Figure 1: Initial Stakeholder Mapping Diagram



Stakeholder Analysis

The initial stakeholder mapping diagram shown in Figure 1 identifies key stakeholders for engagement during various activities on The Northern Road project.

The stakeholder analysis figure below reflects the minimum level of engagement for dealing with each segment of the community based on the level of impact.

Lendlease will carry out a detailed assessment of the direct and indirect impacts of the project to assess what level of engagement is required. This assessment will also determine where a stakeholder's interests lie in the project and how we can engage them in the most meaningful way.



The Community Involvement Plan will be addressed at each stage of the project. This Plan will be a living document that will change and improve as the needs and requests of the community also change throughout the life of the project.

Lendlease's best practice approach to developing the Community Involvement Plan and its continual improvement is illustrated below.



The following table provides the explanation of this model.

Understand the Community

Lendlease will build on the extensive consultation undertaken by RMS in the preparation of the Western Sydney Infrastructure Plan and Review of Environmental Factors to identify all stakeholders and understand the broader community context for the project. We recognise that communication and engagement methods and preferences vary significantly from generation to generation, and further to this, that the type of information and way it is consumed varies across generations. For example: The suburbs bordering The Northern Road alignment have a relatively young population in comparison to the broader Australian population. A large proportion of the population in this area is under 60 years of age, with 70% of the population under 60 years of age and 20% in the 0-14 age group. More than 90% of the population identify as speaking English well with only 7% identifying as non-English speaking (Source: Profileid.com.au, 2016).

A stakeholder-determined community engagement approach will be adopted to work with different stakeholder groups to identify and implement a variety of communication and engagement methodologies to meet their specific needs and preferences.

Lendlease will seek to engage stakeholders on their terms, identifying existing community forums and social networks and will seek to become part of the conversation.

Inform & Engage the Community

Lendlease will develop a Community Involvement Plan that informs and engages the community with a focus on building strong relationships, with an aim to:

- Inform and involve stakeholders in the design and delivery of the project
- Build trust with stakeholders through honest, transparent, consistent and proactive engagement
- Provide information to those who want and need it using language and channels that they can engage with
- Establish, manage and respond to reasonable community expectations
- Engage early to ensure no surprises
- Elicit honest feedback and respond accordingly
- Effectively manage complaints, issues and incidents
- Promote advocacy for the project through the provision of compelling justification
- Ensure compliance with all contractual and regulatory requirements
- Establish and maintain a professional and collaborative working relationship with all key stakeholders
- Effectively manage the property adjustment process
- Protect and promote the RMS brand and reputation

Tools to inform the community include but are not limited to :

- Notifications to directly and indirectly impacted work site neighbours to advise on the start of work or changes to the work programme as a result of engagement
- 24 hour community information line
- Project email address
- Meetings and briefings, as required

- Flyers or postcards to directly and indirectly impacted work site neighbours with programme reminders, site location maps, street closure / diversion information and out of hour work schedules
- Start up and ongoing quarterly community updates to the broader region
- Courtesy doorknocks, phone calls and emails to sensitive receivers and directly impacted stakeholders
- Weekly emails to the community and stakeholders of the next week's programme

To sustain ongoing engagement we will position ourselves as an approachable, open and transparent organisation willing to work through concerns and issues of the neighbouring communities. Tools to engage the community include but are not limited to:

- 'Have Your Say' formal process
- Interactive online mapping tool
- Place Management Plans
- Community events (i.e. opening)
- Face to face engagement (i.e. doorknocks, information sessions, workshops and drop in sessions at local venues and events)
- Briefings and regular meetings to receive feedback on progress and impact
- Social legacy and community support via involvement at local events

Address Community Needs – Continuous Improvement

As the project evolves so will the communication and engagement needs of the community. Lendlease will implement a process of basic continuous improvement, eliciting feedback from the community while informing and engaging the community, using this information to refine the teams approach for the next event or output, ensuring the engagement approach remains effective throughout delivery and promoting innovation in the wider project team to provide feasible solutions.

The Community involvement Plan will be benchmarked against the IAP2's Quality Assurance Standard for Community and Stakeholder Engagement. This will ensure that the plan is being carried out in line with best practice principles, providing a copy of the self-assessment results to RMS as a form of reporting on the project.

Monthly reporting will also provide information to RMS on how we are tracking against all aspects the Community Involvement Plan including issues management, engagement activities, consultation, complaints and compliments.

Broad Engagement

Lendlease recognises that the community in suburbs neighbouring The Northern Road have expressed concern about the potential impacts during construction and operation of The Northern Road. The broader local and regional community may be impacted by factors including, changed traffic conditions on The Northern Road and M4 Motorway, detours, traffic management, noise, dust and vibration, construction and heavy vehicle movements, as well as changes to the visual amenity.

A precinct level approach will be adopted to engage with the broader community. We will host a series of information sessions or workshops targeting identified precincts. These will focus on providing information about the detailed design, construction and operational components of the project and to engage with the community to understand their priority needs.

The benefits of precinct level sessions include:

- Consistent and targeted messaging relevant to the precinct;
- Shared issues and concerns can be identified and where possible addressed immediately;
- Understanding of the need to balance differing priorities in the community in relation to the project;
- Establishes precinct level networks that can support one another during construction; and
- Providing a regular feedback loop that Lendlease will use to continuously improve the engagement and communication channels.

As a general approach to communication and engagement with the directly impacted but also broader community, an interactive online platform will be provided. This platform will keep the community informed

of activity and progress while also providing them an opportunity to give feedback.

Localised Community or Event-Based Involvement Plans

For areas / activities where more targeted communication and consultation will be meaningful and beneficial to the community, we will develop tailored localised community or event based Involvement Plans to support the wider community involvement approach.

These localised community or event based involvement plans will be developed following project award and implemented at least one month before commencement of the construction-related project activities. Areas or events where localised community or event based involvement plans will be developed include, but are not limited to:

- Out of hours work (night work, weekend work);
- Construction of the M4 interchange and overpass, and demolition of the existing bridge;
- Traffic changes requiring detours, switches or closures;
- Changes to access arrangements; and
- High noise events or activities.

Workforce Code of Conduct

A key aspect of implementing a best practice Community Involvement Plan is understanding that our site staff are, in many cases, the front line of its implementation during construction. Site staff are key in maintaining and growing reputation, goodwill and relationships.

In recognising its importance, we will establish a Workforce Code of Conduct that will be communicated to all employees at the project induction to foster a culture of good community and project outcomes.

The construction workforce will be advised of the following protocols through project induction and regular toolbox talks.

- Be polite and respectful to all community members
- Do not enter private properties without permission
- Do not use profanities – you never know who's within earshot
- Park only in designated construction car parks
- Minimise loud talking and construction noise, where possible
- Keep construction site clean and tidy
- Maintain access to properties and community facilities
- Refer community members to the 1800 Community Information Line
- Report all contact with the community to the Community and Stakeholder Team
- Adhere to all laws regarding smoking in public and utilise designated smoking areas only

(iv) Managing Complaints & Enquiries

Lendlease has a robust community and stakeholder complaints and enquiries management process. The process is in accordance with the Australian Standards for complaints handling (AS-ISO-10002-2006) and RMS minimum response times. It will satisfy the requirements of the REF determination and the SWTC. We have effectively implemented the process on a number of large scale civil infrastructure projects in NSW including Nambucca Heads to Urunga Pacific Highway Upgrade and the Oxley Highway to Kundabung Pacific Highway Upgrade as well as our urban projects.

Issues Management Plan

An Issues Management Plan will be developed to pre-empt any concerns from stakeholders and the community, so that a suite of mitigation and management solutions or options can be developed. The Plan will be based on risks and issues identified throughout engagement with the community or those resulting from a gap in community expectations and project delivery.

The Plan is intended as the proactive middle ground between the Community Involvement Plan and

Complaints Management Plan, aimed at reducing the number of complaints through design and delivery by anticipating and managing community issues before they arise.

The Issues Management Plan will also provide a process for categorising and escalating issues as they are identified.

Complaints Management Plan

Responsibilities

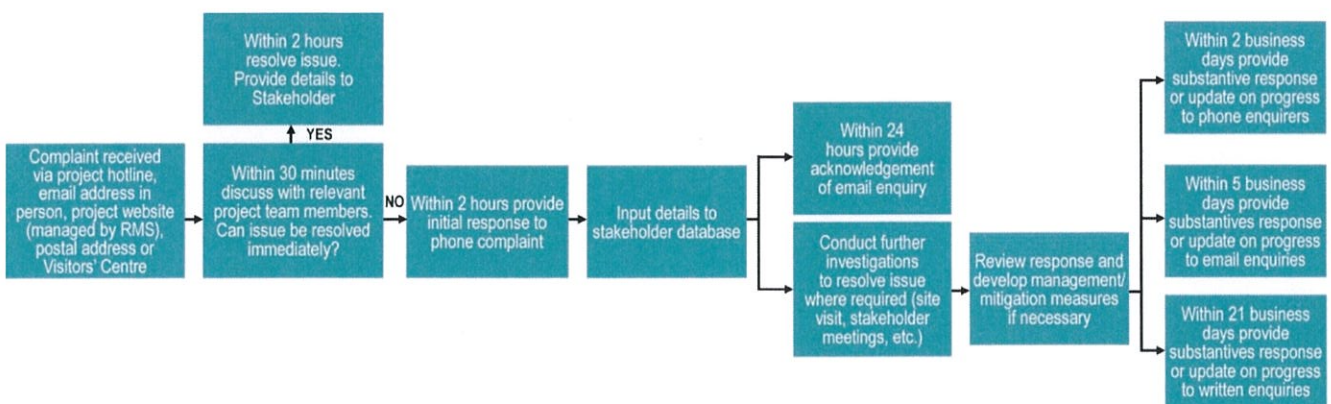
Complaints handling is the responsibility of all team members who come into contact with the community and stakeholders. The CSM is the designated complaints handling representative for the project.

Our Community and Stakeholder Team will manage all complaints in line with requirements of the SWTC. In addition, the team will:

- Develop and implement a procedure for managing and resolving stakeholder and community complaints directed to the project including methods of categorisation and escalation;
- Develop and implement a procedure for database management via the Consultation Manager to ensure all complaints and interactions are recorded and are consist;
- Keep the complainant informed of the process until the complaint is resolved;
- Appropriately report and investigate complaints about any environmental issues, including noise or pollution, arising from our work;
- Provide a final report with proposed measures to prevent the occurrence of a similar incidents and complaints; and
- Keep the project team informed of complaint types to help mitigate further reoccurrence.

Receiving & Responding to Complaints

The flow chart below details the project process of receiving and responding to complaints from the community and stakeholders.





**Exhibit A –
Scope of Works and Technical Criteria
Appendix 41 – Initial Work Health & Safety
Management Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 41
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

Table of Contents

Initial Work Health & Safety Management Plan

3-G: Initial WHS Management Plan

Safety of all is our priority, and this Initial WHS Management Plan has been prepared to outline the processes and measures which shall be implemented by Lendlease in safely constructing the project.

The key differentiators that help us keep safety as priority are our innovative technologies and our continual improvements strategies that track WHS processes and output predictive analysis.

Innovations that set us apart include:

- 3D Safety Systems with online on-boarding of subcontractors including their personnel's qualifications and training, as well as online records management of plant information, all of which drives consistency, efficiency and conformance;
- Enablon – allows for safety observations, inspections and audits on the go;
- Yammer – in-house social networking for real-time sharing of smart ideas, good news stories, and gadget sharing;
- Our in-house developed app 'Virtual Superintendent' – this helps us manage our chain of responsibility for our truck paving fleet by monitoring fatigue; and
- ICAM – our incident cause analysis model enables thorough investigation, root cause analysis and information feeding back into our system.

Our commitment to innovation and continual improvement has led us to focus on:

- Error Tolerant workplaces where controls are in place to ensure human error does not have major consequences; and
- 'Next Steps' and 'Back to Basics' campaigns where all high-risk activities are reviewed by staff, workers, subcontractors and challenge teams to empower the workers and improve our controls on site. What was previously accepted as a suitable control is now challenged to move the control up the hierarchy of controls to achieve error tolerance on our worksites.

(i) Complying with Requirements

A. WHS Laws

The Work Health and Safety (WHS) principles and systems of Lendlease's engineering business comply with all WHS laws and legislation.

The following general statutory requirements will apply to this project:

- *Work Health and Safety Act 2011*;
- *Work Health and Safety Regulation 2011*;
- *Workers Compensation Act 1987*; and

- *Workplace Injury Management and Workers' Compensation Act 1998*.

In addition to the core legislative requirements, a Legal Requirements Register will be developed for the project. Under its statutory obligation, Lendlease will obtain and comply with licences, permits, approvals and notifications. At all times, Lendlease shall hold (and ensure its subcontractors, agents, and workers hold) all required licences, permits, approvals, certificates and registrations.

Copies of the relevant Legislation, Codes of Practice and Australian Standards will be held at the project office.



A sample of Lendlease's keeping people safe posters

Environmental Health & Safety Management System

Lendlease has a comprehensive Integrated Management System with a suite of 12 management areas, which includes the WHS Management System.

The WHS Management System and the Lendlease standardised National Work Health & Safety Project Plan (WHSPP) are the roadmaps we use to ensure we achieve compliance on all projects. Lendlease health

and safety systems are designed around best practice, a standard that enhances the level of compliance to WHS legislation and other laws.

As part of the WHS System, Lendlease has processes in place through our accreditations and regular auditing to ensure our ongoing compliance. This is done through management of change and continuous improvement principles, and regular review of Lendlease Management Systems for compliance. Further, we ensure our ongoing compliance by maintaining in-house subscriptions to receive automatic notification of legislative change.

The Lendlease Management System undergoes reviews regularly for compliance. Lendlease takes a systematic approach to ensuring that it meets its duties under the relevant WHS legislation and other laws. This is done through assigning key performance indicators (KPIs) that help develop an understanding of the business performances and improvements.

The WHS components of our Environmental, Health & Safety Management System include:

- Global Minimum Requirements (GMRs);
- Lendlease Health and Safety Policy;
- Health and Safety Manual;
- Procedures and guidelines;
- WHS Management Plan (Standardised); and
- Project-specific EHS Plans and Procedures.

Lendlease will implement its GMRs which mandate minimum work health and safety and environment standards designed to control risks associated with construction operations. Our GMRs will ensure compliance to WHS laws throughout the project.

Lendlease's WHS Management System is certified to SR OHSAS 18001: OHS Management Systems-Requirements and accredited with the Office of the Federal Safety Commission. Lendlease participates in all certification and accreditation audits annually in order to maintain our accreditations.

Our company core policies are expressions of the commitment and intent of the business and provide guidance in our approach of management of all operations. In addition to setting out executive management's intentions and commitments they contain core objectives for key aspects of Lendlease's Engineering business.

These core objectives provide the framework for establishing further project or site-based objectives that are not only consistent with the core objectives but are also aligned to the project intent.

Core policies therefore provide constant guidelines for establishing, implementing and improving both systems and procedures consistently across all operations.

Our Core policies cover the following WHS aspects:

- Work Health and Safety;

- Rehabilitation;
- Drug and Alcohol; and
- Quality.

These policies need to be understood, implemented and maintained at all levels of the organisation. Therefore it is our duty to ensure their commitments and objectives are clearly communicated to all employees, subcontractors and stakeholders.

The core policies are regularly communicated throughout the course of a project, and forums for policy sharing include:

- Management meetings;
- Training;
- Mentoring;
- Work method development; and
- Implementation.

Management Systems Standards

In addition to SR OHSAS 18001, the Lendlease Integrated Management System is certified to the following International and Australian Management Systems Standards:

- AS4801 OHS Management Systems;
- AS/NZS ISO 14001: Environmental Management Systems; and
- AS/NSZ ISO 9001: Quality Management Systems.

The common principles and approach of these Standards have been used as the basis of both the overall Management System and the individual system procedures within it. The following methodology is adhered to within our processes:

- *Plan*: Establish the objectives and process necessary to deliver results in accordance with clients' requirements and company policies. (i.e. develop and maintain policies and system procedures, prepare project management plans and delegate responsibilities);
- *Do*: Implement the process. (i.e. use system procedures and project management plans to ensure our methods are consistent);
- *Check*: Monitor and measure processes and products against requirements and report results. (i.e. audit, inspect and review implementation and compliance;); and
- *Act*: Take actions to continually improve process performance. (i.e. take corrective and preventative actions, review suitability, relevance and effectiveness and take actions to continually improve performance).

This methodology underpins the process approach adopted in the development of the Management System where the outputs of one process are effectively the inputs of another.

The major processes of the overall Management System and their functions are:

- *Management Responsibility*: Sets project or site policies and objectives, review performance and direct improvements;
- *Resource Management*: Provides the resources necessary to implement policies, objectives and implement changes;
- *Delivery*: Performs the work necessary to deliver the project or product using the resources provided; and
- *Measurement, Analysis and Improvement*: Reviews and analyses performance.

The significance of the client in the operations of a process based Management System cannot be underestimated. It is the client who defines the project or product requirements which act as further input to the delivery process and by expression of satisfaction during the delivery process and on completion provides additional input to the measurement, analysis and improvement process.

Lendlease typically undergoes contractual relationships with our clients, including RMS, where we deliver a project or product.

However in this instance, the concept of 'client' can be seen to extend to regulatory authorities and local community groups. This is to acknowledge external inputs into the Management System, particularly in the areas of work health and safety and the environment.

Integrated Management System

Lendlease operates an Integrated Management System with procedures which cover both business and project (site activities). This system ensures that each project or site is managed efficiently across all functions and activities to consistently satisfy our clients' requirements and company policies.

The Management System Manual describes how the Management System is structured and how the various elements interact. It sets out key management roles and responsibilities and summarises the application of the associated documents. Applicable roles and responsibilities are detailed in the response within the Project Management Plan.

Documented Management System Procedures are intended to provide direction as to how activities relating to system requirements can be carried out consistently and efficiently. They are designed to describe the best way of carrying out each activity and are reviewed annually to ensure that they continue to be helpful, relevant and of best practice. Employees are encouraged to provide positive suggestions, criticisms and complaints for change and improvement.

System Review & Improvement

The core policies and Integrated Management System are formally reviewed by senior management each year, to ensure their continuing suitability, adequacy

and effectiveness in satisfying the requirements of relevant legislation, certification standards (ISO9001, ISO14001, SR OHSAS18001, AS4801), objectives and clients.

This review is undertaken annually at three operational levels:

- Project and Site Systems and Plans;
- State Systems and System Procedures (including Project and Site Reviews); and
- Corporate Systems and System Procedures (including State Reviews).

The results of the reviews are reported to Senior Management and communicated to all relevant employees to ensure that the Management System is continually improved. During these reviews, applicability to WHS laws and changes in legislation are addressed, as well as any WHS continuous improvements.

When there is a change in WHS legislation, the impacts of the change are immediately assessed and we promptly review our affected systems. Any changes that are necessary are implemented in a timely manner.

B. RMS D&C G22

Lendlease's objectives are to comply with RMS G22 and work with RMS in partnership to achieve the outcomes of the client and business work health and safety Management Systems.

The Lendlease WHS management plans are developed to comply (at minimum) with RMS G22, and Lendlease encourages regular audits from RMS to measure the performance of the implementation of such plans. Lendlease will maintain regular communication and consultation with RMS in relation to compliance and to address any opportunities as they may arise.

Client Focus & Satisfaction

A major outcome of any review of the Integrated Management System and its ongoing implementation is to ensure that it provides an effective means to achieve an efficient, safe, environmentally sensitive and ultimately profitable organisation as well as satisfying client expectations.

Our strategy to achieve this can be summarised as follows:

- Client focus is the process of determining, understanding and meeting client requirements;
- At the pre-bid and tender stages, the Lendlease Project Conversion Plan (PCP) process ensures that the expressed technical requirements, regulatory and legal requirements, community expectations, associated client policy and practices and their effect on project or product delivery are taken into account;
- Throughout the delivery phase, onsite construction personnel are encouraged to maintain cooperative and open relationships with client representatives; and

- Client satisfaction is gauged by whether or not client requirements and expectations have been met or exceeded.

During the delivery process, a structured series of meetings both formal and informal may be instigated to discuss and report on key project or site issues including progress, technical, industrial, safety and environmental compliance.

These meetings and comments or formal reports such as those generated by the partnering process will be used to review ongoing client satisfaction levels.

On project or supply completion, clients will be encouraged to provide feedback as to their satisfaction with the overall performance of Lendlease on selected projects or product supplies. We anticipate RMS to provide formal reports on contractor performance throughout the project as part of their own procedures via Contractor Performance Reports.

C. The Project Deed

Lendlease's objectives are to comply with client contractual arrangements, including the Project Deed. Lendlease will uphold contractual obligations to satisfy the Project Deed and looks forward to a working relationship with RMS in partnership to achieve the desired outcomes of the project and to comply with contractual obligations.

The processes Lendlease will use to ensure maintained compliance (inclusion, review and audit) to the project deed are identified in our previous response to B. RMS D&C G22.

(ii) Methodology of Hazard Identification & Risk Analysis

Part of the role of our set committee, the Safety Leadership Team, is to promote risk management across projects. Risk management is kept at the forefront of all thinking and planning at project level. This is done by reviewing the Programme and Project Risk Register, looking for areas to continually improve and monitoring project performance.

Safety Risk Management is recognised as an integral part of good management practice. It is an interactive process consisting of defined steps – the *Plan, Do, Check, Act* process, which when undertaken correctly will lead to improved decision making. Risk Management is a whole-of-life process, commencing at the bid stage and continuing through to project completion.

Work Health & Safety risks involved in all aspects of projects, offices and operations must be managed by eliminating the risks so far as is reasonably practicable. If elimination is not reasonably practicable to do, then those risks must be minimised by using other controls.

The purpose of Safety Risk Management is to provide a process, which enables the project team to:

- Identify and document risks and opportunities at the bid stage;
- Identify potential hazards and assess the associated risk for work activities undertaken;
- Determine the controls needed to eliminate or mitigate the hazard or risk and monitor the controls;
- Plan and develop appropriate documented Safe Work Method Statements (SWMS) as required;
- Provide SWMS education and ongoing safety awareness through pre-work briefings;
- Use targeted Job Hazard Analysis (JHA) and/or Worksite Protection Plans (WPP); and
- Address those hazards identified through third party complaints.

Hierarchy of Controls

Our hierarchy of controls is a series of meaningful measures to protect personnel and public from hazards. They guide the user through a logical sequence to arrive at the most applicable preventative measure possible.

- *Elimination* – is a permanent solution and must be considered in the first instance;
- *Substitution* – involves replacing the hazard with one that presents a lower risk;
- *Isolation* – separate the hazard from the exposed workers;
- *Engineering controls* – involves some change to the work environment or work process to reduce the risk;
- *Administrative (procedural) controls* – that can reduce or eliminate exposure to a hazard by adherence to procedures and instructions;
- *Personal protective equipment* – is worn by people as a barrier between themselves and the hazard; and
- *GMRs* – The Lendlease minimum environment, work health and safety standards designed to control the risks associated with construction operations.

Design Risk Review

Design Risk Reviews are conducted on every design generated via the Safety in Design process. Any remaining risk is transferred to the Project Risk Register. The Project Risk Register records all hazards and risks on the project. This is reviewed monthly by the Project Safety Leadership Team and the Project Control Group and is updated when systems change, incidents occur, work type changes and/or new hazards are identified. This Risk Register is made available to RMS.

Any remaining risk at the completion of the project is detailed in a handover risk register that is transferred to RMS.

Incidents, or incidents with potential for injury or damage if they re-occur are investigated and remedial

actions are implemented. For Critical Incidents an ICAM investigation is undertaken with a formal management review conducted by the NSW General Manager. All actions from investigations are tracked through to closure. Actions that have wider implications are entered in to Enablon (discussed later in this document) and computer tracked until final completion.

The monthly RMS G22 Reports will ensure RMS remains informed of all activities on site and of any safety non-compliances being actioned.

Lendlease generates internal Safety Alerts to promote consistency across operations and to ensure lessons are learnt the first time. Safety Alerts are distributed across projects to learn from other projects, companies and sometimes industries.

SWMS are generated for all medium and high-risk tasks on the Project Risk Register. These SWMS are developed with the work crew and are reviewed if an incident occurs, an issue is identified during a site inspection or a company alert advises that work methods are to be reviewed.

SWMSs shall encompass all quality, safety and environmental issues associated with the activity and must:

- Be formulated, set up and implemented by persons experienced in the type of construction activity covered by the SWMS; and
- Set out specific methodologies, practices, resources and sequence of construction activities relevant to the work activity.

SWMS shall be developed in consultation with those involved in the work activity to ensure that any relevant knowledge and experience has been included.

JHA cards are developed by each work crew prior to starting work each day. These JHAs focus on the high risk hazards faced by the crew and any unusual activity nearby that may alter or impact on the works being undertaken. The JHAs are written by the crew in the field to gain ownership of the content and educate people at the front line on risk management.

Training & Competency

Those who facilitate risk assessments including the development and review of the Project Risk Register and SWMSs will be trained and assessed as competent in Lendlease’s risk management framework.

Hazard Reporting

Any person who identifies a hazard during the course of their daily activities must inform their Supervisor and where possible take immediate corrective action to eliminate the hazard or minimise its risk.

Where applicable, the Supervisor or reporter of the hazard may raise an Observation (a safety observation) in Enablon. The Observation and its corrective action are discussed during Work Health & Safety Committee

meetings and where practicable the reporters of the hazard are advised of the outcomes.

Subcontractors

Prior to being directed to undertake work, subcontractors must provide a copy of site-specific SWMSs for the activities they are undertaking on-site.

A SWMS must be developed for all high-risk activities. Lendlease will review these SWMSs using a SWMS Review Checklist.

Subcontractors cannot commence work until their SWMSs have been reviewed and the appropriate level of approval designated within our WHS Plan has been received. Subcontractors must also provide evidence that their workers have completed SWMS work activity training. Due to their experience and expertise in their respective activities, subcontractors are often best suited to identify hazards, assess risks and decide on the control measures necessary to prevent or minimise the risks associated with their work activities. An independent review must be completed of SWMSs provided by a subcontractor to assess the adequacy of the safety inspections and observations made by the subcontractor.

The SWMS Review will reference the Project Safety Risk Register relevant to that time for the specific task to be undertaken by a subcontractor. Where deficiencies are found, the Project Safety Risk Register will be provided to the subcontractor to ensure risks identified from the review are applied, as deemed necessary.

Subcontractor activities will be inspected in accordance with safety inspections and observations. Activities assessed will include implementation and monitoring as well as effectiveness of their control measures.

Enablon

ENTITY	NAME	STATUS	DATE	DATE	DATE	DATE
Atlanta	Observation_16/12/14 15:50:00					
Atlanta	MelReObs - Construction activities - 25/02/14					
Chicago	MelReObs - Construction activities - 11/02/14					
Chicago	MelReObs - Construction activities - 16/02/14					

Lendlease’s Safety (and Environment) system and procedures are managed by Enablon software. Enablon is utilised to manage the reporting of safety and environmental inspection reports, incidents, non-conformances and corrective actions.

This Lendlease database will be used to track and analyse all inspections, observations and incidents with an aim to predict incidents through an Enablon analytics tool in the database. This information will be used to

improve current procedures and areas of focus across all projects and the company.

Our safety system model is founded on a risk-based approach of the probability versus risk magnitudes. It employs behaviour-based safety systems to capture and analyse at-risk behaviours to identify patterns, trends and the root causes. It aims to reduce incident rates through the collection, management and analysis of observational data from multiple sites. It observes and records safety behaviours in the workplace, raises employee awareness, and helps identify risks before an injury occurs.

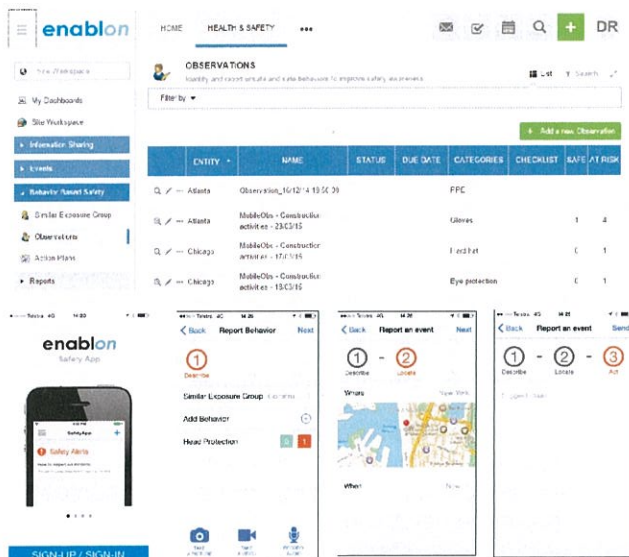
The benefit of reporting from site allows information to be quickly and efficiently shared with Lendlease’s directors. This permits faster reporting turnaround, so that key decision-makers and stakeholders can quickly assess safety levels across all projects and generate solutions to address root causes.

The benefits of Enablon were confirmed 12 months ago when Lendlease’s Engineering business’ vehicle incidents were logged. These incidents and potential incidents were analysed and the data revealed a trend, which showed that 10 out of 13 vehicle incidents were caused when plant and equipment was reversing. As a consequence, we have installed reversing cameras on all equipment to provide improved visibility and reduce the likelihood of this type of incident re-occurring.

The system provides a flexible solution to allow additional extra analysis fields to the reporting platforms such as how many people and how many hours were worked. If we want to look at an issue retrospectively, it provides us with the ability to do so. This helps to assist in correctly calculating who is more likely to be at risk and the alignment with our GMRs in calculating risk rating.

Enablon currently comprises three apps that perform various reporting tasks:

WHS App for Safety Observations



Continually working towards the aspiration for workplaces to be incident and injury free, Lendlease has launched a new WHS App for mobile devices (android phones, iPhones and iPads) to improve safety performance on project sites. This mobility will empower all field workers to report incidents and conduct observations and inspections in the field, wherever they are, reducing administrative processes and freeing up field staff to focus their efforts on improving safety across the organisation.

Features

A draft EHS observation form was developed by App developer, Canvas and turned into a smart phone and tablet App, in collaboration with a team consisting of Lendlease EHS management personnel and ICT experts.

The App was trialed on the Barangaroo Reserve project and modified based on user experience and feedback. It is internet accessible, can be used off-line and is easy to use. It is able to record information about safe and unsafe behaviour, conditions from drop-down lists, and allows the user to access safety alerts and safety toolboxes. The App also allows users to upload photos.

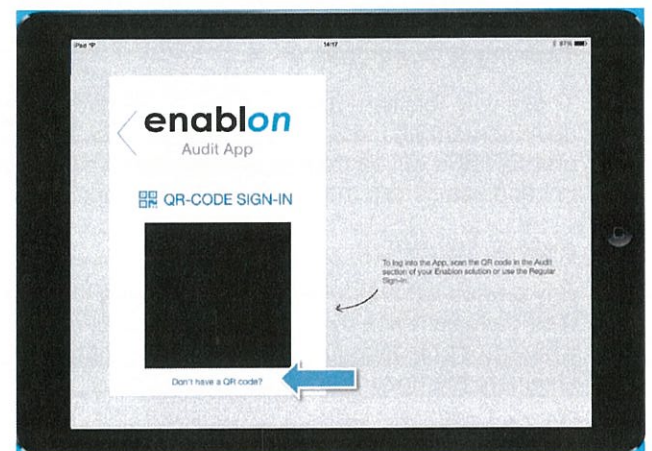
The introduction of the App is a chance for Lendlease to help our frontline, the people who are out on our sites, to keep safety front of mind without having to go back to a desktop to report behaviour. We will continue to look for ways to support and upskill our people to apply the GMRs and manage risk on a daily basis.

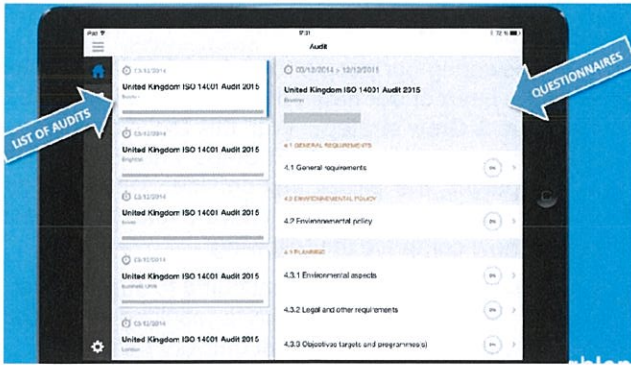
WHS App for Safety Inspections

The Safety Inspection App records inspections and allocates action plans to the inspections where required.

WHS Auditor App

The WHS Auditor App is a series of audit templates to audit systems such as safety plans, risk events and subcontractors.





“Next Steps” & “Back to Basics”

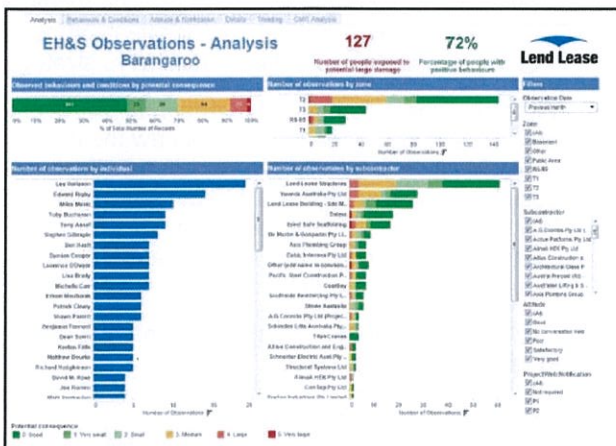
Continual improvement is a key focus and to drive this Lendlease are using these campaigns to achieve simplicity and effectiveness around systems, procedures, forms and permits and records. Safety Health Checks have been performed across the business and reviews of processes are continually taking place.

On each site the management approach to all high-risk activities is challenged. Workshops are held with our methods reviewed by the staff, workers, subcontractors and challenge teams from our corporate business. It is important to include the works and the subcontractors as they deal with the activities and the risks every day on the work-front and provide invaluable insight.

The end target is Error Tolerant workplaces.

Outcomes

The App’s supply data is used to create a reporting dashboard of Leading Indicators which can be reviewed by project teams to inform their safety focus.



Error Tolerant Workplaces

An error tolerant workplace is where the most suitable controls are in-place to counter errors made by those working on the site: human error. Where controls in place have been accepted in the past they are now being challenged in order to improve our sites for example where spotters are used to counter the risks with plant and people interaction, then delineated separation was mandated now it is considered by Lendlease that separation should be via an impact-resistant barrier providing even more surety of safety to people. This approach drives scrutiny and use of higher levels of controls (up the hierarchy of controls) where “eliminate” is the target.

‘Virtual Superintendent’

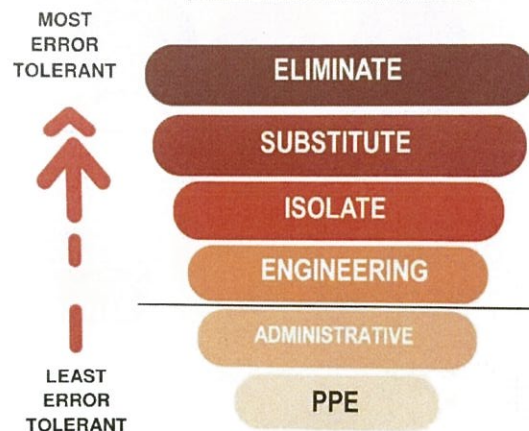
Lendlease’s in-house developed app ‘Virtual Superintendent’ is a powerful tool to manage our chain of responsibility. We use the App to manage fatigue in our truck paving fleet. It monitors a driver’s activities; ensuring that drivers are taking their required breaks and working within their required hours of operation.

Incident Cause Analysis Model (ICAM)

Our investigation model used throughout the company assists us to thoroughly investigate incidents and analyse a root cause. It is able to take the learnings collected and integrate them back into our system, creating a complete lifecycle model.



The Hierarchy of Controls



3D Safety System

Online on-boarding of subcontractors will ensure that we engage only companies and their employees that are qualified and compliant to perform the works for which they are engaged by Lendlease. Important information is communicated to the subcontractors and all applicable records and qualifications are captured. Lendlease then review and approve information provided. Workers are then inducted on-line enabling a more efficient site-specific induction and process when

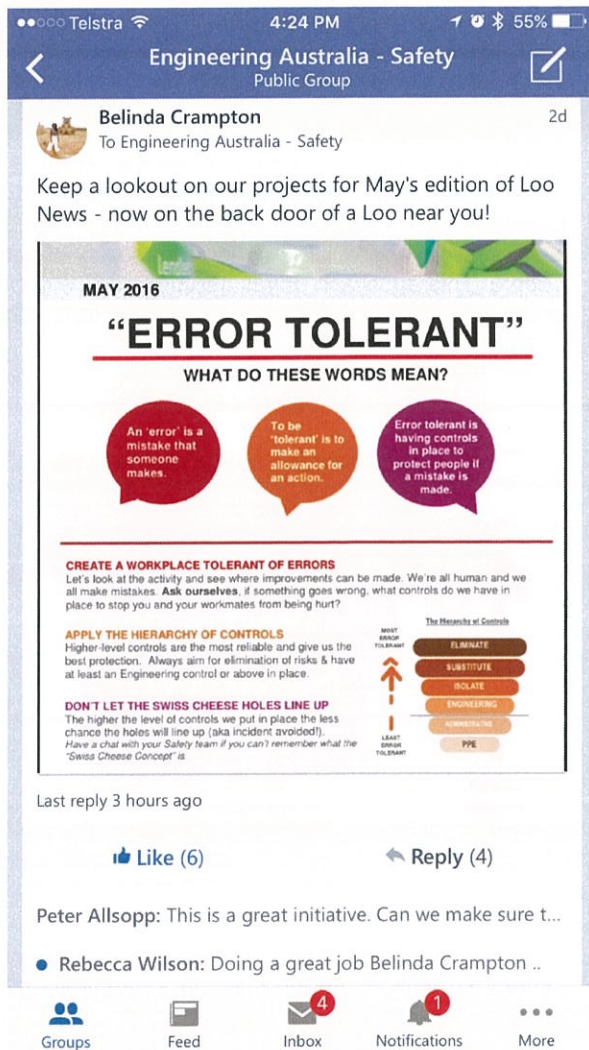
they commence. The system also caters for updated information to be captured.

Consistency of information is important and this system provides a platform for consistency of pre-starts and structure training modules.

Plant records, maintenance and inspection and testing records are captured and managed online to ensure completeness and correctness. Maintenance records can be checked to ensure plant is properly maintained and suitable to be on a Lendlease construction site.

Yammer

Our in-house internal social network and sharing platform Yammer allows fast communication throughout our business. Our team can share smart ideas, new gadgets and good news stories instantaneously. This networking app removes traditional barriers from communication and leads to business and safety improvements.



Safety Initiative 'Loo News' on Yammer

Empowering Our People

Empowering our people to make informed decisions is at the heart of our new WHS strategy, aligning to our Focus & Grow strategy. With this focus of empowering our people within our 'Next Steps' and 'Back to Basics' campaigns, the 'pillars' that provided focus and direction over the last 18-24 months have evolved to reflect this and now comprise the following:

- *Disciplined delivery* – continuing to support the implementation of the GMRs resulting in a more disciplined and consistent delivery model.
- *Strong risk management* – transforming people's relationship with EH&S by empowering them to care and manage risk through the use of informed judgement.
- *Driving innovation* – using the innovation pathway and our mission 'innovate for life' to provide focus and direction to solutions that can positively affect safety outcomes and enable the overall WHS strategy.

We also remain committed to ensuring our operations are focused and engaged, and review the composition of the function to ensure we remain as effective as possible in delivering this strategy. Although we operate in a dynamic environment and changes will be made to enhance our strategy, our WHS strategy is resolute and focused in these areas.

Our WHS is shared across the company from globally, to regional and worksite.

Global Minimum Requirements

Lendlease's GMRs set out a framework designed to control the key risks associated with our operations and establish the governance structures, assurance approach and performance management protocols required to more effectively govern EH&S across the organisation.

Our GMRs are updated regularly (most recently in February 2016) and the latest GMRs are online on the Lendlease website. The most recent GMRs are simpler, risk-based and focused on our 20 risk events.

The reason for updating our GMRs is simple: to refine an approach to WHS that applies across the entire operational lifecycle, while empowering and trusting our people to identify and manage the risks that are applicable to them. The new GMR Framework creates the foundation to do this, while encouraging ongoing innovation and learning. It's more than a new, industry leading approach – it requires a shift in the mindset of our people which is championed by our Leaders at all levels. Below is a summary overview of the GMRs.

GMR 0 – Governance

Outlines the requirements of Lendlease, regions and business units in the areas of governance, assurance, reporting and performance management.

GMR 1 – Investment

Focuses on new work and investment opportunities and outlines what WHS risks need to be considered and planned for, starting at the deal stage. This means teams are set up for success from the beginning and that EH&S due diligence is in place and revisited throughout the conversion process.

GMR 2 – Design & Planning

Addresses the design and planning stage and is closely linked to the 20 GMR risk events in GMR 4 as it looks at ways to prevent critical incidents occurring from a design perspective.

GMR 3 – Establishment

Focuses on creating a place that cares and outlines what all of our work environments require, including welfare and accommodation facilities, appropriate and flexible working hours and how personal injury risks and non-catastrophic events will be managed.

GMR 4 – Delivery

Addresses the mandatory delivery controls aimed at eliminating catastrophic and fatal risks across the 20 GMR risk events.

Whilst our revised GMRs have been implemented for a number of months, Lendlease has continued to gather feedback and input on how well they control our key risks, leading to important ongoing refinements.

(iii) Project-Specific WHS Issues identified in Annexure G22/A of RMS D&C G22

During the tender period, Lendlease conducted opportunity and risk review workshops and Safety in Design workshops. These workshops considered all project-specific issues including the project-specific WHS issues contained in Annexure G22/A. They were also a platform for sharing lessons learnt from previous projects.

On contract award, Lendlease will establish a Risk & Opportunity Workshop schedule (amongst other management activities) where the Risk and Opportunity Register prepared during the tender will be reviewed and further developed in parallel with the development of the project.

At regular intervals (monthly minimum), risk and opportunity workshops will continue to consider specific issues from Annexure G22/A. It should be noted that our existing systems and procedures already address the issues currently identified in Annexure G22/A. A project-specific WHS Management Plan will be prepared for the project.

The table at the end of this Initial Work Health and Safety Management Plan lists the project-specific issues identified in G22/A and cross-references the risk against sections where the risk is addressed within our

GMRs. Our GMRs are designed to control risks associated with construction operations and ensure compliance to WHS laws.

The G22/A requirements will be tabled at the safety in design workshops and considered throughout the detailed design phase.

(iv) Satisfying the WHS Requirements as Principal Contractor

Lendlease will be the Principal Contractor on the project and assumes the related responsibilities under the National WHS Act and Regulations, as they have successfully on many projects for RMS.

Annexure G22/A – Project Specific Work Health & Safety Issues

Extract from D&C G22: Some specific high risk activities that may be encountered.

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
<p>1. Working in close proximity to high volumes of moving traffic:</p> <p>Take all necessary precautions to ensure the safety of workers and road users.</p>	<p>4.14.1 Traffic Planning</p> <ul style="list-style-type: none"> i) Ensure any applicable traffic management plans or regulatory required traffic management protocols are current and define the controls to minimise the risk of vehicles striking another vehicle, structure or pedestrian. ii) Controls to manage any interface with public roads must provide effective signs and traffic control aids addressing prohibited vehicles, access points, routes for different vehicles types and reversing requirements. <p>4.14.2 Pedestrian & Vehicle Segregation</p> <ul style="list-style-type: none"> i) All locations must assess the risks presented by the movement of pedestrians and vehicles around or next to the site and implement appropriate controls to eliminate or minimise these risks. ii) Route sightlines must be unobstructed and adequately lit to ensure good visibility. Blind spots and corners must be avoided, or where they do exist, have mirrors or other controls installed. iii) Signage and road markings must provide clear instructions to pedestrian and vehicle route users and be located in positions which allow users to see them and have time to respond. iv) Loading and unloading areas for commercial vehicles (e.g. delivery trucks) must be clearly defined for loading or unloading. v) Speed limits must be determined to reduce the risks associated with pedestrian movements, the local environment and authority standards. Speed calming measures such as raised crossings, humps on approach to crossings and rumble strips must be implemented in areas where pedestrians and vehicles could interface. vi) In locations where vehicles and pedestrians are in close proximity (e.g. security entrance points or where doors open directly onto vehicle routes) engineering controls must be provided to keep pedestrians and vehicles apart (e.g. by fitting physical barriers or providing separate routes). vii) Where shared zones for traffic and pedestrians are in place, speed limits must be reduced to less than 10km per hour (6mph) and signage and traffic calming devices must be in place where building entry and exit points lead onto any area where vehicles can operate. <p>4.14.3 Parking & Traffic Routes</p> <ul style="list-style-type: none"> i) All locations must assess the risks presented by the movement of pedestrians and vehicles around or next to the site and implement appropriate controls to eliminate or minimise these risks. ii) Route sightlines must be unobstructed and adequately lit to ensure good visibility. Blind spots and corners must be avoided, or where they do exist, have mirrors or other controls installed. iii) Signage and road markings must provide clear instructions to pedestrian and vehicle route users and be located in positions which allow users to see them and have time to respond. iv) Loading and unloading areas for commercial vehicles (e.g. delivery trucks) must be clearly defined for loading or unloading. v) Speed limits must be determined to reduce the risks associated with pedestrian movements, the local environment and authority standards. Speed calming measures such as raised crossings, humps on approach to crossings and rumble strips must be implemented in areas where pedestrians and vehicles could interface. vi) In locations where vehicles and pedestrians are in close proximity (e.g. security entrance points or where doors open directly onto vehicle routes) engineering controls must be provided to keep pedestrians and vehicles apart (e.g. by fitting physical barriers or providing separate routes). vii) Where shared zones for traffic and pedestrians are in place, speed limits must be reduced to less than 10km per hour (6mph) and signage and traffic calming devices must be in place where building entry and exit points lead onto any area 	<p>GMR4</p>

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
	<p>where vehicles can operate.</p> <p>4.14.4 Safe Vehicle Usage</p> <ul style="list-style-type: none"> i) Vehicles used as a tool of trade by Lendlease personnel must be operated in a safe manner at all times. ii) Light vehicles on operations should be of a high visibility colour (e.g. white) and have reflective taping, flashing lights, a first aid kit, a fire extinguisher, a spill kit and survival or emergency equipment suitable for the operating environment. iii) Vehicles proposed for hire or purchase must have a minimum five star Australasian New Car Assessment Program (ANCAP) rating or equivalent standard. iv) Vehicles provided by Lendlease as a tool of trade shall be fitted with in vehicle management systems, reversing cameras and hand brake warning systems. v) Seatbelts must be used at all times by all occupants and drivers of vehicles. vi) Vehicle journeys of two hours or more continual driving must be planned to ensure adequate rest breaks are in place and that there is provision to manage fatigue. vii) Mobile phones, whether hands free or not, must only be used by the driver of a tool of trade vehicle whilst the vehicle is stationary and in a parked safe location. The exception to this is for emergency and incident response vehicles, using hands free communications in a response situation, where alternative communication methods are not available. viii) All drivers must be appropriately licensed for the vehicle being operated and be fit for work (i.e. not impaired by medication, drugs or alcohol). ix) When parked all vehicles must be fundamentally stable with the engine turned off, handbrake effectively applied, placed in gear and on level ground. Wheels should be situated in spoon drains, gutters or against wheel stops. If fundamentally stable parking cannot be achieved, appropriately sized wheel chocks must be available and implemented. x) All Lendlease vehicles must have inspection and maintenance protocols in place for all safety related items such as wheels and tyres, steering, suspension and braking systems, seats and seat belts, lamps, indicators, mirrors and reflectors, windscreen and windows including windscreen wipers and washers, the vehicle structure itself and any other safety related item on the vehicle body, chassis or engine including instrumentation. xi) Pre-start inspections must be completed to ensure the lighting and braking systems are in proper working order. xii) Vehicles must not be used above the manufacturer defined maximum load limit. xiii) Wheel nut indicators must be fitted to all vehicle wheels. 	
<p>2. Utilities (Gas, Water, Electrical, Communications, etc.):</p> <p>Take all necessary precautions when working around underground and overhead services such as gas, water, electrical and telecommunication public utilities which may cause erosion, electrocution, damage or disruption to services.</p>	<p>4.4.1 Identification & Schematics: All electrical circuits including overhead and underground services are fully identified and recorded in schematics. Procedures exist for safe work</p> <p>4.4.2 Appropriate Electrical Equipment: All electrical equipment including insulated MEWPs, tools and PPE must be fit for purpose and compliant with local standards</p> <p>4.4.3 Temporary Electrical Supply: All temporary electrical supply panels and boards must be sufficient in number, located in close proximity to work areas to minimise trailing cables and secured to prevent unauthorised access</p> <p>4.4.4 Isolation: De-energise, isolate and test for dead prior to any work on electrically powered items</p> <p>4.4.5 Live Work: Live work is authorised, planned and communicated and prohibits lone working</p> <p>4.4.6 Fault Finding: When investigating any electrical equipment to identify and rectify faults, all items must be treated as live until the fault is located</p> <p>4.4.7 Overhead Conductors: Prevent inadvertent overhead services contact by equipment or operational activity</p> <p>4.4.8 Underground Services: Prior to ground disturbance, underground electrical services must be positively located with work planned accordingly</p>	<p>GMR4</p>

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
<p>3. Access / Egress from Site:</p> <p>Take all necessary precautions to ensure the safety of workers and the public where construction vehicles are entering / exiting work sites.</p>	<p>4.3.1 Traffic Management: Vehicle routes on construction and haul roads must be managed to ensure risks to vehicles and people are effectively managed</p> <p>4.3.2 Pedestrian & Vehicle Segregation: All locations must assess the risks presented by the movement of pedestrians, materials and vehicles around or next to the site or workplace and implement appropriate safety measures to eliminate or minimise these risks</p> <p>4.3.3 Parking & Traffic Routes: Traffic routes and parking arrangements must be in place to avoid vehicle-to-vehicle and vehicle-to-pedestrian conflict</p> <p>4.3.4 Use of Light Vehicles on Site: Lendlease tool of trade vehicles operating in defined construction or engineering zones must be in good working order and operated in a safe manner</p> <p>4.3.5 Use of Plant, Equipment & Vehicles: Effective controls must be in place for managing the use of all mobile plant, equipment and vehicles used for ground and civil works, including bobcats, excavators, backhoes, graders, scrapers, bulldozers, dump trucks, rollers and compactors</p> <p>4.3.6 Vehicle & Plant Recovery & Rescue: Effective measures must be in place for the recovery of vehicles and plant immobilised or bogged in mud, sand or other type of similar traction resistant ground conditions</p>	GMR4
<p>4. Pedestrians / Cyclists:</p> <p>Take all necessary precautions to ensure the safety of pedestrians and cyclists through and/or around work sites (including exclusion from work sites, pedestrian access across temporary property accesses and allowing for the volume of pedestrians at bus stops, etc.).</p>	<p>4.14.1 Traffic Planning</p> <p>4.14.2 Pedestrian & Vehicle Segregation</p> <p>4.14.3 Parking & Traffic Routes</p> <p>4.14.4 Safe Vehicle Usage</p>	GMR4
<p>5. Private Properties:</p> <p>Take all necessary precautions to ensure the safety of persons and/or vehicles entering and exiting private accesses affected by the works and through and/or around the works site. Also, take all necessary precautions to ensure the safety and security of residents, pets, and property during the property adjustment works, including but not limited to dismantling of existing boundary fences and erection of new fencing, retaining walls and noise walls as required.</p>	<p>Lone Worker LLE601Procedure LLE601 Project Risk Assessment LLE601 SWMS LLE601 JHA</p>	

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
<p>6. Working at heights:</p> <p>Take all necessary precautions during construction of bridges / box culverts and retaining walls or the like to ensure the safety of workers.</p>	<p>4.1.1 Fall Prevention Barriers: Provide robust physical barriers to protect people falling from height</p> <p>4.1.2 Height Access Equipment: Height access equipment must be operated and maintained in accordance with the manufacturer's instructions</p> <p>4.1.3 Temporary Access Platforms: Temporary access platforms must be structurally sound, free of defects and require three points of contact to be maintained when entering and leaving the access equipment</p> <p>4.1.4 Management of Penetrations, Risers & Shafts: Effective measures must be in place to prevent the fall of people or materials down penetrations, risers and shafts</p> <p>4.1.5 Use of a Safety Harness: Any safety harness in use must be an approved type with fit for purpose anchor points</p>	GMR4
<p>7. Demolition work:</p> <p>Take all necessary precautions during demolition works to ensure the safety of workers. Paying particular attention to possible asbestos materials.</p>	<p>4.10.3 Asbestos Register & Maintenance Plan: Ensure Lendlease is aware of the extent of asbestos so that an informed decision can be made on the acquisition and future management of the asset</p> <p>4.10.4 Health Monitoring: Health monitoring must be completed for all workers specifically handling or removing ACM, NOA or other hazardous material</p> <p>4.10.1 Hazardous Substance & Hazardous Materials Identification: Ensure Lendlease is knowledgeable of any known hazardous substances or hazardous materials and the implications for future management of the asset</p>	GMR4
<p>8. Working in the vicinity of moving plant:</p> <p>Take all necessary precautions when working around moving plant to ensure safety of workers.</p>	<p>4.3.1 Traffic Management: Vehicle routes on construction and haul roads must be managed to ensure risks to vehicles and people are effectively managed</p> <p>4.3.2 Pedestrian & Vehicle Segregation: All locations must assess the risks presented by the movement of pedestrians, materials and vehicles around or next to the site or workplace and implement appropriate safety measures to eliminate or minimise these risks</p> <p>4.3.3 Parking & Traffic Routes: Traffic routes and parking arrangements must be in place to avoid vehicle-to-vehicle and vehicle-to-pedestrian conflict</p> <p>4.3.4 Use of Light Vehicles On Site: Lendlease tool of trade vehicles operating in defined construction or engineering zones must be in good working order and operated in a safe manner</p> <p>4.3.5 Use of Plant, Equipment & Vehicles: Effective controls must be in place for managing the use of all mobile plant, equipment and vehicles used for ground and civil works, including bobcats, excavators, backhoes, graders, scrapers, bulldozers, dump trucks, rollers and compactors</p> <p>4.3.6 Vehicle & Plant Recovery & Rescue: Effective measures must be in place for the recovery of vehicles and plant immobilised or bogged in mud, sand or other type of similar traction resistant ground conditions</p>	GMR4
<p>9. Potential flooding:</p> <p>Ensure all workers are aware of the possibility of the potential for flooding of dams and cross drainage structures.</p>	<p>4.18.1 Work In, Above, or Adjacent to Water</p> <ul style="list-style-type: none"> i) Work activities above, in or adjacent to water (e.g. diving, work within stormwater and sewer systems, water body maintenance, boating or maritime operations, dredging, bridge and pier construction) are high risk activities and represent a drowning risk. Worker exposure to water must be assessed and minimised with work practices aligned to applicable codes and regulatory requirements. ii) Proof of competency for divers and all maritime plant and equipment operators must be provided. iii) Work activities reliant on favourable climatic conditions, flow shut-off protocols (within water and sewerage treatment facilities) and monitoring equipment and protocols must not proceed if safeguards are compromised in any way. iv) All excavations, including piling operations, must be inspected after significant rainfall events (i.e. greater than 20mm [0.8 inches] in 24 hours) to ensure that water ingress does not present a drowning risk. No further work is to proceed until the risk is eliminated and the removal of the excess water is complete. <p>4.18.2 Systems of Work</p> <ul style="list-style-type: none"> i) Develop and communicate a set of procedures for drowning prevention for all 	GMR4

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
	<p>operations that have standing water. As a minimum, procedures must cover:</p> <ul style="list-style-type: none"> Working and prefabricating components away from water wherever possible. Secondary barriers or nets to prevent contact with water if the normal barriers have to be worked beyond. Purpose designed and suitable gantries for safe transport of workers from vessel to vessel. Fit for purpose methods for the transfer of equipment and materials to and from vessels. Use of a spotter or buddy system when working near or over water and never allowing lone working near or in water. All workers wearing fully functioning personal floatation devices when working near or over water. Verifying that all workers are able to swim. Guidelines for crossing roads flooded with moving water and identifying driving protocols where this activity is proposed to be carried out. <p>4.18.3 Management & Creation of Water Bodies</p> <p>i) All natural bodies of water (e.g. wetlands, lakes, watercourses, rivers or creeks) must be the subject of a risk assessment to determine if modifications are required to their surroundings to minimise risks to people, especially children or the elderly, or whether it would be more appropriate to preserve the natural surroundings.</p> <p>ii) Purpose built structures interfacing with these water bodies such as bridges, walkways and boardwalks must provide protection against the fall of a person into the water. Where fencing or balustrades are installed they must not be climbable.</p>	
<p>10. Contaminated Materials:</p> <p>Take all necessary precautions when working in the proximity of, and/or approved disposal of contaminated materials to ensure the safety of workers.</p>	<p>4.10.1 Hazardous Substance & Hazardous Materials Identification: Ensure Lendlease is knowledgeable of any known hazardous substances or hazardous materials and the implications for future management of the asset</p> <p>4.10.2 Storage & Minimisation: Hazardous substances, dangerous goods and hazardous materials must not be stored on site except for small volumes in purpose built structures</p> <p>4.10.3 Asbestos Register & Maintenance Plan: Ensure Lendlease is aware of the extent of asbestos so that an informed decision can be made on the acquisition and future management of the asset</p> <p>4.10.4 Health Monitoring: Health monitoring must be completed for all workers specifically handling or removing ACM, NOA or other hazardous material</p> <p>4.10.5 Work In Extreme Temperatures: Any work conducted in a natural or artificial environment of extreme temperatures must be proactively managed to eliminate the risk of temperature related injury or illness</p> <p>4.10.6 Interaction with Flora, Fauna & Allergens: Risks associated with potential interaction with dangerous plants and animals must be managed to minimise the risk of harm</p>	GMR4
<p>11. Hazardous Materials:</p> <p>Take all necessary precautions when forming epoxy mortar blocks over elastomeric bearing pads to ensure the safety of workers.</p>	<p>4.10.1 Hazardous Substance & Hazardous Materials Identification: Ensure Lendlease is knowledgeable of any known hazardous substances or hazardous materials and the implications for future management of the asset</p> <p>4.10.2 Storage & Minimisation: Hazardous substances, dangerous goods and hazardous materials must not be stored on site except for small volumes in purpose built structures</p> <p>4.10.4 Health Monitoring: Health monitoring must be completed for all workers specifically handling or removing ACM, NOA or other hazardous material</p>	GMR4

Specific High Risk Activities	GMR Preventive Controls	LLE Mgmt System Ref.
<p>12. Erection and Stability of Precast Concrete Bridge Super-T girders:</p> <p>Take all necessary precautions during transportation, lifting and installation of the precast planks to ensure the safety of workers and the public.</p>	<p>LLE626 Chain of Responsibility, LLE626 Attachment 1 Chain of Responsibility Matrix, LLE626 Prequalification of Trucking Companies</p> <p>4.9.1 Structural Integrity: Appropriate methods for adjusting temporary and permanent structures must be in place</p> <p>4.9.2 Installation: The installation of structural elements must be subject to quality management rigour and certification</p> <p>4.6.1 Cranes & Hoisting Equipment in Use: Only use lifting and hoisting equipment that addresses all applicable usage and operating requirements</p> <p>4.6.2 Lift Plans: All crane and hoisting equipment must be in accordance with any lift plans</p> <p>4.6.3 Installation, Inspection, Maintenance & Dismantling: Cranes and other hoisting equipment must be installed, erected, adjusted, climbed, inspected, maintained and dismantled in accordance with the manufacturer’s requirements</p> <p>4.6.4 Oversight: All crane and hoisting equipment must be maintained and operated in accordance with the manufacturer’s operating instructions</p> <p>4.6.6 Ground Conditions: All cranes must be established and set up on approved ground conditions</p> <p>4.6.7 Fatigue Management: A fatigue management program must be in place for crane / hoist operators</p> <p>4.6.8 Preventing Plant Collisions: Install hard barriers (tower crane), exclusion zones (mobile crane) or other barriers to prevent plant collisions</p> <p>4.6.9 Handling Objects: Uncontrolled movement of objects must not occur</p>	<p>GMR4</p>



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 42 – Initial Earthworks Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
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Contract number:	15.3662.2254
Location:	Penrith, New South Wales
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Initial Earthworks Plan

3-H: Initial Earthworks Plan

Through our simple and logical earthworks methodology we will provide certainty of delivery to accomplish RFT requirements.

(i) Investigation, Design, Construction, Monitoring, Foundations & Earthworks Methodologies

Lendlease's approach to the investigation, design, construction and monitoring of the foundations and earthworks formation is detailed within this plan. Additionally, the key issues relating to cuttings, embankments, topsoil and spoil are addressed.

Cuttings – Key Issues & Approach

The materials anticipated to be encountered within cuts is predominantly residual soils and weathered rock. Some fill materials will be encountered adjacent to the existing roads. Therefore excavation will be carried out using conventional hydraulic excavators with toothed buckets. Ripping with tynes or using hydraulic breakers may be required if high strength rock is encountered.

The investigation, design, construction and monitoring of the cuttings will address the following key issues for the design life of the project:

- Cutting heights and stability – maximum vertical cut of 2m, permanent cut batter slope of 2:1 (H:V). Regular cut batter inspections by the on-site Geotechnical Designer Representative is important to maintain safe and conforming cut batters;
- Slopes adjacent to cuttings – early installation of open drainage systems adjacent to slopes including erosions and sedimentation controls. Regular geotechnical inspection including after inclement weather;
- Weathering (both on the cutting surface and at depth) – batter slope materials are anticipated to comprise stiff clay or shallow weathered rock. Strategic early construction of open drainage systems, topsoiling and landscaping of batters. Repairs of any scours identified during batter inspections;
- Fracturing and slippage of stiff clay or shallow weathered rock – regular geotechnical inspection including after inclement weather, installation of permanent and/or temporary safety risk mitigation measures i.e. shotcreting as well as the use of exclusion zones during construction;
- Repair provisions – regular maintenance and repair of cut batters is essential during the construction phase which could include shotcreting, re-topsoiling, adjustment of drainage and access during construction;
- Erosion, scour and scour protection – the early installation of open drainage systems adjacent to slopes including erosion and sedimentation controls. Continual maintenance of permanent and temporary

erosion and sedimentation controls including but not limited to mulching, covering and permanent landscaping;

- Maintenance requirements and access provisions – all weather access to be provided to sedimentation basins, ensure cutting bench height widths are suitable for light vehicle access, and maintain access to tops of cuttings as required;
- Cut floors may require stabilisation where expansive clays are present. In-situ stabilisation with minimum 2% lime to a minimum depth of 300mm;
- Drainage – early construction of open drainage systems. The level of the water table during excavation of the cut will determine the need for drainage blankets. Survey checks during subsoil installation to ensure the minimum grade is achieved with cut / fill lines to be constructed to be free draining. Allow the provision to alter the subsoil set-up if cut is wetter than expected, provide for interception drains on the batter for water seepage from face of cut when shotcrete is used as part of batter treatments;
- Traffic loads – designated access points for vehicles adjacent to cut batters with restriction for certain vehicles to access above the cut batter. Trimming of the cut batter to be completed with an excavator not a track-type dozer. Trim batter progressively as the cut is being excavated; and
- Traffic safety – safety of construction traffic by installation of temporary concrete barriers where required, restrict access to top of batters with designated haul roads from cut to fill for heavy plant and restricted access for vehicles not associated with the haulage of material.



Lendlease excavating a large cutting. Source: Oxley Highway to Kundabung Project.

The design of the cuttings will be carried out in accordance with the SWTC Appendix 11 Geotechnical Performance and Design Requirements Section 1.

The designs are also based on the geotechnical information that has been supplied as part of the tendering process including:

- Factual Geotechnical Report for Proposed Northern Road Upgrade between Jamison Road and Glenmore Parkway, Orchard Hills, File No. GEO4983, Report No. G4983/1, 11 Feb 2016 – INFO DOC 087;

- Tender Requested Factual Geotechnical Report for Proposed Northern Road Upgrade between Jamison Road and Glenmore Parkway, Orchard Hills, File No. GEO4983, Report No. G4983/1, 13 April 2016 – INFO DOC 111; and
- Factual Geotechnical Report for Proposed Northern Road Upgrade between Jamison Road and Glenmore Parkway, Orchard Hills, File No. GEO4983, Report No. G4983/3, 27 April 2016 – INFO DOC117. Previous investigations include:
 - File NO. G4859-M4 Smart Motorway (2015); and
 - G4335 – The M4 Ramp Widening (2012).

Embankment – Key Issues & Approach

Geotechnical modelling for each embankment within the TNR3N project has been carried out and summarised in 2-E Geotechnical Design, to provide details on the maximum fill heights and dimensions.

Investigation, design, construct and monitoring activities relevant to the embankments include:

- Investigate and design all embankments in accordance with the SWTC Appendix 11 Geotechnical Performance and Design Requirements;
- Designs will be based on the geotech information supplied as part of the tender process taking into account:
 - Design life;
 - Foundation treatment requirements, (including available programming timeframes);
 - The potential for settlement <50mm and lateral deformation of foundations, embankments, pavements and structures (and options for limiting or accelerating them);
 - Options to minimise or eliminate differential settlement issues;
 - The construction of fills on existing ground (minimal topsoil / vegetation stripping);
 - The verification (including a detailed verification methodology) of compliance of the predicted Total Settlements, Total Residual Settlements and Differential Settlements with SWTC Appendix 11;
 - The stability of embankment foundations, including requirements to key into side slopes, cut-to-fill transitions (if required), dewatering, drainage and pore pressure relief;
 - Monitoring / validation of ground movements, including settlements and lateral movements;
 - The impacts of embankment materials and embankment pore pressures;
 - Surface, subsurface and batter drainage requirements, including (where embankments are designed to settle) the measures and methodologies proposed to maintain drainage;
 - All erosion and scour protection and stabilisation requirements;
 - The intervention levels required for maintenance and/or repair activities; and
- Access provisions for maintenance and repair activities;
- In design analysis, considering issues potentially affecting embankment stability, including the rate of embankment construction (i.e. vertical rise / week);
- Ensure early installation of open drainage systems adjacent to slopes, including E&S controls;
- Ensure regular geotechnical inspections, particularly after inclement weather / flooding events;
- Minimise potential impacts at interfaces with the existing M4, The Northern Road and Other Roads within the project boundary;
- Ensure the timely installation of transverse and open drainage systems to control the above ground flow of water around / through the project boundaries;
- Install subsoil drainage systems to control potential flows of underground water as determined by geotechnical investigations during embankment construction;
- In soft soil areas, construct earthwork fills directly over the existing ground surface wherever practicable to preserve the integrity of the existing surface crust (see “Stripping” below);
- Ensure compliance with the required specification settlement limits;
- Ensure that anticipated settlement periods are adequately accounted for in the works programming;
- Construct embankment foundations, including drainage on side slopes and cut to fill transitions (where required) as per RMS Specification R44 Clauses 3.2 and 3.5;
- Implement erosion and sedimentation controls as per Lendlease’s Construction Environmental Management Plan (CEMP);
- Provide scour protection where specified / required by the design;
- Topsoil and revegetate embankment batters as early as practicable to minimise potential scouring;
- Ensure compliance with design intervention level requirements;
- Undertake regular maintenance and repair of embankment batters during construction to minimise potential impacts that may arise during the subsequent maintenance phase;
- Ensure the embankment will be able to withstand the construction loads. The requirements for compaction specified by RMS D&C Specification R44 is considered as a sufficient constraint, however smaller plant may be required to be used during foundation construction;
- Design embankments to withstand the final traffic loads as per the geotechnical design; and
- Install open drainage systems where required to control the above ground flow of water around the embankments.

Topsoil – Key Issues & Approach

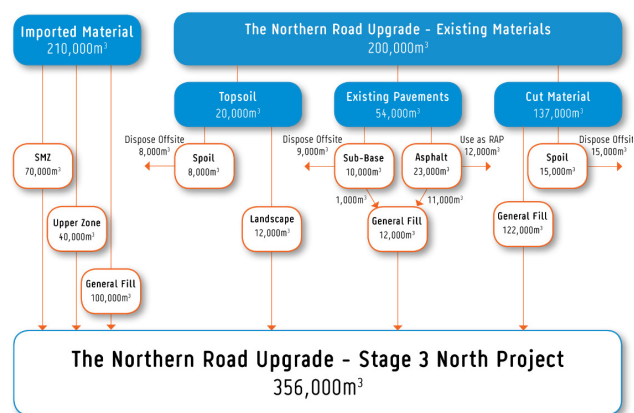
Topsoil across the project is generally in a 0.15-0.3m thick layer consisting of silty sands and silty clay.

Investigation, design, construct and monitoring activities pertaining to topsoil on the project will include:

- Retain existing vegetation and topsoil in place wherever practicable to maintain the integrity of the existing surface crust so that stripping of topsoil on-site is minimised or eliminated;
- Where stripping is required in embankment foundation areas on-site, confirm using Hold Points;
- Store stripped topsoil in stockpiles in close proximity for reuse (batters or landscaping, etc.);
- Where stockpile locations may be required on-site, the Environmental Manager and Earthworks Project Engineer will identify potential locations at the commencement of construction;
- Ensure that all stockpile sites comply with the criteria established in the CEMP;
- Implement all measures identified in the Erosion & Sedimentation Control Plans;
- As a guide, topsoil which is suitable for storage and reuse will be material that is within the approved corridor, has been assessed as such in accordance with the Flora & Fauna Management Sub-Plan, and has a low level of weeds (or may be sprayed etc. to destroy weeds);
- Ensure all topsoil required for rehabilitation, batter top-soiling, landscaping and other works on-site is in accordance with Specification requirements;
- Imported topsoil is to be sourced and supplied to Lendlease using registered road trucks and in accordance with the agreed supply and delivery requirements for the Project Works;
- Limit the movements of topsoil on the project as much as physically possible;
- As part of the vegetation and landscaping works at the end of the project, re-use any topsoil removed from an area with a particular vegetation type in the same area;
- Implement topsoil handling and stockpiling measures to minimise potential damage to the existing soil structure;
- Apply a suitable cover crop or provision of other covering over topsoil stockpiles where these stockpiles are prone to wind erosion and are in place for longer than four weeks; and
- Undertake visual inspections of embankments after rainfall / flood events.

It is Lendlease's intention to limit the amount of spoil produced from the project by designing the road alignment with a minimal amount of surplus materials. Concept designs have been optimised to create a cut / fill balance for the materials utilisation on the project and design development will continue to focus on the materials balance optimisation.

Spoil – Key Issues & Approach



Mass Haul – Summary of Quantities

Unsuitable material can come from a number of sources including existing basins, dams, fish ponds and existing creek lines. Prior to removing / treating the unsuitable material, water and any other flora / fauna would be removed in accordance with environmental requirements. Unsuitable material would then have to be treated or removed prior to embankment construction commencing.

Replacement of the unsuitable material will be covered by the requirements of RMS D&C R44 Specification Hold Point Clause 3.2 or 3.4.

All unsuitable material and non-contaminated spoil within the project site will be incorporated into the works within the project boundary or within approved stockpile locations. The utilisation of these materials will be optimised in non-structural earthworks or landscape mounds that will add to the urban design or noise attenuation measures to be implemented. Spoil management investigation, design, construct and monitoring measures include the following:

- Incorporate spoil into the works e.g. increasing the slope of fill batters from 2H:1V to 4:1, which may decrease the exposure to scour, potentially remove the requirement for safety barriers and reduce whole-of-life costs;
- Reshape natural ground on RMS land, including minimising scour damage and improving natural drainage surface flow or through provision of landscaped mounds or bunds;
- Excavate and haul spoil to treatment area, to dry out wet material to allow for re-use in earthworks embankments subject to R44 requirements; and
- Re-use treated acid sulphate soils in the earthworks embankment construction subject to compliance with R44 and environmental requirements.

Table 1: Proposed stockpile sites

TNR3N Temporary Stockpile Locations		
Item	DP/Lot No.	Proposed Use
1.0	40/DP853672	Proposed Temporary Stockpile
2.0	5/DP548308	Proposed Temporary Stockpile
3.0	21/238741	Proposed Temporary Stockpile
4.0	2/DP238339	Proposed Temporary Stockpile
5.0	13/DP831409	Proposed Temporary Stockpile
6.0	19/DP1028818	Proposed Temporary Stockpile
7.0	11/DP236368	Proposed Temporary Stockpile
8.0	26/DP247948	Proposed Temporary Stockpile
9.0	10/DP236368	Proposed Temporary Stockpile
10.0	220/DP260512	Proposed Temporary Stockpile
11.0	12/DP220581	Proposed Temporary Stockpile

Upon further development of the detailed design other spoil and stockpile areas may be identified that will improve the management of materials and spoil. Each area of spoil will be assessed on a case by case basis, and the appropriate spoil management measure will be chosen and implemented.

(ii) Programming & Resourcing for Batter Treatments

The cutting and trimming of batters will occur progressively throughout the bulk earthworks operations during the construction phase of the project. The bulk of earthwork removal will be done by larger earthmoving equipment, with the main aim of removing the excavated material as efficiently as possible. The batters in cuts will be left high to enable more accurate equipment to proceed with batter trimming in accordance with RMS D&C Specification R44 requirements.

The majority of small cuts on this project are made up of extremely weathered to highly weathered quality materials. Therefore, batters will be trimmed using a GPS-controlled excavator. Since the batter trimming works takes a relatively short period of time in comparison to the bulk earthworks operations, the resources that will trim the batter will be needed on an ad hoc basis. GPS-controlled excavators are used extensively during the bulk earthworks process for multiple jobs including batter trimming, topsoiling, stockpile removal, unsuitable removal, drainage works, etc.

During the excavation and trimming operations if any unexpected conditions or features are encountered with the on-site works, an inspection will be conducted by the relevant parties. Any subsequent design outcome will be incorporated into the works with ongoing removal of materials and treatment of the unexpected feature. This may include use of localised rockbolting / soil

nailing or shotcrete to provide batter stability or inhibit long-term weathering and erosion. These measures would be installed progressively as the excavation proceeds and the batter is trimmed to ensure a safe working environment is maintained.

Batter inspections will be undertaken at suitable intervals determined by the size of the cut and the construction programme. Additional inspections will be scheduled as previously detailed for unexpected conditions or changes in encountered materials.

The on-site Geotechnical Representative will be suitably qualified to complete batter assessments.

(iii) Batter & Bench Inspection, Maintenance and Monitoring

The key to monitoring batter performance is defining an inspection strategy to ensure any risk to the batter performance can be identified and rectified as early as possible.

Considering the quality of the material along the length of the alignment and the height of cuts / embankments on the TNR3N project, batter performance risk is significant.

The table below defines the frequency and scope of geotechnical inspections for monitoring batter performance.

Table 2: Frequency and Scope of Geotechnical Inspections for Monitoring Batter Performance

Inspection Timing	Frequency	Scope	Output
During Cut Extraction or Embankment Construction	As required	No criteria, need to evaluate only if current state of batter could impact assessment at pre-topsoil stage	GDR Report
Pre-topsoil	Once only	Assessed Risk Level (ARL) four or better	GDR Report
Post-topsoil	As required, i.e. after rain events	No criteria, need to evaluate only if current state of batter could impact assessment at pre-road opening stage	GDR Report
Pre-Road Opening Survey as per SWTC Appendix 11.1(I)	Once only	ARL four or better.	Slope Inventory Details per RTA "Guide to Slope Risk Analysis"

The frequency and scope of maintenance of batters would depend on the outcomes of the above batter inspections. The key risk to the performance of the cut and embankment batters is the flow of water over the batter face. Therefore, it is expected that if there are periods of wet weather the frequency of batter inspections will increase, and depending on the intensity of the inclement weather, will either increase or decrease the scope of maintenance.

Notwithstanding the above, maintenance diaries are required to be maintained for:

- All cut batters higher than 6m and/or steeper than 2:1; and
- All fill batters steeper than 2:1.

(iv) Embankment Methodologies

(A) Embankment Foundations

A detailed on-site and desktop study has been undertaken to determine the suitability of the potential embankment treatment types for the project.

Areas of soft soil have not been identified along the alignment. Localised soft zones may be encountered adjacent to water courses or within surficial layers. Treatment of these areas would be removal and replacement as per RMS Specification R44.

Embankments are to be constructed over stiff to hard soils.

Key features of the foundation strategy for embankments include:

- Constructing all embankments to RMS Specification R44 and SWTC Appendix 11 Section 2;
- Foundation treatment, Type E1, Type E2 or Type E3, used as appropriate, following the review of the site conditions and available geotech data; and
- All embankments have been designed with 2H to 1V batter slopes to achieve the required factors of safety for embankment stability as nominated in the SWTC. No other measures are anticipated to be required to achieve embankment stability.

Proposed foundation treatments require various ground improvements and techniques, depending on the location, as per Table 3 below:

Table 3: Embankment Foundation Treatment Summary

Type	Locations	Foundation Treatments
1	Fill Heights greater than approx. 2.1m to Top of Pavement Level	<ul style="list-style-type: none"> • Mow grass / clear vegetation by cutting stumps at ground level and remove any existing foundations; • Do not strip topsoil; • Place E6 "Earthfill Bridging Layer" to 800mm thickness; and • Construct formation and allow necessary settlement period prior to constructing pavement.
2	Shallow Embankments	<ul style="list-style-type: none"> • Excavate test pits at 50m intervals, take samples of subgrade material and carry out CBR and PI testing on subgrade (one test of each at each test pit location) during detailed design; • Strip topsoil; • Confirm CBR ≥ 5 with dynamic cone penetration tests, in conjunction with laboratory testing; • If CBR ≥ 5 and PI ≤ 25, excavate to 300mm below the bottom of SMZ and carry out E1 "Loosen and Compact" treatment to a minimum depth of 300mm; • Construct formation comprising 300mm SMZ to achieve formation level; and • If the above requirements are not satisfied, in-situ stabilisation C3 shall be carried out.
3	Tie-in to existing The Northern Rd	<ul style="list-style-type: none"> • Mow grass; • Remove any unsuitable in drainage channels at toes of existing embankments; • Terrace into existing formation as per RMS Specification R44; • Cut top of The Northern Rd embankment to underside of Upper Zone Fill (min. 900mm below top of formation); and • Construct formation.

The construction techniques and resources for these treatments are detailed below.

Table 4: Preparation of Embankment Foundations – Techniques & Resources

Activity	Embankment Foundation Construction Techniques	Resources
Ground Preparation & Topsoil Stripping	<ul style="list-style-type: none"> • Prior to commencing embankment foundation treatments, Lendlease will complete clearing, grubbing, removal of cleared materials and the implementation of all required erosion and sedimentation controls; and • For treatment Type 1 it is proposed that the top soil would be retained in place. 	Backhoes, excavator, trucks, site labour, etc.

Activity	Embankment Foundation Construction Techniques	Resources
Geo-textile	<ul style="list-style-type: none"> Where used, geo-fabrics are to be placed the full width of the embankment; Rolls of geo-fabric are laid longitudinally and parallel with the alignment while ensuring that sufficient overlapping width is provided; and To ensure that no fine material will get into the drainage blanket layer (where used), the overlap of the geo-fabric layers will be such that the top layer is on the high side of the slope. 	Geo-fabric is placed using on-site labour with the aid of mechanical equipment where possible (i.e. excavator or backhoe).
Working Platform	<ul style="list-style-type: none"> Bridging material will be placed and spread in a single layer with sufficient depth to allow for the passage of earthmoving plant with minimal surface heaving; No compaction requirements are specified by RMS Specification R44 for bridging materials. However, to ensure that the layers are compacted with minimal surface heaving, the haulage equipment to be used will have significant weight and the continual haulage of loaded gear will be distributed over the full width of the bridging layers; and An additional geo-fabric layer can be laid over the top to fully encapsulate the platform where required by the on-site Geotechnical Design Representative. 	The working platform material will be imported and delivered by truck and end dumped to form a single layer. To ensure that any drainage blanket layer is not contaminated by clay fines or silt, all delivery trucks tyres must be free from foreign matter. The drainage blanket / working platform material is spread with a small track-type dozer or excavator to avoid segregation.

(B) Construction of Embankments

Further key aspects of the project's geotechnical design for embankments are:

- Optimisation of the vertical alignment to minimise the length of shallow embankment and consequent foundation treatment in transition zones;
- On-site processing of site won material to optimise the re-use of materials on-site;
- Retention of all existing pavements and their incorporation into the new formation; and
- Temporary Batter Slopes: Engineered Fill 1.5:1, Firm Clay 2:1, and Stiff Clay to Firm Sand 2:1.

Embankment Construction Techniques

Within each stage of works on the project, the timing for the excavation, movement and placement of the embankment materials will be determined from the overall construction programme. This programme has been developed and presented using a simple and logical earthworks excavation and placement methodology and sequencing involving:

- Development of detailed design, verification, approvals, planning and hauls;
- Clearing and grubbing;
- Excavation of open drainage, basins and installation of Erosion and Sedimentation controls as required;
- Unsuitable Material removal (where required);
- Earthworks foundation treatments, including in-situ stabilisation;
- Transverse drainage construction where required;
- Embankments will be constructed in 300mm layers in accordance with RMS Specification R44 where fill will be delivered directly to the embankment from site won material or general fill imported material and then spread and compacted;

- Testing of each earthworks lot will be undertaken in accordance with RMS Specification R44 requirements;
- Final trimming of subgrade to final levels;
- Placement of Select Material Zone (SMZ) to underside of pavement;
- Installation of pavement and subsoil drainage as required by the detailed design documentation;
- Trimming of SMZ utilising Lendlease's motor graders; and
- Spray seal of SMZ layer.

Resources

Fill material for the embankments on the project will consist of a variety of materials that include General Fill, SMZ, DGB, unspecified road-base material made up from site won materials and imported material to meet the project requirements. All materials will be supplied and placed in accordance with the specification requirements and will be delivered to the site in road trucks.

All equipment used for the transportation of materials from suppliers will be subjected to the rigorous Lendlease safety and transport requirements with continual "Chain of Responsibility" assessments undertaken as part of the project Safety Audit schedule to ensure all quarry and sub-contractor equipment meets all safety requirements.

Earthworks material will be supplied by road trucks onto the embankment for placement and compaction.

Compaction will predominantly be via combinations of smooth drum and pad foot rollers in tandem for Other Than Rock (OTR) material.

Motor-graders and water carts (road registered) will be used for haul road maintenance, spreading material over fill embankments, applying water for both compaction purposes and for dust control.

Trimming of the formation will occur at two levels, at the sub-grade and top of the SMZ, with motor-graders used to complete both operations to the survey requirements set-out in RMS Specification R44.

Testing of the specified earthworks materials will be conducted during construction to ensure that materials are incorporated in the works in accordance with the relevant design documents and specifications. This includes ensuring that the higher quality materials are incorporated in the works in the UZF of embankments, SMZ and other select backfill areas. Details of these testing controls will be included in the Project Quality Plan and associated ITPs.

C. Monitoring, Inspection & Maintenance of Embankment Performance

Monitoring during Construction

SWTC Appendix 11, 2(f) states the monitoring plan must include details for monitoring embankments and pavements above Compressible Foundation Materials.

The maximum predicted settlements of embankments have been calculated as part of 2-E Geotechnical Design. No Compressible Foundation Materials have been identified on the Project. It is anticipated that embankment settlement would be <50mm with 80% of settlement occurring during construction. The creep settlement is considered to be negligible <15mm.

Embankments shall be constructed with good quality material and compacted in layers in accordance with R44, therefore internal settlement control can be maintained to 0.2% of the embankment height with an additional 16mm of settlement for the embankment on the northern approach to the M4 overpass, as it is greater than 8m in height.

Following best practice construction methods and R44 specification, embankment settlement should have no adverse impact on pavements or structures.

During the detailed design differential settlement and the need for further ground treatments should be assessed to determine if any further treatment is required.

A visual assessment process will be implemented in order to determine whether deformations are occurring during construction, thus requiring further investigation.

Review Levels & Actions for Embankment Performance

During construction, the fill rate and slope stability shall be monitored to ensure the embankment performs to meet SWTC requirements and 2-E Geotechnical Report.

Embankment Protection & Maintenance

Considering the impact even a small rain event can have on an earthworks placement and compaction operation, the protection of earthworks is an important skill that is imperative in the construction of a road project in the Sydney area.

Below are strategies Lendlease will implement to protect the earthworks embankment during construction to minimise ongoing maintenance:

- Early construction of open drainage adjacent to embankments;
- Early construction of transverse drainage lines;
- During construction of embankments, ensure the slope of the fill falls towards the batter (or alternatively construct with a crown in the formation) where possible to ensure surface water does not pool on the embankment;
- Maintenance of dedicated temporary surface drainage (in cuts and fills) in conjunction with site specific Environmental, Runoff & Sediment Control Plans;
- Prior to finishing earthworks for the shift, a smooth drum roller will be placed on fills and back blade stockpiles to ensure a smooth surface is obtained to enable surface water to sheet off the fills;
- Installation of temporary windrows and open drains to direct water away from embankments or cut materials;
- Use of temporary drainage e.g. under haul road access tracks;
- Use of dedicated haul / access roads;
- Install ERSED controls as per ERSED Plans; and
- Limit heavy and light vehicle access over problematic areas especially during rain events or "in between" showers.

After a significant rain event during the earthworks construction process, the water increases the moisture content of the top layer of fill / exposed cut. This increase in moisture content can cause significant rutting / movement and is non-conforming to the RMS Specification. It is a requirement to bring the layer back into the conforming moisture content level before continuing with the earthworks formation.

Where rainfall occurs after a lot has been tested, the layer will be inspected to identify the area of the lot requiring drying back. Drying back material will be completed in the traditional format via reopening the earthworks layer with a dozer or grader allowing the fill to dry and re-compacting and retesting the layer in accordance with RMS Specification R44, Clause 7. If retesting of a layer occurs there will be an additional lot and subsequent conformance records recorded within Quality, Engineering, Safety and Environmental System, QESE. Alternatively, the over optimum portion of the fill (i.e. top 25mm) could be removed and replaced in conjunction with the next layer.

(v) Methodology for Key Issues associated with Foundations of Structures

A. Programming & Resource Provisions to Construct Foundations

The foundations for the bridge over the M4 are tabulated below. In accordance with SWTC Appendix 13.8, the substructure is supported by piles founded on rock.

Location	Pile type	Diameter	Depth	Qty
Abutment A	Bored	900mm	8m	15
Central Pier	Bored	1200mm	12m	6
Abutment B	Bored	900mm	9m	17

While the majority of piles will be installed in the initial stage of bridge construction, there are currently several piles that clash with the existing structure. These will be installed in a separate mobilisation once traffic is switched onto the new bridge and the old structure is demolished. Further information of the sequencing of bridge construction can be found at 3-D Initial Construction Plan in this response.

The abutments piles are programmed to be completed before the central pier to allow retaining wall construction to commence.

Other key programme provisions relating to structure foundations include the staged dates for site access, Design Approval(s) of relevant temporary and permanent works; major plant mobilisations; and the approval of the CEMP and relevant management plans.

All of the bridge piles fall within the existing road corridor and are expected to be available from the Staged Commencement date.

Bored piles have been adopted for the TNR3N bridgeworks. The use of relatively simple techniques and commonly used pile diameters ensures that adequate resources will be available and also provides the best value-for-money. During the construction phase, resources will be allocated in accordance with the programme requirements.

A single drill rig will be used to complete all investigative work.

B. Frequency & Scope of Foundation Inspections

Geotechnical investigations including bore logs will be completed at each pier and abutment in accordance with the requirements in SWTC Appendix 13.2.3(a) and will be included in the Structures Design Report. To ensure that all of the foundation requirements are achieved, including the required frequency of inspections, a Geotechnical Representative will be present for all foundation operations under delegated authority.

As previously mentioned, the following additional investigations are required by the SWTC.

Location	Pile type	Diameter	Investigation Depth	Test Qty
Abutment A	Bored	900mm	12.5m	6
Central Pier	Bored	1200mm	18m	5
Abutment B	Bored	900mm	13.5m	7

Boreholes at the bridge piers and abutments are required to comply with the SWTC minimum requirements for bridge investigations. Each borehole will need to extend to a depth of at least five pile diameters below the anticipated pile toe level. Full details of the requirements can be found in the schedule of additional investigations and testing provided in Appendix A of 2-E: Geotechnical Design.

C. Foundation Construction Techniques

A geotechnical and foundation study will be conducted on each structure that will be part of the permanent or temporary works as per SWTC Appendix 13 Clause 4.2. The key issues to be addressed include structural adequacy; long-term deformations; durability; the effects of the placement of fill in embankments near or adjacent to structures; and predictions of the in-situ ground movement, structural movement and ground water movement.

Bored piles are proposed for this structure.

The general construction methodology will be to establish safe site access; install necessary environmental controls; install temporary works area in accordance with the approved design; confirm conformance of works areas and mobilise equipment; and then undertake the foundation works as required by design.

A Geotechnical Representative will be present for all piling operations, under delegated authority. Inspection of removed tailings from the boring operation will be undertaken and compared to previously completed Geotechnical investigations and bore logs will be completed with the necessary compliance to RMS D&C B059 as required.

Pile integrity testing in the form of sonic logging is required to be undertaken in accordance with the specification.

The construction methodology for these works will be further refined in the detail design stage. In addition, prior to commencement, the proposed methodologies for structure foundation construction will be confirmed for design adequacy, conformance to Environmental requirements for existing waterways, and site conditions. All foundation Temporary Works will be undertaken in accordance with the Project Plans and conform to Deed requirements.



**Exhibit A –
Scope of Works and Technical Criteria
Appendix 43 – Initial Traffic Management
and Safety Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
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Contract number:	15.3662.2254
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Table of Contents

Initial Traffic Management and Safety Plan

3-1: Initial Traffic Management & Safety Plan

Our Traffic Management and Safety Plan has been developed with our key theme in mind, safety of all is our priority, and outlines the tools and strategies we will use to keep vital infrastructure accessible to the communities that use them.

(i) Proposed Measures to Maintain Capacity & Performance

It is a strategic goal of Lendlease to maintain the performance of the road network and foster a positive customer experience during all road construction activities. This is achieved by intelligently identifying all potential impacts, planning “best practice” traffic management schemes to negate or minimise these impacts and allocating sufficient resources to facilitate those mitigations. Lendlease has successfully delivered projects for RMS with similar challenges, such as working adjacent to large volumes of live traffic, maintaining traffic flow, pedestrian and cyclist management, and maintaining property owner and pedestrian access. In particular we have delivered Inner West Busway (IWB) along Victoria Road where the 60,000 road users daily were not impacted, and the M5 West Widening (M5WW) where Lendlease maintained levels of service and travel times and reduced monthly reportable crashes by 75% for the 150,000 daily commuters.

Lendlease will adopt a collaborative approach to meeting the goals of the TMC. The placement of experienced, trained staff will enable Lendlease to develop strategies, monitor systems and implement controls which promote the free-flow of traffic, particularly during peak periods. The Traffic Management and Safety Plan for the project will optimise the effectiveness of traffic staging. This will reduce the number of temporary realignments, minimising the impact on the road network. Stakeholders including road users, residents and businesses will remain informed of pending changes with concise, timely and targeted notifications. Through intelligent planning and design we will identify any impact on the network caused by the location, nature or duration of work activities. Best practice control measures will then be implemented to avoid or mitigate these impacts and maintain the level of service at all intersections and mid-blocks throughout the project. The Lendlease strategy combines contemporary road safety and traffic management principles to ensure the safety and amenity of all road users and the public.

Other key features of this approach incorporate the following:

- Harmonise the Lendlease “Incident and Injury Free” vision with the NSW Government’s “Arrive Alive” road safety strategy;
- Ensuring potentially affected pedestrians, cyclists, road users, landowners and businesses are identified during the design and construction planning phase;
- Isolating work areas from traffic flows, through appropriate site planning, choice of construction methodologies and clear delineation of worksites;
- Installing traffic controls that effectively warn, inform and guide and that comply with RMS requirements and the Australian Standards;
- Plan and stage all works effectively to minimise road occupancy where possible and reduce conflict points on the existing road network;
- Maximise working opportunity on the roads. Works will be sequenced so that the works can be carried out behind traffic barriers as much as feasibly possible, as performed successfully on IWB and M5WW;
- Implement traffic control operations that minimise delays to road users taking into consideration traffic volumes including peak times of the day, seasonal traffic and impacts from school traffic;
- Minimise driver confusion by ensuring clear and concise traffic management schemes and by using existing and new communication networks to advise commuters and the general public of upcoming changes on the road network;
- Construction staging will be designed such that traffic lane widths are in accordance with RMS requirements and any side track designs will be designed for the approved traffic speed;
- Roadwork speed limits will be implemented for worksite and public safety purposes;
- Effective planning of all construction vehicle movements including the provision of safe ingress and egress points at the interfaces with the existing road network;
- Limit obstructions and restrictions on the existing road network, and when necessary provide alternate routes to maintain access for the local community and businesses;
- Coordinate and effectively communicate changed traffic conditions with members of the Traffic & Transport Liaison Group (TTLG) in particular the TMC, RMS, NSW Police, NSW Fire & Rescue, Rural Fire Brigade NSW, Ambulance Service of NSW, NSW State Emergency Service, Sydney Trains, Sydney Buses, Sydney Ferries and Local Councils as demonstrated on IWB and M5WW;
- Develop a regime to monitor the impacts of traffic changes and respond to any identified road user and public safety and amenity issues;
- Out of hours’ works occupying the road will be necessary to perform critical points such as tie-ins and intersection works, which will be carried out once necessary community consultation has occurred and

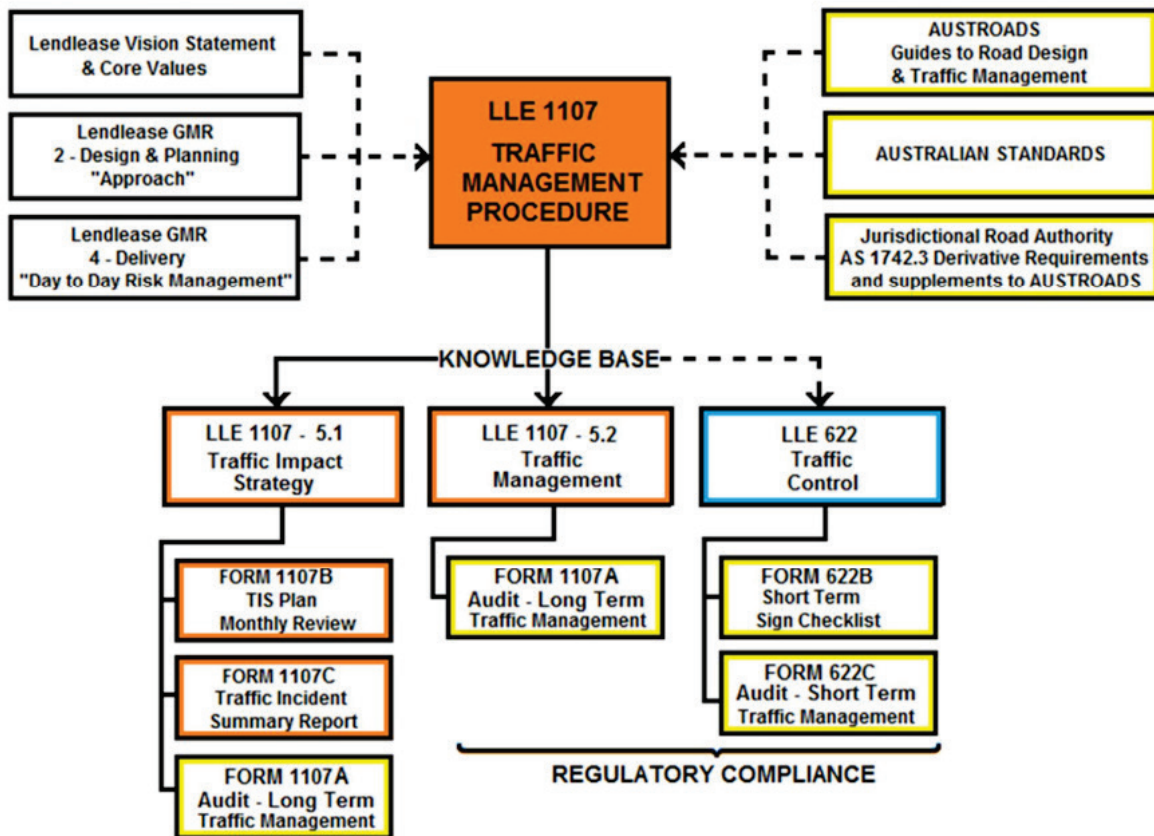
the Environment Protection Licence requirements have been addressed;

- Where critical, out of hours' works will be planned on an hourly basis to monitor progress of works during the shift to ensure the road is left in a safe condition and in accordance with the Road Occupancy Licence (ROL). This was adopted on IWB where pavements needed to be reinstated within a shift as road plates were not permitted and on North West Rail Link Early Works where intersection works had to be completed in a single shutdown; and
- Our Utilities Manager will ensure that adjustments to RMS traffic signal assets will be designed and adjusted by RMS-accredited traffic signal contractors.

Traffic Management Team

All project staff associated with developing, implementing, operating and/or managing traffic control plans and associated site activities will undertake the appropriate TCWS Manual for Traffic Control at Worksites Training Course and be qualified in order to comply with the Principal's requirements. All Lendlease staff will comply with the *LLE 1107 Traffic Management Procedures*.

The chart below outlines how the Traffic Management Team will operate and maintain capacity and performance of The Northern Road, M4 and Other Roads during the construction period.



LLE1107- Traffic Management procedural flow chart.

Traffic Manager / Representative:

The Traffic Manager is responsible for the long and short term temporary Traffic Management of the project. The Traffic Manager will be qualified, at a minimum, in the RMS "Design and Inspect Traffic Control Plans" course and have 10 years of recent experience in traffic management on road construction sites of equivalent complexity to the current construction project. Further, the Traffic Manager will:

- Comply with G10 Traffic Management and SWTC requirements;
- Oversee the projects compliance with the provisions of this document and ensure the traffic management objectives of the project are achieved;

- Liaise with the Lendlease National Traffic Manager for functional support and guidance;
- Comply with *LLE 1107 Traffic Management Procedures*;
- Communicate with stakeholders regarding traffic matters in conjunction with the Communication and Stakeholder Management Team;
- Prepare, implement, monitor and review all staging Traffic Management Plans (TMPs);
- Review TMP / Traffic Control Plans (TCPs) following incidents and/or accidents;
- Attend Penrith City Council Local Traffic Committee Meetings;
- Obtain all necessary approvals and ROLs for the TCPs as necessary;

- Be responsible for the implementation of ROLs and continuously monitor the implementation and operation of all road occupancies to ensure that they are compliant with the ROLs, including, but not limited to:
 - Monitor and quantify the duration of any traffic delays;
 - Monitor, measure and record traffic queue lengths during ROL operation, including the maximum traffic queue lengths in each direction and the total occupancy or traffic stoppage times;
 - Maintain and adjust traffic control measures and devices to: assist prevailing traffic flows; minimise lane and shoulder occupancies and any lost traffic flow capacity; and minimise traffic delay durations and queuing;
 - Monitor over-dimension heavy vehicle movements; and
 - Maintain close liaison with the Construction Manager and construction teams regarding the programming of work activities which impact traffic.
- Implement traffic control operations that minimise delays to road users taking into consideration traffic volumes including peak times of the day and seasonal traffic;
- Minimise driver confusion by ensuring clear and concise traffic management schemes and by using existing and new communication networks to advise commuters and the general public of upcoming changes on the road network;
- Construction staging will be designed as such that traffic lane widths remain in accordance with RMS requirements throughout the works;
- Roadwork speed limits will be implemented for worksite and public safety purposes;
- Effectively plan all construction vehicle movements including the provision of safe ingress and egress points at the interfaces with the existing road network;
- Limit obstructions and restrictions on the existing road network, and when necessary provide alternate routes to maintain access for the local community and businesses;
- Effectively communicate changed traffic conditions with key stakeholders including the community, Traffic & Transport Liaison Group, road authorities, Police, local councils, emergency service agencies and transport operators;
- Develop a regime to monitor the impacts of traffic changes and respond to any identified road user and public safety and amenity issues; and
- Develop methods and strategies to promote continual improvement and sharing of lessons learnt across the project in relation to traffic management issues.

Traffic Foreman / Supervisor

The Traffic Supervisor will:

- Report to the project Traffic Manager / Representative;
- Comply with G10 and SWTC requirements;
- Comply with [LLE 1107 Procedures](#);
- Implement and monitor TMPs;
- Coordinate and supervise subcontractors deployed for TMP implementation; and
- Manage Traffic Controllers at all worksites, including maintenance.

Independent Road Safety Auditor

In compliance with G10 Lendlease will engage an accredited Independent Road Safety Auditor that is registered with the RMS.

(ii) Temporary Roadworks & Staging Arrangements

Lendlease will apply the following key road safety and traffic management principles to manage the safety and amenity of all road users and the public:

- Ensuring potentially affected pedestrians, cyclists, road users, landowners and businesses are identified during the design and construction planning phase;
- Isolating work areas from traffic flows, through appropriate site planning, choice of construction methodologies and clear delineation of worksites;
- Installing traffic controls that effectively warn, inform and guide, and are compliant with RMS requirements and the Australian Standards;
- Plan and stage all works effectively to minimise road occupancy where possible and reduce conflict points on the existing road network;

Temporary Roadworks

Lendlease will implement temporary controls, signs and devices. A forgiving environment, safe sight lines, stopping distances, shy line maintenance, lane widths and turning radii will all be factored into temporary alignments.

A clear zone will be maintained adjacent to the traffic lane and kept free from features that could be potentially hazardous to errant vehicles. This area takes into account a vehicles recovery time and the probability of an errant vehicle encountering a hazard. Lendlease will not install any non-frangible devices, as part of temporary roadworks or staging, including VMS trailers, blunt barrier ends, and signposts greater than 100mm within the clear zone as per Section 3.7 of the Austroads Road Design Guide.

Temporary pavements shall be constructed in Stage 1, where existing medians and shoulders require removal to facilitate traffic being shifted to the west on The Northern Road and north on Glenmore Parkway. Temporary pavement shall also be constructed on the M4 shoulders to enable 24 hour construction access with minimal disruption to the traffic on the M4. Detailed staging drawings for each stage of the project are shown in LL-TNR3N_3-I_Traffic-Drwgs.pdf.

Works shall be carried out behind barriers with allowances made to maintain property access for residents. In the southern section of the project, Bringelly Road to Glenmore Parkway, access for residents shall be directly off The Northern Road and locally adjusted to facilitate works enabling new carriageway to be constructed. When works disrupt access to a property, consultation will be carried out as per 3-F Initial Community Involvement Plan.

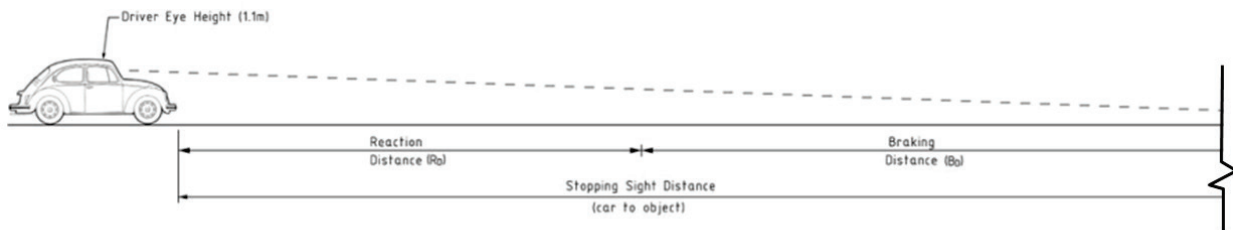
In the northern section of the project, between Jamison Road and Maxwell Road / Bringelly Road, residents will be provided an entry gate for property access. The service road will be a 10km/h “Shared Use” service road arrangement that will follow the direction of the traffic flow on the main carriageway. Entry and Exit Gates shall be designed to ensure safe 24 hour access to enter and exit into traffic. The service road shall be

separated from the main carriageway by barriers. For further details on local resident access during construction, refer to Lendlease’s “Driveway Strategy” in Section (vi) of this document. Temporary road works will be required on the M4 shoulders to install temporary pavement facilitating the implementation of site entry and exit gates with deceleration and acceleration lanes. These temporary works shall be constructed under traffic control during night shifts following discussions with the TMC to ensure minimal disruption to the M4 traffic flow.

Geometric Design

Our staging has been designed by a Traffic Engineer to comply with the following geometric requirements:

Approaching Sight Stopping Distance



85th percentile value for typical drivers braking on wet, sealed roads. Desirable maximum value for most urban and rural road types

	40kmh	50kmh	60kmh	70kmh	80kmh	90kmh	100kmh
R _r	2.0 sec	2.0 sec	2.0 sec	2.0 sec	2.0 sec	2.0 sec	2.0 sec
R _o	22.22m	27.77m	33.33m	38.88m	44.44m	50.00m	55.54m
V	40 km/h	50 km/h	60 km/h	70 km/h	80 km/h	90 km/h	100 km/h
d	0.36 μ	0.36 μ	0.36 μ	0.36	0.36 μ	0.36 μ	0.36 μ
a	0%	0%	0%	0%	0	0%	0%
B _o	17.05m	26.7m	38.32	52.14m	68.10m	86.19m	106.42m
SSD	40m	55m	73m	92m	114m	139m	165m

AUSTROADS Table 5.4

Turning Paths

Vehicle Type	Speed	Turning Radius
Passenger Vehicle, Normal Car, Utility 5.2m length	5km/h 15km/h 20km/h	6.3m
Service Vehicle, Light Truck 8.8m length	5km/h 15km/h 20km/h	9.0m 15.0m 20.0m
Single Unit Truck, bus, medium truck, flatbed, bogie 12.5m length	5km/h 15km/h 20km/h	12.5m 15.0m 20.0m
Articulated truck, prime mover, semi-trailer, truck and dog combination 19m length	5km/h 15km/h 20km/h 30km/h	12.5m 15.0m 20.0m 30.0m
B Double, prime mover and long semi-trailer 25m length	5km/h 15km/h 20km/h 30km/h	12.5m 15.0m 20.0m 30.0m

Lane Widths

Road	Speed Limit	Lane Width	Shoulder Width
The Northern Road	60km/h	3.2m	0.5m
M4 Motorway	80km/h	3.5m	0.5m
M4 Ramps	60km/h	3.0m	0.5m
Other Roads	40km/h	3.0m	0.5m

The geometry of entry and exit gates for an 80km/h road work environment must comply to the following dimensions:

- Approaching Sight Stopping Distance (SSD) = 139m. The lane path necessary (braking zone) on approach to the conflict point. For TNR3N, this is for vehicles entering or departing the live carriageway in the path of approaching vehicles;
- Mutual merging sight distance at site egress where our vehicles are joining the road will be 88m. This must be an unobstructed “continuity line” type arrangement where public traffic can fully see the site vehicle (side indicators) accelerating to merge in their lane, to allow 4 seconds of observation;
- Lateral merge or diverge length is the distance that vehicles require to move sideways between lanes, or in this case into or out of site gate acceleration / deceleration. This distance is equivalent to 1 second of forward travel for every metre of lateral movement required, i.e. a lane swap of 3.0m will take 66m. As such our site gate access mouth shall be at least 66m long;
- Acceleration lengths vary from vehicle to vehicle and our un-manned gates must cater for the heaviest / slowest of these. A truck and dog accelerates 1km/h for every 3m of travel which equates to 240m from

0km/h to 80km/h. However, this length is reduced due to several factors: the assumption that site vehicles leaving the site approach the acceleration lane at 10km/h; and that RMS accepts a merge that is 90% of ambient. Therefore, the necessary acceleration is between 10km/h and 72km/h (62 x 3 = 186m). We will also provide a further 30m of “run-out” at the end of the lane (3m wide shoulder adjacent to edge line taper) which creates a site acceleration lane length of 220m. Similarly, deceleration is averaged at 1km/h speed loss for every 1m of travel. The same rules determine a minimum 72m length required for a vehicle to come to a halt inside the gate as well as an additional length for a parked vehicle (19m). Therefore the site deceleration lane will be 91m;

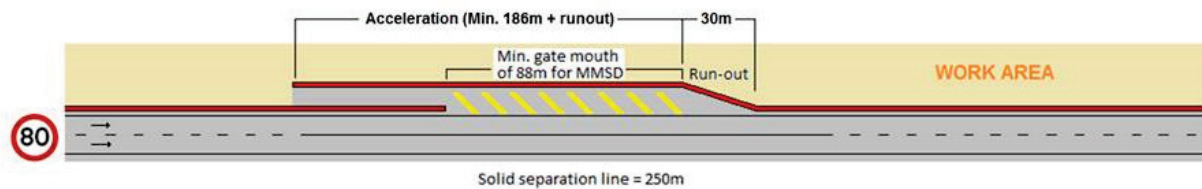
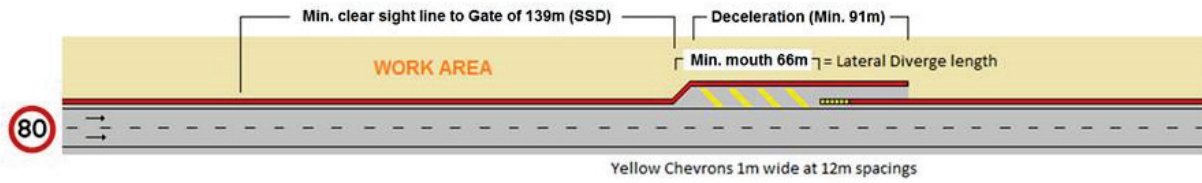
- Road geometry. These dimensions apply to straight level roads. Increases in horizontal and vertical curves will increase the gate lengths; and
- Ambient road conditions. The road surface is assumed to be solid asphalt or concrete with high wear and friction characteristics. The above dimensions assume the road is wet.

Similarly the design standards and calculations detailed above will be applied to entry and exit gates throughout the project including those on 60km/h roads, as shown in the diagram below.

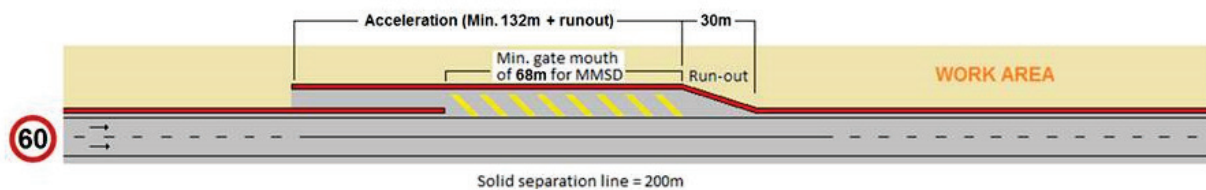
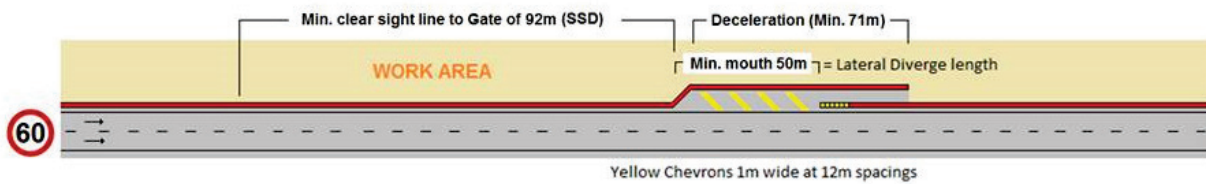


Example of a typical gate arrangement, for carrying out pavement construction works, between live traffic. Source: M5WW.

Entry and Exit Gate geometry for site access egress on 60km/h and 80km/h roads.



For a 60km/h environment:



A road safety audit shall be conducted following any major traffic switch to ensure traffic routes, lane configurations, barriers, line marking and signage meet applicable safety standards.

Pedestrians & Cyclists

The project will maintain existing or alternative connections for cycle and pedestrian facilities including Shared Use Paths and bridges in accordance with provisions in the Annexure 2 – Part 1, MUTCD, Austroads, and relevant Australian Standards.

Cyclists

Cycle access is an important part of the transport network and has the ability to encourage and promote activity to and from the study corridor as well as reduce travel demand by motor vehicles.

Lendlease recognise that cyclists will be affected during the upgrade of The Northern Road. Several measures aimed at improving the safety of cyclists during the construction include:

- Awareness campaigns targeting motorists to highlight the laws concerning the protection of cyclists through provision of a 1m overtaking buffer, in line with current NSW legislation;
- Notification ahead of the project will be displayed warning motorists and cyclists of pending changes to the road;

- Information signs will be installed as part of the traffic control plans highlighting the changes to the road networks specifically as it relates to cyclists;
- Cycle path information will be posted online by Councils to indicate alterations as the various staging is implemented and lane widths and footpaths are altered.

When developing Construction Traffic Control Plans, Lendlease will ensure that they comply with Austroads criteria and pass a Road Safety Audit carried out by an independent third party. Following this the plans will be submitted for approval to the Council acting as the Authority. Approved changes will be notified to the public at least 14 days ahead of implementation. Once a new route is constructed, an audit will be undertaken to ensure that it has been constructed in accordance with the approved plan.

Pedestrians

The current pedestrian paths along The Northern Road vary in standard both in surface finish and in width. The quality of the surface also varies with several sections being broken due to long term use, tree root pressure and installation of utilities. Damage has often been patched with asphalt. In carrying out the numerous maintenance and construction activities required to complete the upgrade to The Northern Road, changes to the road and pedestrian network will be required.

(iii) Traffic Management Staging

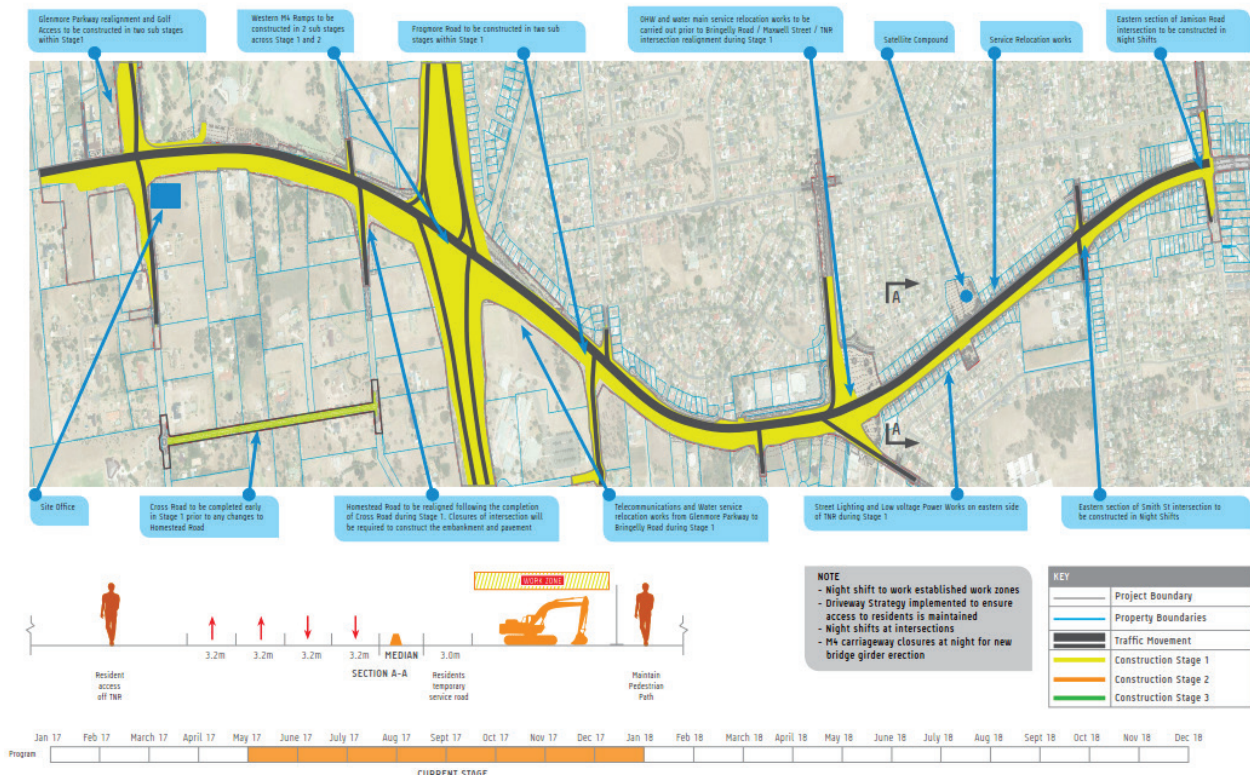
TNR3N construction has been broken into three main stages detailed in this section of the Plan. Throughout these main stages there will be a number of sub-stages to facilitate minor adjustments to intersections and resident / business access. The current configuration of lanes on The Northern Road, two lanes northbound and two lanes southbound, shall be maintained throughout all stages of construction for TNR3N. There are currently no dedicated over taking lanes on The Northern Road within the project boundaries of TNR3N.

Staging has been developed to maintain the existing configuration when turning on and off The Northern Road until local road changes have been completed to accommodate access changes. This will meet the final design requirements as outlined in the SWTC and Mandatory Functional Requirements.

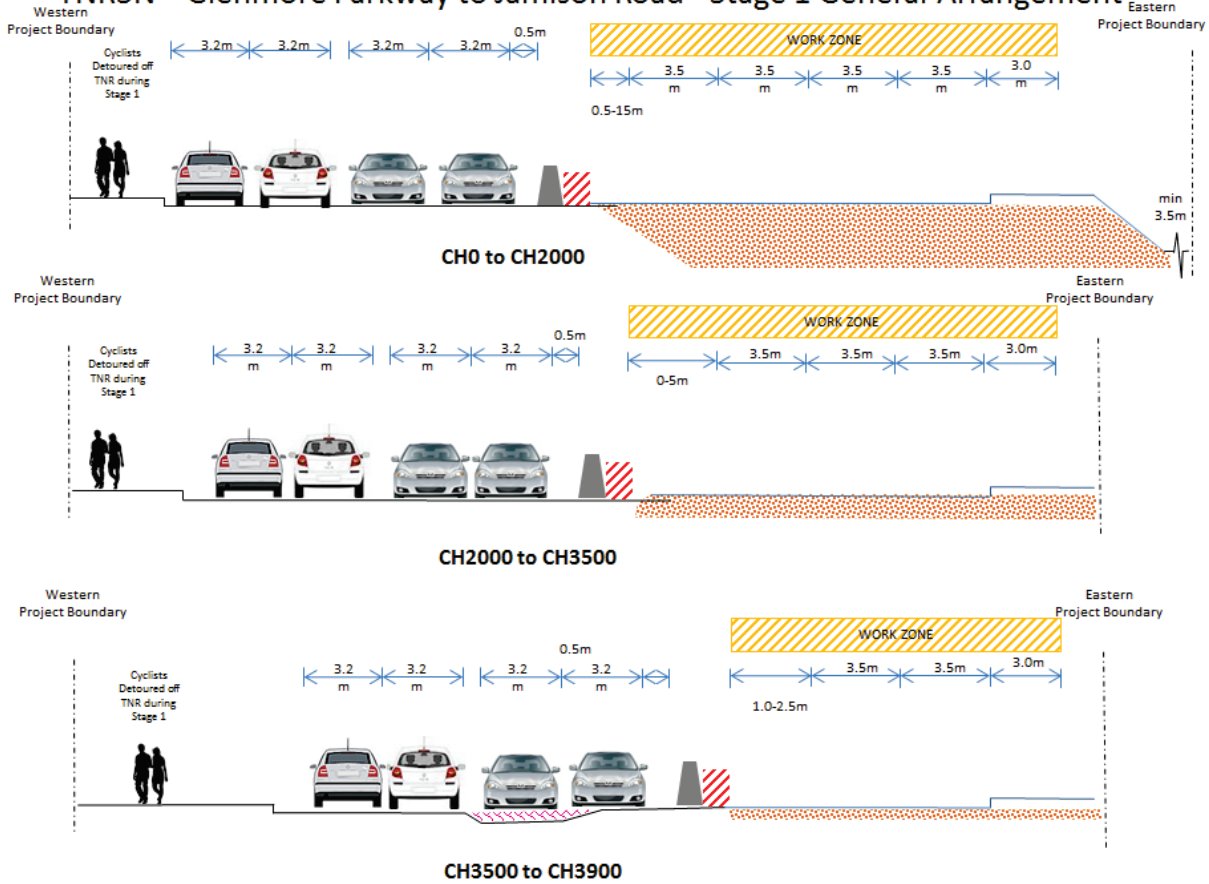
- Stage 1 – From Jamison Road to Bringelly Road the kerbside two lanes will be constructed. From Bringelly Road to Glenmore Parkway the full southbound carriageway will be constructed. Works will commence on the construction of the new bridge over the M4;
- Stage 2 – From Jamison Road to Bringelly Road centre lanes and median will be constructed. From Bringelly Road to Glenmore Parkway the northbound carriageway will be constructed with traffic switched onto the existing bridge as the new M4 bridge is still being constructed; and
- Stage 3 – From Jamison Road to Glenmore Parkway traffic will be on the new southbound carriageway to enable completion of the northbound carriageway, demolition of the existing bridge over the M4 and tie in of the new M4 entry and exit ramps.

Stage 1

TNR3N - Construction Staging Plans - Stage 1



TNR3N – Glenmore Parkway to Jamison Road - Stage 1 General Arrangement



Intersection Layouts & Capacities

All existing turning lanes at intersections shall be maintained during Stage 1 works.

Detailed staging drawings for each stage of the project are attached to this Plan.

Temporary Connections

Temporary connections in Stage 1 shall involve widening existing road pavement to realign local road connections at the intersections with The Northern Road.

Local roads will temporarily cross the new southbound carriageway and temporarily tie into the existing The Northern Road with asphalt pavement adjusted to meet the level of the existing The Northern Road intersection. These roads include:

- Glenmore Parkway;
- Wentworth Road;
- Homestead Road;
- M4 Eastbound Entry Ramp;
- M4 Westbound Exit Ramp;
- Frogmore Road; and
- Castle Road.

Local Road Closures

The Traffic Manager / Representative will frequently liaise with the Community and Stakeholder Manager

when preparing long term realignments of the road. Information sharing will allow the project to develop a suite of notifications including:

- Local newspaper advertising;
- Letters to Stakeholders;
- Maintain updates of closures on project website;
- A 24 hour community information phone line to report traffic incidents;
- Ongoing notifications to TMC;
- Workshop with Penrith City Council Local Traffic Committee of all changes to traffic arrangements; and
- Ongoing consultation with stakeholders.

During the construction of the southbound carriageway there will be closures of local roads at various stages of the construction programme to enable the works to be completed.

The table below outlines the closure requirements during Stage 1, the scope of works during the closure and the predicted length for the closure.

All closures would be workshopped with Penrith City Council Local Traffic Committee and advertised to local residents and businesses as well as the wider community as detailed in the Community Involvement Plan.

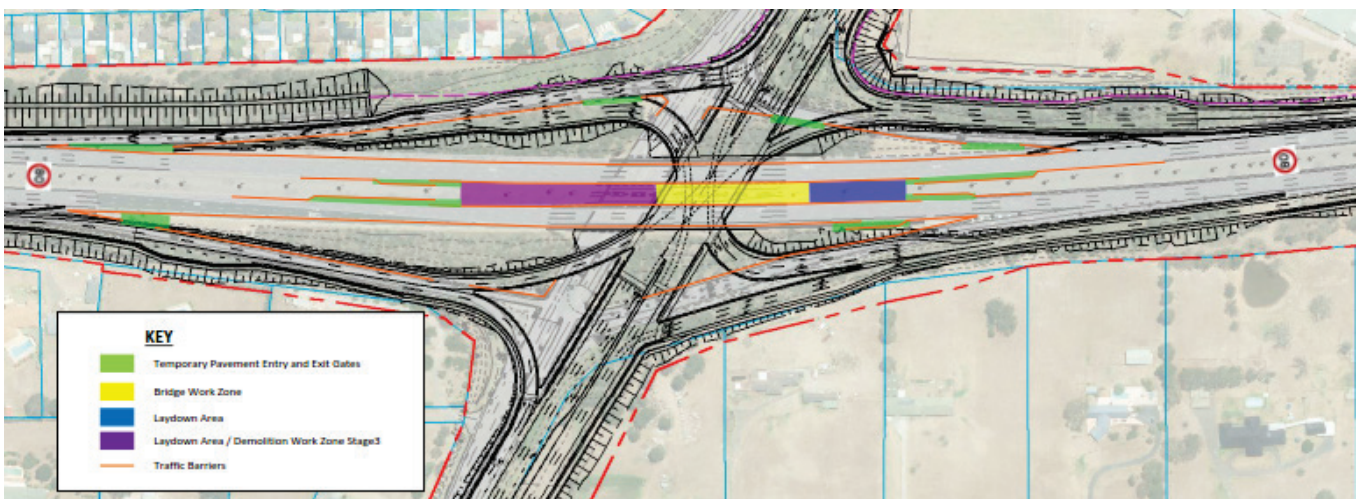
Road Closure	Detour Via	Works During Closure	Duration of Closure
Glenmore Parkway	Garswood Rd	<ul style="list-style-type: none"> • Temporary Pavement Works • Asphaltting Works 	Shift Closures
Wentworth Rd	Kingswood Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Cross Rd	Homestead Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Homestead Rd	Cross Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd 	4 months
Garswood Rd	Glenmore Parkway	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
M4 Eastbound Carriageway	Bringelly Rd / Caddens Rd / Kent St On-Ramp	<ul style="list-style-type: none"> • Girder Erection 	Night Shift Closures
M4 Westbound Carriageway	Jamison Rd / Mulgoa Rd On-Ramp	<ul style="list-style-type: none"> • Girder Erection 	Night Shift Closures
Frogmore Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersections with The Northern Rd and Simeon Rd 	4 months
Tukara Rd	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Castle Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd 	4 months
Aspen Rd	Maxwell St	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Bringelly Rd	Caddens Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Maxwell Street	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Fragar Rd	The Northern Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Smith St	Jamison Rd / Bringelly Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures

M4 Closures

Lendlease will work closely with TMC to develop a suitable programme to enable lane closures on the M4. This will be done during night shifts 10.00 a.m. to 5.00 a.m. to establish work zones within the shoulders and median of the M4 including traffic barriers, median

earth mound removal and temporary shoulder pavement at access gates.

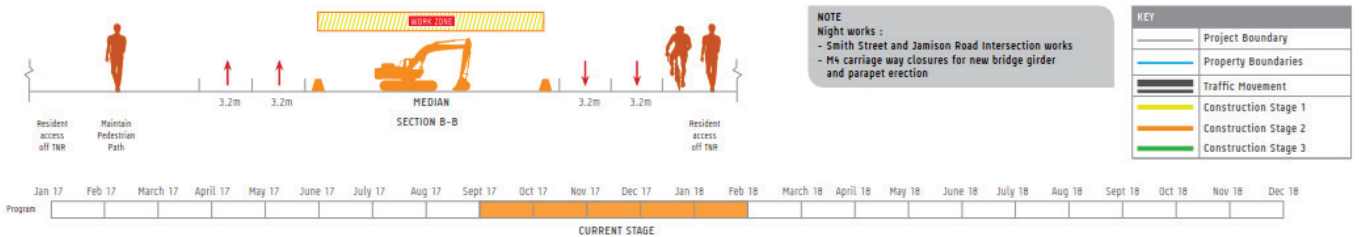
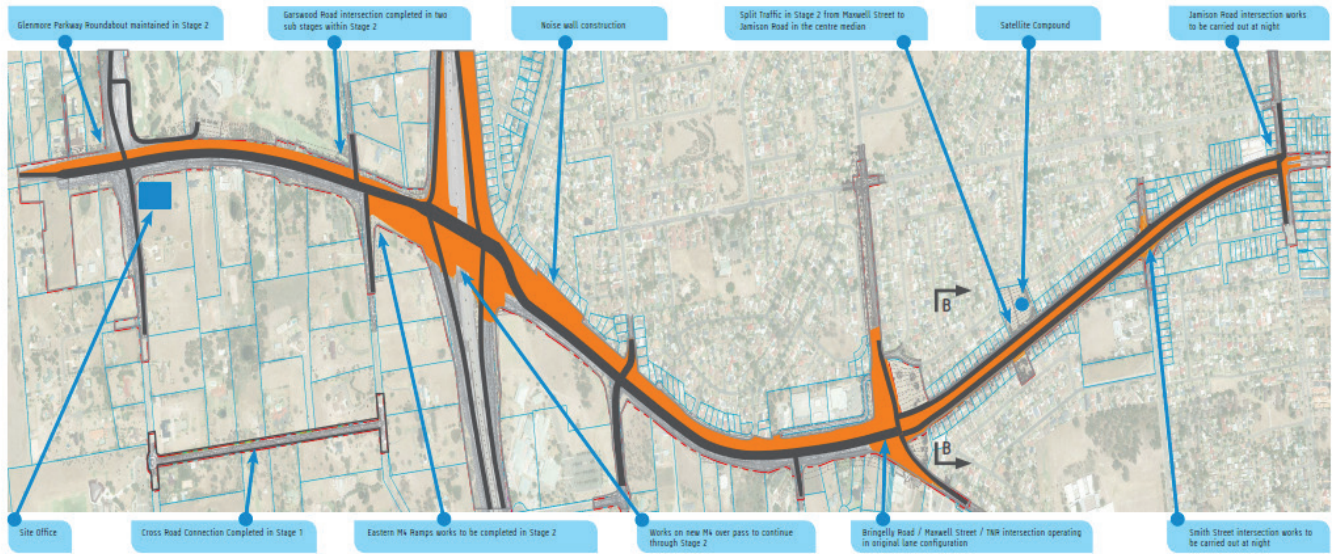
Once the worksites have been established works shall be carried out during night and day works with no impact to the traffic on the M4.



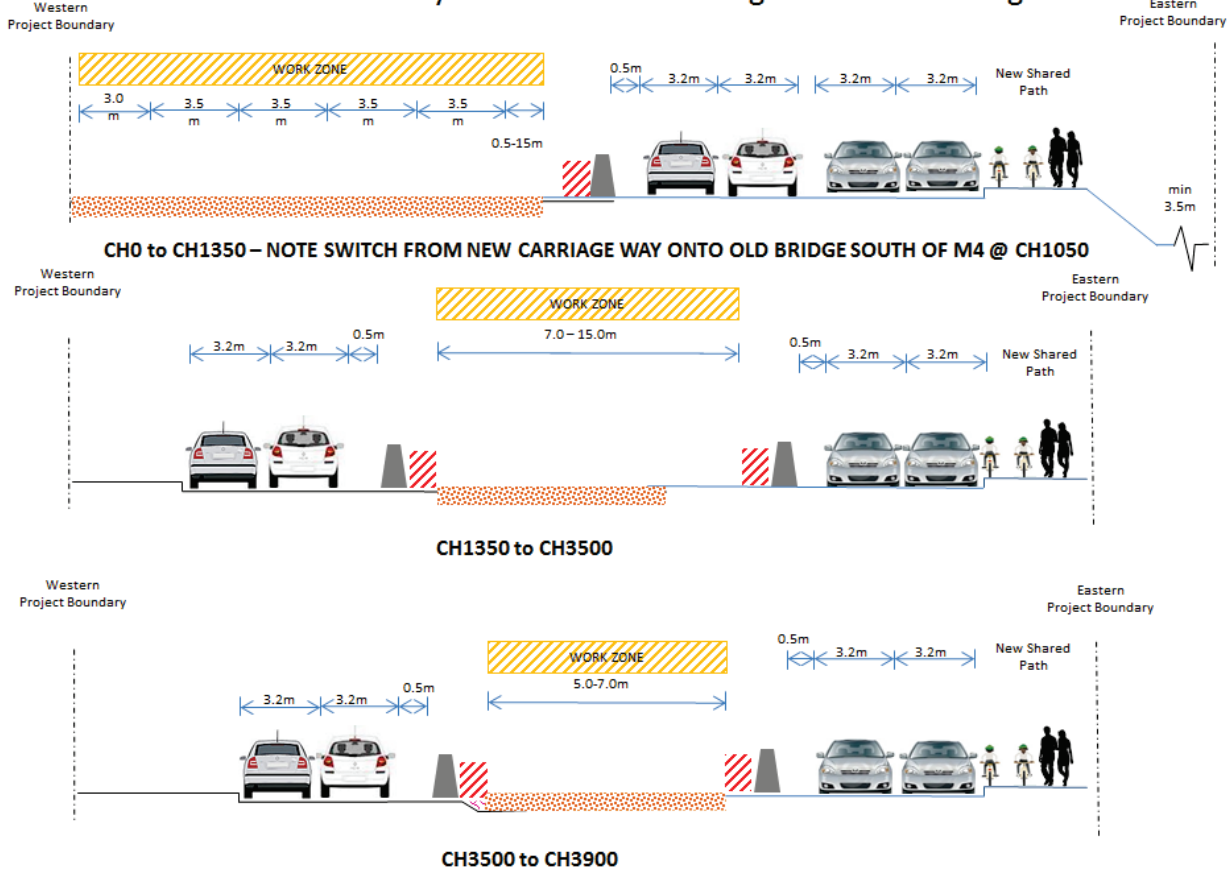
M4 Shoulder and Median Work Zone Setup, Access & Egress.

Stage 2

TNR3N - Construction Staging Plans - Stage 2



TNR3N – Glenmore Parkway to Jamison Road - Stage 2 General Arrangement



Intersection Layouts & Capacities

Turning lane movements shall be adjusted to the final design configuration as per the details below:

- Access to the Penrith Golf and Recreation Club off Glenmore Parkway;
- Homestead Road will become left in and left out only;
- Castle Road will become left in and left out only; and
- Aspen St will become left out with U-turn function at the Fragar Road / Maxwell Road roundabout.

Detailed staging drawings for each stage of the project are attached to this Plan.

Temporary Connections

Temporary connections in Stage 2 shall involve widening existing road pavement to realign local road connections at the intersections with The Northern Road.

Local roads will temporarily cross the new southbound carriageway and temporarily tie into the existing The Northern Road with asphalt pavement adjusted to meet the level of the existing The Northern Road intersection. These roads include:

- Glenmore Parkway;
- Garswood Road;
- Tukara Road;
- Aspen Road;
- Maxwell Road;
- Smith Street; and
- Jamison Road.

Local Road Closures

The table below outlines the closure requirements during Stage 2, the scope of works during the closure and the predicted length for the closure.

All closures would be workshopped with Penrith City Council Local Traffic Committee and advertised to local residents and businesses as well as the wider community as detailed in 3-F Initial Community Involvement Plan.

Road Closure	Detour Via	Works During Closure	Duration of Closure
Glenmore Pkwy	Garswood Rd	<ul style="list-style-type: none"> • Temporary Pavement Works • Asphaltting Works 	Shift Closures
Garswood Rd	Glenmore Pkwy	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
M4 Eastbound Carriageway	Bringelly Rd / Caddens Rd / Kent St On-Ramp	<ul style="list-style-type: none"> • Girder Erection 	Night Shift Closures
M4 Westbound Carriageway	Jamison Rd / Mulgoa Rd On-Ramp	<ul style="list-style-type: none"> • Girder Erection 	Night Shift Closures
Frogmore Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd and Simeon Rd 	4 months
Tukara Rd	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Castle Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd 	4 months
Aspen Rd	Maxwell St	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Bringelly Rd	Caddens Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Maxwell Street	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Smith St	Jamison Rd / Bringelly Rd	<ul style="list-style-type: none"> • Intersection Construction • Asphaltting Works 	Shift Closures
Jamison Rd	Smith / Bringelly Rd	<ul style="list-style-type: none"> • Intersection Construction • Asphaltting Works 	Shift Closures

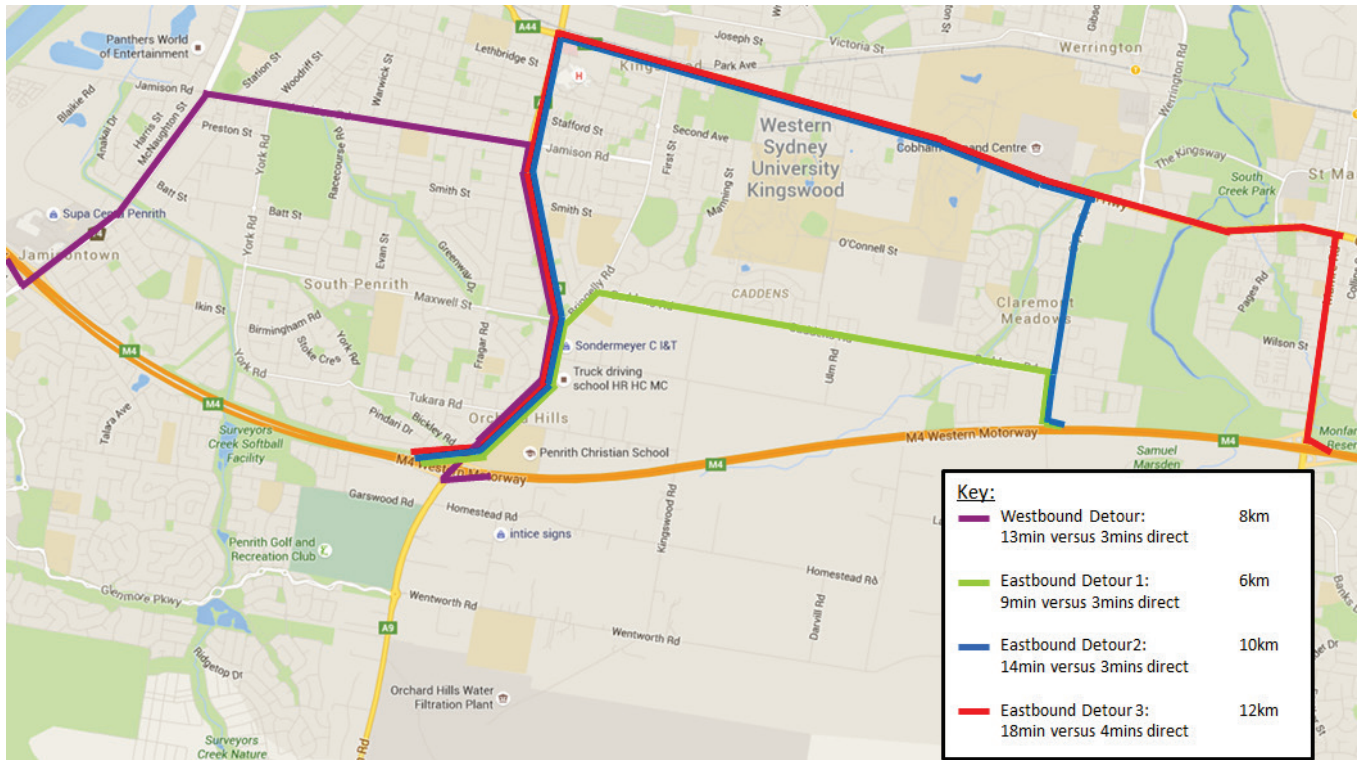
M4 Closures

Lendlease will work closely with TMC to develop a suitable programme to enable the girder placement on the new bridge to minimise disruption to the road user and local community. The detailed methodology for the girder and parapet erection is outlined in 3-D Initial Construction Plan.

During Stage 2 M4 carriageway closures, 10.00 p.m. to 5.00 a.m. will be required to facilitate the erection of the bridge deck girders. These closures will detour the traffic on a single carriageway onto a detour around the new M4 bridge site, using the local road network.

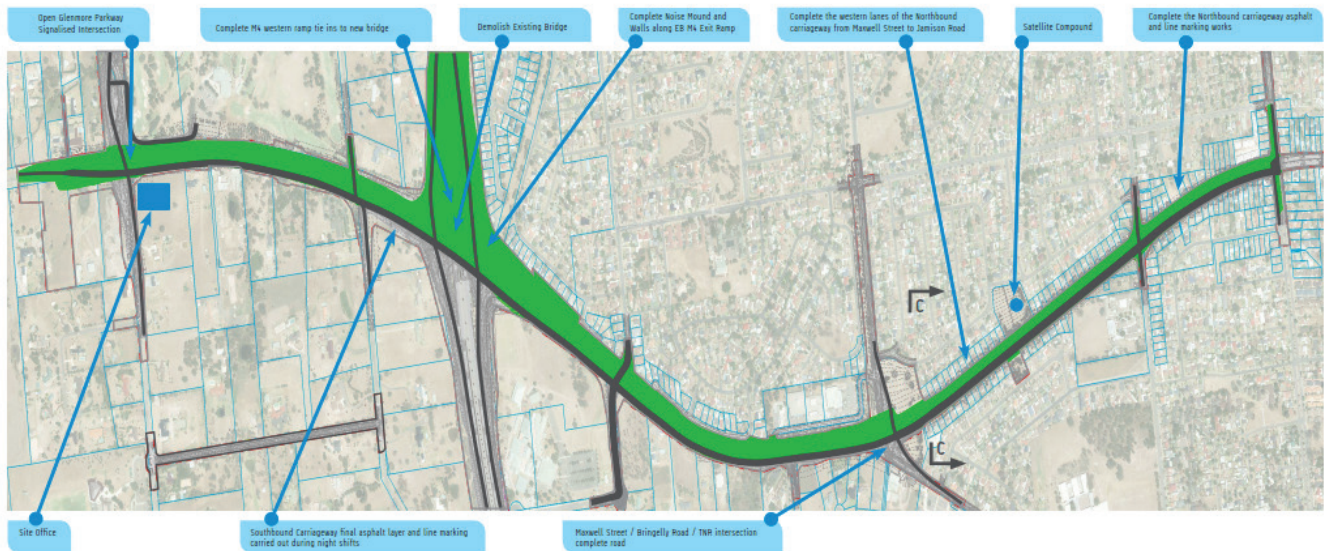
The duration of full carriageway closure will be minimised with crane setups being completed during the day shift prior to works. Traffic control shall be progressively setup, commencing at 10.00 p.m. Once all detour signage has been set out as per the TMP and the girder lifting operation is ready to commence, traffic control shall divert the M4 traffic onto the detour. A detailed hour by hour programme shall be drafted in consultation with the TMC to ensure the hours of closure are minimised and advertised effectively to reduce the impact on the RMS customers using the M4.

Proposed detour routes during M4 carriageway closures.



Stage 3

TNR3N - Construction Staging Plans - Stage 3

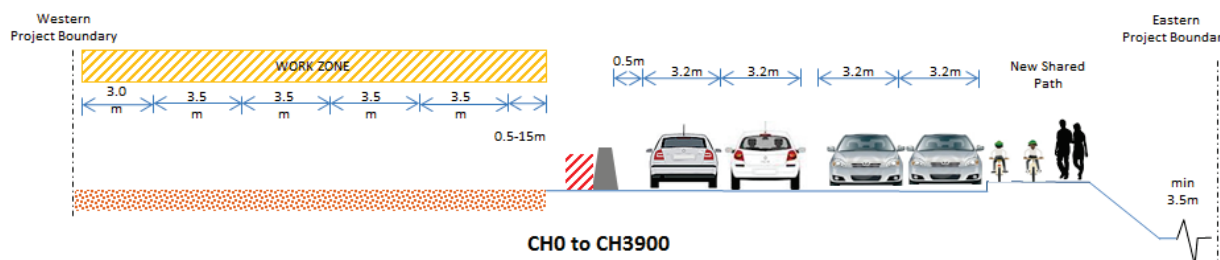


NOTE
 - M4 carriageway closures at night during demolition of existing bridge
 - Night shift to complete southbound asphalt pavement
 - Demolish work zones across project including site compounds

KEY	
	Project Boundary
	Property Boundaries
	Traffic Movement
	Construction Stage 1
	Construction Stage 2
	Construction Stage 3



TNR3N – Glenmore Parkway to Jamison Road - Stage 3 General Arrangement



Intersection Layouts & Capacities

All intersections shall be fully functional as per the final design during this stage.

Detailed staging drawings for each stage of the project are attached to this Plan.

New Traffic Control Signal sites at Glenmore Parkway and Frogmore Road will be commissioned and operational during this stage.

Temporary Connections

Temporary connections in Stage 3 shall involve widening existing road pavement to realign local road connections at the intersections with The Northern Road.

Local roads will temporarily cross the new southbound carriageway and temporarily tie into the existing The Northern Road with asphalt pavement adjusted to meet the level of the existing The Northern Road intersection. These roads include:

- Glenmore Parkway;
- Garswood Road;
- Tukara Road;
- Aspen Road;
- Maxwell Road;
- Smith Street; and
- Jamison Road.

Local Road Closures

The table below outlines the closure requirements during Stage 3, the scope of works during the closure and the predicted length for the closure.

All closures would be workshopped with Penrith City Council Local Traffic Committee and advertised to local residents and businesses as well as the wider community as detailed in 3F- Initial Community Involvement Plan.

Road Closure	Detour Via	Works During Closure	Duration of Closure
Glenmore Pkwy	Garswood Rd	<ul style="list-style-type: none"> • Temporary Pavement Works • Asphaltting Works 	Shift Closures
Wentworth Rd	Kingswood Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures

Road Closure	Detour Via	Works During Closure	Duration of Closure
Cross Rd	Homestead Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Homestead Rd	Cross Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd 	4 months
Garswood Rd	Glenmore Pkwy	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Frogmore Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd and Simeon Road 	4 months
Tukara Rd	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Castle Rd	Kingswood Rd	<ul style="list-style-type: none"> • Construction of intersection with The Northern Rd 	4 months
Aspen Rd	Maxwell St	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Bringelly Rd	Caddens Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Maxwell Street	Fragar Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Fragar Rd	The Northern Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Smith St	Jamison Rd / Bringelly Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures
Jamison Rd	Smith / Bringelly Rd	<ul style="list-style-type: none"> • Asphaltting Works 	Shift Closures

M4 Closures

Lendlease will work closely with TMC to develop a suitable programme that will enable girder placement on the new bridge while minimising disruption to the road user and local community.

During Stage 3 M4 carriageway closures, 10.00 p.m. to 5.00 a.m. will be required to enable the demolition of the existing M4 bridge (as detailed in the 3-D Initial Construction Plan). In order to maintain safety of the public and workers during these night works, Lendlease proposes to:

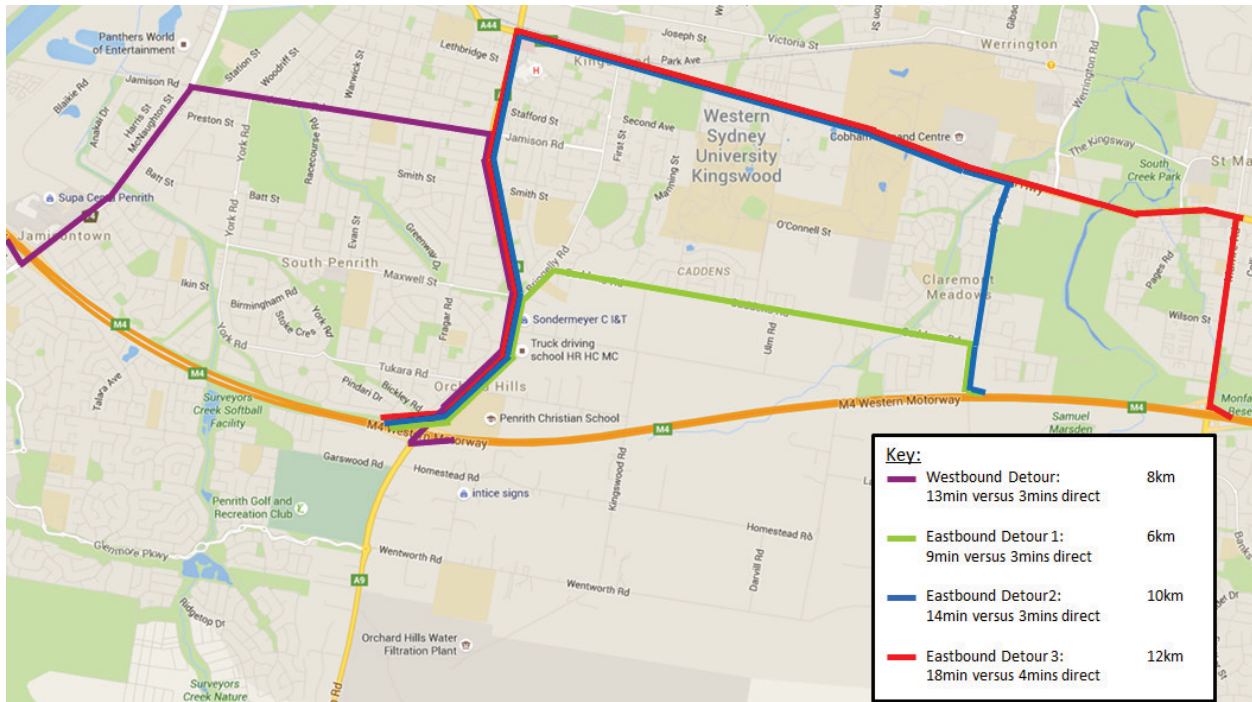
- Reduce the M4 carriageway to one lane prior to diverting the traffic onto the M4 off-ramp and onto the detour; and

- Divert all carriageway traffic off the M4 and onto detour routes detailed below. Detours shall be fully signposted and maintained during the shift.

The duration of full carriageway closure shall be minimised with crane setups being completed during the day shift prior to the works. Traffic control shall be progressively setup while a crew carry out lift preparation works.

A detailed hour by hour programme shall be drafted with consultation from the TMC to ensure the hours of closure are minimised and advertised effectively to reduce the impact on the RMS customers using the M4.

The detailed methodology for the demolition of the existing M4 bridge is outlined in 3-D Initial Construction Plan.



Proposed detour routes during M4 carriageway closures.

(iv) Timing of Staging & Strategies for Peak Traffic Flow Periods

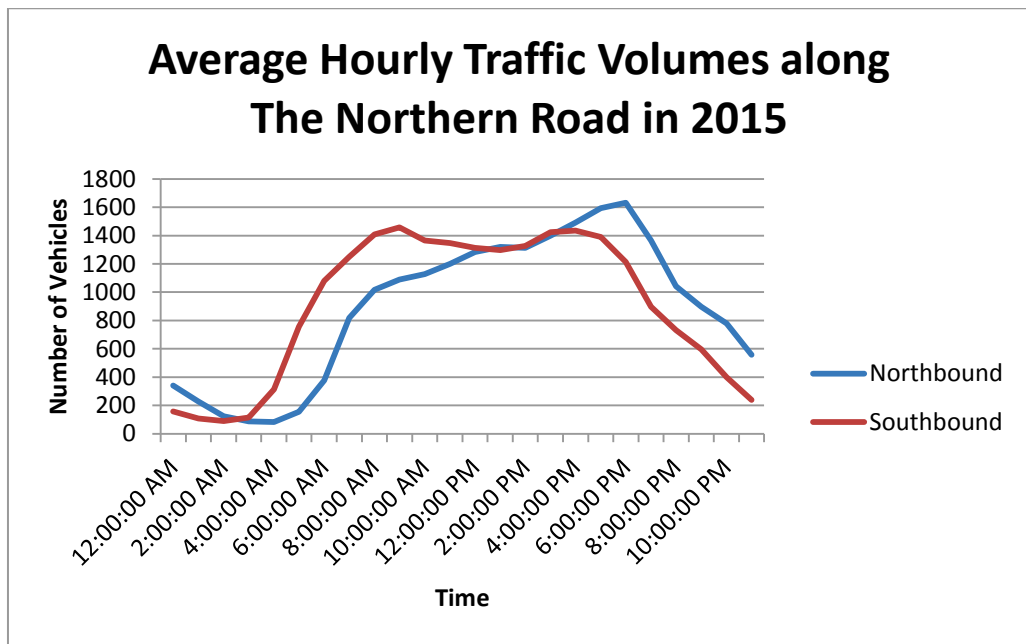
Current traffic flow data from the RMS website shows significant traffic flow northbound on The Northern Road between 6.00 a.m. to 9.00 a.m. and southbound from 4.00 p.m. to 6.00 p.m. Lendlease would minimise impact on these periods by carrying out works behind barriers and coordinating material and plant deliveries to limit the use of access gates.

Similarly on the M4, eastbound traffic numbers are at a peak from 6.00 a.m. to 9.00 a.m. and 4.00 p.m. to 6.00 p.m. Works adjacent to the M4 and within the

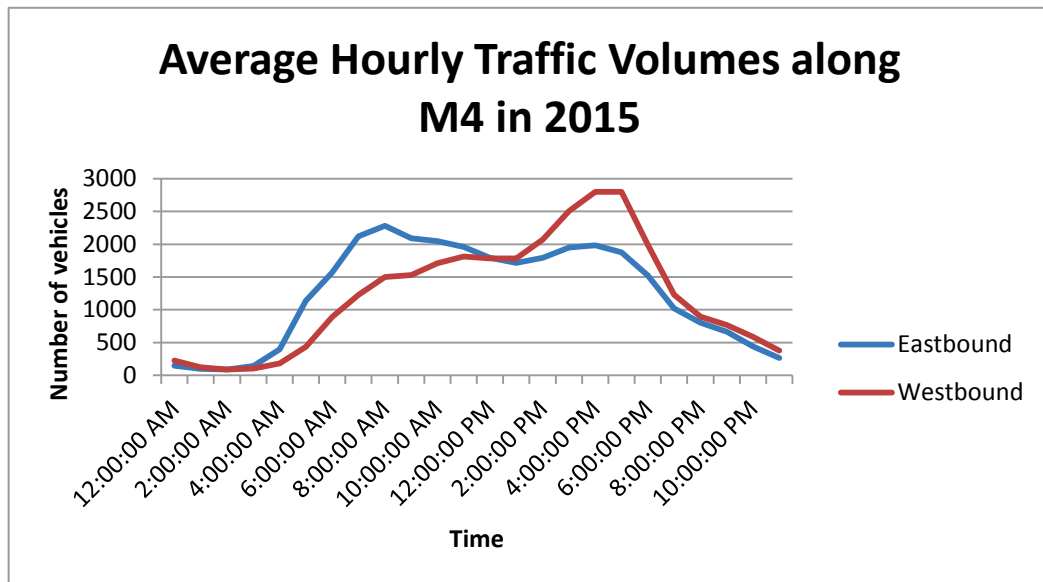
median would be carried out behind barriers with no impact on traffic.

Temporary lane closures will be required to install worksite protection barriers or where works cannot be carried out behind barriers. These works will be scheduled in consultation with the TMC for outside peak periods, including:

- Dayshift 10.00 a.m. to 1.00 p.m.; and
- Nightshift 10.00 p.m. to 5.00 a.m.



RMS 2015 Traffic Data: Parker Street (The Northern Road) 50m South of Cox Avenue, Station ID 86036.



RMS 2015 Traffic Data: M4 Western Motorway – 190m North of Loftus Street, Station ID 87006.

(v) Geometric Designs, Posted Speeds & Pavement Details

Detailed staging drawings for each stage of the project are attached to this Plan.

The speed limits throughout the project shall be reduced, despite not being required when working

behind barriers rated to 80km/h, to maximise both the safety to workers and the road user.

Lendlease will coordinate with Penrith City Council Local Traffic Committee to implement local road speed reductions in the following table.

Table of Proposed Speed Reductions through the Project

Road	Existing Speed km/h	Temp. Speed km/h	Temporary Pavement
M4 East and West Bound Carriageways	100	80	On existing shoulders
M4 Entry and Exit Ramps	70	60	On existing shoulders
The Northern Rd – Glenmore Pkwy to Bringelly Rd	80	60	In existing medians
The Northern Rd – Bringelly Rd to Jamison Rd	70km/h	60km/h	In existing medians
Glenmore Pkwy	50km/h	40km/h	In existing medians
Wentworth Rd	60km/h	40km/h	On existing shoulders
Cross Rd	60km/h	40km/h	On existing shoulders
Homestead Rd	70km/h	40km/h	On existing shoulders
Garswood Rd	50km/h	40km/h	On existing shoulders
Frogmore Rd	60km/h	40km/h	On existing shoulders
Tukara Rd	50km/h	40km/h	On existing shoulders
Castle Rd	50km/h	40km/h	On existing shoulders
Aspen Rd	60km/h	40km/h	N/A
Bringelly Rd	50km/h	40km/h	N/A
Maxwell St	50km/h	40km/h	On existing shoulders
Fragar Rd	50km/h	40km/h	N/A
Smith St	50km/h	40km/h	In existing medians
Jamison Rd	50km/h	40km/h	N/A

(vi) Temporary Arrangements for Access by the Local Community “Driveway Strategy”

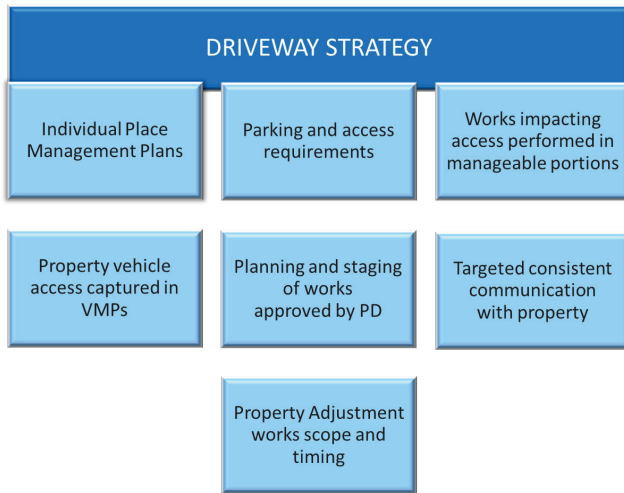
Lendlease has developed a comprehensive “Driveway Strategy” that enables the construction of The Northern Road while maintaining access for residents and business owners and their customers. Lendlease has considered each work activity separately to determine whether access across property boundaries can be maintained. Where access is restricted or prevented, alternative solutions or mitigation measures will be provided. For smaller residential properties with minimal access requirements, we have provided alternative nearby parking. For commercial properties, we have staged our works or provided an alternative access when no secondary access can be utilised. Lendlease will work closely with each property owner / resident to finalise the solution that best meets their requirements while still enabling our activities to proceed. Our initial assessment for each property on The Northern Road is contained within the Community Involvement Plan. The following steps describe the processes to be employed during staging.

- Extensive community consultation with affected residents is undertaken prior to the commencement of works;
- The maintenance and timing of access, either existing or temporary, will form a key aspect of the site specific Construction Traffic Control Plan (CTCP) development, and the Community Involvement Plan. The construction, community and traffic teams will engage with the residents and business owners and develop an understanding of their individual needs.

We will then mitigate the impact by addressing, where possible, individual needs before notifying of the final solution;

- Where changes are required for access, additional access information such as signage will direct customers and residents. These measures will form part of the CTCP. Notification of forthcoming changes to property owners and businesses will be conducted by the Community and Engagement Manager in the manner and with the timing outlined in 3-F Initial Community Involvement Plan;
- Limited short duration driveway closures will also occur during the course of the project for events such as tree lopping, crane lifts and positioning of traffic barriers. These will be coordinated with the residents and businesses to minimise disruption;
- A 24 hour community information phone line will be provided to all property owners to ensure any unforeseen obstruction or inconvenience is quickly addressed;
- Pedestrians are relocated from the footpath onto a delineated walkway behind the traffic barriers;
- Where possible, adjacent driveways are consolidated into the one crossing point through the work area from the live traffic lanes; and
- The work area between driveways will be fenced.

Driveway Strategy



Individual Place Management Plans

As part of the initial consultation process and as detailed in 3-F Initial Community Involvement Plan all residents and businesses that have access affected by the project will be consulted and a database created to capture details.

The relevant project activities that impact access to residential properties will be limited to minimum durations in accordance with the proposed access solutions developed from the consultation process.

Parking & Access

Reasonable alternative access provisions will be put in place to maintain vehicular access to individual properties or alternate parking arrangements will be made during these works. All temporary access arrangements will be removed within seven days of the completion of the associated works

Vehicular and pedestrian access for commercial properties will be maintained during their relevant trading hours unless contrary written agreement of the owner and occupier is granted. To achieve continual vehicular access modifications to driveways or construction of alternate driveways may be required. Our initial assessment of these requirements is in SWTC Appendix 3. Pedestrian access will be provided at all times.

Lendlease shall provide parking for the main workforce within the main site compounds and use mini vans / buses to transport them around the site to minimise the need for parking on-site. Where construction vehicles are required on-site they will be parked in designated areas to avoid blocking access to adjacent properties.

Works Performed in Manageable Portions

Work areas will be broken down to manageable areas, enabling the work activity to be completed progressively through the area and to minimise the number of residents or businesses impacted at any one time. Once the activity has been completed on a section the next activity will commence. All works will be completed prior to demobilising site barriers to avoid workers returning to the area and completing works in an uncontrolled environment.

Property Access Captured in Vehicle Movement Plans

VMPs will be developed specifically for each site and stage detailing the access for residents, business and construction vehicles. These VMPs will be communicated to the residents via the Community and Stakeholder Team.

Planning & Staging of Works

Detailed planning of each stage of works will be completed looking at activities scope and durations to develop detailed programmes. These programmes will highlight activities that will affect residents and businesses and be communicated to residents and businesses to ensure minimal disruption. This will allow sufficient time to enable possible alternative arrangements to properties adjacent and within the work zones.

Consistent Communication with Property

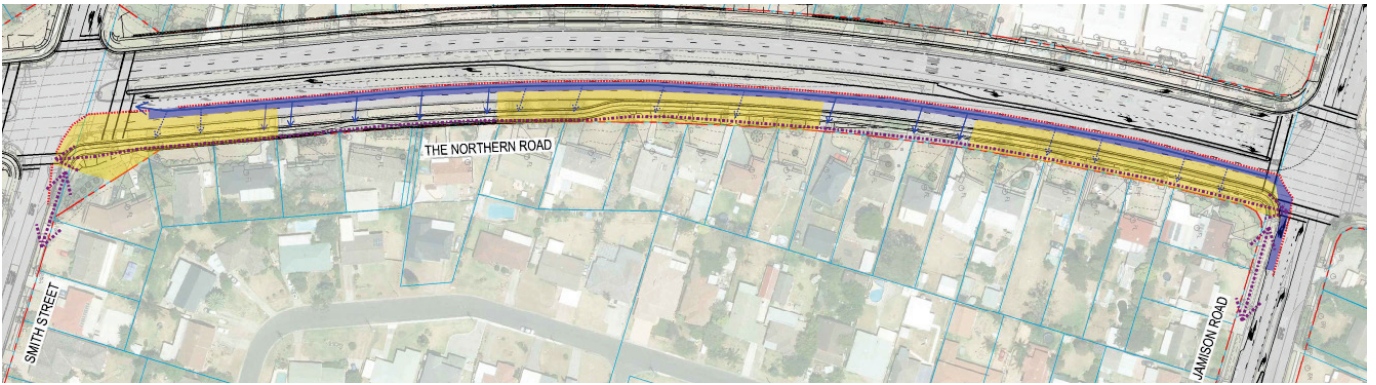
The Community and Stakeholder Team will continually communicate the staging programmes and progress of works to ensure minimal disruption to residents and businesses.

Property Adjustments Scope of Works

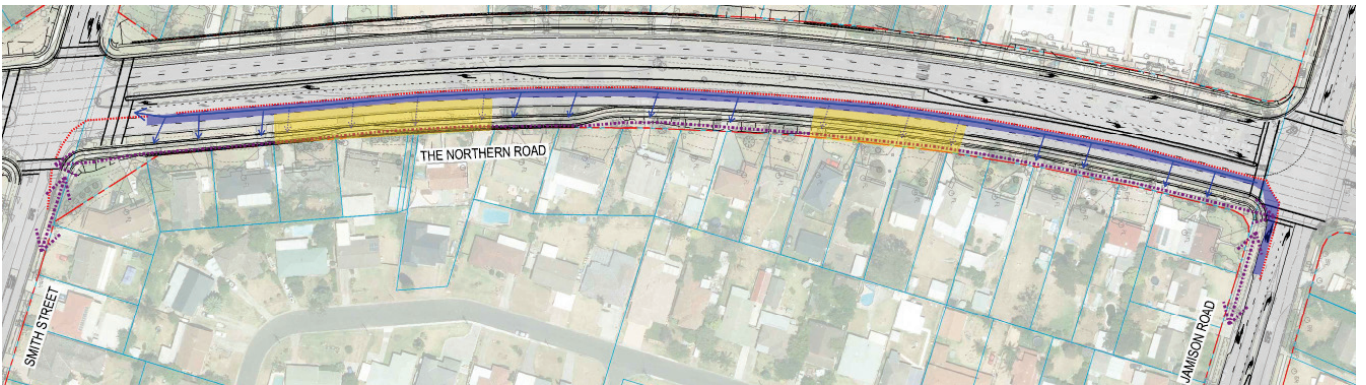
The Community and Stakeholder Team will consult with property owners to fully develop and understand the scope of works for property adjustments required at each property. This information will be included in a database, reviewed regularly, and updated with status of works complete, issues and changes.

Prior to commencing works at each property the owner will be consulted to agree on works commencing and any access requirements or issues.

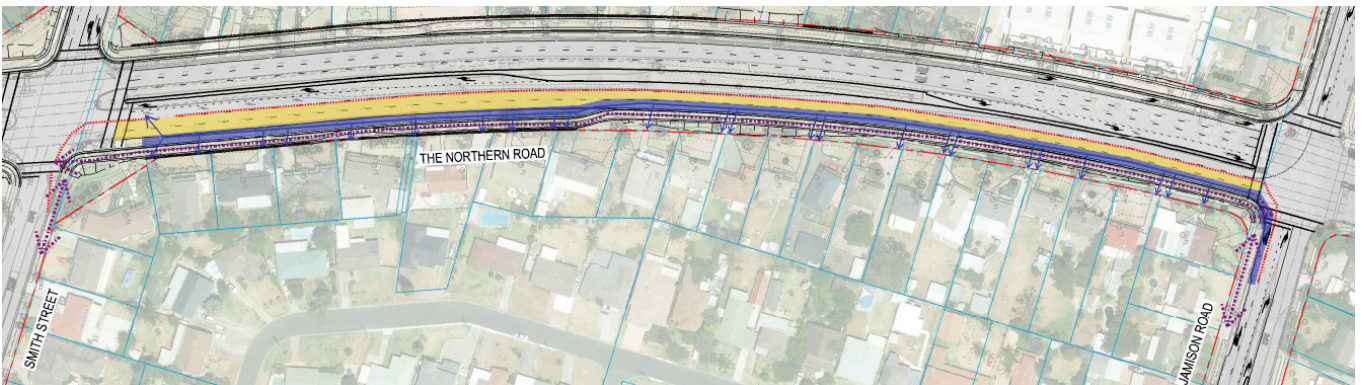
The following images show an example of how Pedestrians and Property Owners will be managed through the work area to minimise impact on access.



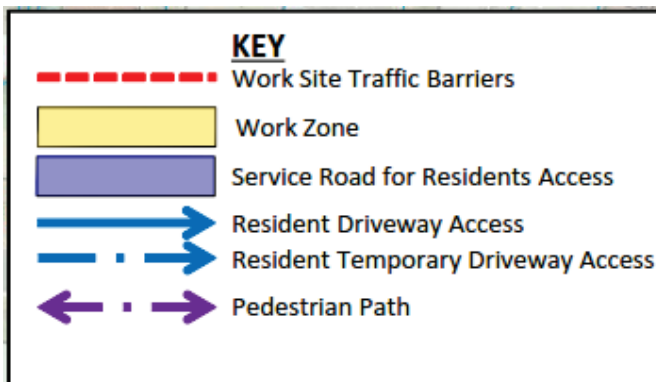
Driveway Strategy Stage 1



Driveway Strategy Stage 2

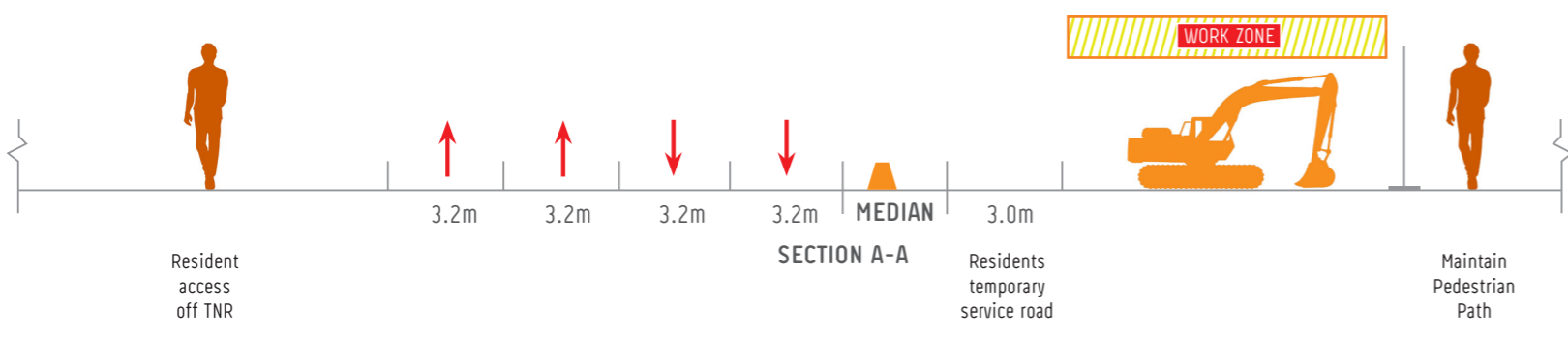
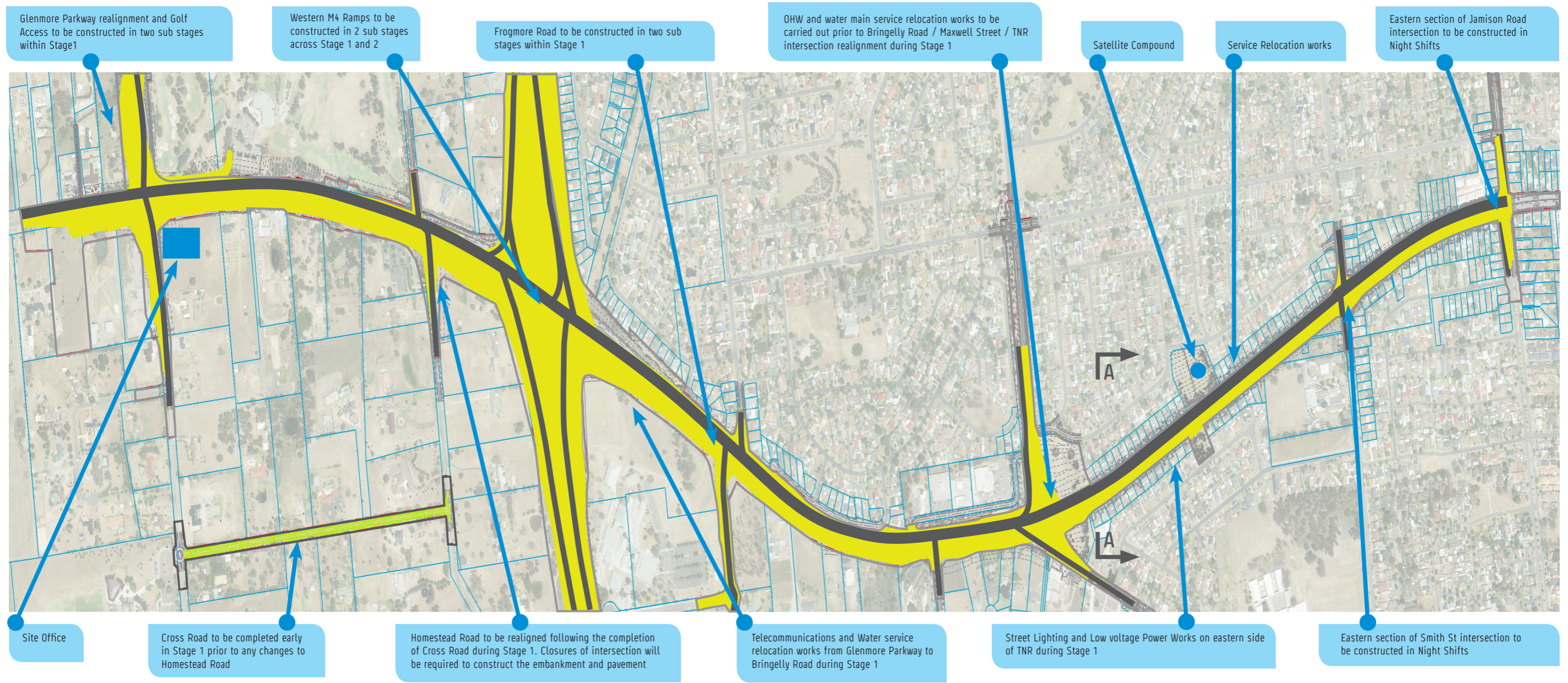


Driveway Strategy Stage 3



Key to Driveway Strategy Diagrams

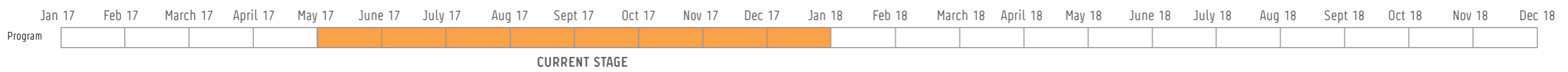
TNR3N - Construction Staging Plans - Stage 1



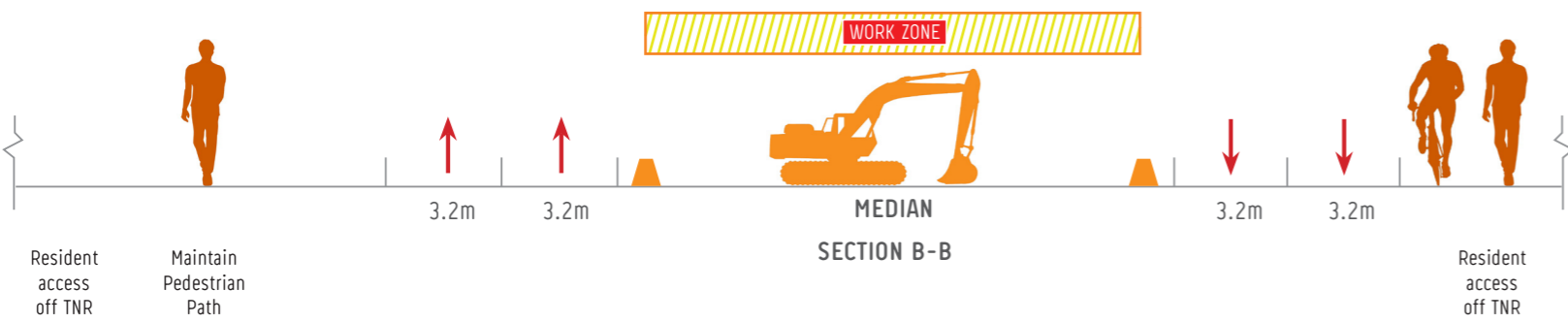
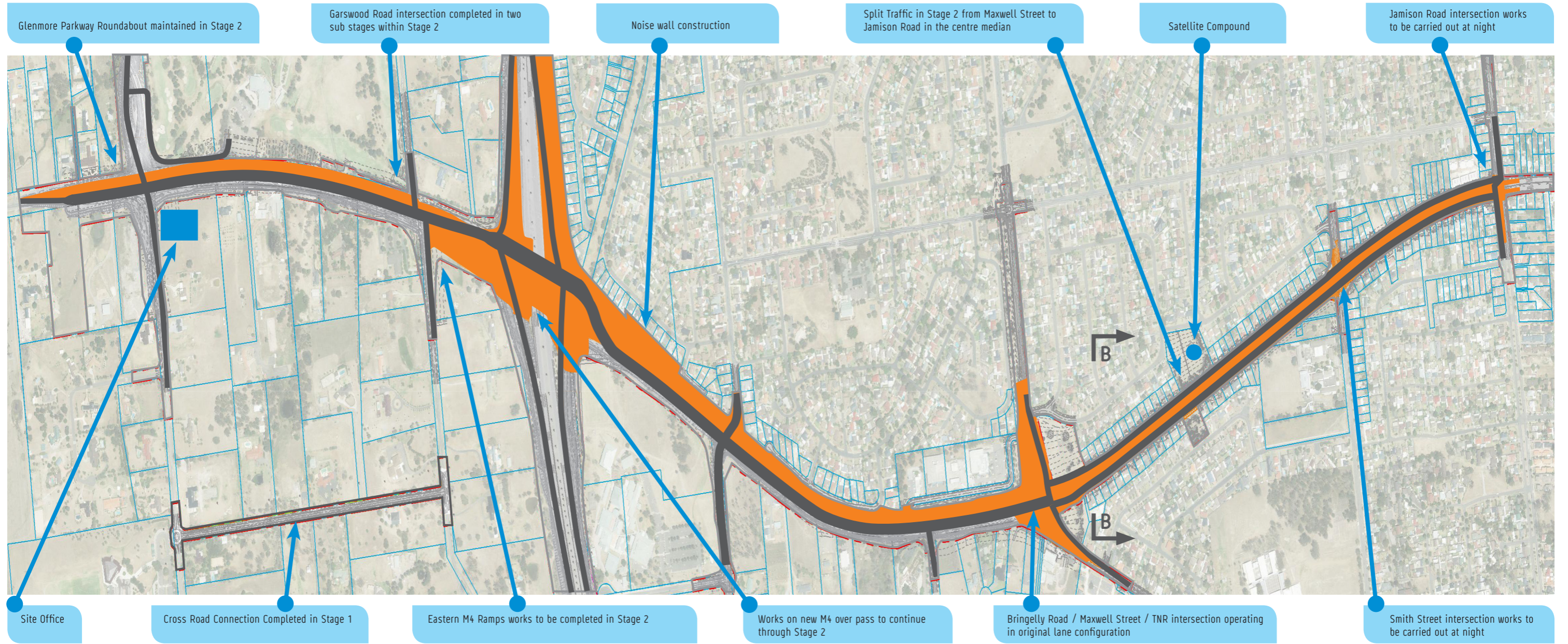
NOTE

- Night shift to work established work zones
- Driveway Strategy implemented to ensure access to residents is maintained
- Night shifts at intersections
- M4 carriageway closures at night for new bridge girder erection

KEY	
	Project Boundary
	Property Boundaries
	Traffic Movement
	Construction Stage 1
	Construction Stage 2
	Construction Stage 3

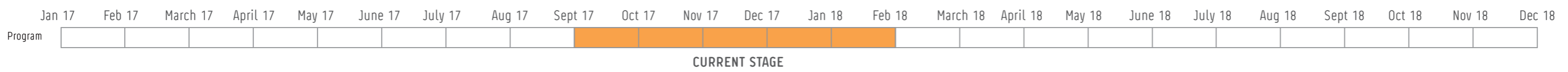


TNR3N - Construction Staging Plans - Stage 2

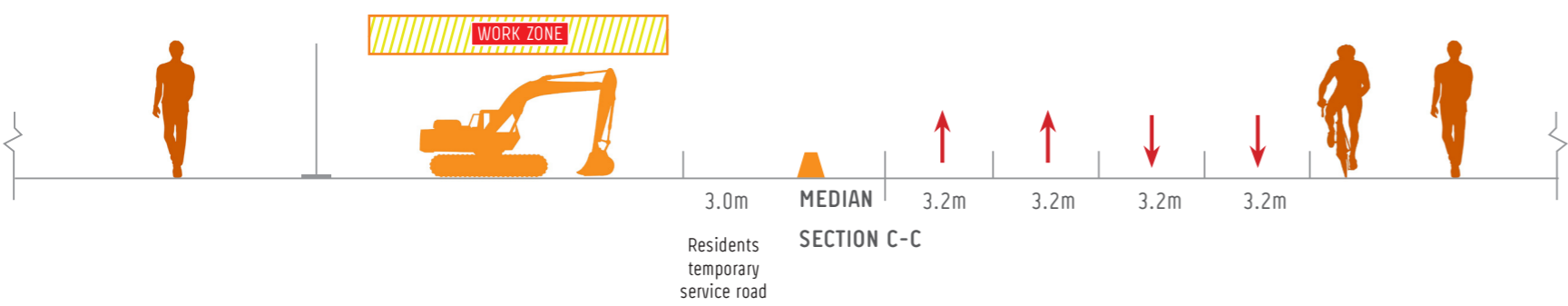
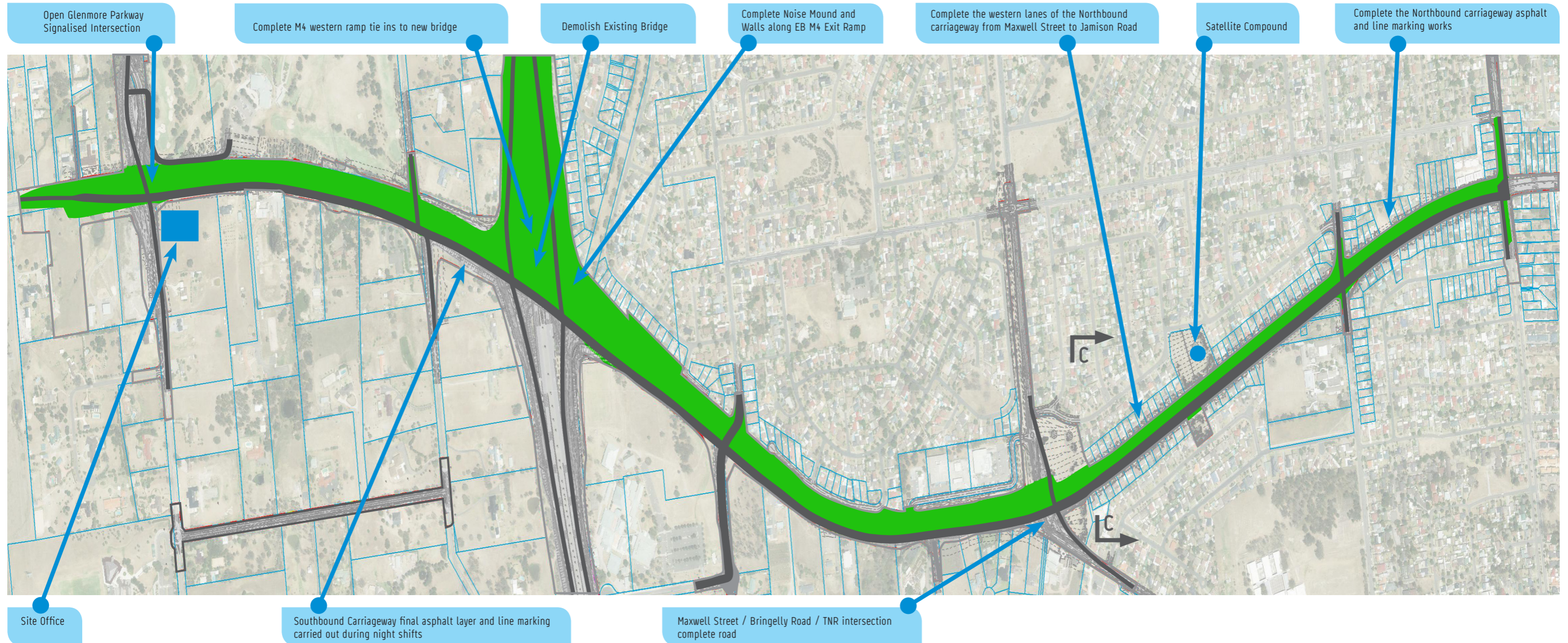


NOTE
 Night works :
 - Smith Street and Jamison Road Intersection works
 - M4 carriage way closures for new bridge girder and parapet erection

KEY	
	Project Boundary
	Property Boundaries
	Traffic Movement
	Construction Stage 1
	Construction Stage 2
	Construction Stage 3



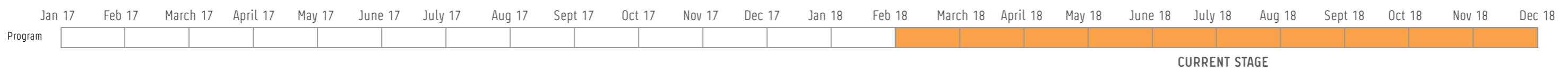
TNR3N - Construction Staging Plans - Stage 3



NOTE

- M4 carriageway closures at night during demolition of existing bridge
- Night shift to complete southbound asphalt pavement
- Demobilise work zones across project including site compounds

KEY	
	Project Boundary
	Property Boundaries
	Traffic Movement
	Construction Stage 1
	Construction Stage 2
	Construction Stage 3





Transport
Roads & Maritime
Services

PENRITH CITY COUNCIL AREA
THE NORTHERN ROAD
 THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH
 THE NORTHERN ROAD UPGRADE
 STAGE 3 NORTH

STAGING DESIGN
 TENDER DESIGN - PART No. 3I

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TNR3N-TD-ST-DRG-0103	CONSTRUCTION STAGING - STAGE 1A ARRANGEMENT - GENERAL ARRANGEMENT	SHEET 3
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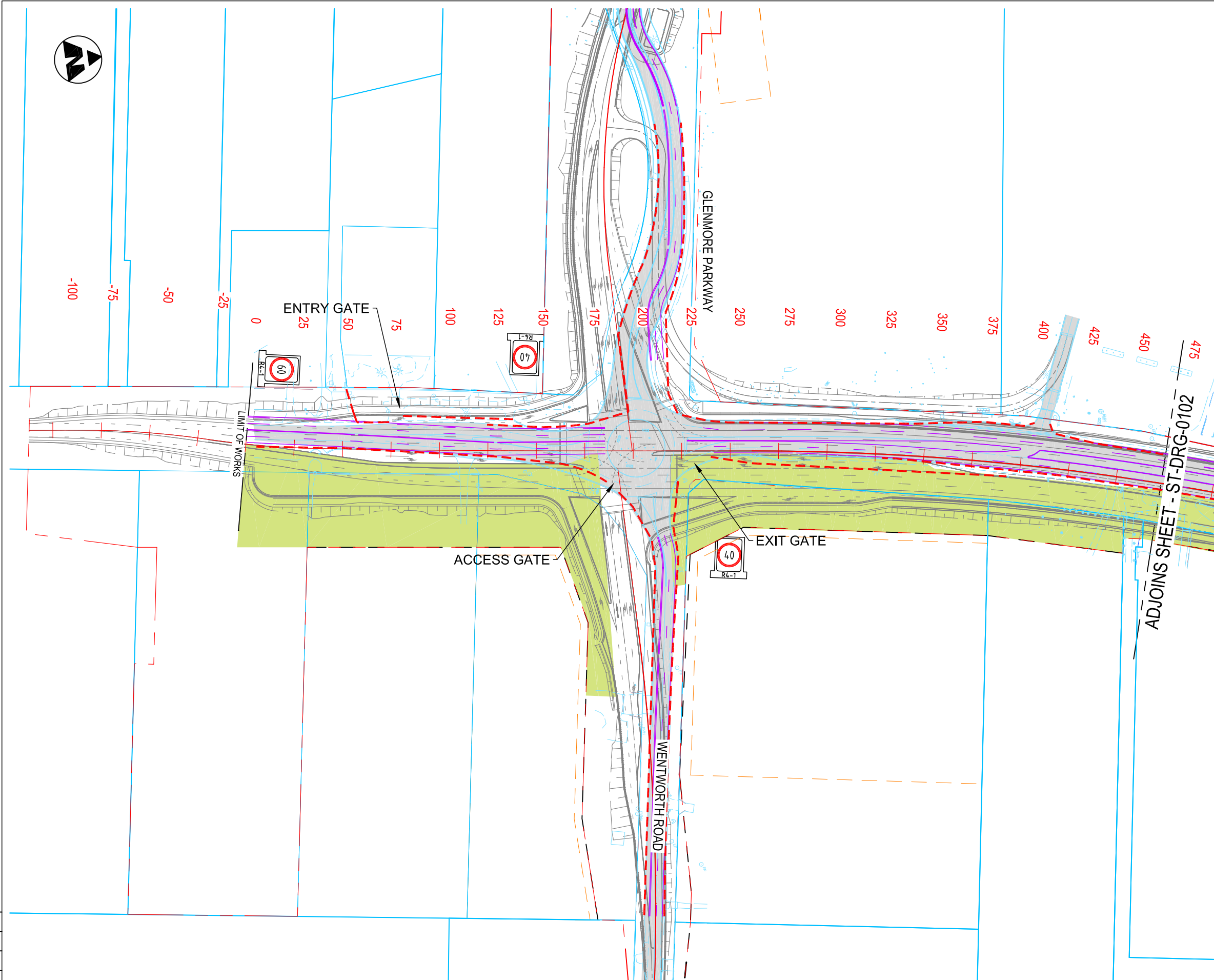
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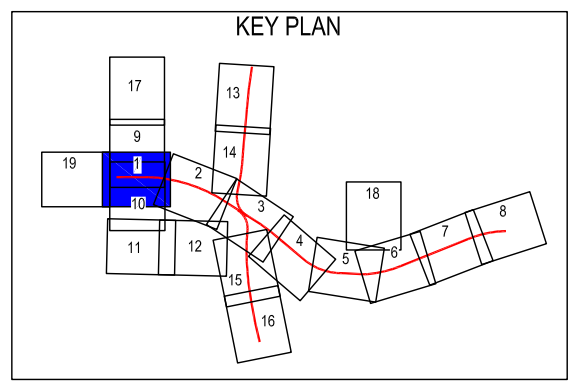
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LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	UNDERGROUND COMMS
	UNDERGROUND SEWER MAIN
	UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	OVERHEAD ELECTRICAL (LOW VOLTAGE)
	UNDERGROUND LOCAL WATER MAIN
	UNDERGROUND GAS
NOTE:	
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.	



ADJOINS SHEET - ST-DRG-0102



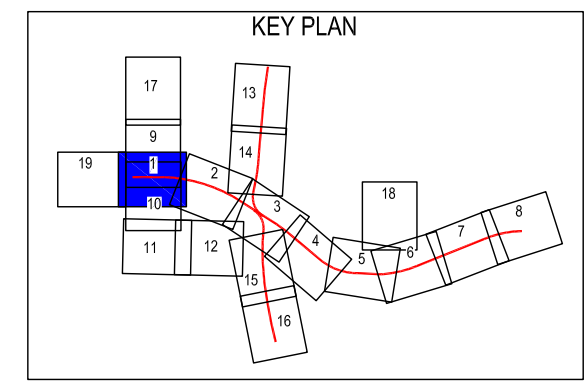
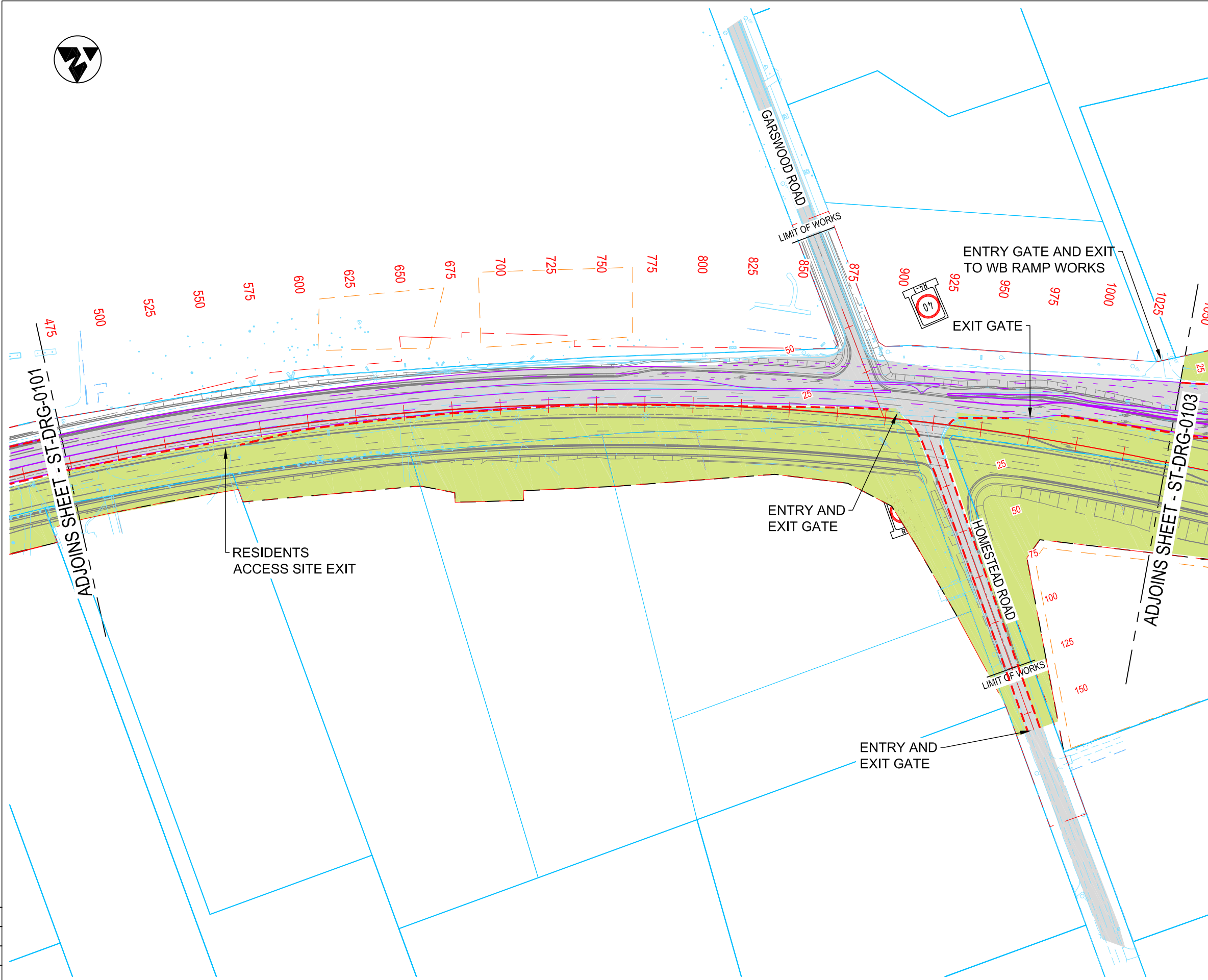
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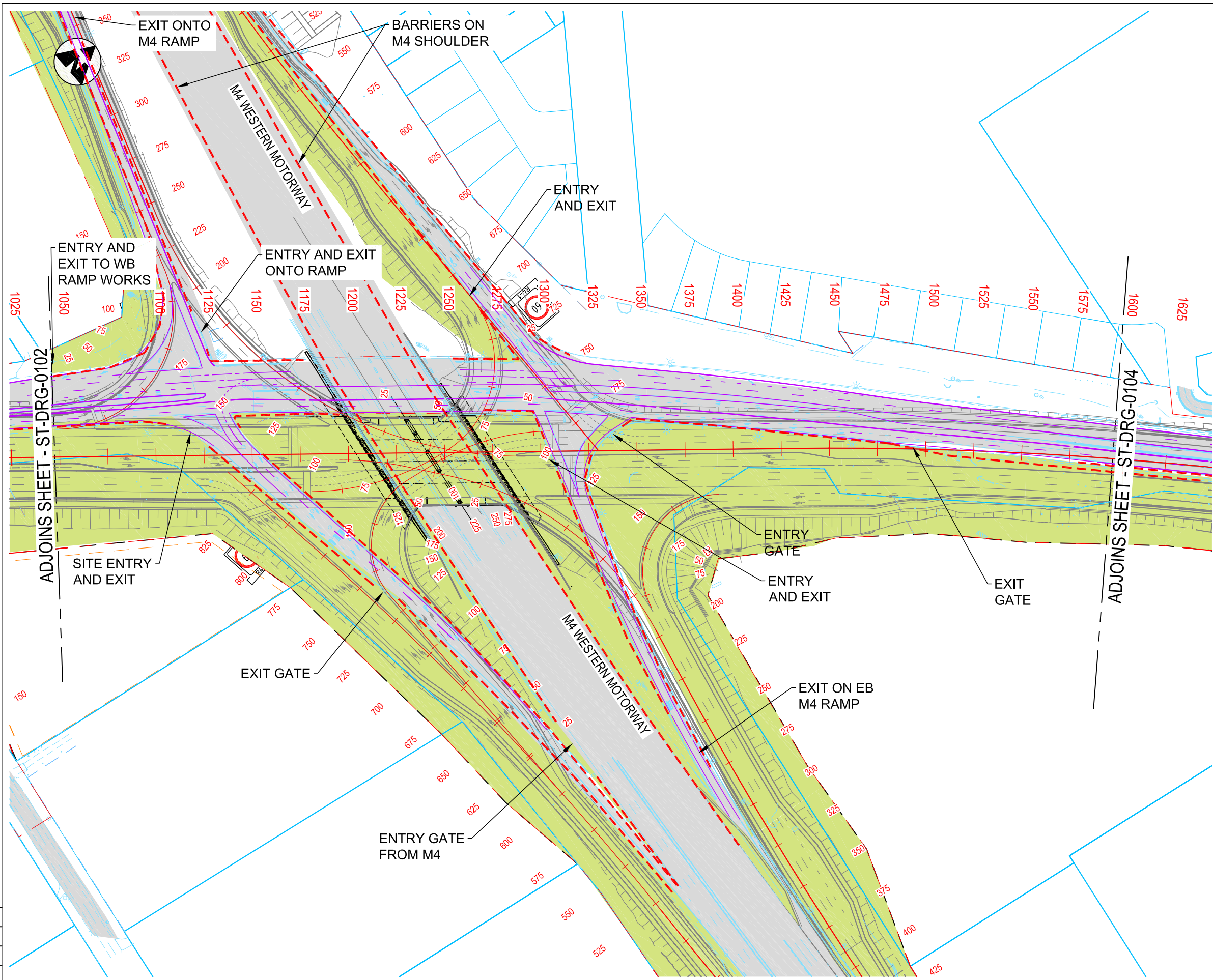
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	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	UNDERGROUND COMMS
	UNDERGROUND SEWER MAIN
	UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	OVERHEAD ELECTRICAL (LOW VOLTAGE)
	UNDERGROUND LOCAL WATER MAIN
	UNDERGROUND GAS
NOTE:	
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.	



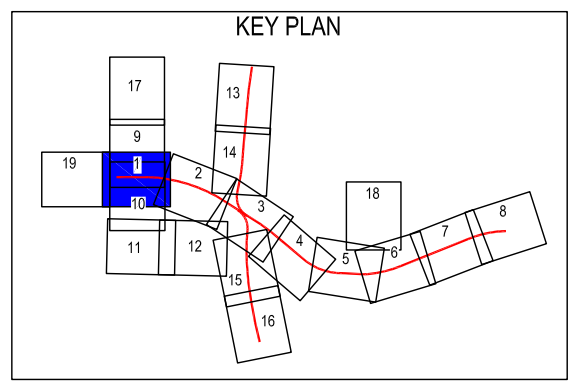
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0101.dwg			DESIGN LOT CODE -			DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM			PLOT BY Steve			CLIENT Transport Roads & Maritime Services			PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1A - ARRANGMENT GENERAL ARRANGEMENT PLAN			A3								
EXTERNAL REFERENCE FILES			WVR No.			APPROVAL			SCALES ON A3 SIZE DRAWING			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE			DATE											
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									CO-ORDINATE SYSTEM MGA ZONE 56			DESIGN PARTNERS 			DESIGN CHECK			-											
									HEIGHT DATUM AHD			DRG No. ####			DESIGN MNGR			-											
												PROJECT MNGR			-			PREPARED FOR			-								
																		RMS REGISTRATION No. DSXXXX/XXXXXX			PART 31								
																		ISSUE STATUS TENDER ISSUE			EDMS No.			SHEET No. TR-0102			ISSUE 1		



LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	UNDERGROUND COMMS
	UNDERGROUND SEWER MAIN
	UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	OVERHEAD ELECTRICAL (LOW VOLTAGE)
	UNDERGROUND LOCAL WATER MAIN
	UNDERGROUND GAS
NOTE:	
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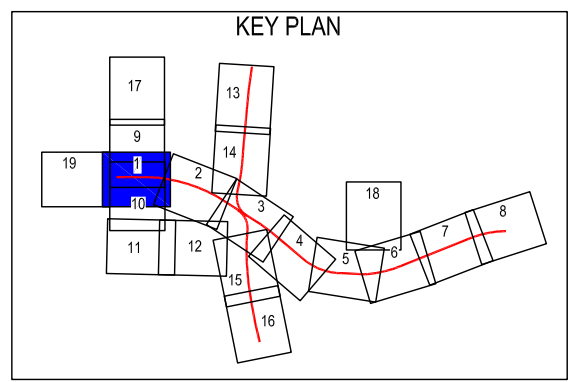
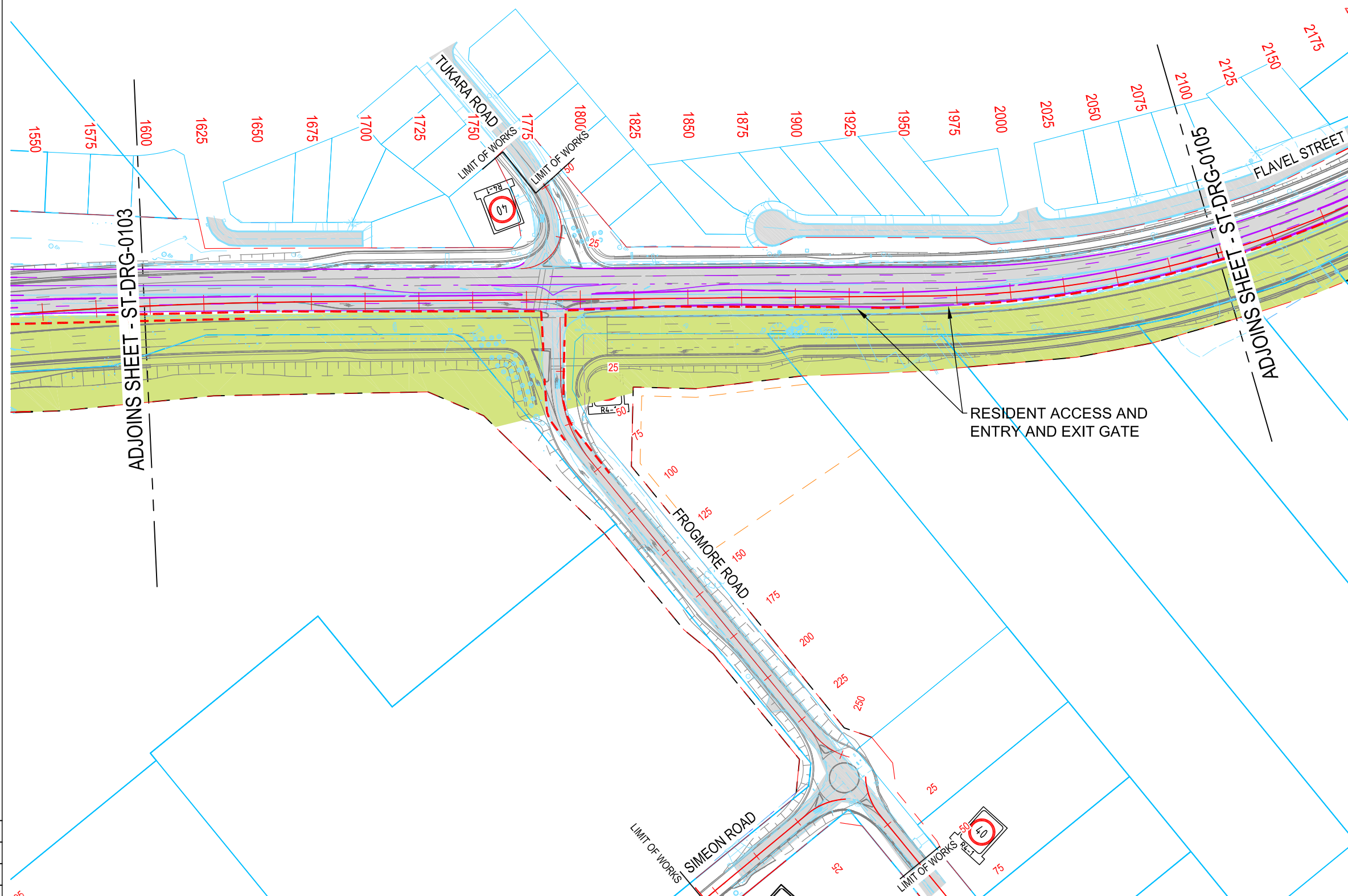
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0101.dwg			DESIGN LOT CODE ---		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING ---		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1A - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3	
EXTERNAL REFERENCE FILES			DESIGNERS / DESIGN PREPARED BY: CES PTY LTD		CONTRACTOR 		TITLE ---		DRAWN L.SMEAL		DATE 10.06.16		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31	
REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m		CONTRACTOR 		DESIGN CHECK ---		DESIGN CHECK ---		DESIGN MNGR ---		SHEET No. TR-0103	
					CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD		DESIGN MNGR ---		PROJECT MNGR ---		ISSUE STATUS TENDER ISSUE		EDMS No.	ISSUE 1



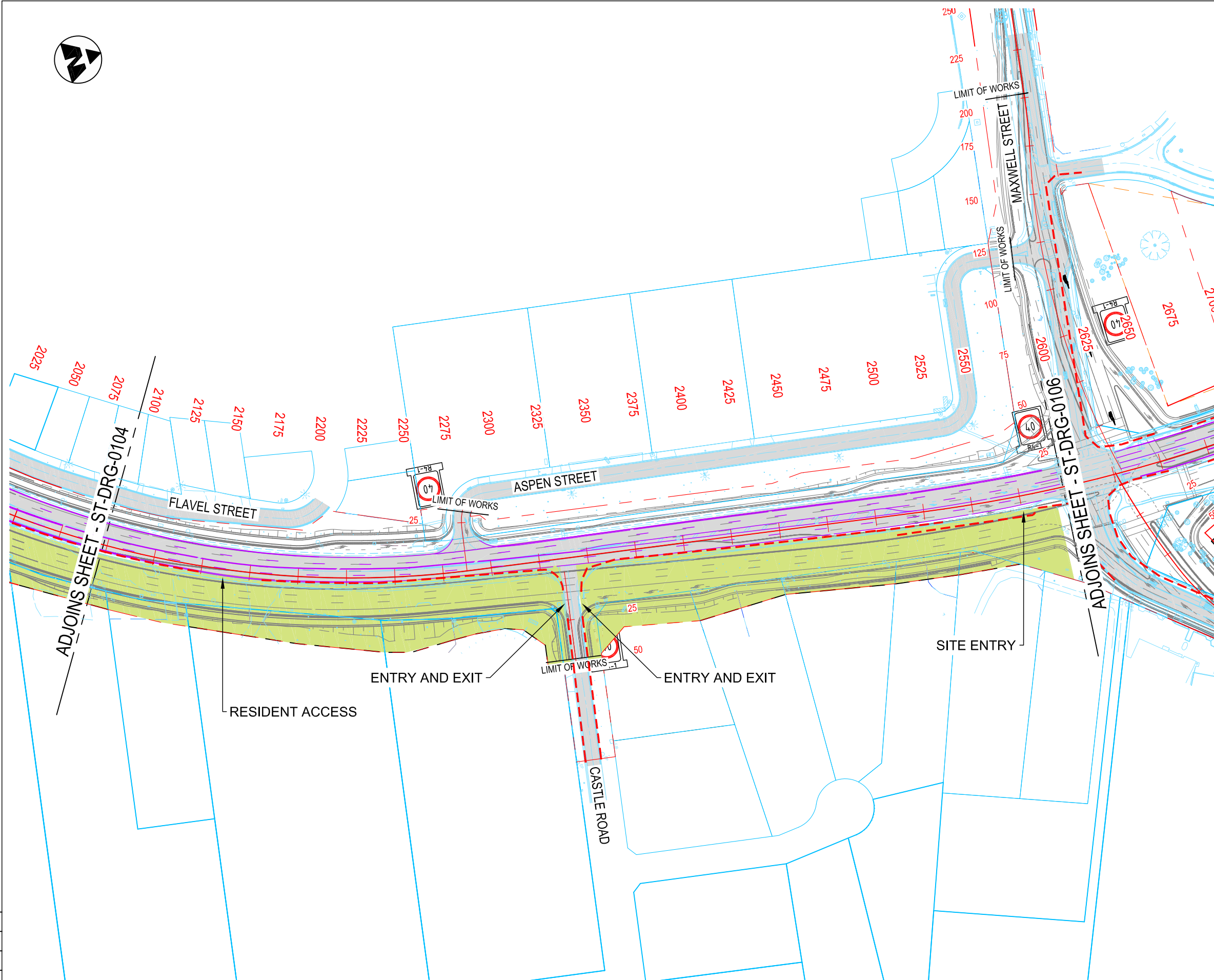
LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	UNDERGROUND COMMS
	UNDERGROUND SEWER MAIN
	UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	OVERHEAD ELECTRICAL (LOW VOLTAGE)
	UNDERGROUND LOCAL WATER MAIN
	UNDERGROUND GAS
NOTE:	
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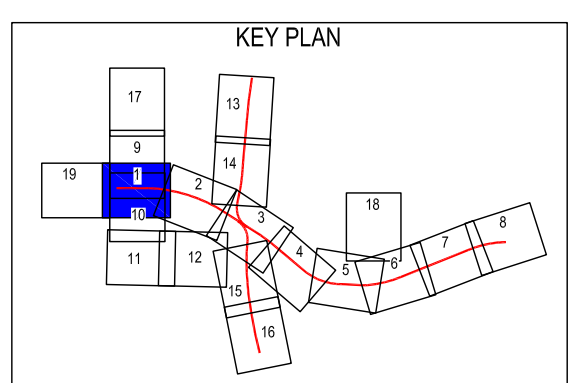
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0101.dwg			DESIGN LOT CODE -	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT NSW GOVERNMENT	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1A - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			Transport Roads & Maritime Services		RMS REGISTRATION No. DSXXXX/XXXXXX	PART 31
REV	DATE	AMENDMENT / REVISION DESCRIPTION			0 20 40 60 80 SCALE 1:2000m	CONTRACTOR lendlease			Prepared For		RMS REGISTRATION No. DSXXXX/XXXXXX	ISSUE 1
					CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF			TENDER ISSUE		EDMS No.	SHEET No. TR-0104
					HEIGHT DATUM AHD	DRG No. ####						



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS

- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0101.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1A - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3			
EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		CONTRACTOR		PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31	
REV | DATE | AMENDMENT / REVISION DESCRIPTION			WVR No.		APPROVAL		SCALE 1:2000m		DRAWN | NAME | DATE		DESIGN		DESIGN CHECK		ISSUE STATUS TENDER ISSUE		SHEET No. TR-0105	
| | |			| |		| |		0 20 40 60 80		L.SMEAL | 10.06.16		| |		| |		EDMS No.		ISSUE 1	
| | |			| |		| |		CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD		CONTRACTOR 		DESIGN MNGR		PROJECT MNGR		© Roads and Maritime Services	



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

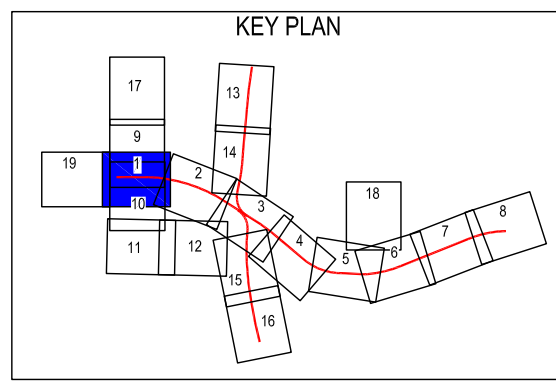
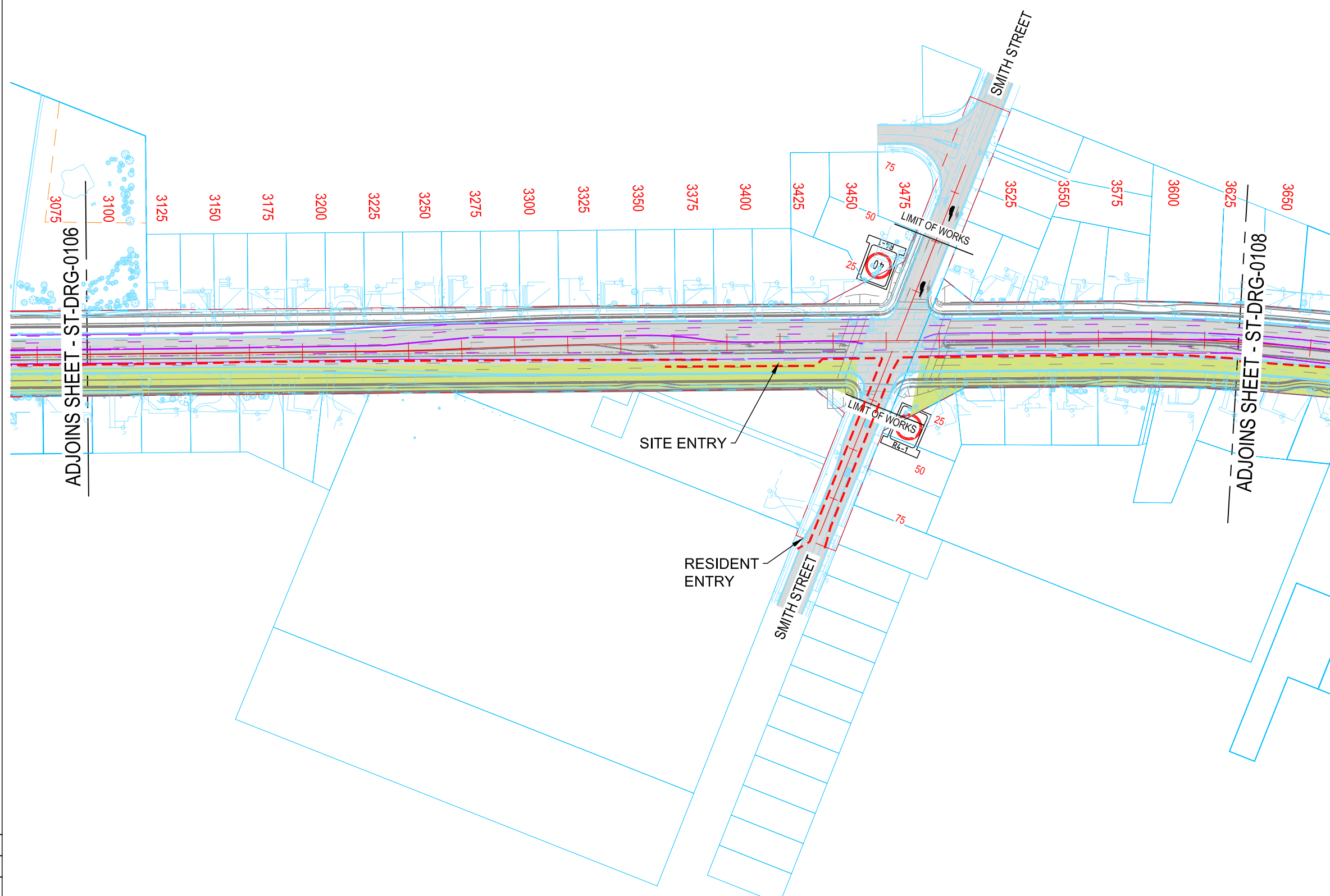
DRAINAGE

- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



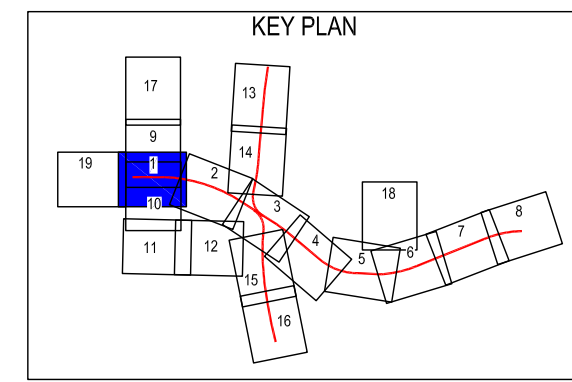
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EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE		NAME		DATE					
REV DATE AMENDMENT / REVISION DESCRIPTION			---		---		0 20 40 60 80 SCALE 1:2000m			CONTRACTOR 		DRAWN		L.SMEAL		10.06.16					
CO-ORDINATE SYSTEM MGA ZONE 56			HEIGHT DATUM AHD		DESIGN PARTNERS 			DRG No. ####		DESIGN CHECK		---		DESIGN MNGR		---		PROJECT MNGR		---	
PREPARED FOR										RMS REGISTRATION No.		DSXXXX/XXXXXX				PART 31					
ISSUE STATUS TENDER ISSUE										EDMS No.		SHEET No. TR-0107				ISSUE 1					



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
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EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		CONTRACTOR lendlease		TITLE DRAWN L.SMEAL 10.06.16		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
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			0 20 40 60 80		CONTRACTOR		DESIGN CHECK		DESIGN MNGR		ISSUE STATUS TENDER ISSUE		ISSUE 1
			SCALE 1:2000m		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN MNGR		PROJECT MNGR		EDMS No.		SHEET No. TR-0108
			CO-ORDINATE SYSTEM MGA ZONE 56		DRG No. ####		HEIGHT DATUM AHD				© Roads and Maritime Services		



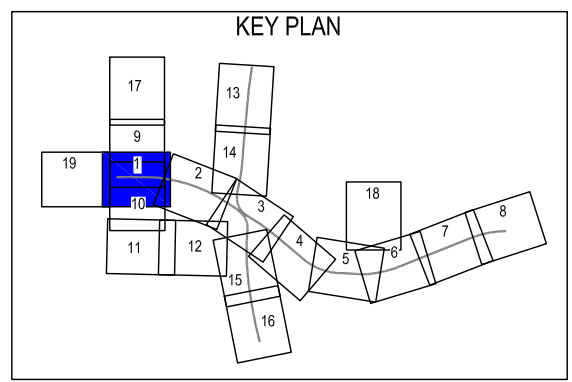
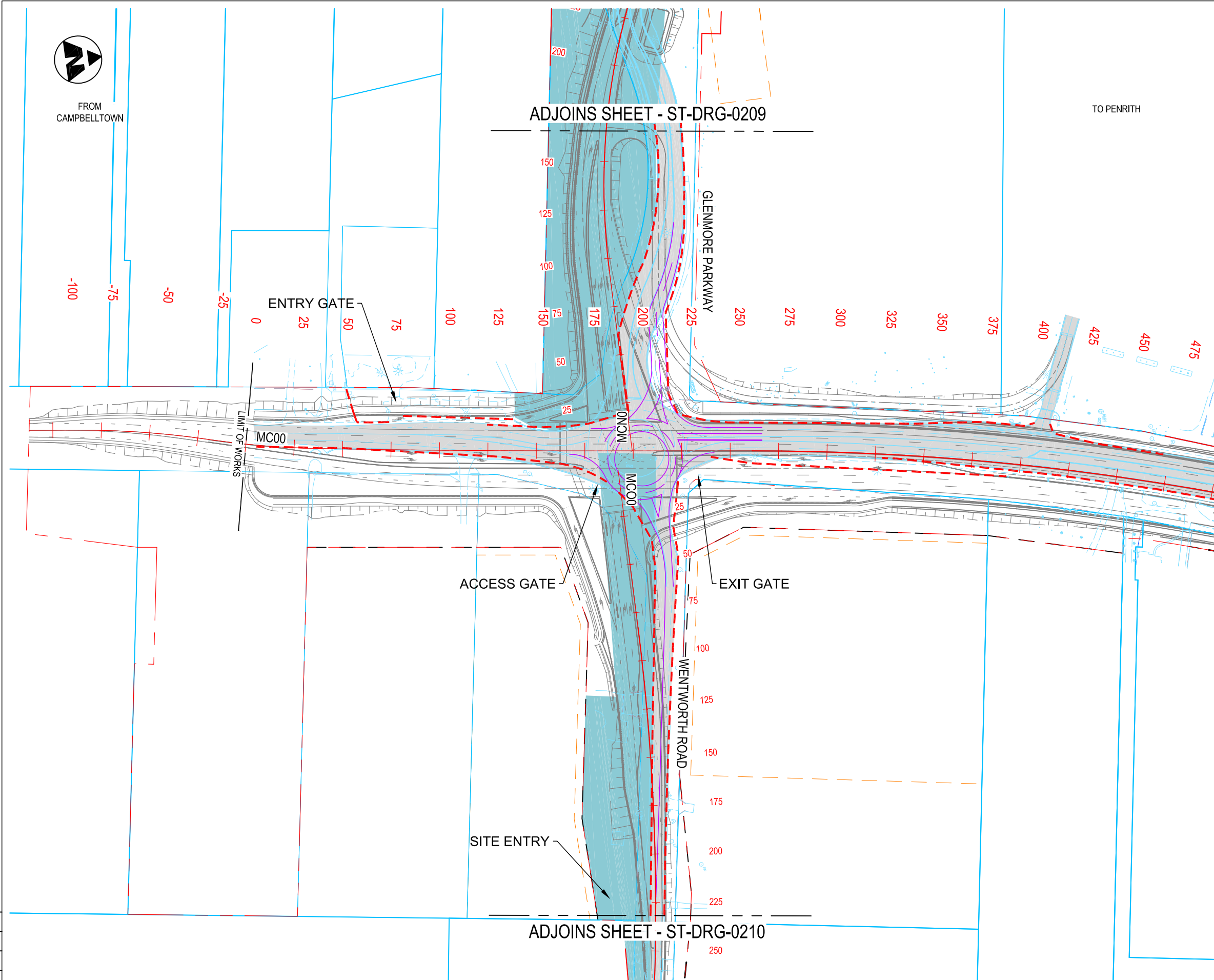
FROM CAMPBELLTOWN

TO PENRITH

ADJOINS SHEET - ST-DRG-0209

ADJOINS SHEET - ST-DRG-0210

- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
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NOT FOR CONSTRUCTION

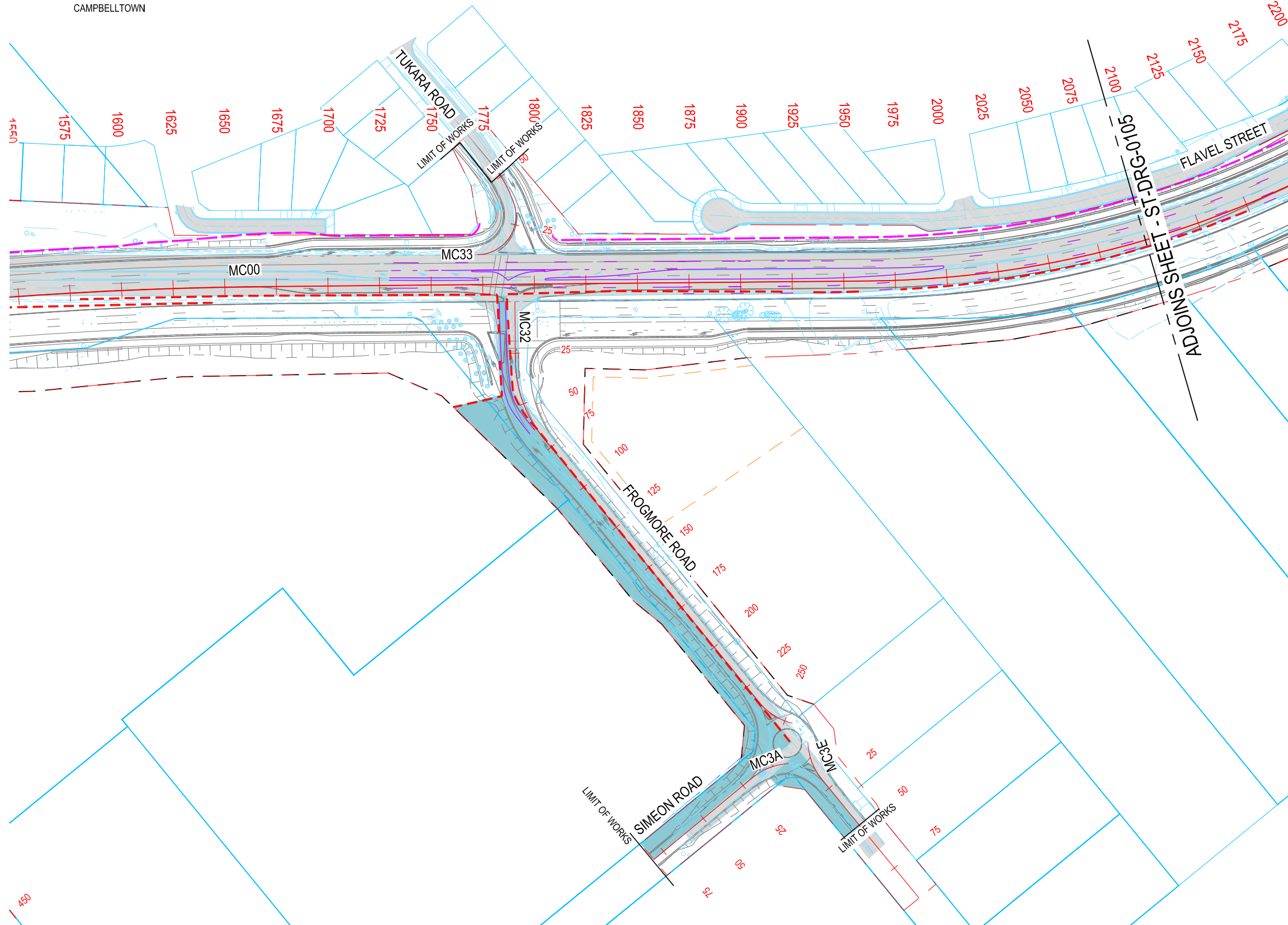
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			CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN CHECK		-		-		© Roads and Maritime Services			
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							PROJECT MNGR		-		-					



FROM CAMPBELLTOWN

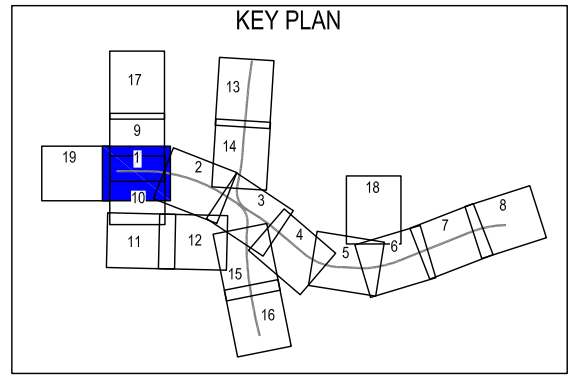
TO PENRITH



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
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50mm ON A3 SIZE ORIGINAL



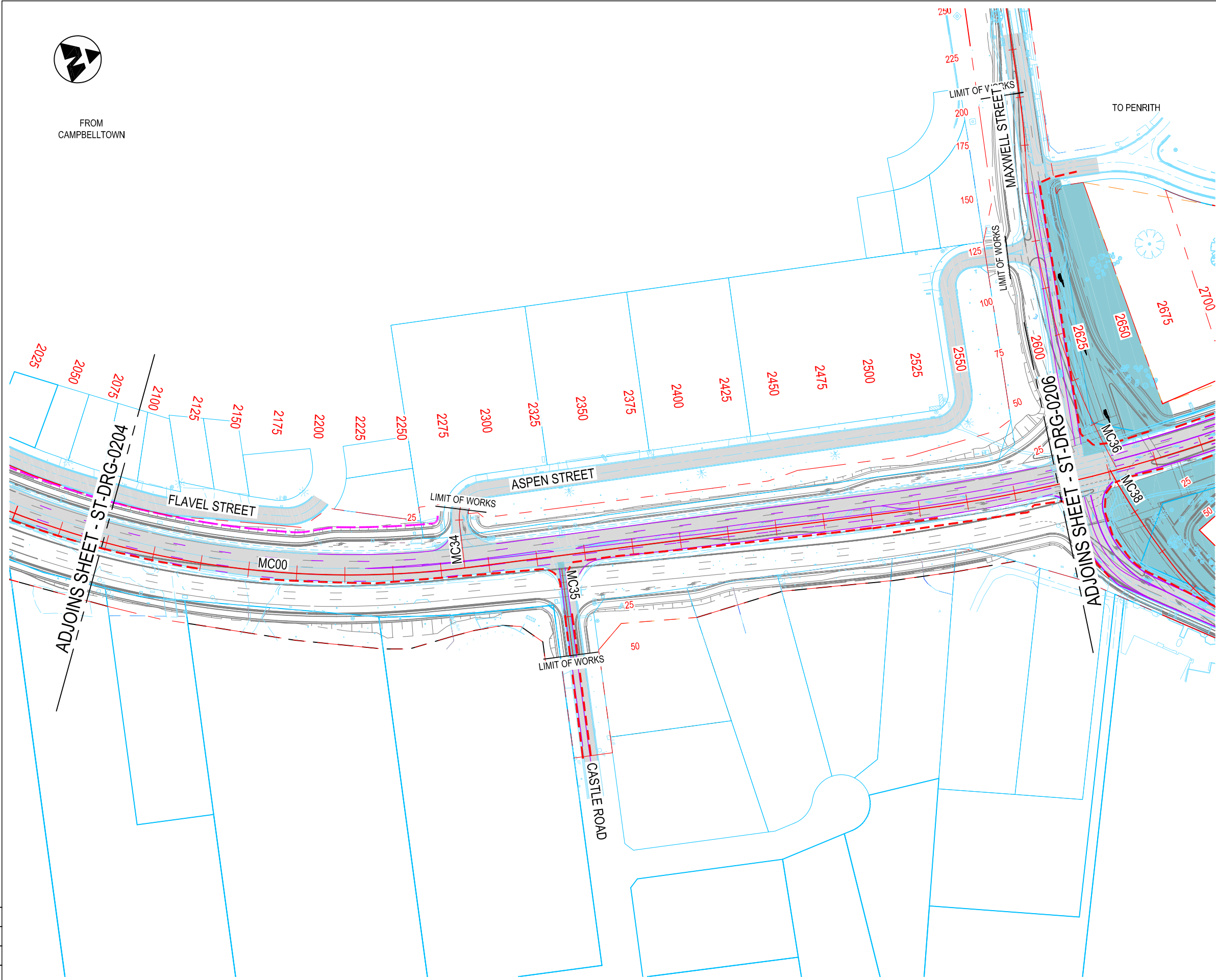
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EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
REV DATE AMENDMENT / REVISION DESCRIPTION			CONTRACTOR 		SCALE 1:2000m		TITLE		DRAWN		NAME		DATE		ISSUE 1
			DESIGN PARTNERS 		CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD		DRG No. ####		DESIGN CHECK		DESIGN MNGR		SHEET No. TR-0204
							PROJECT MNGR						EDMS No.		© Roads and Maritime Services

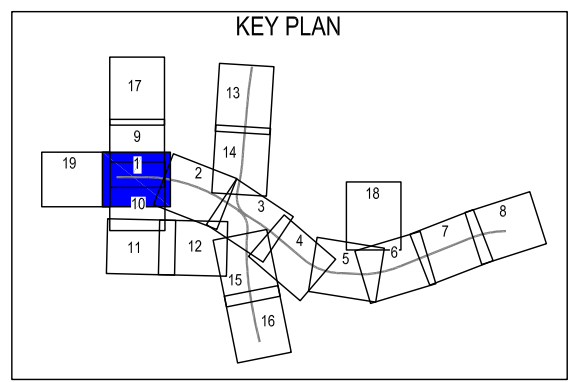


FROM CAMPBELLTOWN

TO PENRITH



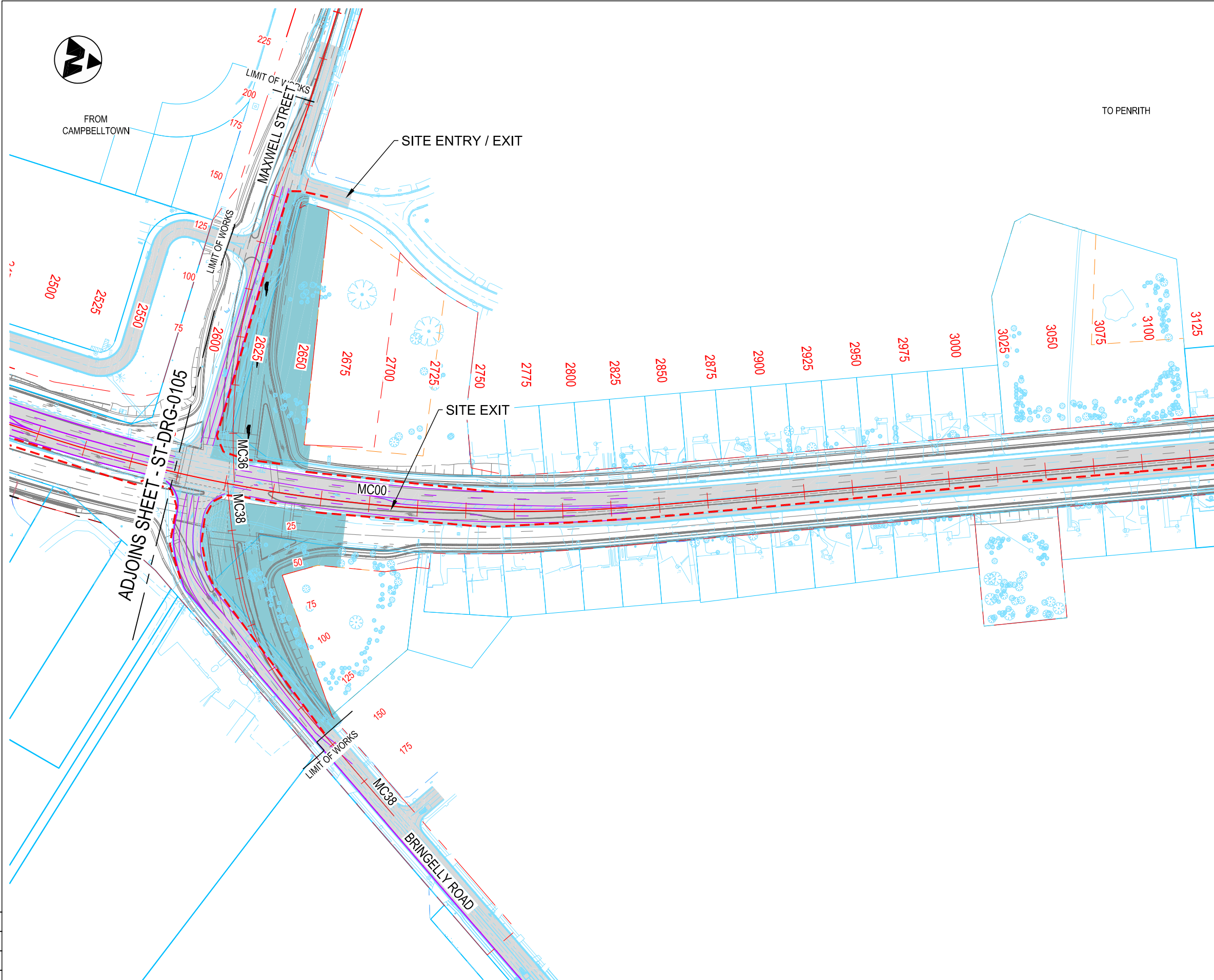
- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0201.dwg			DESIGN LOT CODE -	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY admin	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1B - ARRANGMENT GENERAL ARRANGEMENT PLAN	A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		RMS REGISTRATION No. DSXXXX/XXXXXX	
REV | DATE | AMENDMENT / REVISION DESCRIPTION			CONTRACTOR 			TITLE | NAME | DATE DRAWN | L.SMEAL | 10.06.16		DESIGN PARTNERS 		PART 31	
			CO-ORDINATE SYSTEM MGA ZONE 56			DESIGN CHECK | DESIGN MNGR | PROJECT MNGR		PREPARED FOR		ISSUE STATUS TENDER ISSUE	
			HEIGHT DATUM AHD					EDMS No.		SHEET No. TR-0205	
										ISSUE 1	



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

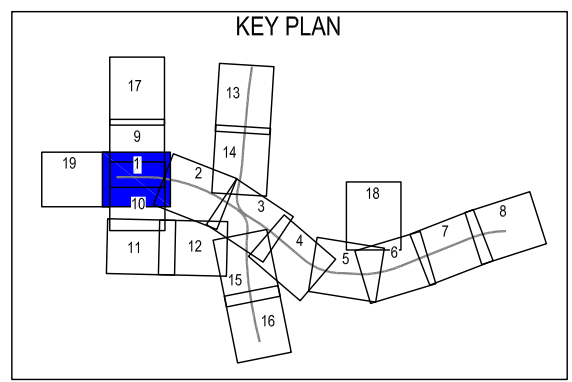
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.

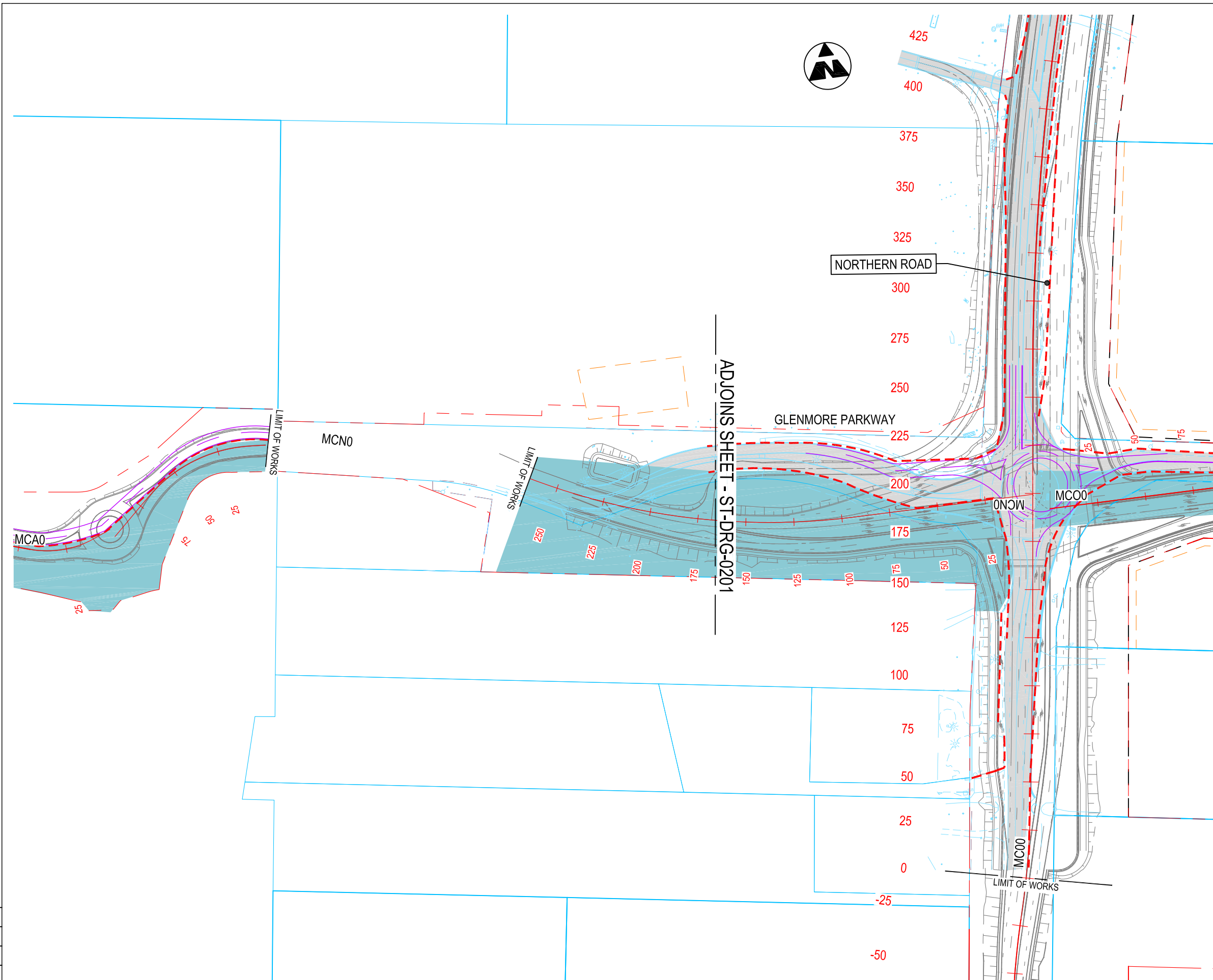


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EXTERNAL REFERENCE FILES			DESIGN PARTNERS		CONTRACTOR		TITLE		NAME		DATE		PREPARED FOR		RMS REGISTRATION No.
REV DATE AMENDMENT / REVISION DESCRIPTION			WVR No. APPROVAL		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		DRAWN		L.SMEAL		10.06.16		Transport Roads & Maritime Services		PART 31
SCALE ON A3 SIZE DRAWING			SCALE ON A3 SIZE DRAWING		CONTRACTOR		DRG CHECK		CES		-		NSW GOVERNMENT		ISSUE STATUS
CO-ORDINATE SYSTEM MGA ZONE 56			HEIGHT DATUM AHD		ARUP WSP PARSONS BRINCKERHOFF		DESIGN		-		-		EDMS No.		TENDER ISSUE
DRG No. #####			DESIGN MNGR		PROJECT MNGR		-		-		-		SHEET No. TR-0206		ISSUE 1

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LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

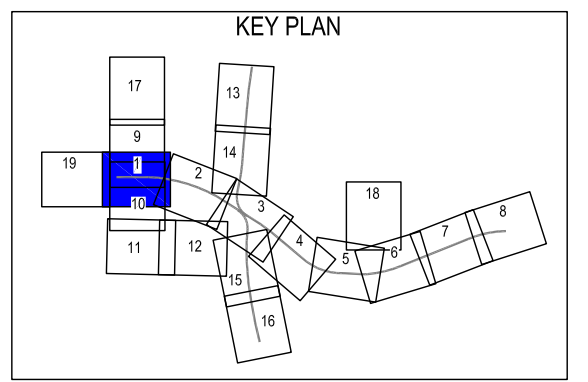
DRAINAGE

- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

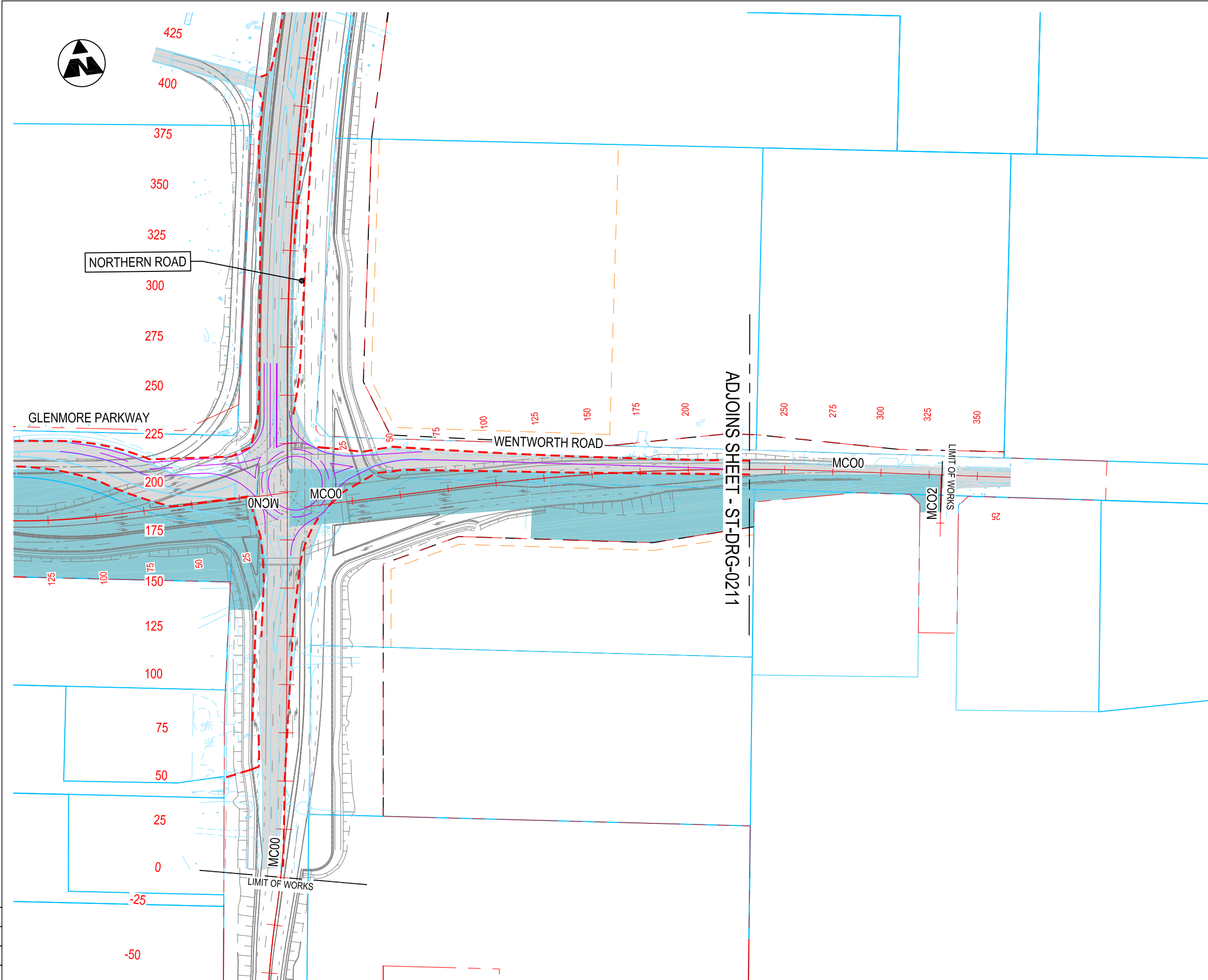
- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.

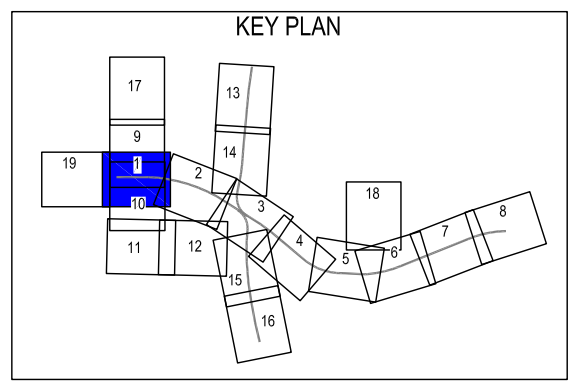


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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0201.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1B - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE	PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX	
							CONTRACTOR 		DRAWN	L.SMEAL	10.06.16			PART 31	
					CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS 		DRG CHECK	CES				ISSUE STATUS TENDER ISSUE	
					HEIGHT DATUM AHD		DRG No. ####		DESIGN					EDMS No.	
									DESIGN CHECK					SHEET No. TR-0209	
									DESIGN MNGR					ISSUE 1	
									PROJECT MNGR					© Roads and Maritime Services	



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- PROPOSED DRAINAGE PIPE
 - EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.

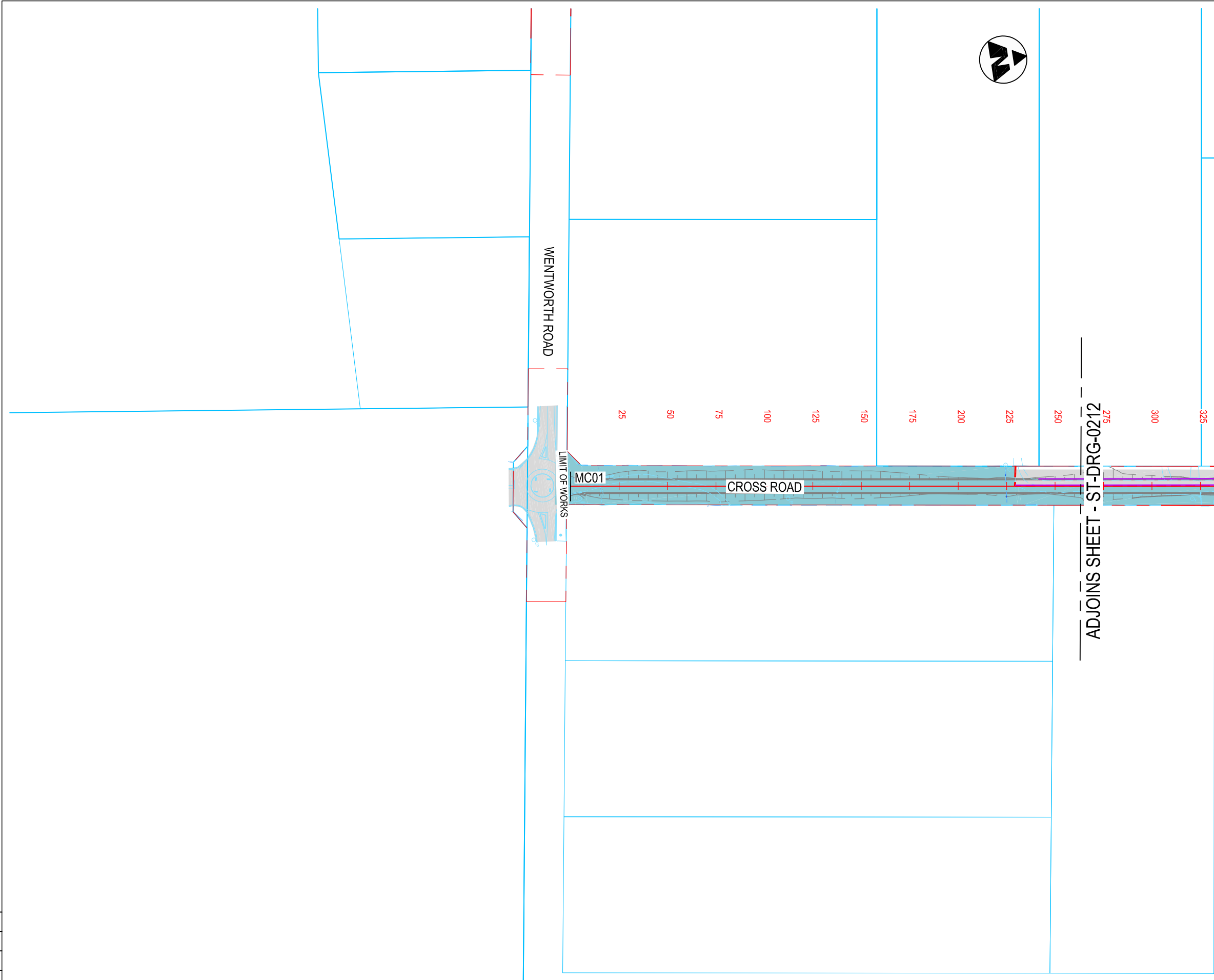


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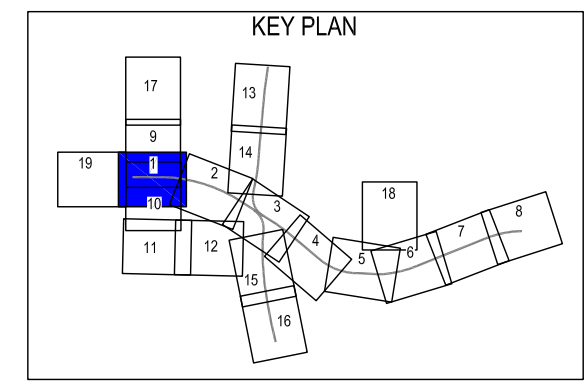
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0201.dwg			DESIGN LOT CODE -			DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM			PLOT BY admin			CLIENT PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH			PART 31		
EXTERNAL REFERENCE FILES			DESIGN SCALE ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE CONSTRUCTION STAGING			DRAWN L.SMEAL			DATE 10.06.16			SHEET 6 OF 8		
REV DATE AMENDMENT / REVISION DESCRIPTION			CO-ORDINATE SYSTEM MGA ZONE 56			CONTRACTOR lendlease			DESIGN CHECK CES			DESIGN CHECK -			DESIGN MNGR -			RMS REGISTRATION No. DSXXXX/XXXXXX		
WVR No. APPROVAL			HEIGHT DATUM AHD			DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF			DESIGN CHECK -			DESIGN MNGR -			DESIGN MNGR -			ISSUE STATUS TENDER ISSUE		
						DRG No. ####			PROJECT MNGR -			PROJECT MNGR -			EDMS No.			SHEET No. TR-0210		
																		ISSUE 1		

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- ### LEGEND
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- ### GENERAL
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- ### DRAINAGE
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- ### PROPOSED UTILITIES AND SERVICES
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.

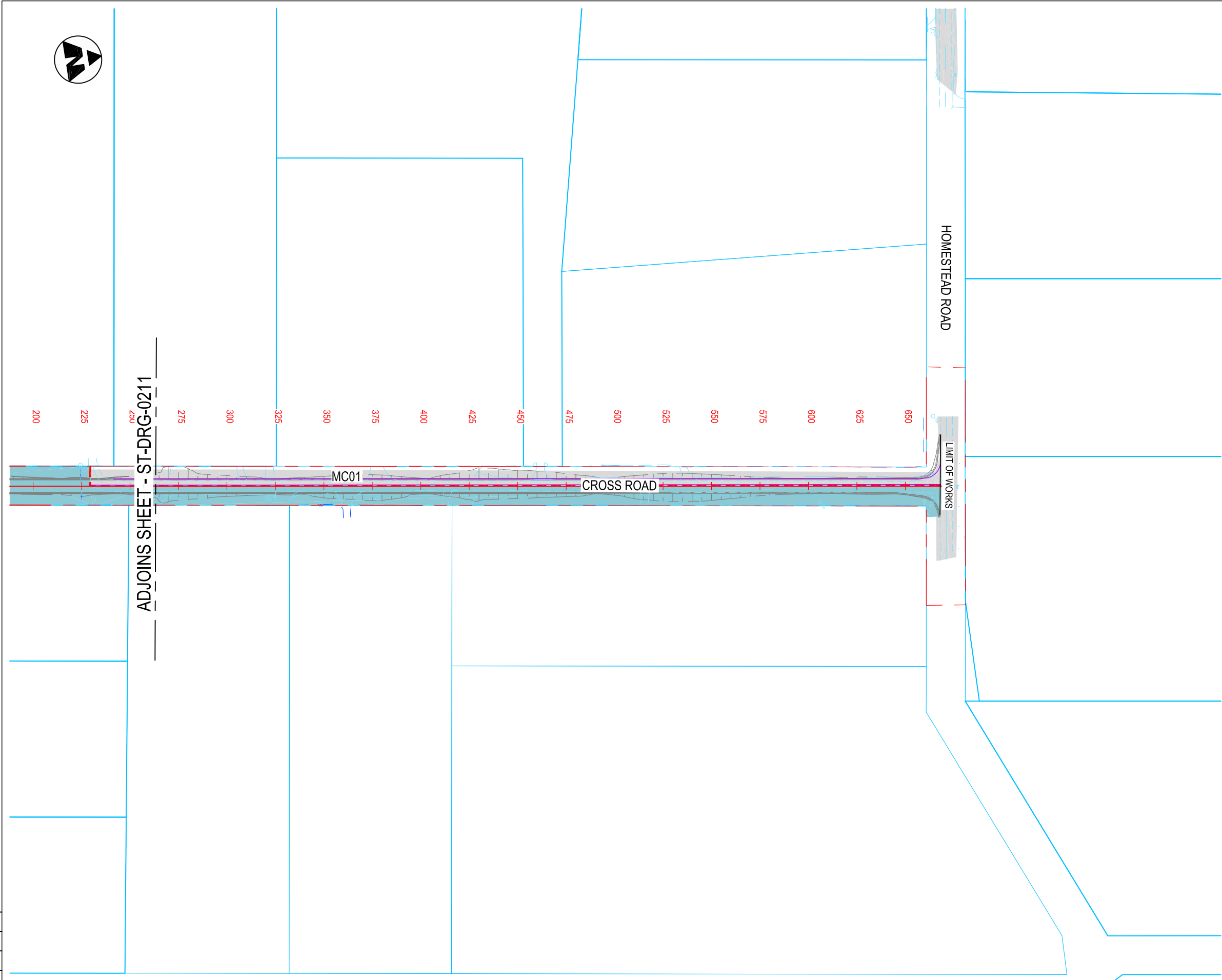


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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0201.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1B - ARRANGMENT GENERAL ARRANGMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE	PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX	
REV	DATE	AMENDMENT / REVISION DESCRIPTION	---	---			CONTRACTOR	DRAWN	L.SMEAL	10.06.16			ISSUE STATUS TENDER ISSUE		EDMS No.
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ADJOINS SHEET - ST-DRG-0211



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

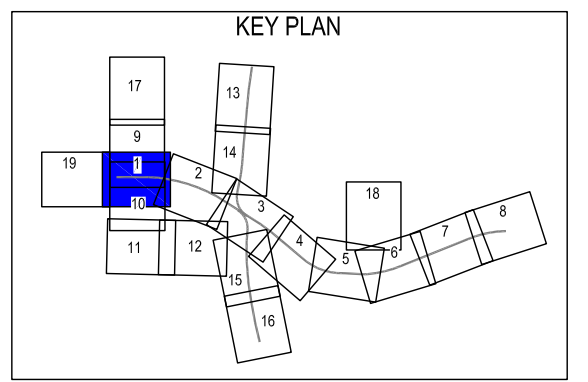
DRAINAGE

- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0201.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT NSW GOVERNMENT		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH		A3			
EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE		NAME		DATE		
REV | DATE | AMENDMENT / REVISION DESCRIPTION			---		---		0 20 40 60 80 SCALE 1:2000m			CONTRACTOR lendlease			DRAWN		L.SMEAL		10.06.16		
CO-ORDINATE SYSTEM MGA ZONE 56			HEIGHT DATUM AHD		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF			DRG No. ####			DRG CHECK		CES		DESIGN		---		
DESIGN CHECK			---		DESIGN MNGR			---		PROJECT MNGR		---		PREPARED FOR		Transport Roads & Maritime Services		SHEET 8 OF 8	
RMS REGISTRATION No.			DSXXXX/XXXXXX		ISSUE STATUS TENDER ISSUE			EDMS No.		SHEET No. TR-0212		PART 31		ISSUE 1		© Roads and Maritime Services			



FROM CAMPBELLTOWN

TO PENRITH

ADJOINS SHEET - ST-DRG-0309

ADJOINS SHEET - ST-DRG-0310

LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

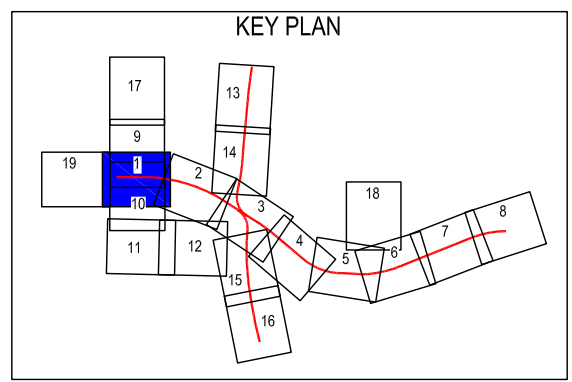
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

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NOT FOR CONSTRUCTION

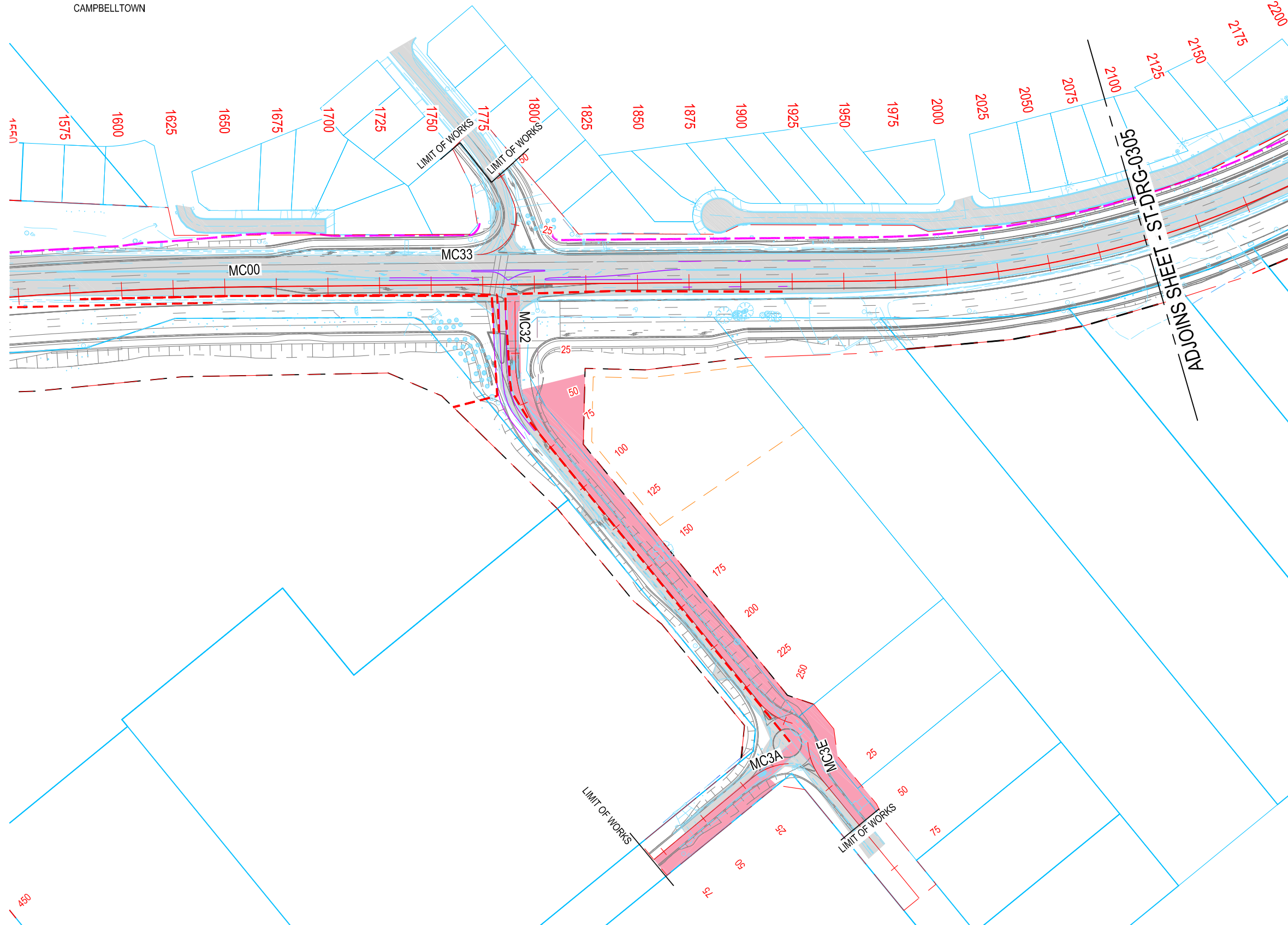
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0301.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1C - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE		CONTRACTOR		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
REV	DATE	AMENDMENT / REVISION DESCRIPTION			CO-ORDINATE SYSTEM MGA ZONE 56		CONTRACTOR 		DRAWN L.SMEAL		DESIGN -		ISSUE STATUS TENDER ISSUE		SHEET No. TR-0301
					HEIGHT DATUM AHD		DRG No. ####		DESIGN CHECK -		DESIGN MNGR -		EDMS No.		ISSUE 1
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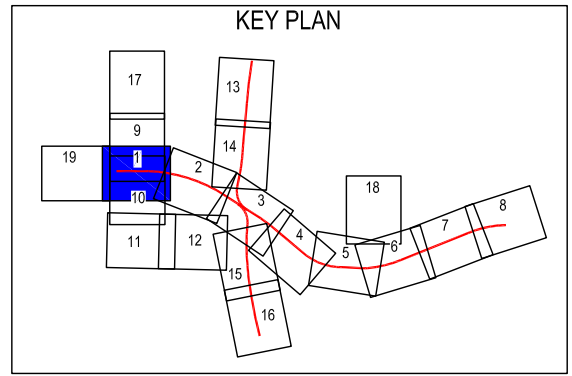


FROM CAMPBELLTOWN

TO PENRITH



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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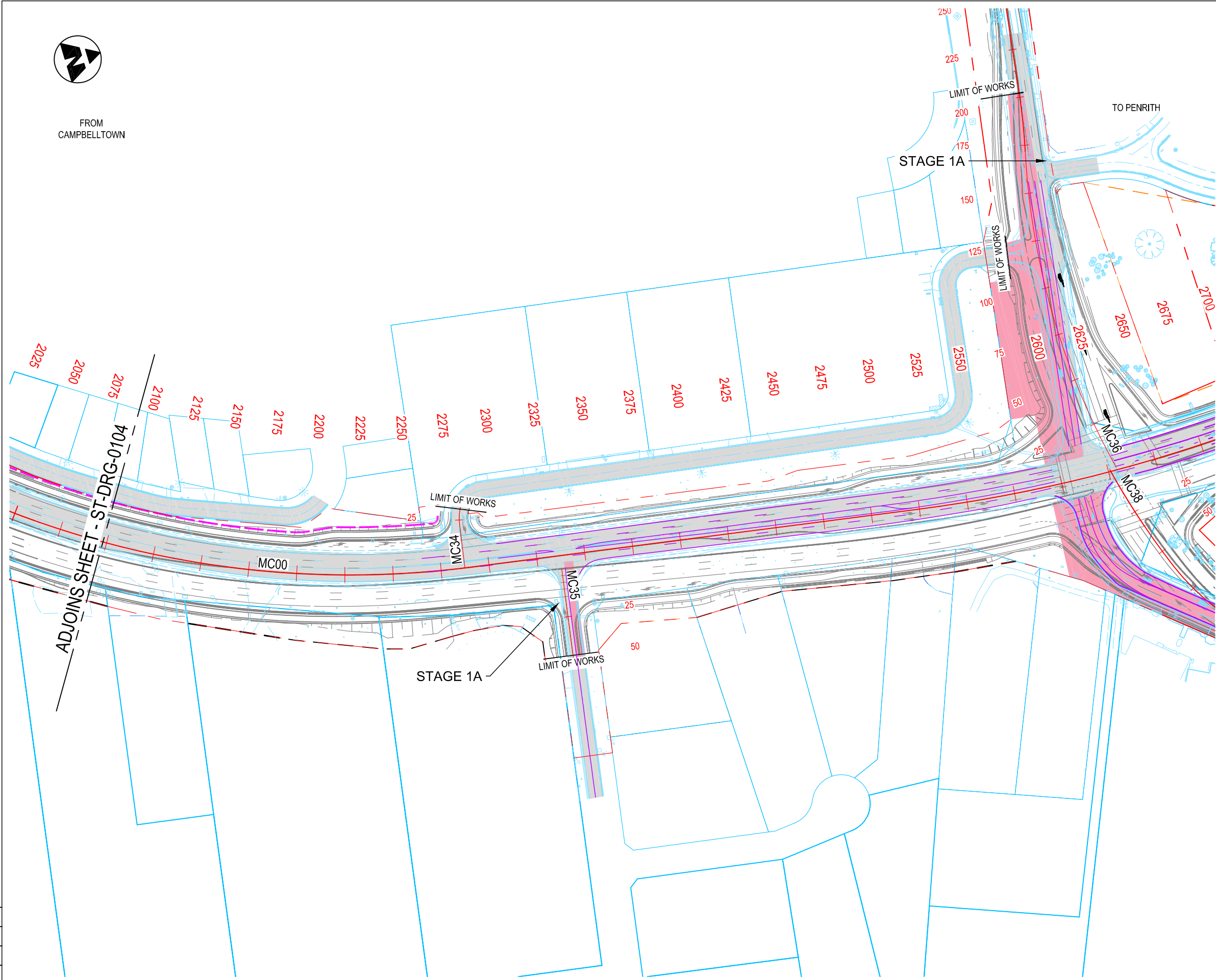
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0301.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT Penrith City Council Area		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1C - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3	
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE		CONTRACTOR		RMS REGISTRATION No.		PART	
REV	DATE	AMENDMENT / REVISION DESCRIPTION			0 20 40 60 80 SCALE 1:2000m		CONTRACTOR lendlease		DRAWN L.SMEAL 10.06.16		NSW GOVERNMENT Transport Roads & Maritime Services		DSXXXX/XXXXXX		31	
					CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DRG CHECK CES		PREPARED FOR		ISSUE STATUS TENDER ISSUE		EDMS No. SHEET No. TR-0304	
					HEIGHT DATUM AHD		DRG No. ####		DESIGN -				ISSUE 1			
									DESIGN CHECK -							
									DESIGN MNGR -							
									PROJECT MNGR -							



FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

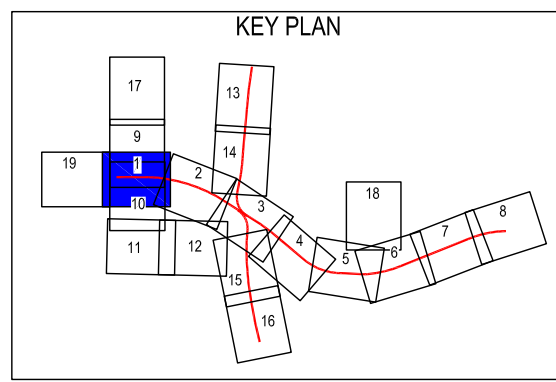
- PROPOSED DRAINAGE PIPE
- EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- UNDERGROUND COMMS
- UNDERGROUND SEWER MAIN
- UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- OVERHEAD ELECTRICAL (LOW VOLTAGE)
- UNDERGROUND LOCAL WATER MAIN
- UNDERGROUND GAS

NOTE:

1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



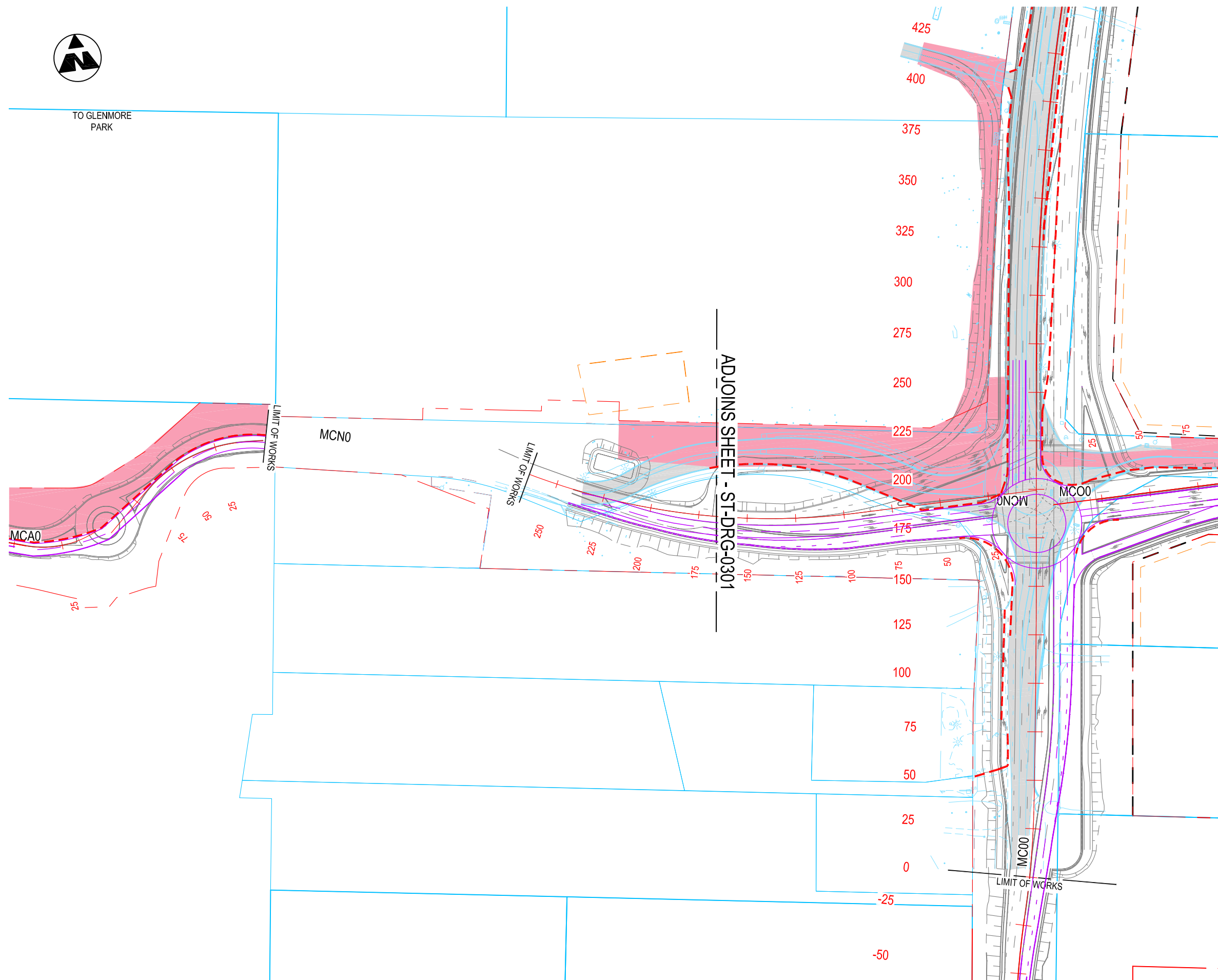
NOT FOR CONSTRUCTION

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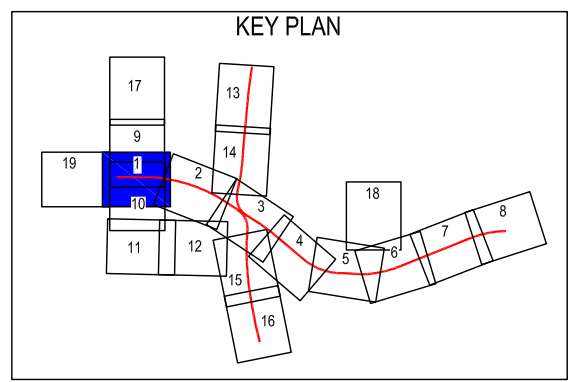
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EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		TITLE		NAME		DATE		RMS REGISTRATION No. DSXXXX/XXXXXX			
REV DATE AMENDMENT / REVISION DESCRIPTION			CONTRACTOR		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		DRAWN		L.SMEAL		10.06.16		ISSUE STATUS TENDER ISSUE			
SCALE ON A3 SIZE DRAWING			DESIGN PARTNERS		CONTRACTOR		DRG CHECK		CES		-		EDMS No.			
SCALE 1:2000m							DESIGN		-		-		SHEET No. TR-0305			
CO-ORDINATE SYSTEM MGA ZONE 56			HEIGHT DATUM AHD		DESIGN CHECK		-		-		-		ISSUE 1			
DRG No. ####					DESIGN MNGR		-		-		-		© Roads and Maritime Services			
PROJECT MNGR			-		-		-		-		-		SHEET 3 OF 7			



TO GLENMORE PARK



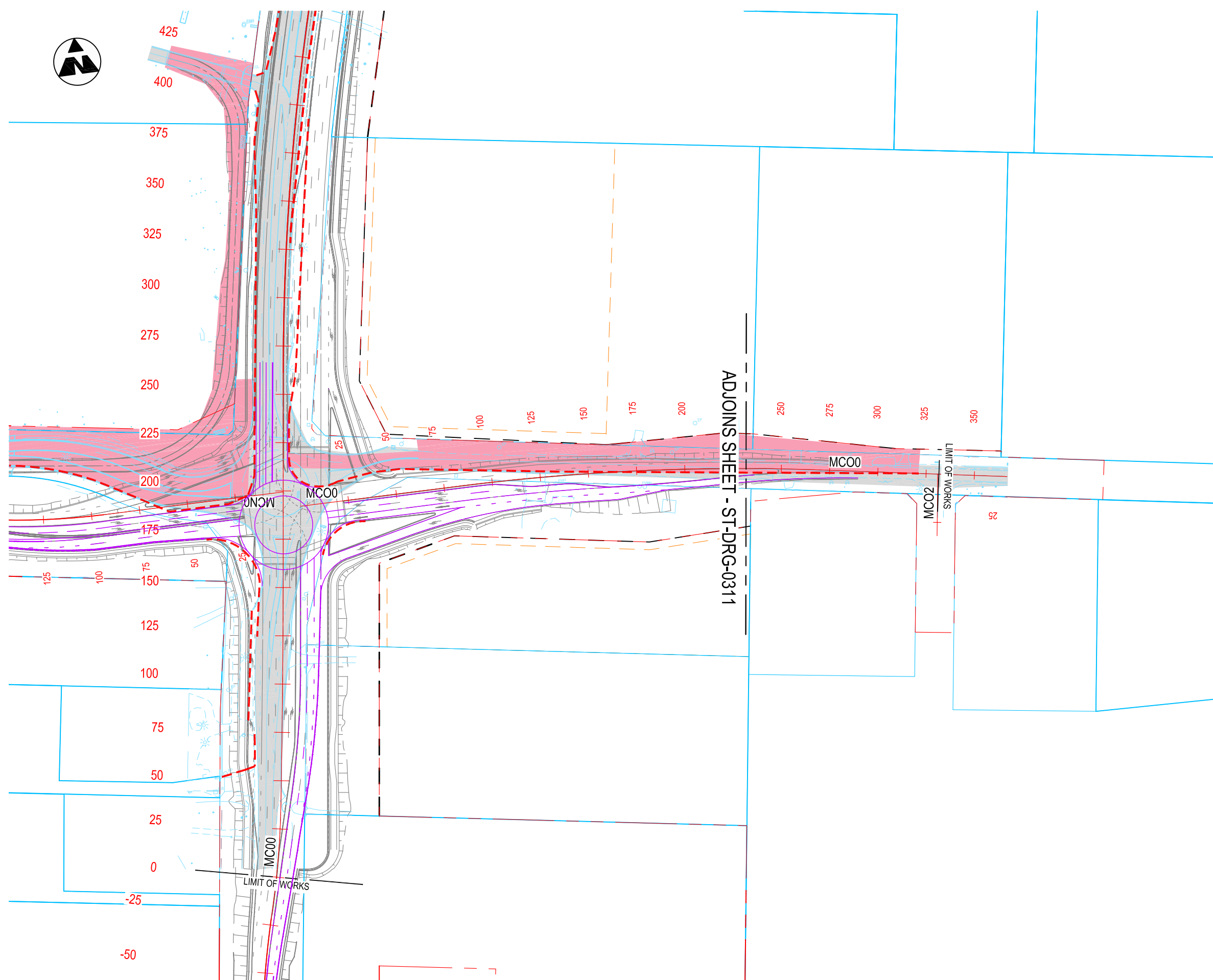
- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- PROPOSED DRAINAGE PIPE
 - EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- UNDERGROUND COMMS
 - UNDERGROUND SEWER MAIN
 - UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - UNDERGROUND LOCAL WATER MAIN
 - UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\TNR3N-TD-ST-DRG-0301.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY admin		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 1C - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE	PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX	
REV	DATE	AMENDMENT / REVISION DESCRIPTION	---	---	CO-ORDINATE SYSTEM MGA ZONE 56		CONTRACTOR 		DRAWN	L.SMEAL	10.06.16	ISSUE STATUS TENDER ISSUE		EDMS No.	SHEET No. TR-0309
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---	---	---	---	---					DESIGN MNGR	---	---	© Roads and Maritime Services			
---	---	---	---	---					PROJECT MNGR	---	---				



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

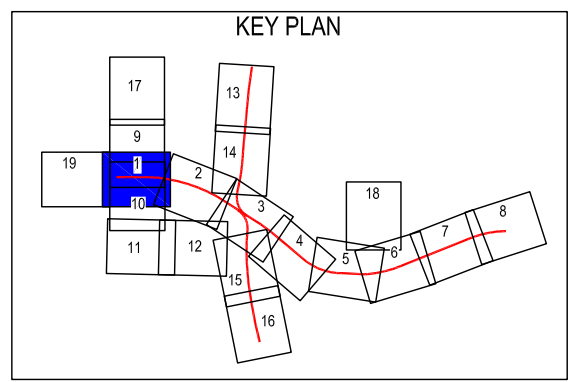
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



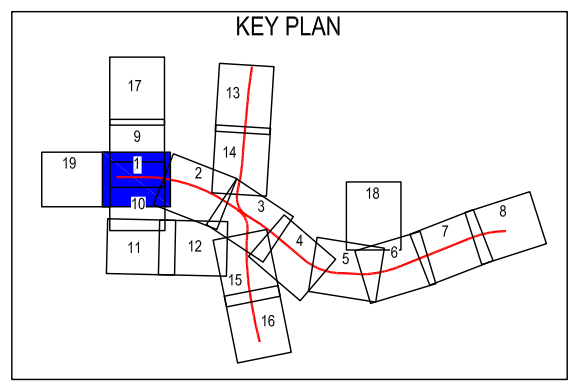
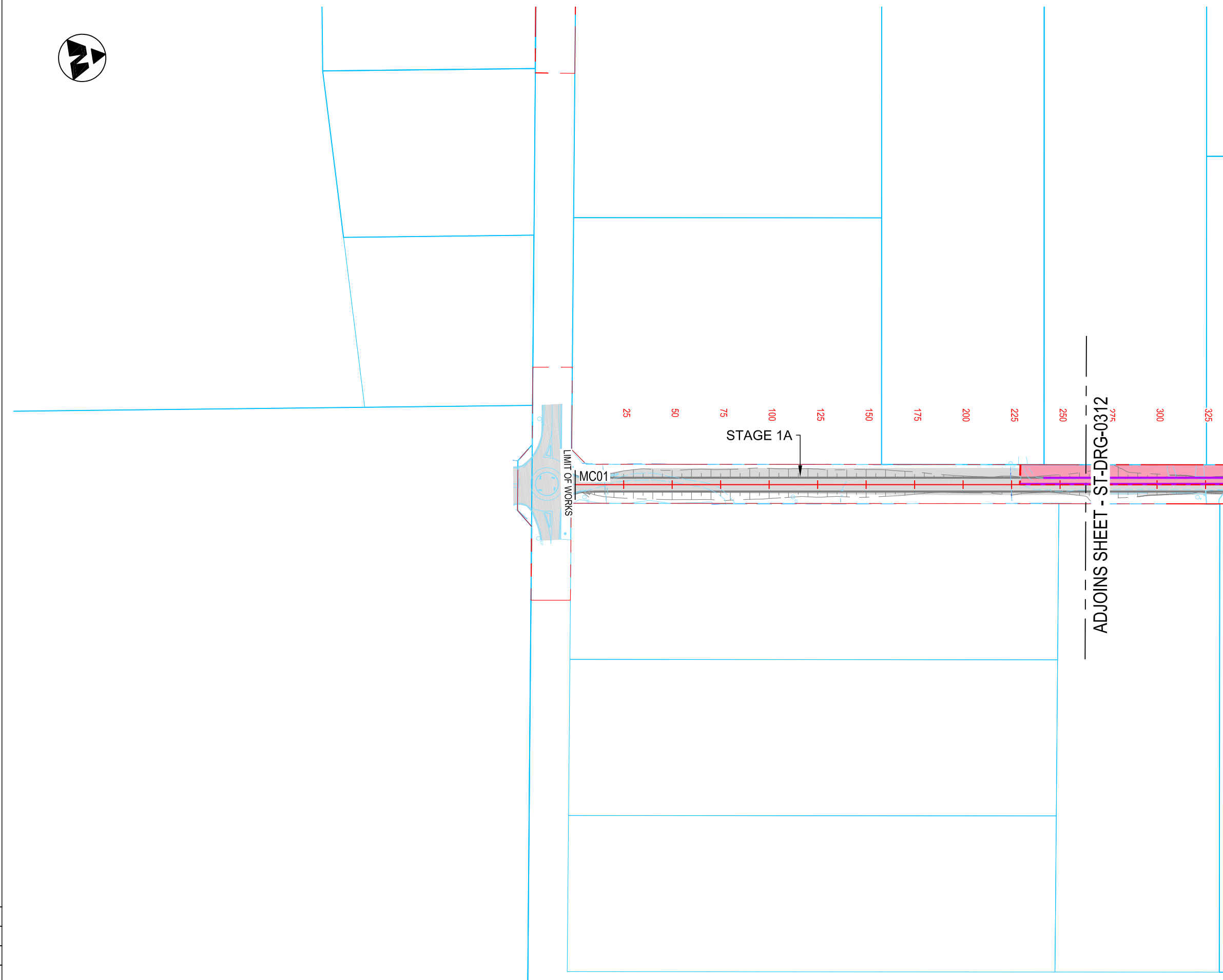
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EXTERNAL REFERENCE FILES			DESIGNER		SCALE(S) ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE		DRAWN		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
REV. DATE. AMENDMENT / REVISION DESCRIPTION			WVR No. APPROVAL		SCALE 1:2000m		CONTRACTOR 		NAME		DRG CHECK		EDMS No.		ISSUE 1
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					HEIGHT DATUM AHD		DRG No. ####		DATE		DESIGN CHECK		ISSUE STATUS TENDER ISSUE		
									DATE		DESIGN MNGR				
									DATE		PROJECT MNGR				



LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	COMM UNDERGROUND COMMS
	S UNDERGROUND SEWER MAIN
	HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
	W UNDERGROUND LOCAL WATER MAIN
	GAS UNDERGROUND GAS
NOTE:	
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.	



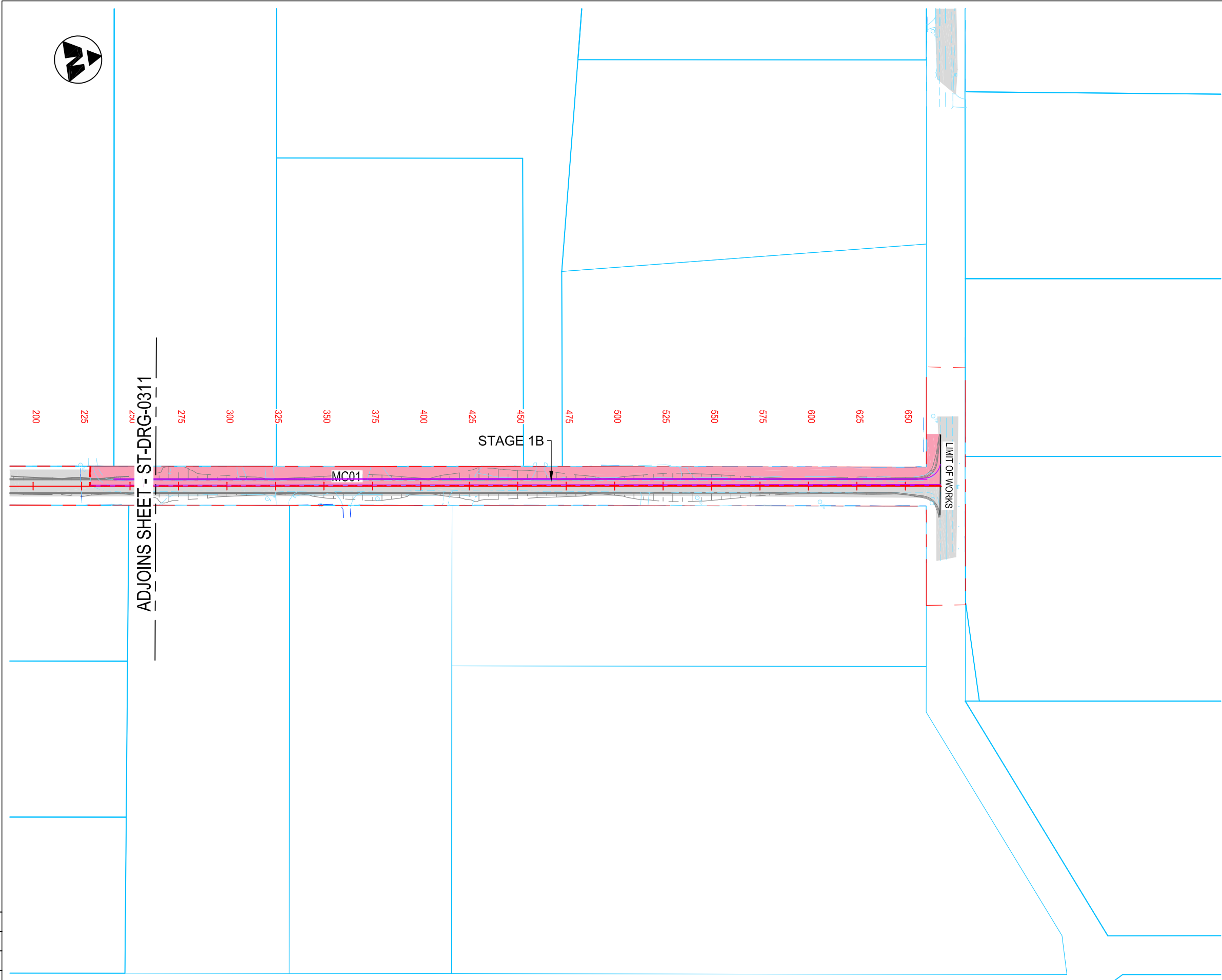
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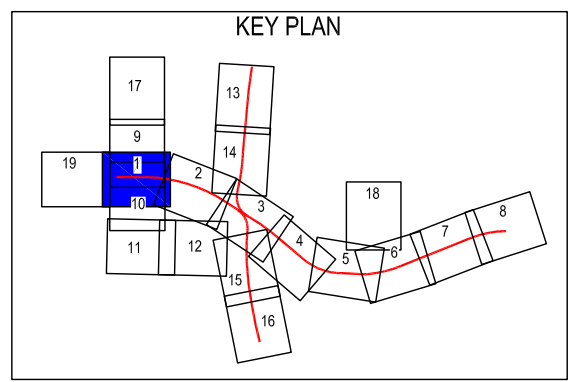
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EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE	NAME	DATE
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			---	---	CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS 			DRG CHECK	CES	---
			---	---	HEIGHT DATUM AHD	DRG No. ####			DESIGN	---	---
			---	---					DESIGN CHECK	---	---
			---	---					DESIGN MNGR	---	---
			---	---					PROJECT MNGR	---	---
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			---	---					RMS REGISTRATION No.	DSXXXX/XXXXXX	PART 31
			---	---					ISSUE STATUS	TENDER ISSUE	EDMS No.
			---	---					SHEET No.	TR-0311	ISSUE 1



ADJOINS SHEET - ST-DRG-0311



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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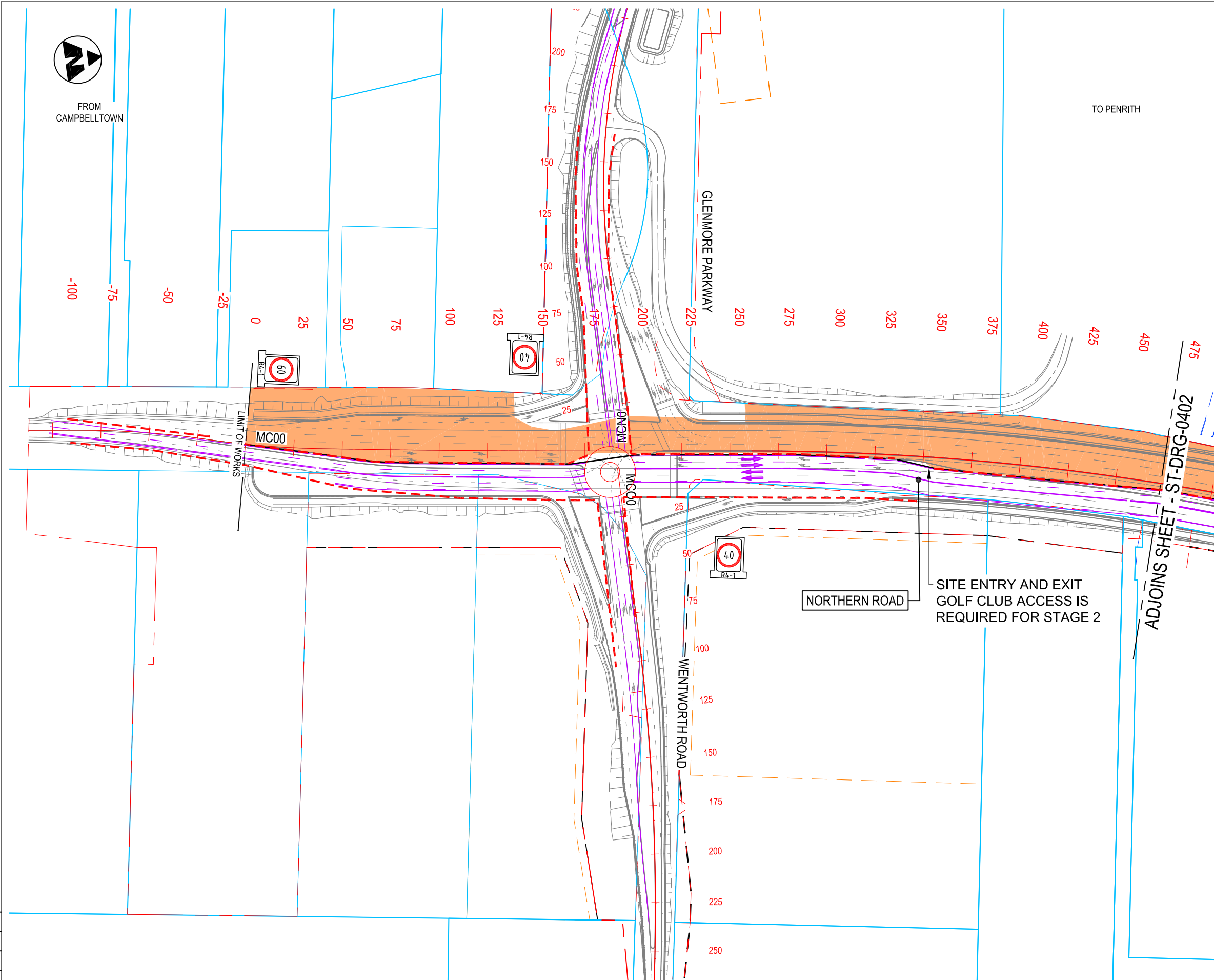
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EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		CONTRACTOR		TITLE		
REV DATE AMENDMENT / REVISION DESCRIPTION			---		---		0 20 40 60 80 SCALE 1:2000m		lendlease		DRAWN L.SMEAL 10.06.16		DRG CHECK CES		
			---		---		CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN		DESIGN CHECK		
			---		---		HEIGHT DATUM AHD		DRG No. ####		DESIGN MNGR		DESIGN MNGR		
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										NSW GOVERNMENT		Transport Roads & Maritime Services		RMS REGISTRATION No. DSXXXX/XXXXXX	
										PREPARED FOR		SHEET 7 OF 7		PART 31	
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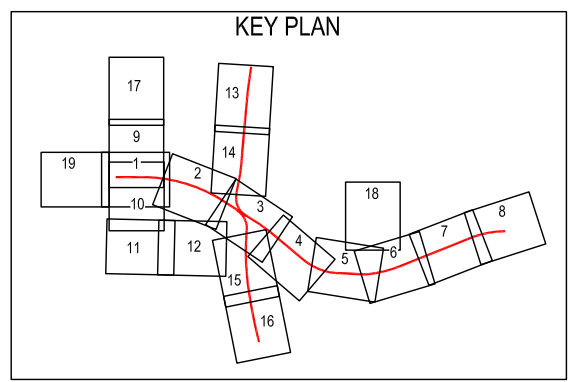
FROM CAMPBELLTOWN

TO PENRITH

- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



ADJOINS SHEET - ST-DRG-0402



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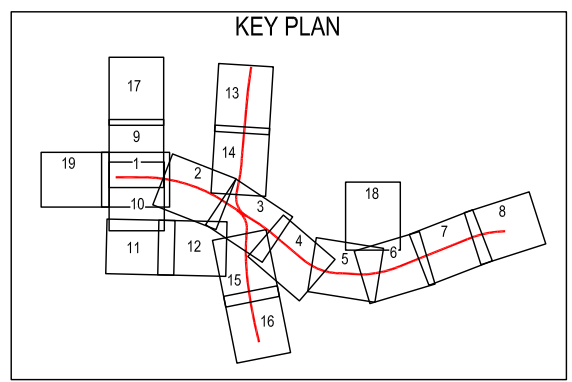
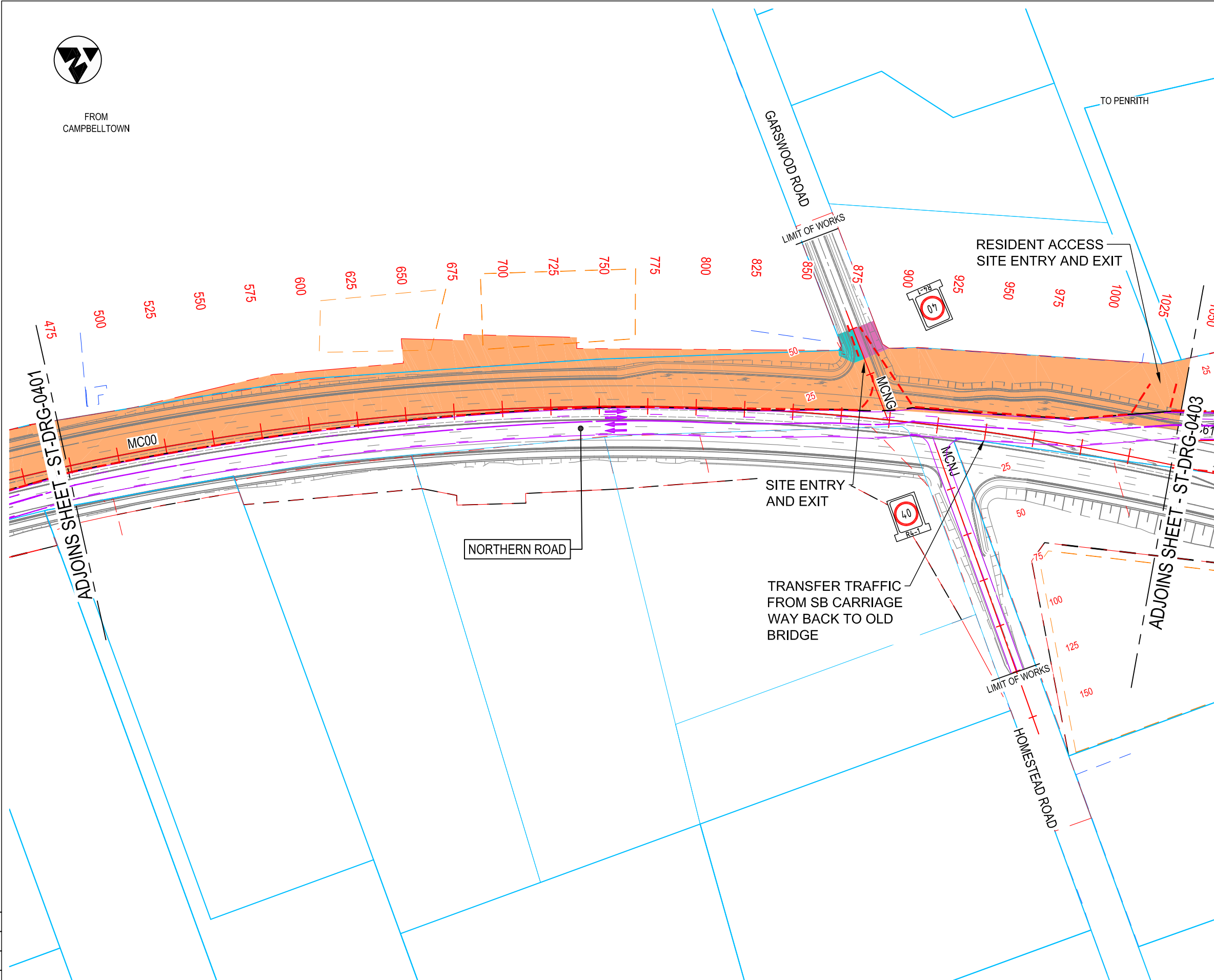
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EXTERNAL REFERENCE FILES		WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD CONTRACTOR lendlease DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		TITLE	NAME	DATE	RMS REGISTRATION No. DSXXXX/XXXXXX
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FROM CAMPBELLTOWN

LEGEND

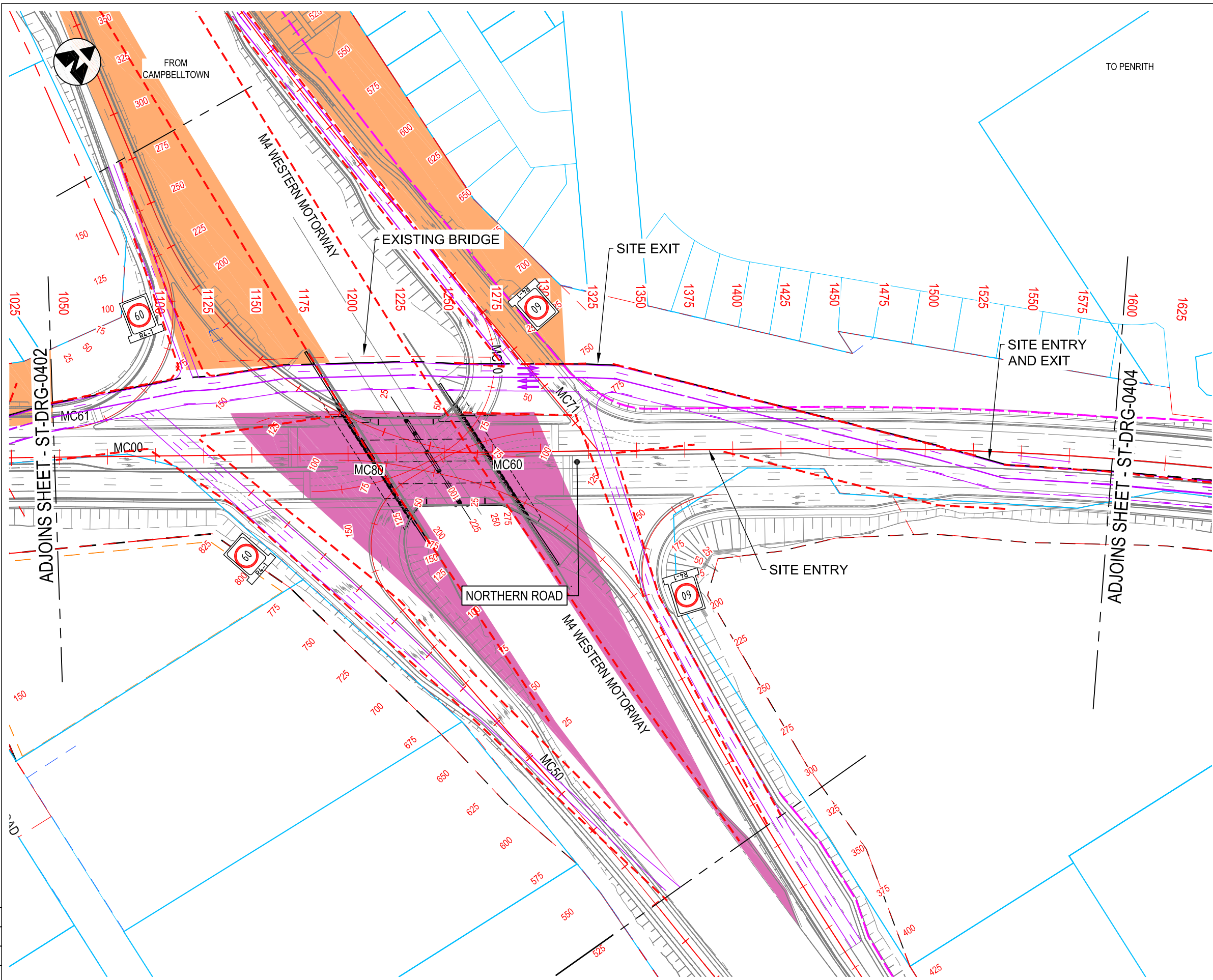
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- PROPOSED DRAINAGE PIPE
 - EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\ITNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE ---		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		CONTRACTOR		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
REV | DATE | AMENDMENT / REVISION DESCRIPTION			SCALE 1:2000m						TITLE		DATE		PREPARED FOR		ISSUE STATUS TENDER ISSUE
			CO-ORDINATE SYSTEM MGA ZONE 56						HEIGHT DATUM AHD		DRG No. ####		DRAWN L.SMEAL		10.06.16		EDMS No.		SHEET No. TR-0402
									DESIGN						ISSUE 1
									DRG CHECK						
									DESIGN CHECK						
									DESIGN MNGR						
									PROJECT MNGR						



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- ↔

 PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

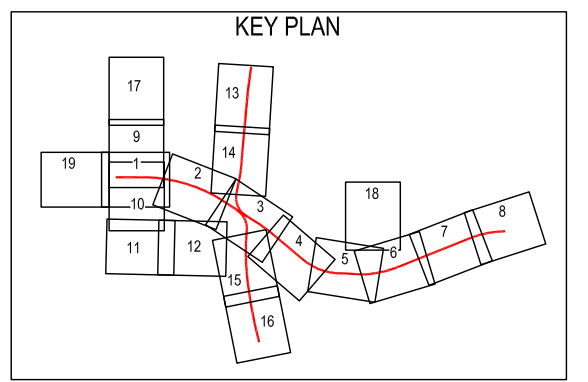
DRAINAGE

- PROPOSED DRAINAGE PIPE
- EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
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- W UNDERGROUND LOCAL WATER MAIN
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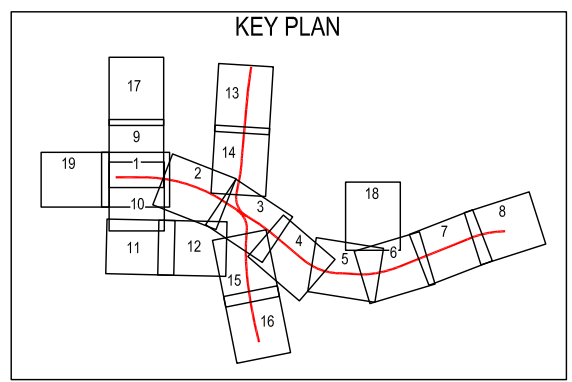
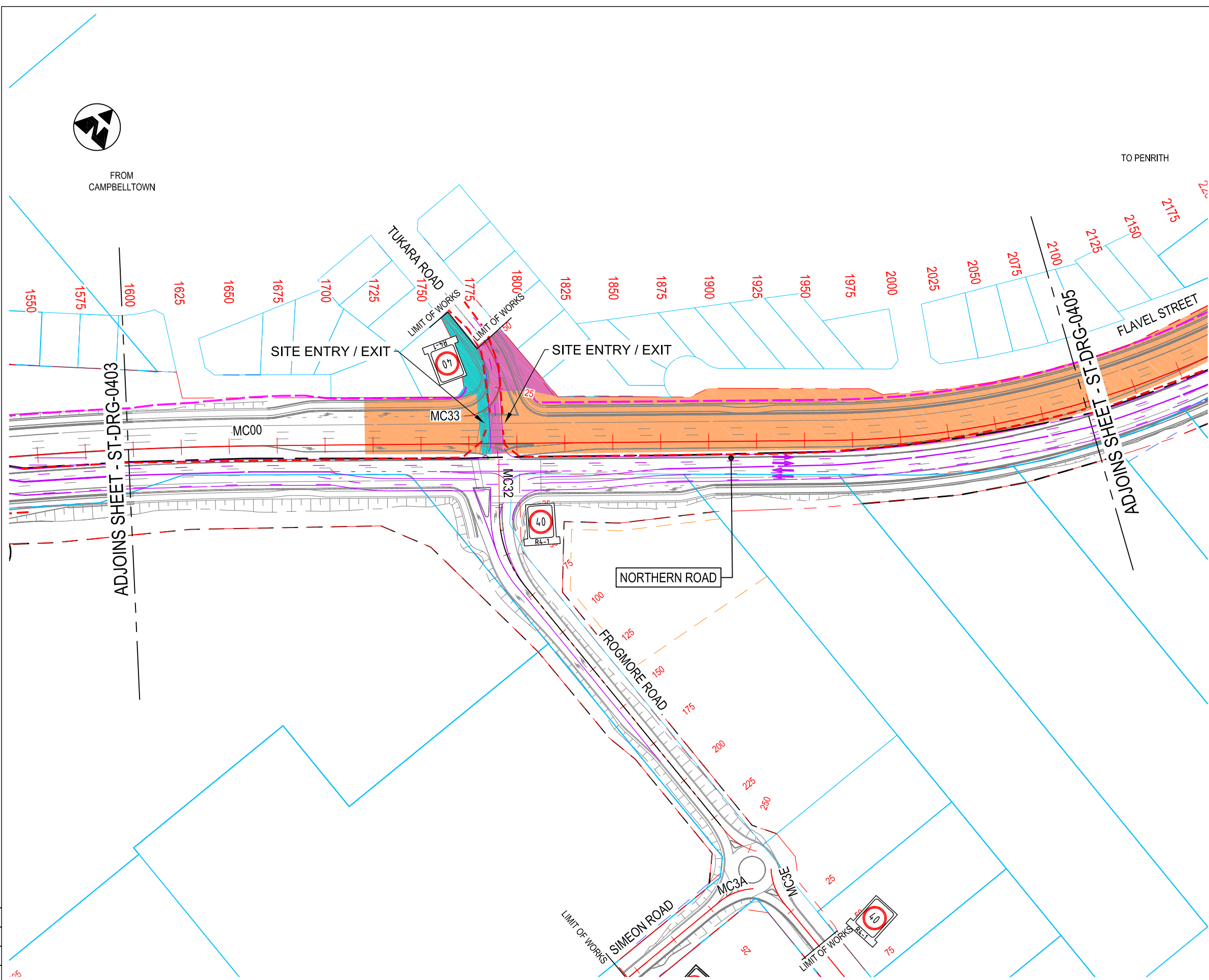


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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CHITNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE ---		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING ---		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		Transport Roads & Maritime Services		CLIENT PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH		A3	
EXTERNAL REFERENCE FILES			WVR No. APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE NAME DATE				Transport Roads & Maritime Services		CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT PLAN		SHEET 3 OF 8
REV DATE AMENDMENT / REVISION DESCRIPTION			WVR No. APPROVAL				CONTRACTOR lendlease		DRAWN L.SMEAL 10.06.16		Transport Roads & Maritime Services				RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
CO-ORDINATE SYSTEM MGA ZONE 56			WVR No. APPROVAL		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN CHECK ---		DESIGN MNGR ---				Transport Roads & Maritime Services		ISSUE STATUS TENDER ISSUE		SHEET No. TR-0403 ISSUE 1
HEIGHT DATUM AHD			WVR No. APPROVAL		DRG No. ####		DESIGN MNGR ---		PROJECT MNGR ---		Transport Roads & Maritime Services				EDMS No.		© Roads and Maritime Services

LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	COMM UNDERGROUND COMMS
	S UNDERGROUND SEWER MAIN
	HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
	W UNDERGROUND LOCAL WATER MAIN
	GAS UNDERGROUND GAS
NOTE:	
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.	



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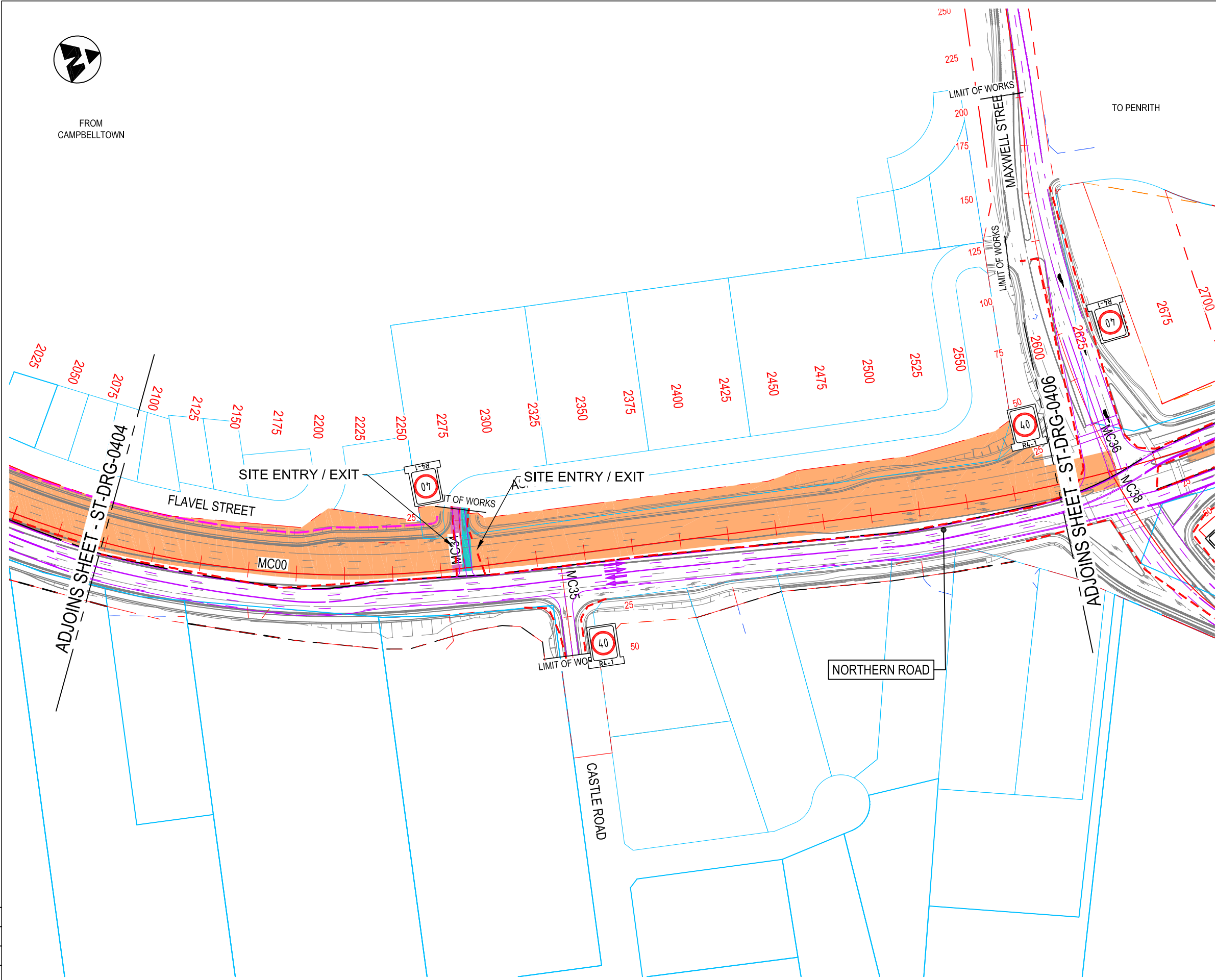
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\Cv\TNR3N-TD-ST-DRG-0401.dwg		DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING ---	PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT PLAN	A3
EXTERNAL REFERENCE FILES	REV DATE AMENDMENT / REVISION DESCRIPTION	WVR No. APPROVAL	SCALES ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD CONTRACTOR 		TITLE NAME DATE DRAWN L.SMEAL 10.06.16 DRG CHECK CES DESIGN DESIGN CHECK DESIGN MNGR PROJECT MNGR	PREPARED FOR Transport Roads & Maritime Services	SHEET 4 OF 8
CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD		DESIGN PARTNERS 		DRG No. ####	RMS REGISTRATION No. DSXXXX/XXXXXX	PART 31
ISSUE STATUS TENDER ISSUE		EDMS No.	SHEET No. TR-0404	ISSUE 1		© Roads and Maritime Services		

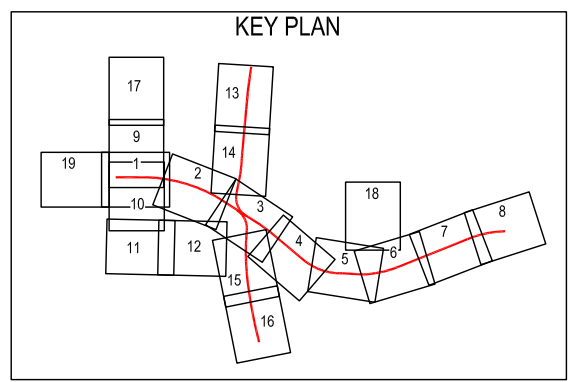


FROM CAMPBELLTOWN

TO PENRITH



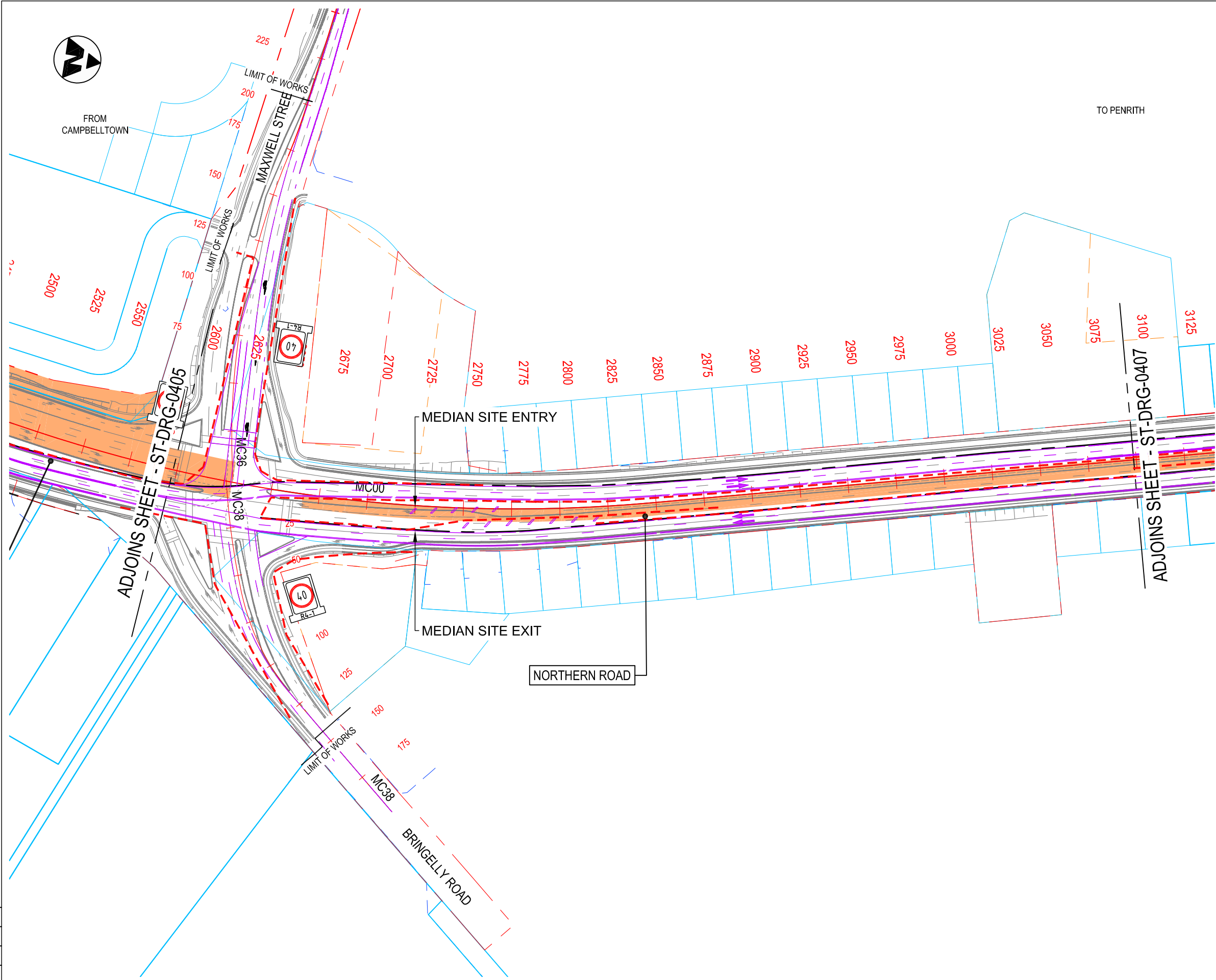
- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CHITNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE -		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		CLIENT Transport Roads & Maritime Services		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3	
EXTERNAL REFERENCE FILES			WVR No.		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE		CONTRACTOR		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31	
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					CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS 		DESIGN CHECK		DESIGN MNGR		EDMS No.		SHEET No. TR-0405	
					HEIGHT DATUM AHD		DRG No. ####		DESIGN MNGR		PROJECT MNGR		PREPARED FOR		SHEET 5 OF 8	



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

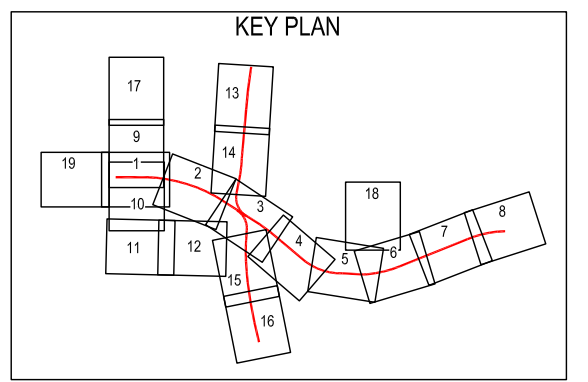
DRAINAGE

- PROPOSED DRAINAGE PIPE
- EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:
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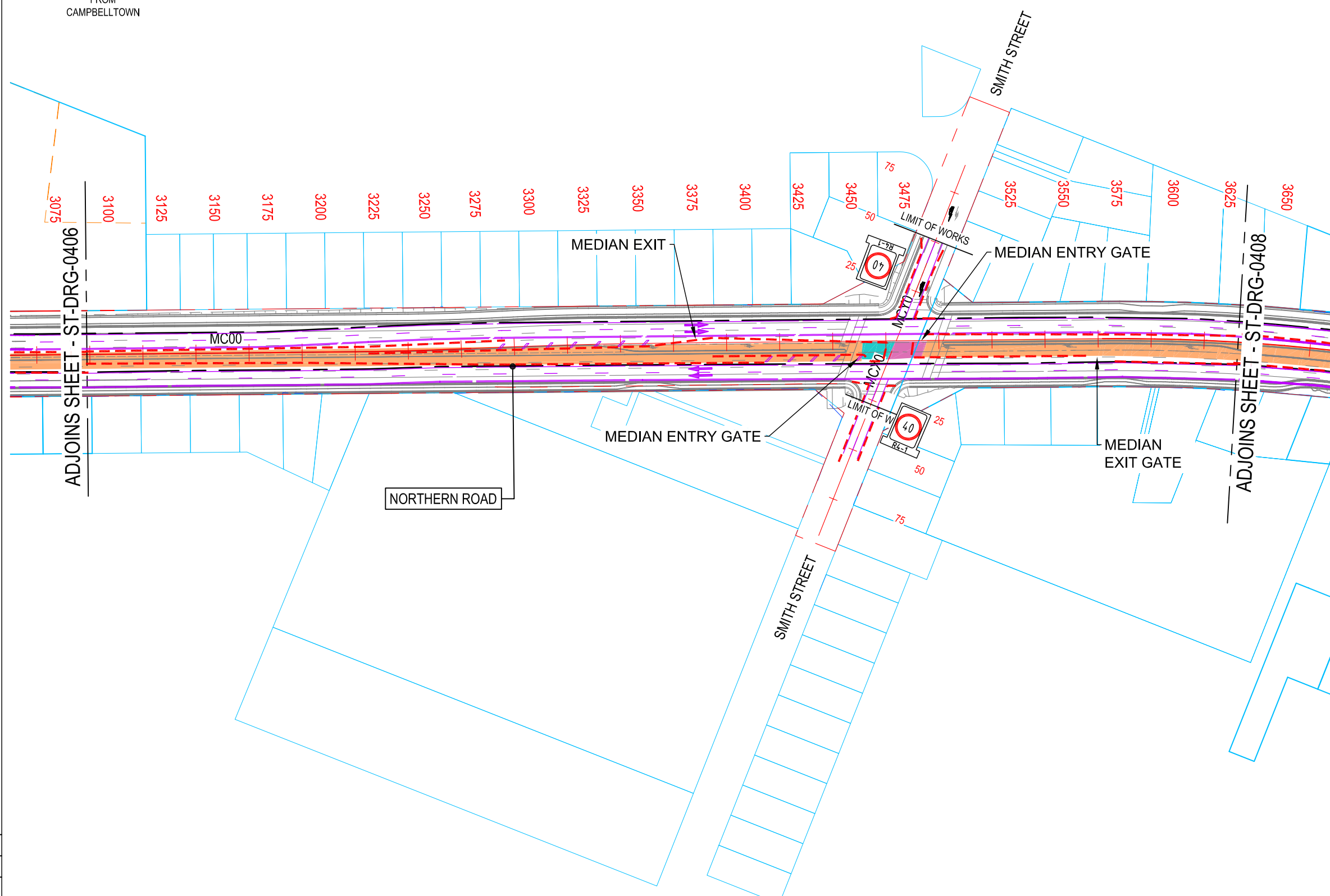
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CHITNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE ---			DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM			PLOT BY Steve			CLIENT PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH			PART 31		
EXTERNAL REFERENCE FILES			WVR No.			APPROVAL			SCALES ON A3 SIZE DRAWING			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE			CONTRACTOR		
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									CO-ORDINATE SYSTEM MGA ZONE 56			DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF			DRG CHECK CES			PREPARED FOR		
									HEIGHT DATUM AHD						DESIGN			RMS REGISTRATION No. DSXXXX/XXXXXX		
															DESIGN CHECK			ISSUE STATUS TENDER ISSUE		
															DESIGN MNGR			EDMS No.		
															PROJECT MNGR			SHEET No. TR-0406		
																		ISSUE 1		



FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

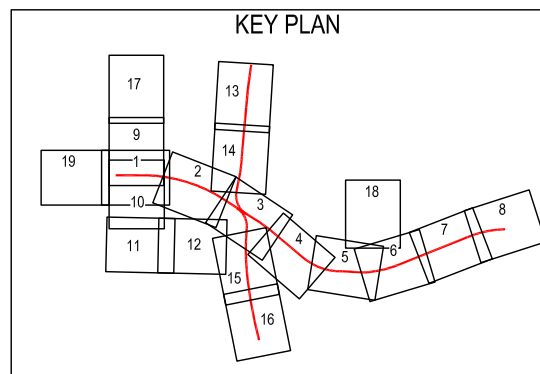
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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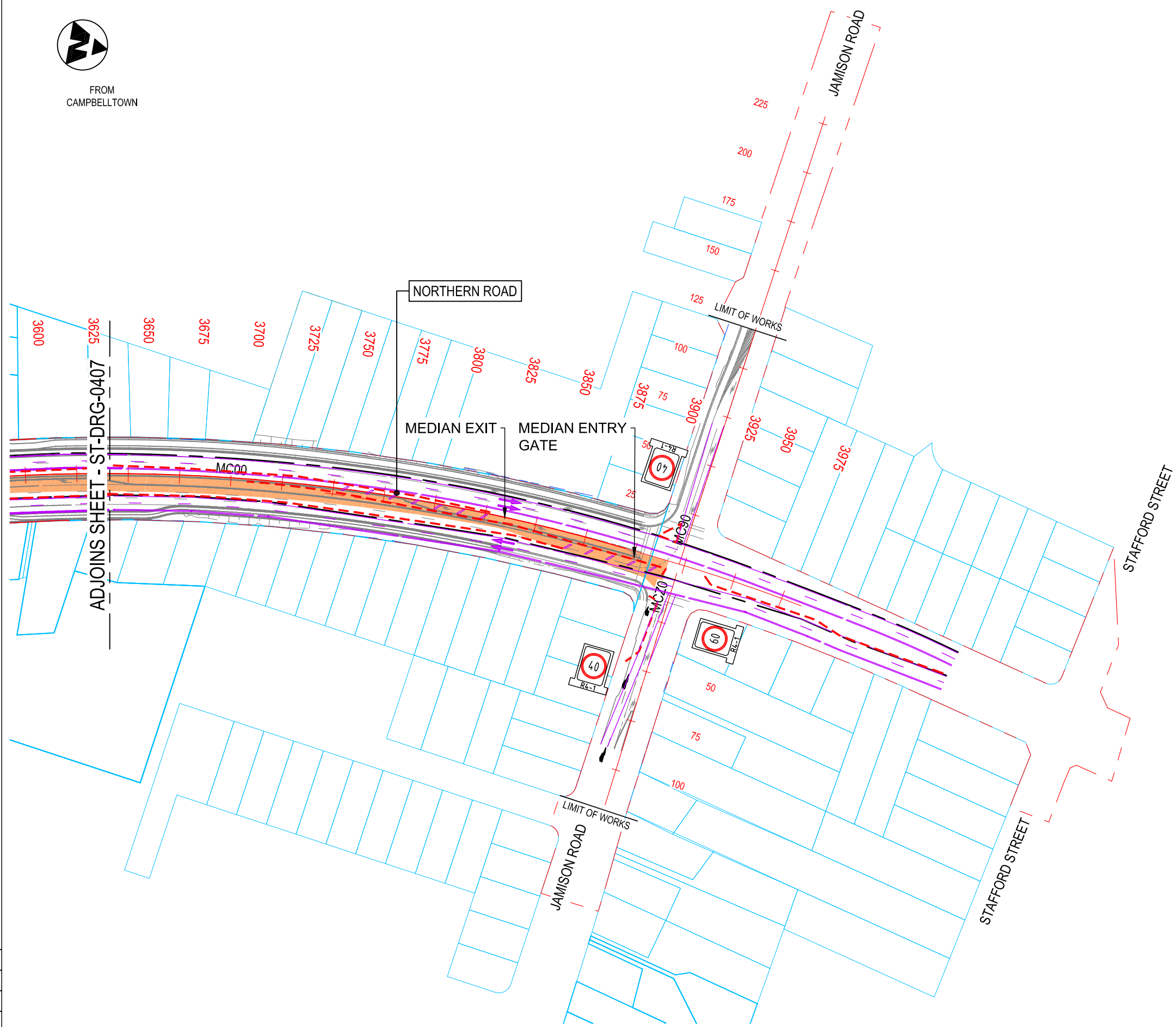
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CHITNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT NSW GOVERNMENT	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3	
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE	RMS REGISTRATION No.	PART	
					0 20 40 60 80 SCALE 1:2000m	CONTRACTOR lendlease		DRAWN	L.SMEAL	10.06.16	DSXXXX/XXXXXX	31	
					CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DRG CHECK	CES		ISSUE STATUS TENDER ISSUE	EDMS No.	SHEET No. TR-0407
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								DESIGN CHECK			© Roads and Maritime Services		
								DESIGN MNGR					
								PROJECT MNGR					



FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

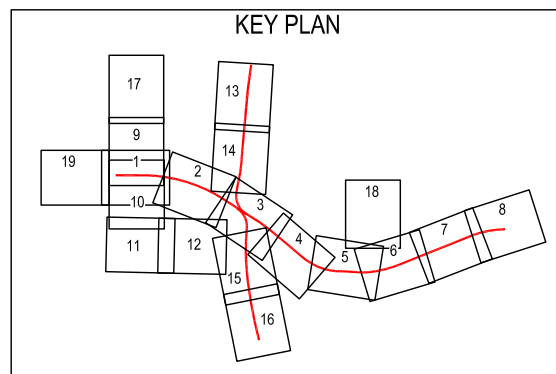
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
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- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

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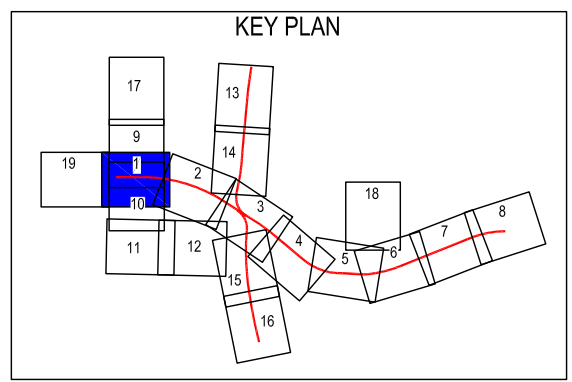
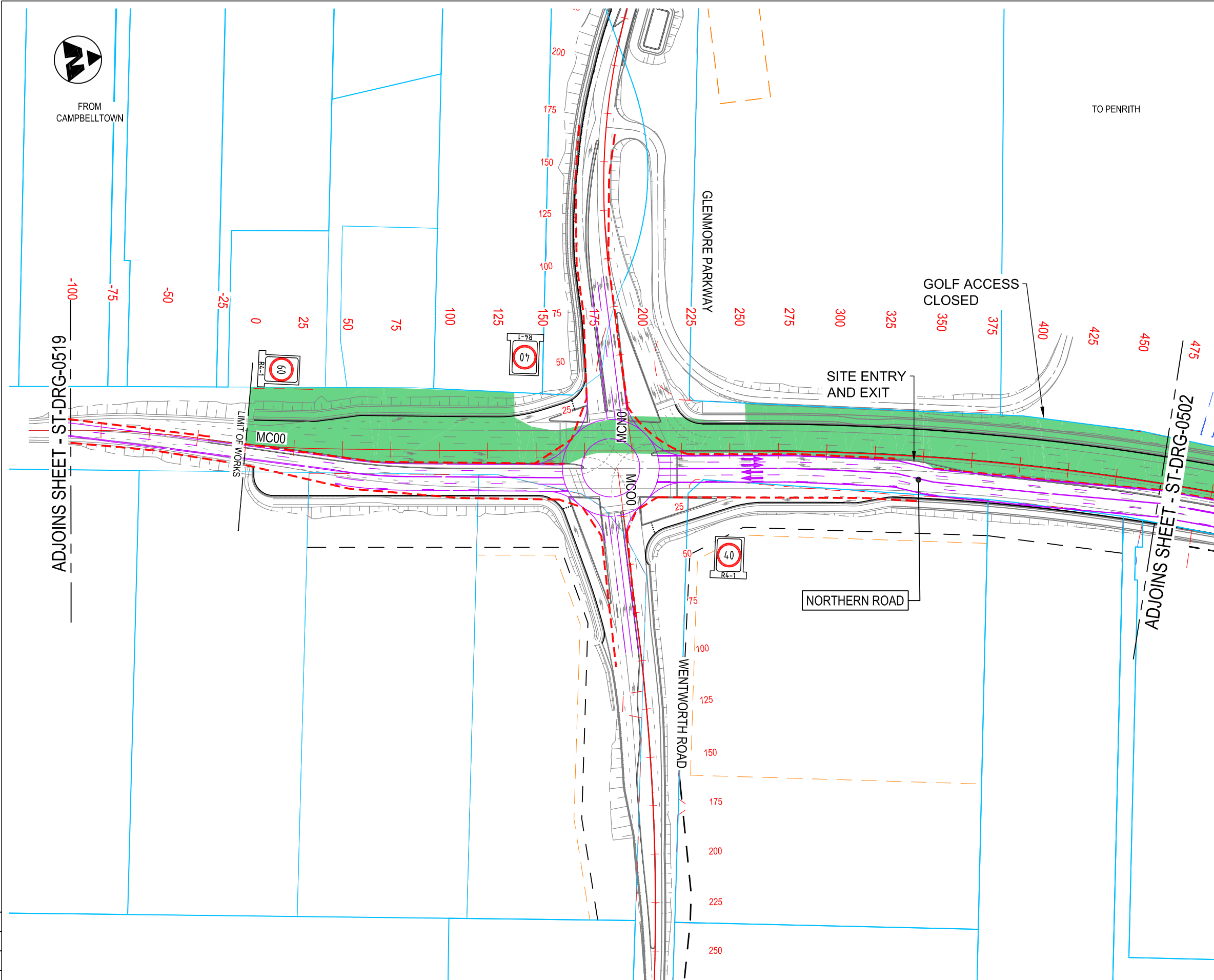
DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\Cv\TNR3N-TD-ST-DRG-0401.dwg			DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 2 - ARRANGMENT GENERAL ARRANGEMENT SHEET 8 OF 8	A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALE(S) ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE
						CONTRACTOR 		DRAWN	L.SMEAL	10.06.16
						DESIGN PARTNERS 		DRG CHECK	CES	
						CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN		
						HEIGHT DATUM AHD		DESIGN CHECK		
						DRG No. ####		DESIGN MNGR		
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								RMS REGISTRATION No.	DSXXXX/XXXXXX	
								ISSUE STATUS	EDMS No.	SHEET No.
								TENDER ISSUE		TR-0408
										PART 31
										ISSUE 1



FROM CAMPBELLTOWN

TO PENRITH

- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



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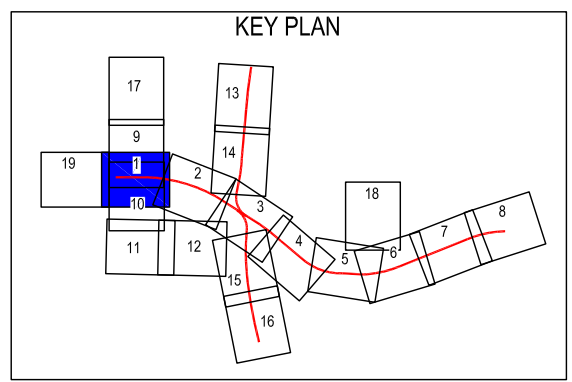
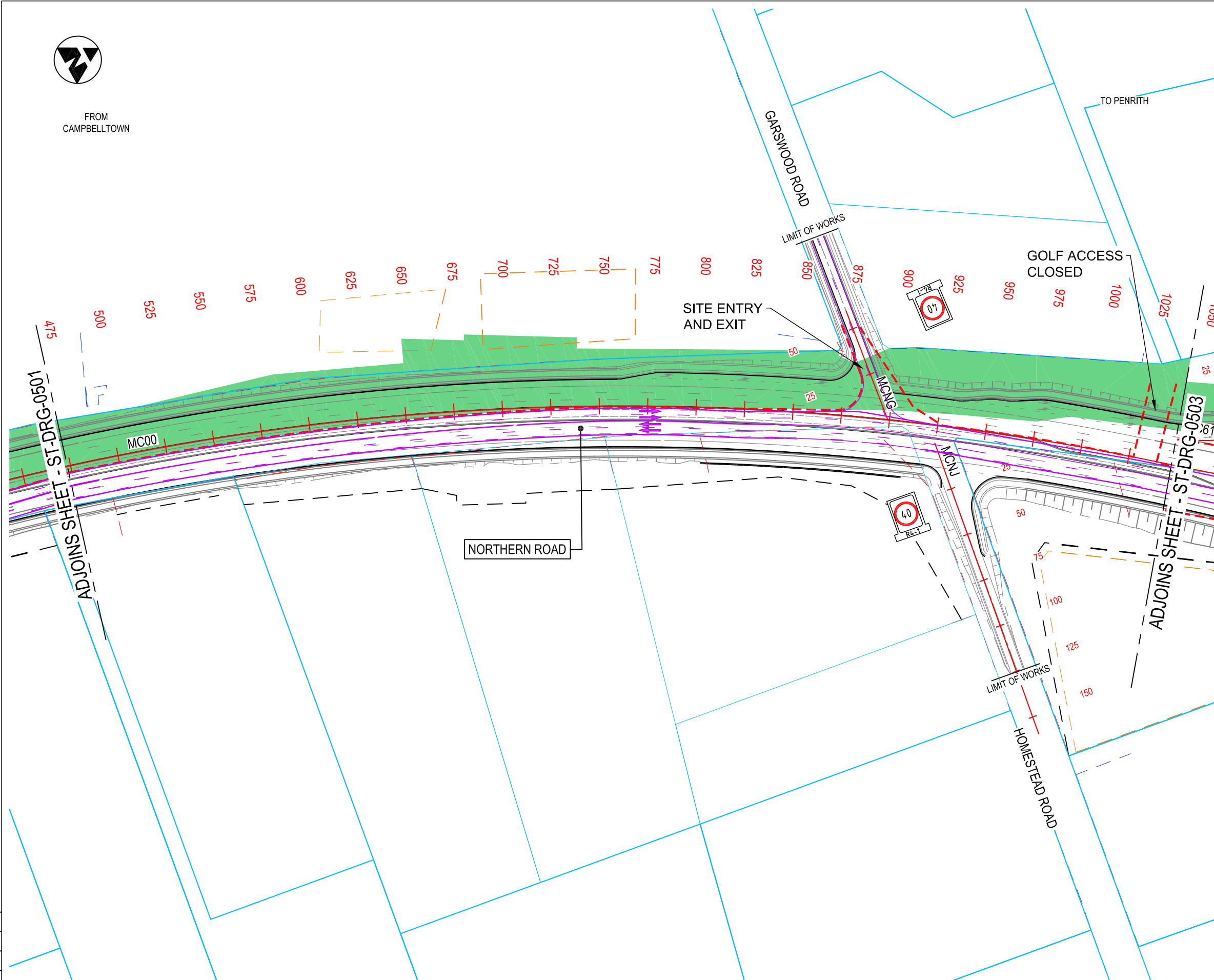
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\ITNR3N-TD-ST-DRG-0501.dwg			DESIGN LOT CODE ---		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING ---		PLOT DATE / TIME 14/5/2015 11:31:23 AM		PLOT BY Steve		CLIENT NSW GOVERNMENT		PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 3 - ARRANGMENT GENERAL ARRANGEMENT SHEET 1 OF 8		A3
EXTERNAL REFERENCE FILES			WVR No.		APPROVAL		TITLE		NAME		DATE		RMS REGISTRATION No. DSXXXX/XXXXXX		PART 31
REV | DATE | AMENDMENT / REVISION DESCRIPTION			SCALE ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		DRAWN		L.SMEAL		10.06.16		ISSUE STATUS TENDER ISSUE		EDMS No.
			0 20 40 60 80 SCALE 1:2000m		CONTRACTOR lendlease		DESIGN		---		---		SHEET No. TR-0501		ISSUE 1
			CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN CHECK		---		---		PREPARED FOR		© Roads and Maritime Services
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							PROJECT MNGR		---		---				



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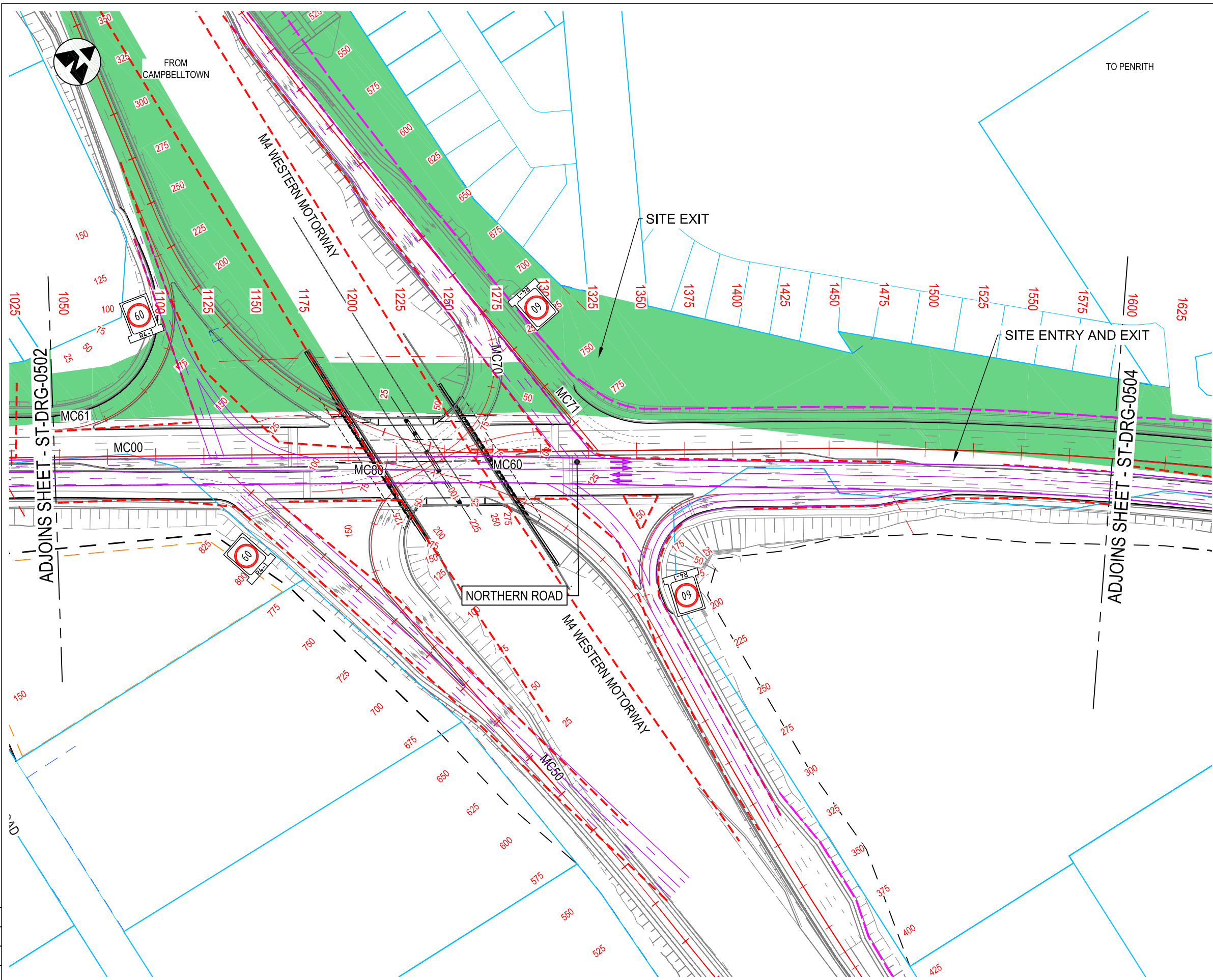
LEGEND	
	EXISTING PAVEMENT
	STAGE 1 WORK ZONE
	STAGE 1A WORK ZONE
	STAGE 1B WORK ZONE
	STAGE 2 WORK ZONE
	STAGE 2A WORK ZONE
	STAGE 2B WORK ZONE
	STAGE 3 WORK ZONE
	STAGE 3A WORK ZONE
	STAGE 3B WORK ZONE
	WORKS COMPLETE
	NIGHT WORKS
	TRAFFIC FLOW
	PROVIDE PED. ACCESS (1.2m min.)
	TEMPORARY PAVEMENT
	ALLOW ACCESS TO PROPERTY
	PRELOADING EXTENT
	TEMPORARY F TYPE BARRIER
	TEMPORARY LINE MARKING
	CONSTRUCTION SITE ACCESS
GENERAL	
	EXISTING CADASTRAL (ACCURACY UNKNOWN)
	PROJECT BOUNDARY
DRAINAGE	
	PROPOSED DRAINAGE PIPE
	EXISTING DRAINAGE PIPE
	DRAINAGE PITS
	HEADWALL
PROPOSED UTILITIES AND SERVICES	
	UNDERGROUND COMMS
	UNDERGROUND SEWER MAIN
	UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
	UNDERGROUND ELECTRICAL (LOW VOLTAGE)
	OVERHEAD ELECTRICAL (LOW VOLTAGE)
	UNDERGROUND LOCAL WATER MAIN
	UNDERGROUND GAS
NOTE:	
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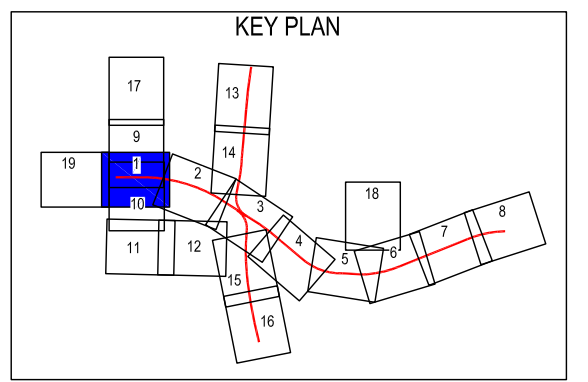
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CH\ITNR3N-TD-ST-DRG-0501.dwg			DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -			PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 3 - ARRANGMENT GENERAL ARRANGEMENT PLAN	A3	
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE	NAME	DATE	RMS REGISTRATION No. DSXXXX/XXXXXX
					0 20 40 60 80 SCALE 1:2000m	CONTRACTOR 			DRAWN	L.SMEAL	10.06.16	ISSUE STATUS TENDER ISSUE
					CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS 			DESIGN			EDMS No.
					HEIGHT DATUM AHD	DRG No. ####			DESIGN CHECK			SHEET No. TR-0502
									DESIGN MNGR			ISSUE 1
									PROJECT MNGR			© Roads and Maritime Services



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- PROPOSED DRAINAGE PIPE
 - EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



NOT FOR CONSTRUCTION

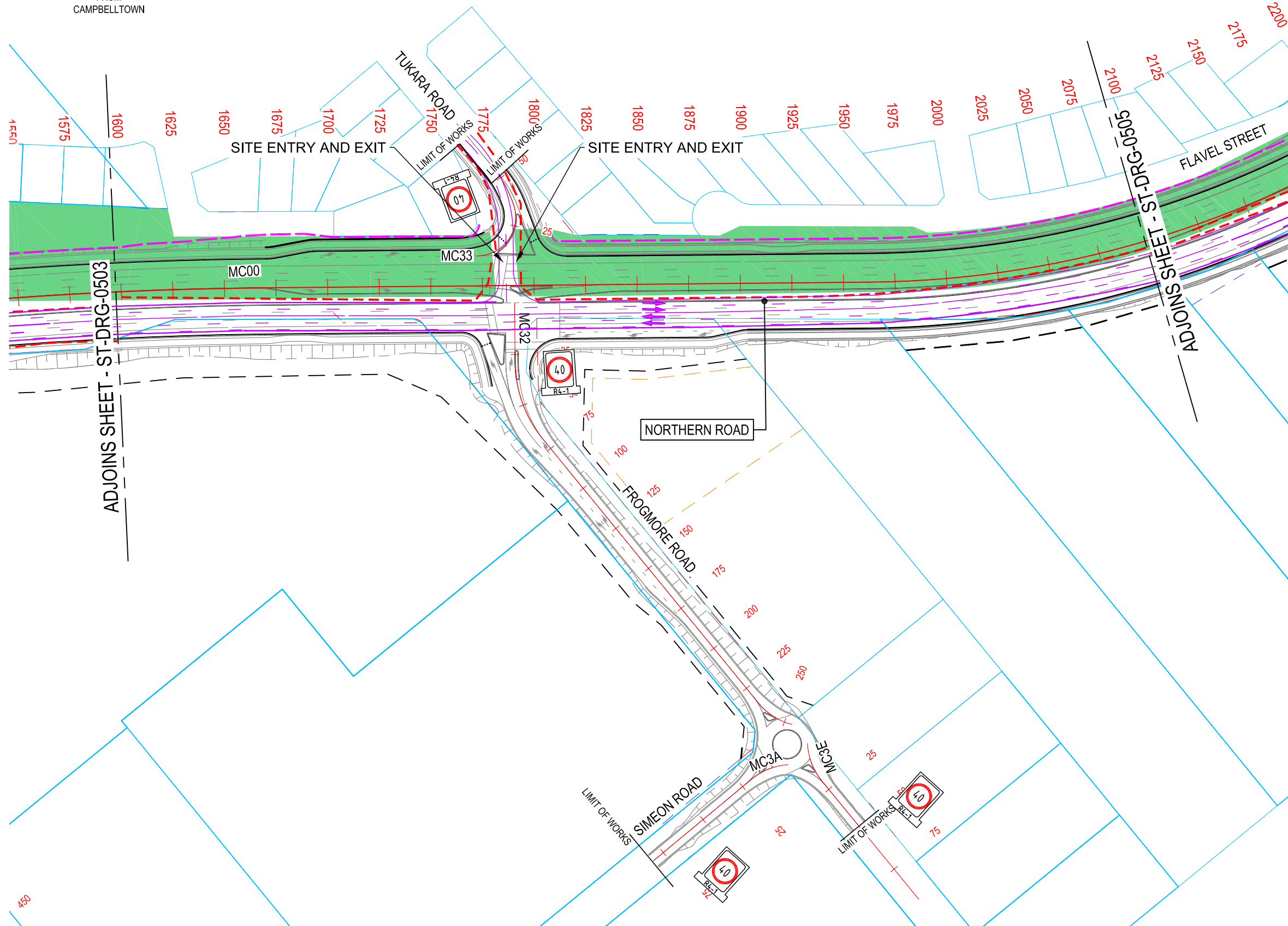
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EXTERNAL REFERENCE FILES			WVR No.			APPROVAL			DRAWINGS / DESIGN PREPARED BY: CES PTY LTD			TITLE			CONTRACTOR			RMS REGISTRATION No. DSXXXX/XXXXXX			PART 31											
REV			DATE			AMENDMENT / REVISION DESCRIPTION			CONTRACTOR			DRAWN			NAME			DATE			ISSUE STATUS			SHEET No.			PART					
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FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

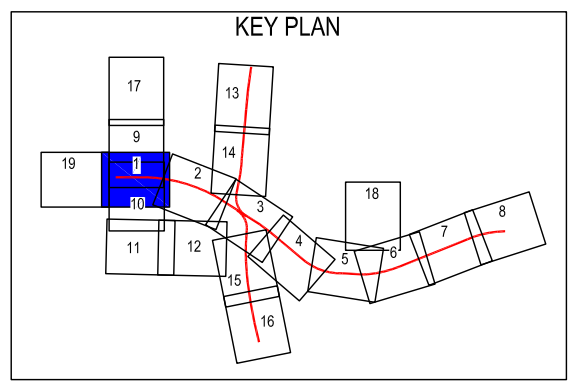
DRAINAGE

- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



NOT FOR CONSTRUCTION

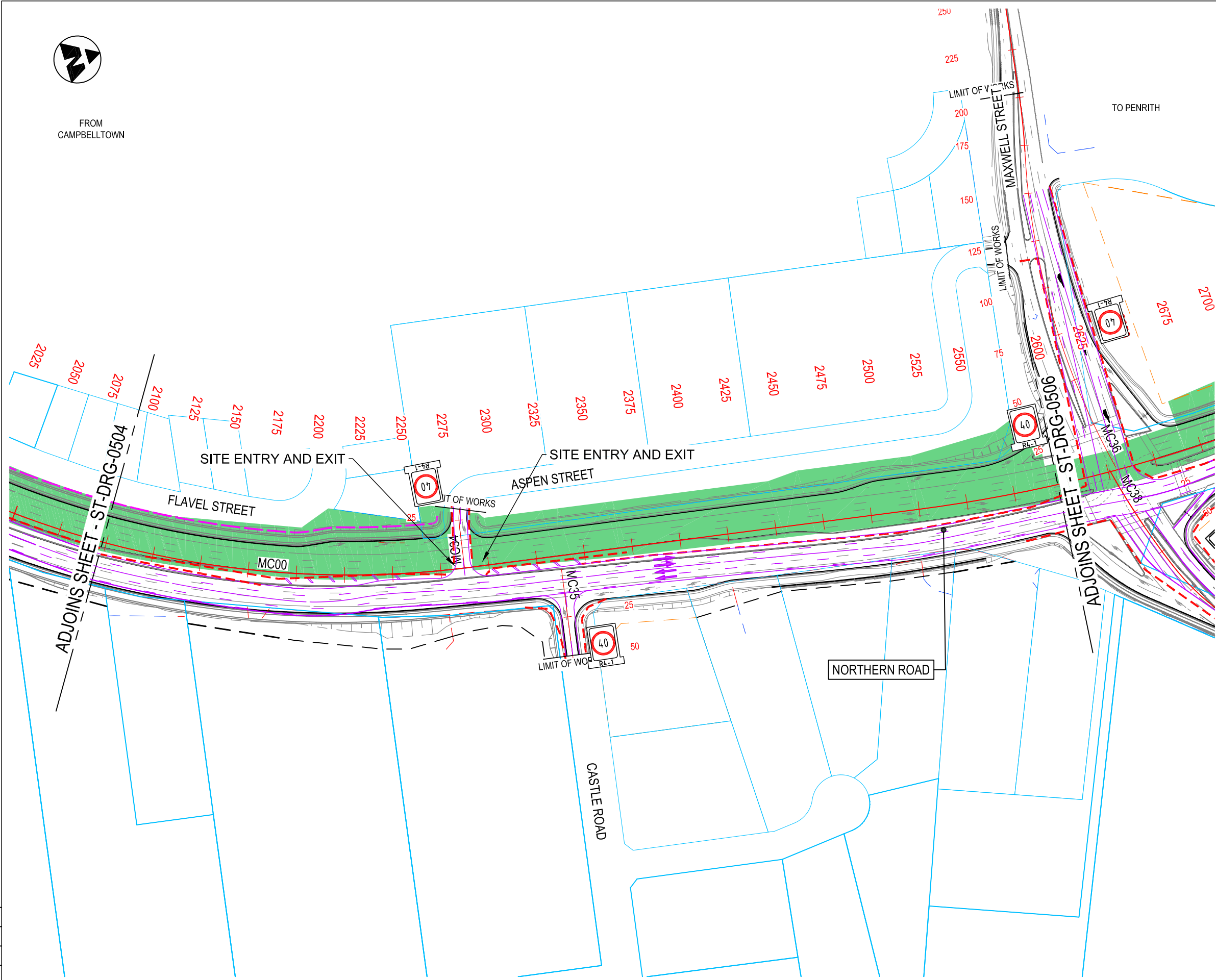
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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\C\#TNR3N-TD-ST-DRG-0501.dwg			DESIGN LOT CODE -	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT NSW GOVERNMENT	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 3 - ARRANGMENT GENERAL ARRANGEMENT PLAN		A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		Transport Roads & Maritime Services		RMS REGISTRATION No. DSXXXX/XXXXXX	
REV	DATE	AMENDMENT / REVISION DESCRIPTION			0 20 40 60 80 SCALE 1:2000m	CONTRACTOR lendlease		DRAWN L.SMEAL 10.06.16		PART 31	
					CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS ARUP WSP PARSONS BRINCKERHOFF		DESIGN DRG CHECK CES		ISSUE STATUS TENDER ISSUE	
					HEIGHT DATUM AHD	DRG No. ####		DESIGN DESIGN CHECK		EDMS No.	
								DESIGN DESIGN MNGR		SHEET No. TR-0504	
								PROJECT MNGR		ISSUE 1	



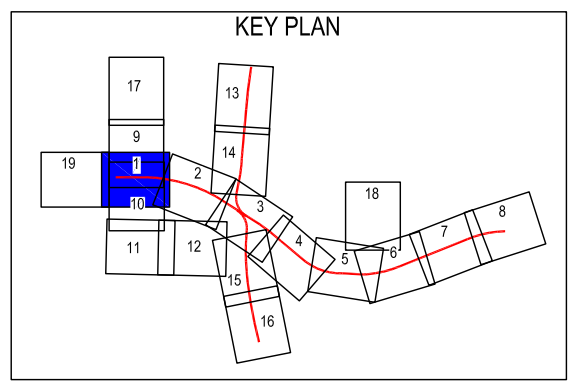
FROM CAMPBELLTOWN

TO PENRITH



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
 - STAGE 3A WORK ZONE
 - STAGE 3B WORK ZONE
 - WORKS COMPLETE
 - NIGHT WORKS
 - TRAFFIC FLOW
 - PROVIDE PED. ACCESS (1.2m min.)
 - TEMPORARY PAVEMENT
 - ALLOW ACCESS TO PROPERTY
 - PRELOADING EXTENT
 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS

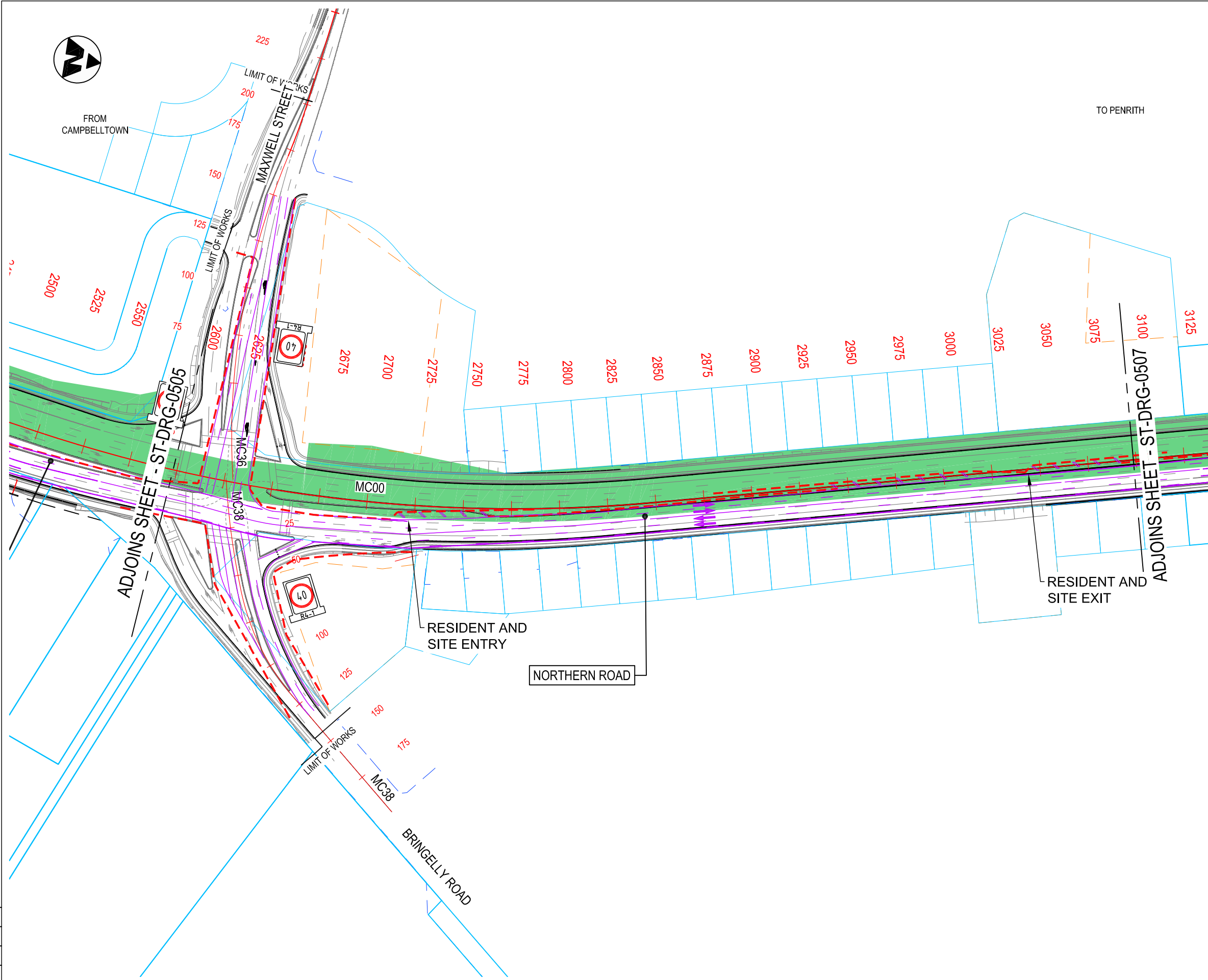
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
 - D 375 EXISTING DRAINAGE PIPE
 - DRAINAGE PITS
 - HEADWALL
- PROPOSED UTILITIES AND SERVICES**
- COMM UNDERGROUND COMMS
 - S UNDERGROUND SEWER MAIN
 - HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
 - LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
 - LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
 - W UNDERGROUND LOCAL WATER MAIN
 - GAS UNDERGROUND GAS
- NOTE:**
1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



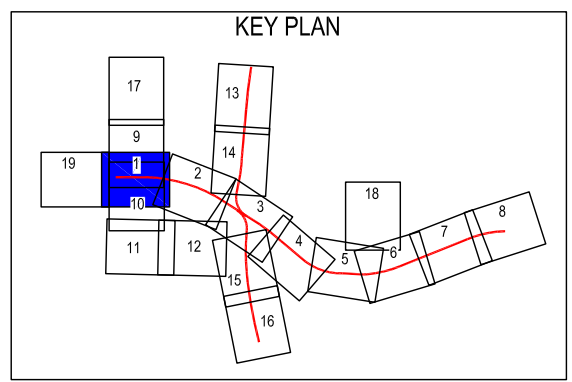
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\CHITNR3N-TD-ST-DRG-0501.dwg			DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING ---		PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 3 - ARRANGMENT GENERAL ARRANGEMENT PLAN	A3	
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE	RMS REGISTRATION No. DSXXXX/XXXXXX
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					CO-ORDINATE SYSTEM MGA ZONE 56	DESIGN PARTNERS 		DESIGN			EDMS No.
					HEIGHT DATUM AHD	DRG No. ####		DESIGN CHECK			SHEET No. TR-0505
								DESIGN MNGR			PART 31
								PROJECT MNGR			ISSUE 1



- LEGEND**
- EXISTING PAVEMENT
 - STAGE 1 WORK ZONE
 - STAGE 1A WORK ZONE
 - STAGE 1B WORK ZONE
 - STAGE 2 WORK ZONE
 - STAGE 2A WORK ZONE
 - STAGE 2B WORK ZONE
 - STAGE 3 WORK ZONE
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 - TEMPORARY F TYPE BARRIER
 - TEMPORARY LINE MARKING
 - CONSTRUCTION SITE ACCESS
- GENERAL**
- EXISTING CADASTRAL (ACCURACY UNKNOWN)
 - PROJECT BOUNDARY
- DRAINAGE**
- SW PROPOSED DRAINAGE PIPE
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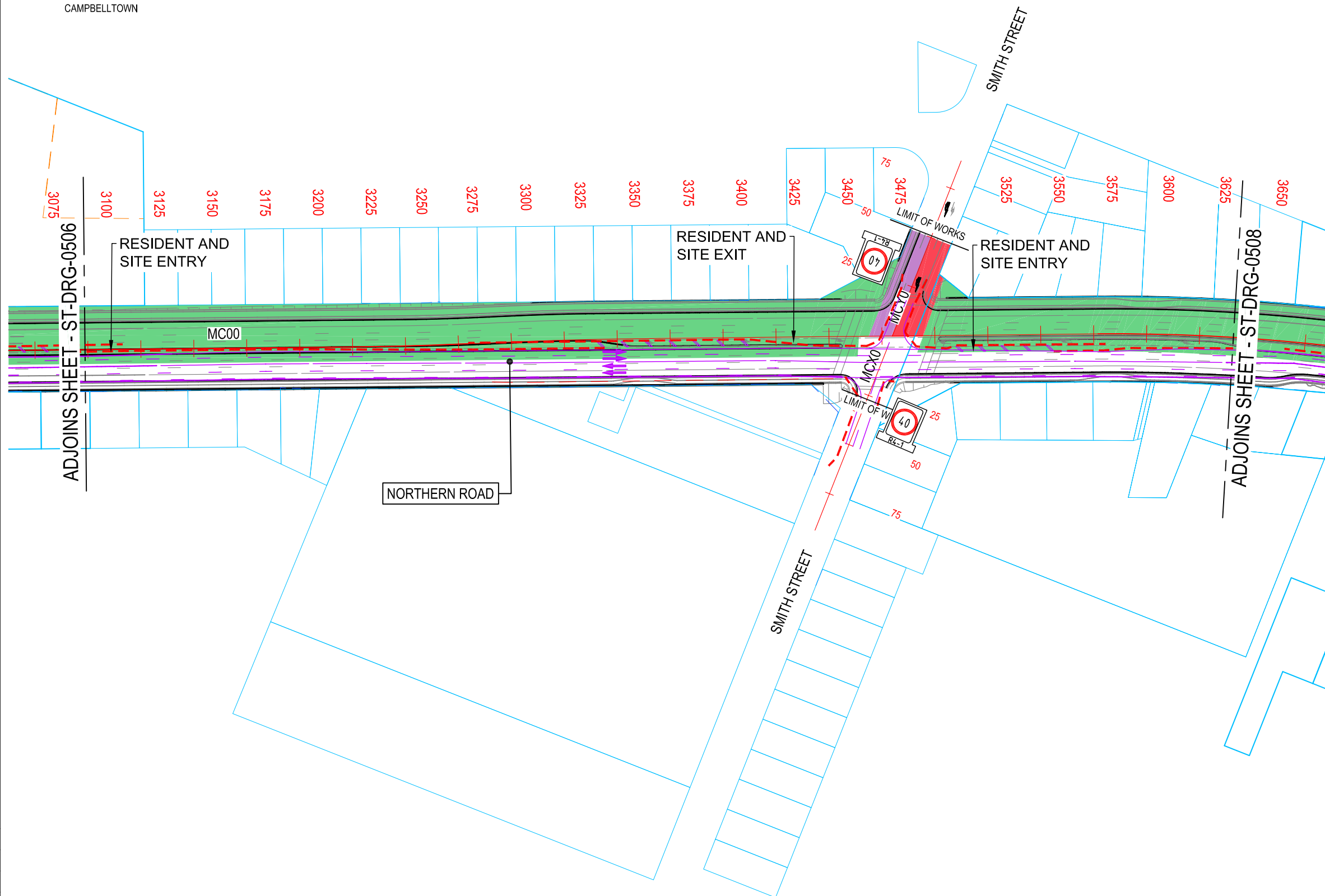
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EXTERNAL REFERENCE FILES		WVR No.		APPROVAL		SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		CONTRACTOR		RMS REGISTRATION No. DSXXXX/XXXXXX
REV		DATE		AMENDMENT / REVISION DESCRIPTION		SCALE 1:2000m		CONTRACTOR		DRAWN		PART 31
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---		---		---						Transport Roads & Maritime Services		ISSUE 1
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---		---		---						Transport Roads & Maritime Services		© Roads and Maritime Services



FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
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- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

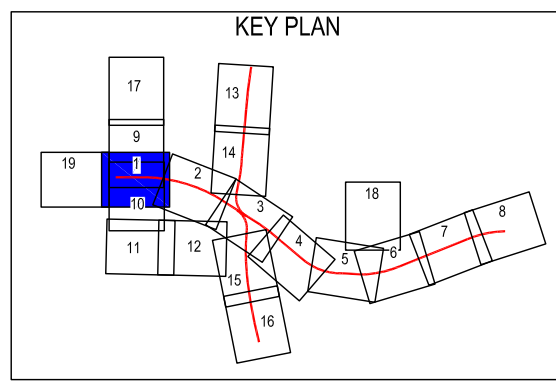
GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
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NOT FOR CONSTRUCTION

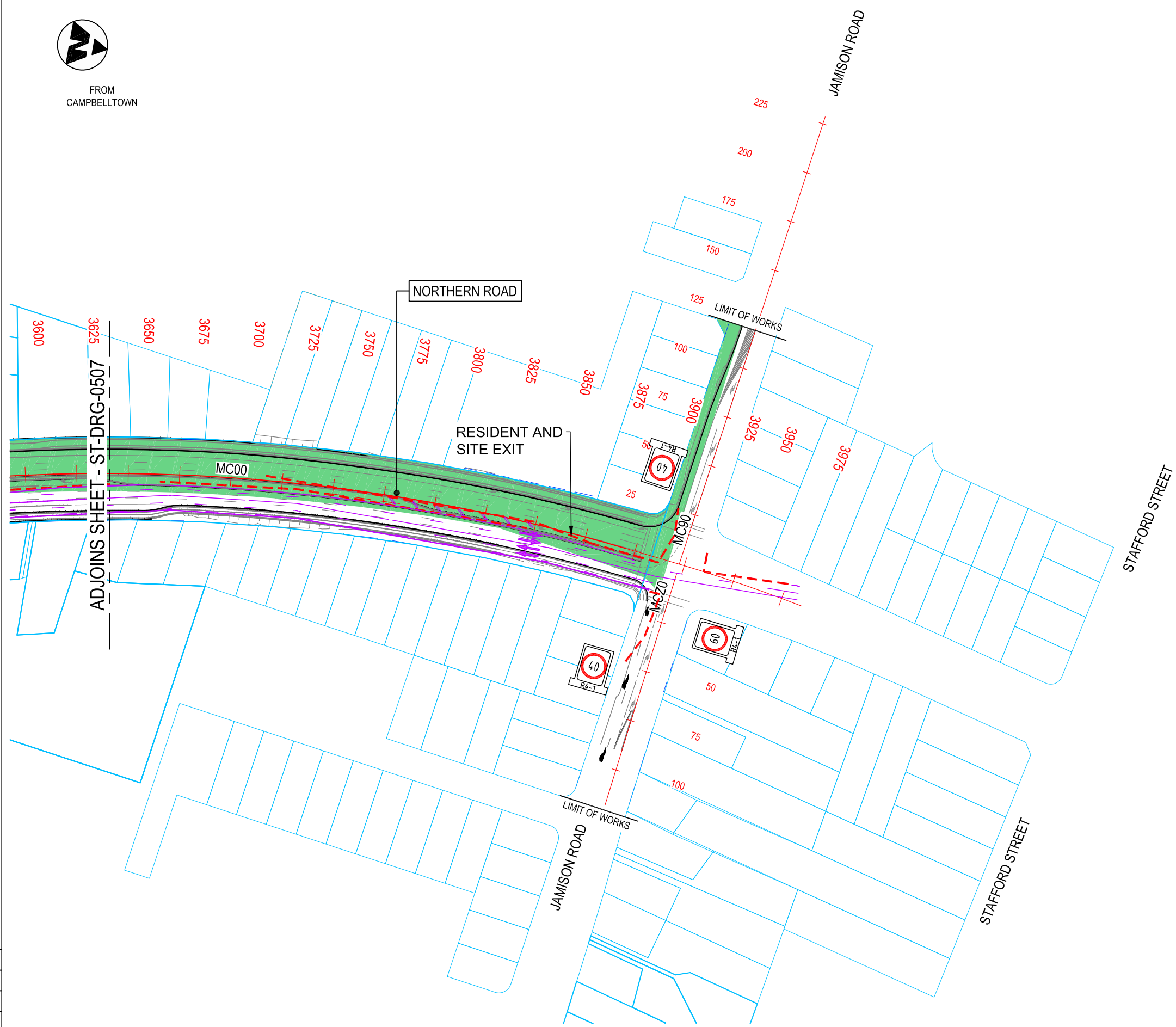
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EXTERNAL REFERENCE FILES		WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		Transport Roads & Maritime Services		SHEET 7 OF 8	
REV	DATE	AMENDMENT / REVISION DESCRIPTION	---	---	CONTRACTOR lendlease		PREPARED FOR		RMS REGISTRATION No. DSXXXX/XXXXXX	
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---	---	---	---	---	CO-ORDINATE SYSTEM MGA ZONE 56		---		SHEET No. 1	
---	---	---	---	---	HEIGHT DATUM AHD		---		ISSUE 1	



FROM CAMPBELLTOWN

TO PENRITH



LEGEND

- EXISTING PAVEMENT
- STAGE 1 WORK ZONE
- STAGE 1A WORK ZONE
- STAGE 1B WORK ZONE
- STAGE 2 WORK ZONE
- STAGE 2A WORK ZONE
- STAGE 2B WORK ZONE
- STAGE 3 WORK ZONE
- STAGE 3A WORK ZONE
- STAGE 3B WORK ZONE
- WORKS COMPLETE
- NIGHT WORKS
- TRAFFIC FLOW
- PROVIDE PED. ACCESS (1.2m min.)
- TEMPORARY PAVEMENT
- ALLOW ACCESS TO PROPERTY
- PRELOADING EXTENT
- TEMPORARY F TYPE BARRIER
- TEMPORARY LINE MARKING
- CONSTRUCTION SITE ACCESS

GENERAL

- EXISTING CADASTRAL (ACCURACY UNKNOWN)
- PROJECT BOUNDARY

DRAINAGE

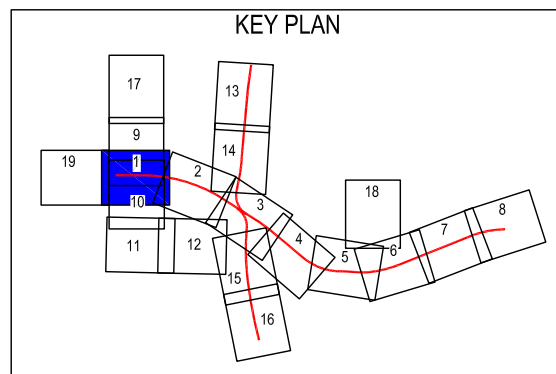
- SW PROPOSED DRAINAGE PIPE
- D 375 EXISTING DRAINAGE PIPE
- DRAINAGE PITS
- HEADWALL

PROPOSED UTILITIES AND SERVICES

- COMM UNDERGROUND COMMS
- S UNDERGROUND SEWER MAIN
- HV UNDERGROUND ELECTRICAL (HIGH VOLTAGE)
- LV UNDERGROUND ELECTRICAL (LOW VOLTAGE)
- LV OVERHEAD ELECTRICAL (LOW VOLTAGE)
- W UNDERGROUND LOCAL WATER MAIN
- GAS UNDERGROUND GAS

NOTE:

1. FOR CONSTRUCTION STAGING NOTES REFER TO DRAWING ST001.



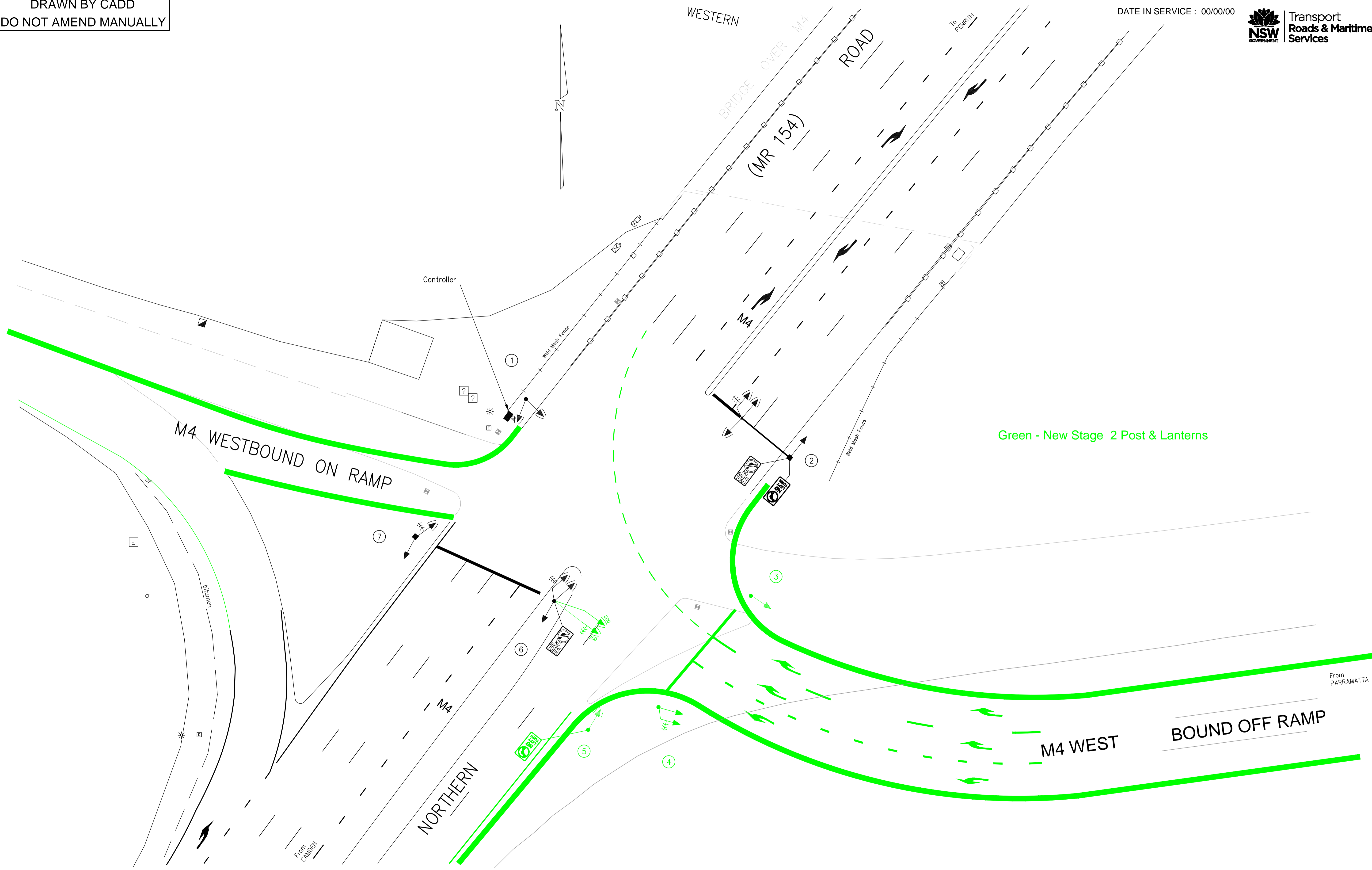
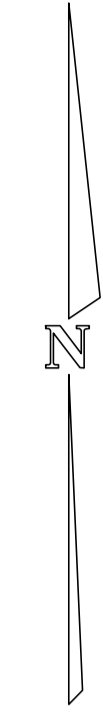
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DRAWING FILE LOCATION / NAME C:\Users\Steve\Dropbox (CES)\CES - DESIGN\160301-TNR3N-LL-DB\Cv\TNR3N-TD-ST-DRG-0501.dwg			DESIGN LOT CODE ---	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING -		PLOT DATE / TIME 14/5/2015 11:31:23 AM	PLOT BY Steve	CLIENT Transport Roads & Maritime Services	PENRITH CITY COUNCIL AREA THE NORTHERN ROAD UPGRADE - STAGE 3 NORTH CONSTRUCTION STAGING STAGE 3 - ARRANGMENT GENERAL ARRANGEMENT PLAN	A3
EXTERNAL REFERENCE FILES			WVR No.	APPROVAL	SCALE(S) ON A3 SIZE DRAWING 0 20 40 60 80 SCALE 1:2000m	DRAWINGS / DESIGN PREPARED BY: CES PTY LTD		TITLE	NAME	DATE
						CONTRACTOR 		DRAWN	L.SMEAL	10.06.16
						DESIGN PARTNERS 		DRG CHECK	CES	
						CO-ORDINATE SYSTEM MGA ZONE 56		DESIGN		
						HEIGHT DATUM AHD		DESIGN CHECK		
						DRG No. ####		DESIGN MNGR		
								PROJECT MNGR		
								PREPARED FOR		
								RMS REGISTRATION No.	DSXXXX/XXXXXX	
								ISSUE STATUS	EDMS No.	SHEET No.
								TENDER ISSUE		TR-0508
										PART 31
										ISSUE 1

DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 00/00/00



Green - New Stage 2 Post & Lanterns

A ORIGINAL ISSUE

STAGE 2

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	⊕	PRES. DETECT	VC005-17
SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019
TELECOM PIT	⊙	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○		
STAY POLE	○		
TELEPHONE BOX	□	SURVEYOR :	N/A
TELECOM PILLAR	●	DATE :	N/A

DESIGN APPROVAL		RMS ACCEPTANCE	
APPROVED		RECOMMENDED	
POSITION	.....	POSITION	.....
DATE	.....	DATE	.....
DESIGN PREPARED BY ROAD DESIGN ENGINEERING ENGINEERING SERVICES ASSET MAINTENANCE		ACCEPTED	
POSITION	.....	POSITION	.....
DATE	.....	DATE	.....

ROADS AND MARITIME SERVICES

PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT
THE NORTHERN ROAD AND
M4 WB RAMPS (SOUTH)
ORCHARD HILLS

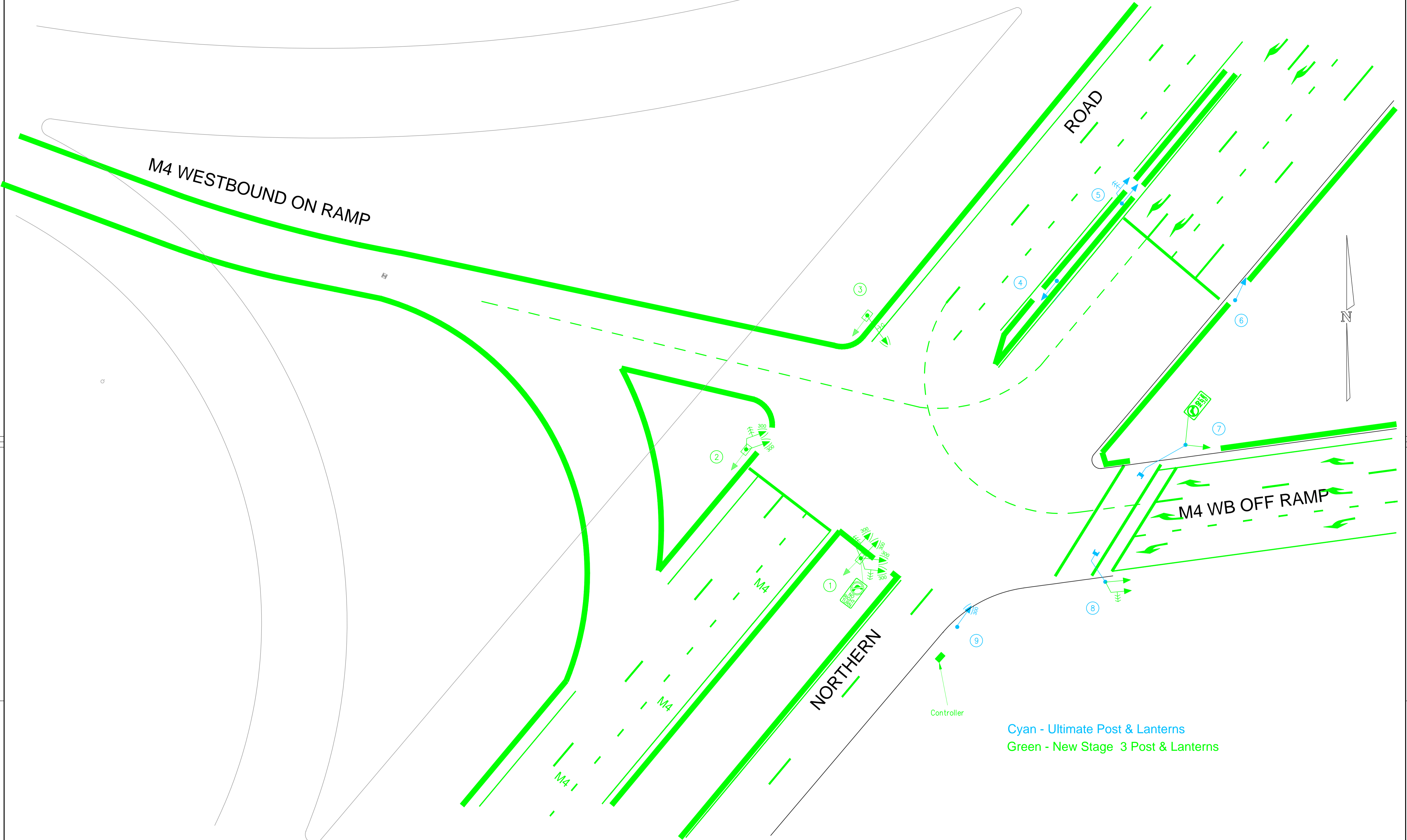
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EXISTING	PROPOSED	ISSUE
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REG No. DS0000/000000	TCS No. 2306	SHEET 1

TCS 2306

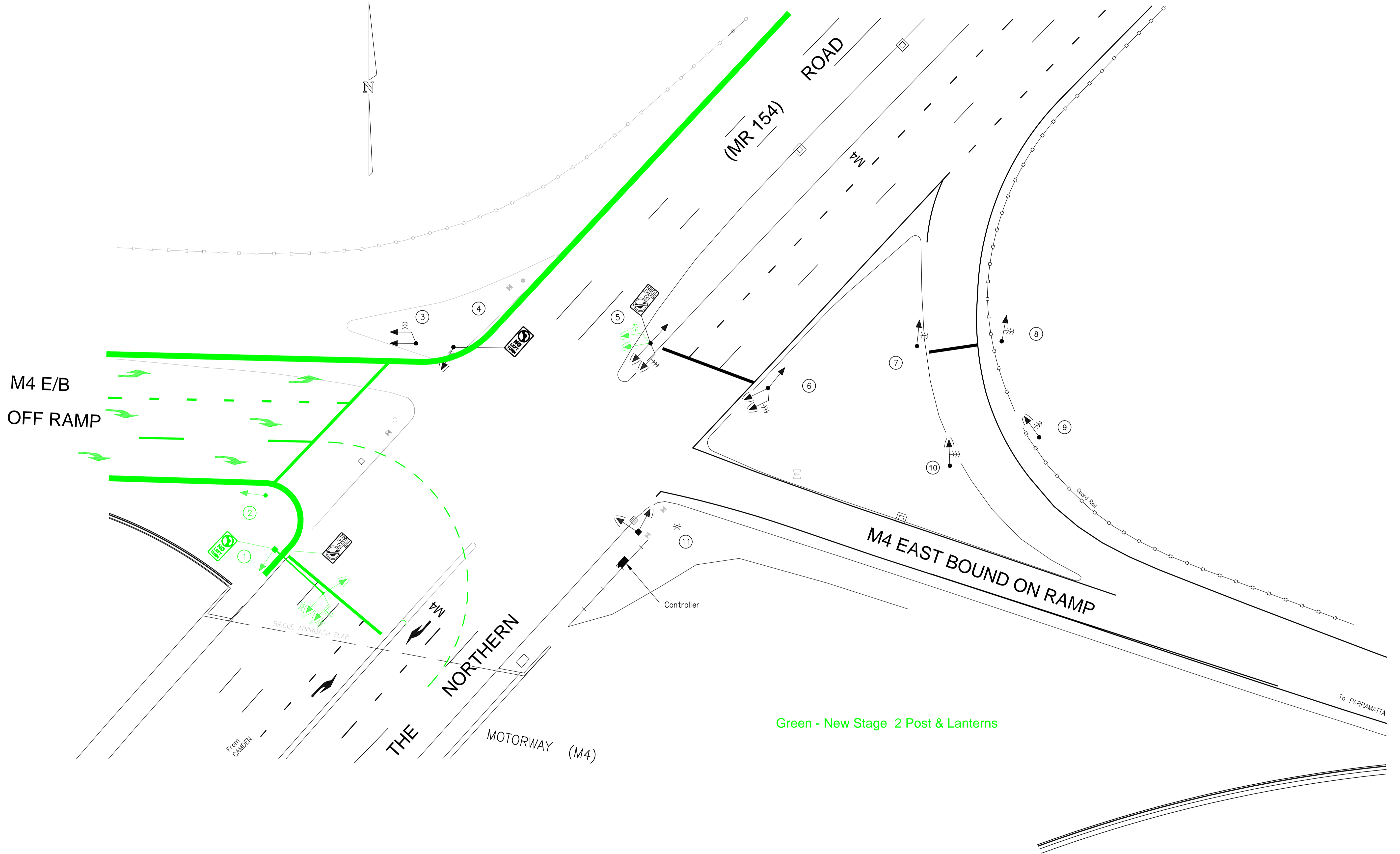
DRAWN BY CADD
DO NOT AMEND MANUALLY

DATE IN SERVICE : 00/00/00



Cyan - Ultimate Post & Lanterns
Green - New Stage 3 Post & Lanterns

A ORIGINAL ISSUE	STAGE 3		<table border="1"> <tr> <th colspan="2">PUBLIC UTILITY LEGEND</th> <th>REFERENCE PLANS</th> </tr> <tr> <td>HYDRANT</td> <td>□</td> <td>SYMBOLS/ABBS. VD003-6</td> </tr> <tr> <td>STOP VALVE</td> <td>▲</td> <td>STD POSIT. VD001-5</td> </tr> <tr> <td>GAS VALVE</td> <td>⊕</td> <td>PRES. DETECT. VC005-17</td> </tr> <tr> <td>SEWER MANHOLE</td> <td>⊗</td> <td>VEH. GROUP OP. TS-TN-019</td> </tr> <tr> <td>TELECOM PIT</td> <td>⊙</td> <td>DET. LOGIC OP. TS-TN-020</td> </tr> <tr> <td>ELECT LIGHT POLE</td> <td>○</td> <td>PED. MOVEMNT OP. TS-TN-021</td> </tr> <tr> <td>POWER POLE</td> <td>○</td> <td></td> </tr> <tr> <td>STAY POLE</td> <td>○</td> <td></td> </tr> <tr> <td>TELEPHONE BOX</td> <td>□</td> <td>SURVEYOR : N/A</td> </tr> <tr> <td>TELECOM PILLAR</td> <td>●</td> <td>DATE : N/A</td> </tr> </table>	PUBLIC UTILITY LEGEND		REFERENCE PLANS	HYDRANT	□	SYMBOLS/ABBS. VD003-6	STOP VALVE	▲	STD POSIT. VD001-5	GAS VALVE	⊕	PRES. DETECT. VC005-17	SEWER MANHOLE	⊗	VEH. GROUP OP. TS-TN-019	TELECOM PIT	⊙	DET. LOGIC OP. TS-TN-020	ELECT LIGHT POLE	○	PED. MOVEMNT OP. TS-TN-021	POWER POLE	○		STAY POLE	○		TELEPHONE BOX	□	SURVEYOR : N/A	TELECOM PILLAR	●	DATE : N/A	<table border="1"> <tr> <td>U.B.D. Ref. Map 000 A0</td> <td>DESIGN APPROVAL</td> <td>RMS ACCEPTANCE</td> </tr> <tr> <td>L.S.G. E: 000 000</td> <td>APPROVED</td> <td>RECOMMENDED</td> </tr> <tr> <td>CO-ORDS N: 1 000 000</td> <td>POSITION</td> <td>POSITION</td> </tr> <tr> <td></td> <td>DATE</td> <td>DATE</td> </tr> <tr> <td></td> <td>DESIGN PREPARED BY</td> <td>ACCEPTED</td> </tr> <tr> <td></td> <td>ROAD DESIGN ENGINEERING</td> <td>POSITION</td> </tr> <tr> <td></td> <td>ENGINEERING SERVICES</td> <td>DATE</td> </tr> <tr> <td></td> <td>ASSET MAINTENANCE</td> <td></td> </tr> </table>	U.B.D. Ref. Map 000 A0	DESIGN APPROVAL	RMS ACCEPTANCE	L.S.G. E: 000 000	APPROVED	RECOMMENDED	CO-ORDS N: 1 000 000	POSITION	POSITION		DATE	DATE		DESIGN PREPARED BY	ACCEPTED		ROAD DESIGN ENGINEERING	POSITION		ENGINEERING SERVICES	DATE		ASSET MAINTENANCE		<table border="1"> <tr> <td colspan="2" style="text-align: center;">ROADS AND MARITIME SERVICES</td> </tr> <tr> <td colspan="2" style="text-align: center;">PENRITH COUNCIL AREA TRAFFIC SIGNALS AT THE NORTHERN ROAD AND M4 WB RAMPS (SOUTH) ORCHARD HILLS</td> </tr> <tr> <td>DESIGN LAYOUT</td> <td>TCS No 0000</td> </tr> </table>	ROADS AND MARITIME SERVICES		PENRITH COUNCIL AREA TRAFFIC SIGNALS AT THE NORTHERN ROAD AND M4 WB RAMPS (SOUTH) ORCHARD HILLS		DESIGN LAYOUT	TCS No 0000	<table border="1"> <tr> <td>EXISTING <input type="checkbox"/></td> <td>PROPOSED <input checked="" type="checkbox"/></td> </tr> <tr> <td colspan="2">CADD FILE: VV0000_1A.dgn</td> </tr> <tr> <td>SCALE 5 0 (1:200) 5 10</td> <td>ISSUE A</td> </tr> <tr> <td>FILE SF0000/000000</td> <td>SUPERSEDES SHEET/ISSUE -/-</td> </tr> <tr> <td>REG No. DS0000/000000</td> <td>TCS No. 2306</td> </tr> <tr> <td></td> <td>SHEET 1</td> </tr> </table>	EXISTING <input type="checkbox"/>	PROPOSED <input checked="" type="checkbox"/>	CADD FILE: VV0000_1A.dgn		SCALE 5 0 (1:200) 5 10	ISSUE A	FILE SF0000/000000	SUPERSEDES SHEET/ISSUE -/-	REG No. DS0000/000000	TCS No. 2306		SHEET 1
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Green - New Stage 2 Post & Lanterns

A ORIGINAL ISSUE

STAGE 2

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	⊕	PRES. DETECT	VC005-17
SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019
TELECOM PIT	⊙	DET. LOGIC OP	TS-TN-020
ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021
POWER POLE	○		
STAY POLE	○		
TELEPHONE BOX	□	SURVEYOR :	N/A
TELECOM PILLAR	●	DATE :	N/A

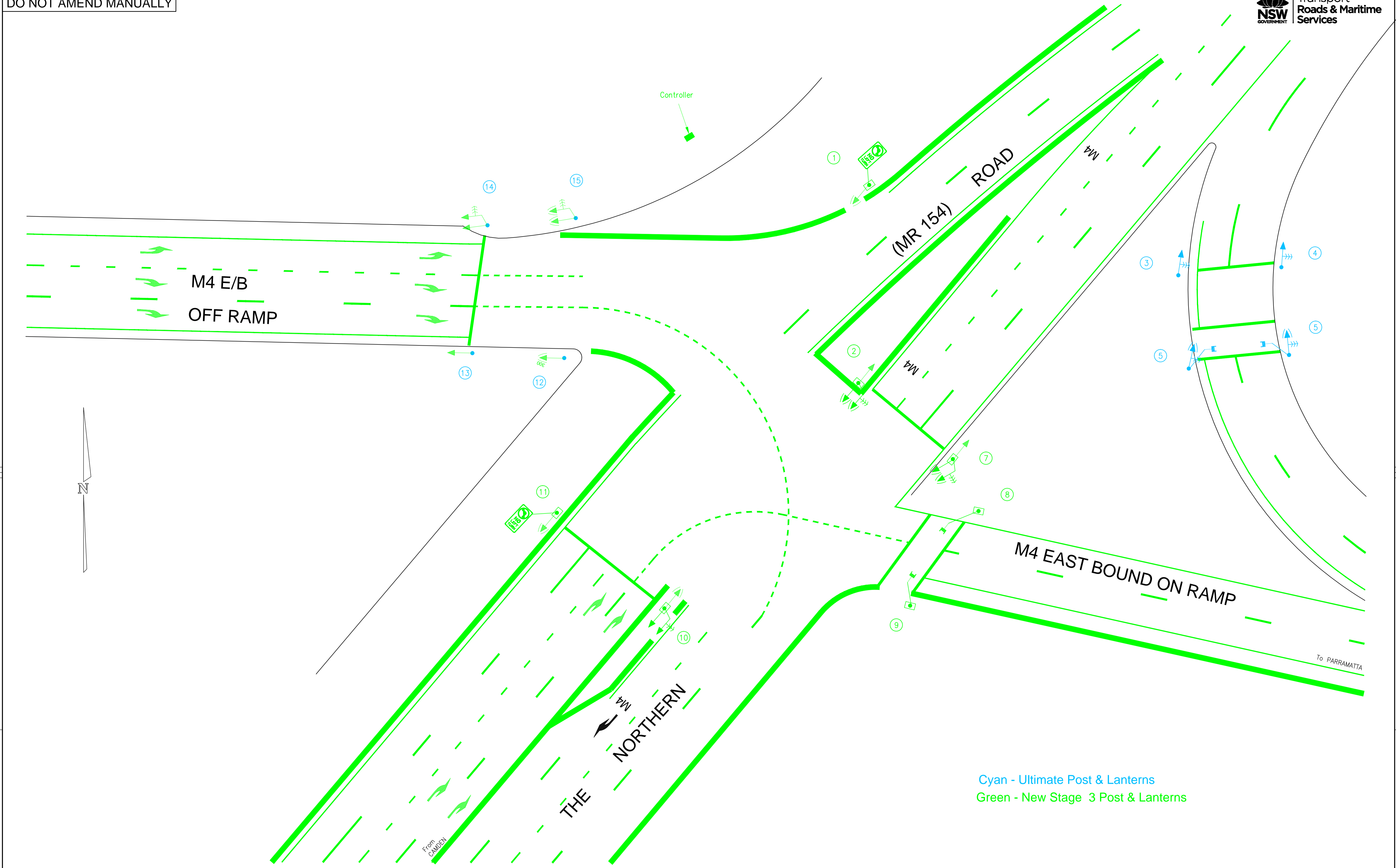
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POSITION	POSITION
DATE	DATE
		ACCEPTED	
		POSITION
		DATE

ROADS AND MARITIME SERVICES

PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT
THE NORTHERN ROAD AND
M4 EB RAMPS (NORTH)
ORCHARD HILLS

DESIGN LAYOUT TCS No 0000

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REG No. DS0000/000000	TCS No. 3669
	SHEET 1



Cyan - Ultimate Post & Lanterns
Green - New Stage 3 Post & Lanterns

A ORIGINAL ISSUE

STAGE 3

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	⊕	PRES. DETECT	VC005-17
SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019
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STAY POLE	○		
TELEPHONE BOX	⊠	SURVEYOR :	N/A
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U.B.D. Ref. Map 000 A0	
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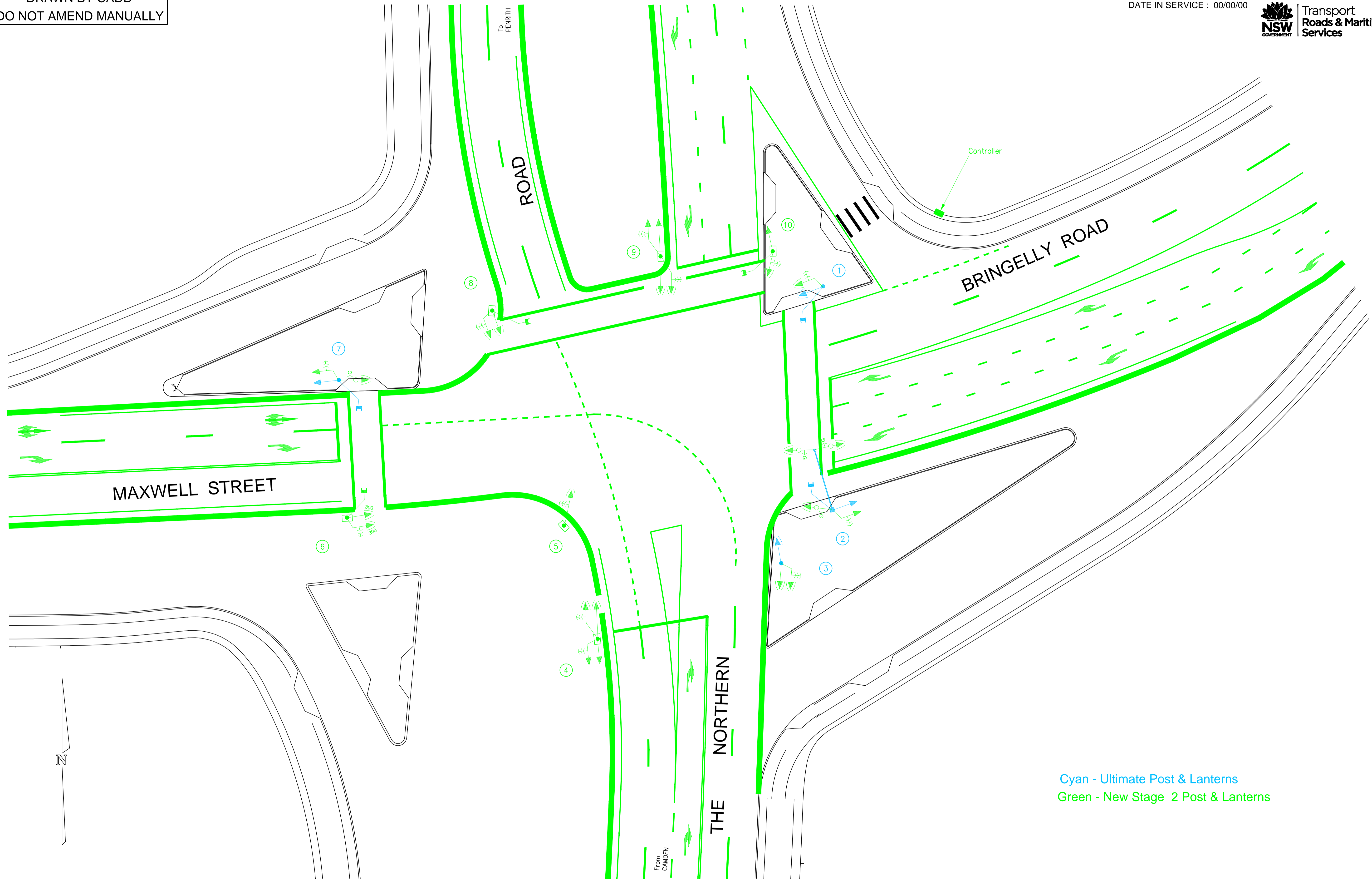
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ROAD DESIGN ENGINEERING	DATE
ENGINEERING SERVICES	
ASSET MAINTENANCE	

ROADS AND MARITIME SERVICES

PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT
THE NORTHERN ROAD AND
M4 EB RAMPS (NORTH)
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	SHEET 1



Cyan - Ultimate Post & Lanterns
Green - New Stage 2 Post & Lanterns

A ORIGINAL ISSUE

STAGE 2

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	⊕	PRES. DETECT	VC005-17
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STAY POLE	○		
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TELECOM PILLAR	●	DATE : N/A	

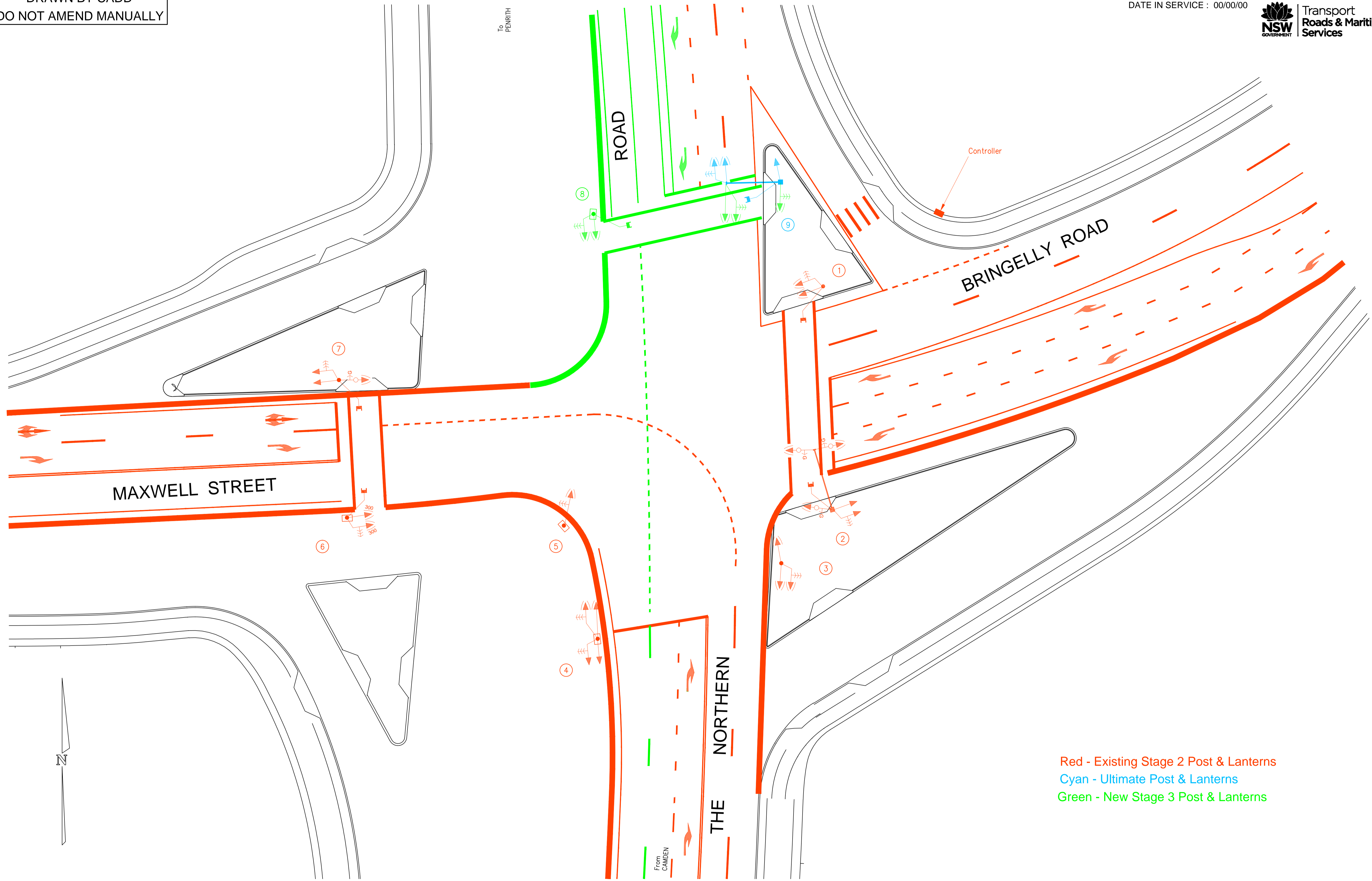
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	DATE :

ROADS AND MARITIME SERVICES

PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT
THE NORTHERN ROAD, MAXWELL STREET
AND BRINGELLY ROAD
ORCHARD HILLS

DESIGN LAYOUT TCS No 2431

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FILE SF0000/000000	SUPERSEDES SHEET/ISSUE -/-
REG No. DS0000/000000	TCS No. 2431
	SHEET 1



STAGE 3

A ORIGINAL ISSUE

PUBLIC UTILITY LEGEND		REFERENCE PLANS	
HYDRANT	□	SYMBOLS/ABBS.	VD003-6
STOP VALVE	▲	STD POSIT	VD001-5
GAS VALVE	≡	PRES. DETECT	VC005-17
SEWER MANHOLE	⊕	VEH. GROUP OP	TS-TN-019
TELECOM PIT	⊗	DET. LOGIC OP	TS-TN-020
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STAY POLE	○		
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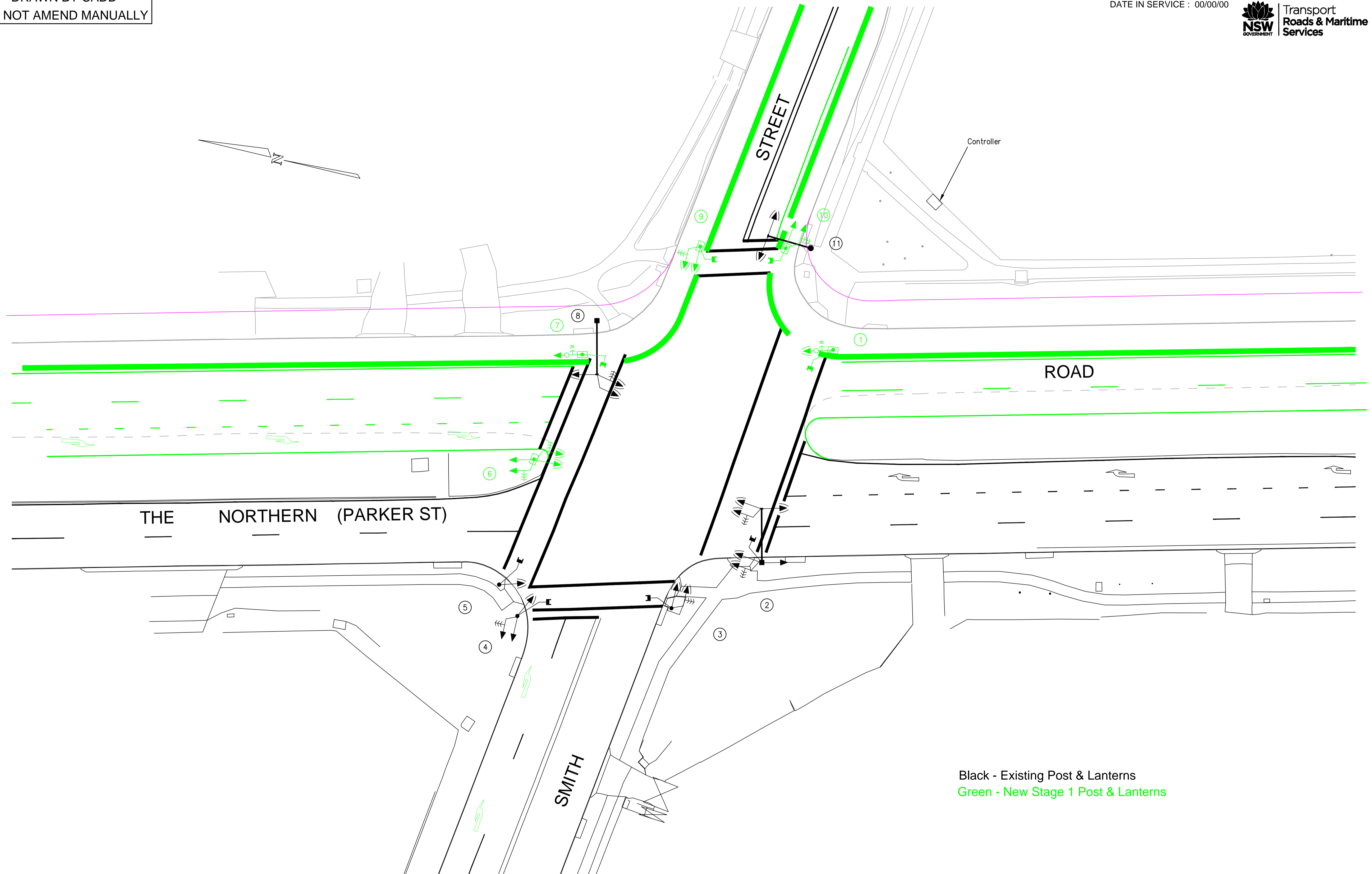
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ROADS AND MARITIME SERVICES

PENRITH COUNCIL AREA
TRAFFIC SIGNALS AT
THE NORTHERN ROAD, MAXWELL STREET
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ORCHARD HILLS

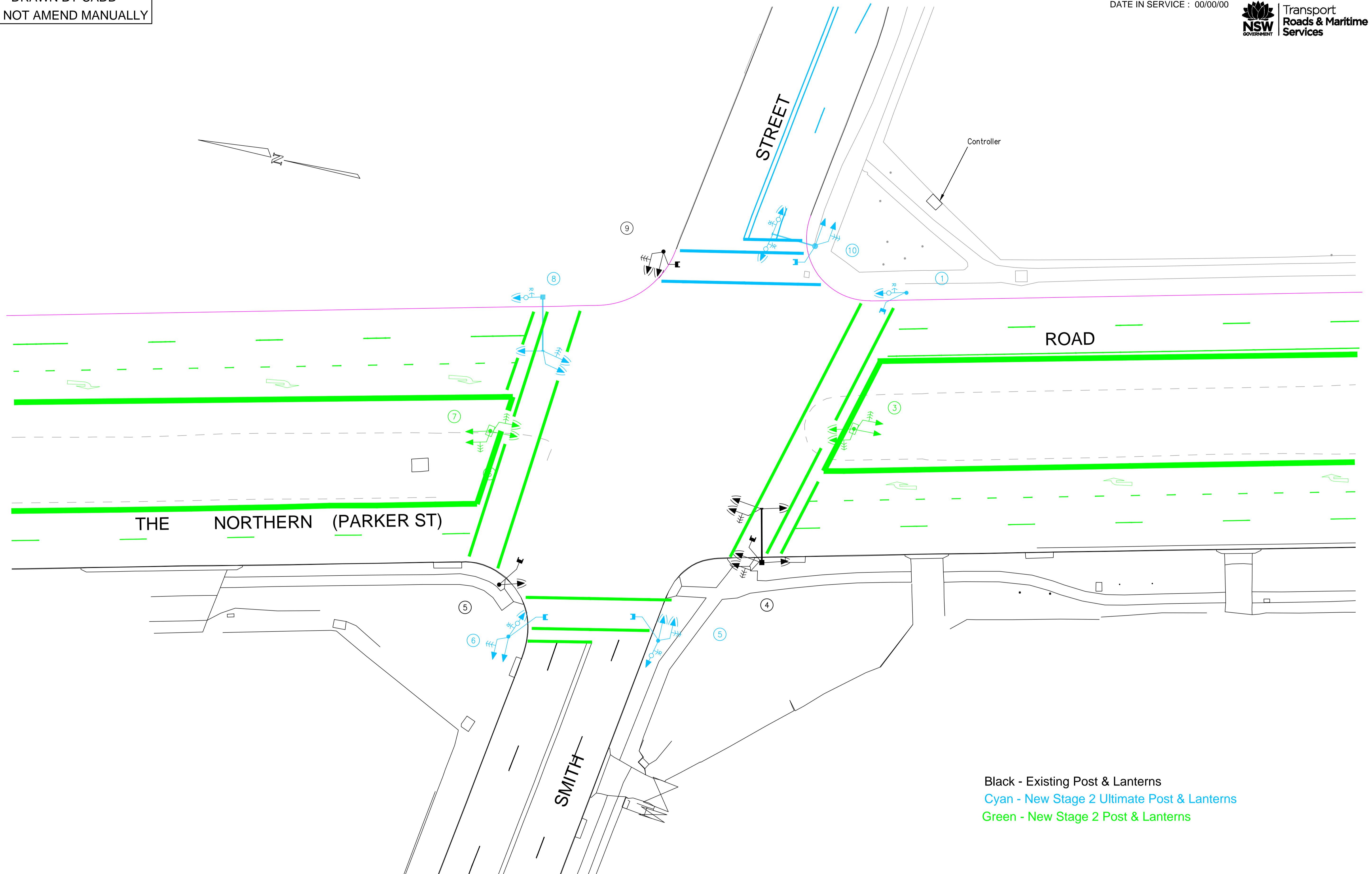
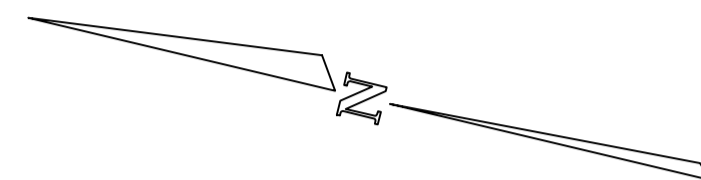
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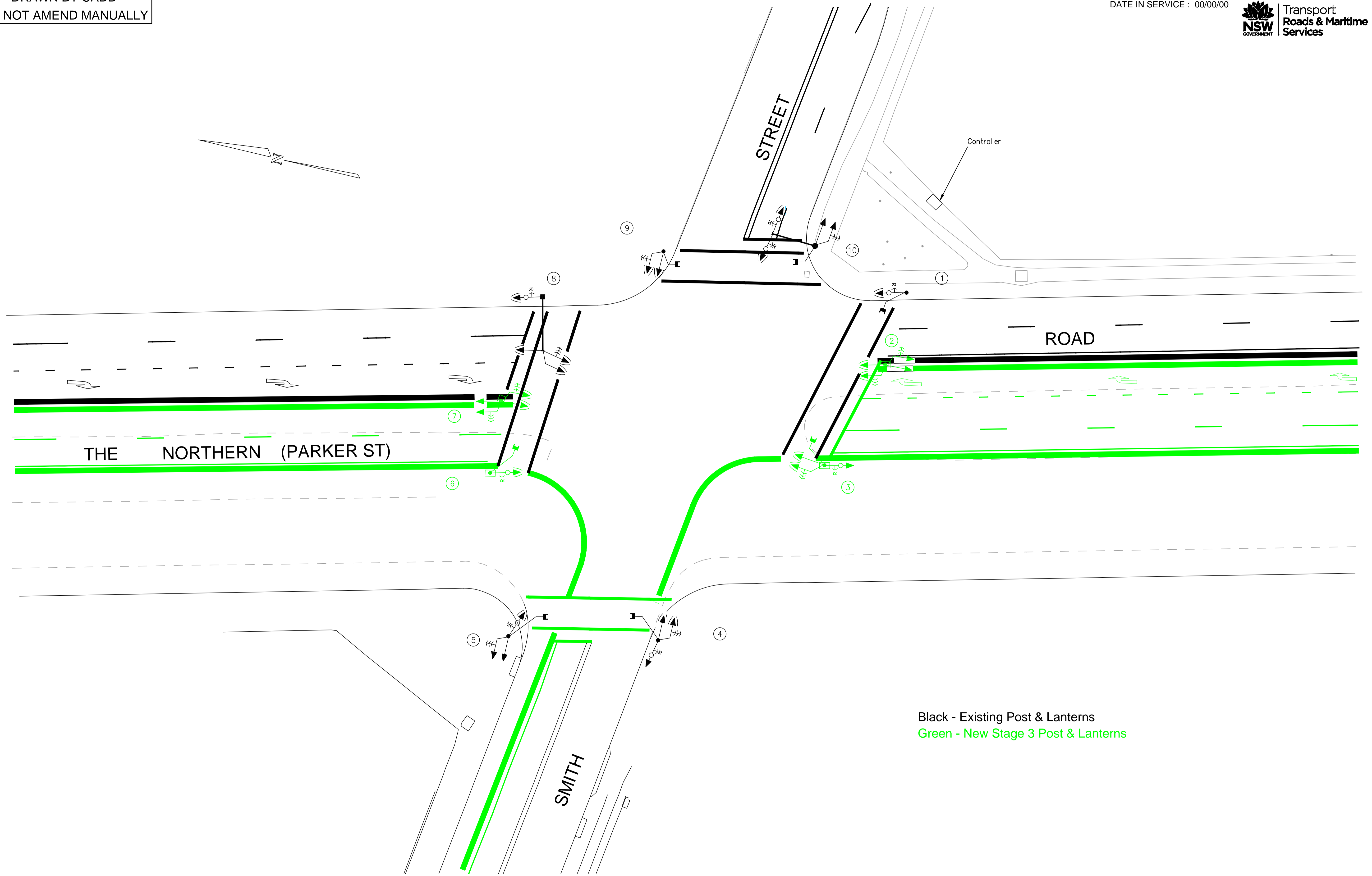
Black - Existing Post & Lanterns
Green - New Stage 1 Post & Lanterns

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Black - Existing Post & Lanterns
Cyan - New Stage 2 Ultimate Post & Lanterns
Green - New Stage 2 Post & Lanterns

A ORIGINAL ISSUE	STAGE 2	<table border="1"> <tr> <th colspan="2">PUBLIC UTILITY LEGEND</th> <th colspan="2">REFERENCE PLANS</th> <th colspan="2">U.B.D. Ref. Map 000 A0</th> <th colspan="2">DESIGN APPROVAL</th> <th colspan="2">RMS ACCEPTANCE</th> <th colspan="3">ROADS AND MARITIME SERVICES</th> </tr> <tr> <td>HYDRANT</td><td>☐</td> <td>SYMBOLS/ABBS.</td><td>VD003-6</td> <td>I.S.G. E:</td><td>000 000</td> <td colspan="2">APPROVED</td> <td colspan="2">RECOMMENDED</td> <td colspan="3">EXISTING <input checked="" type="checkbox"/> PROPOSED <input checked="" type="checkbox"/></td> </tr> <tr> <td>STOP VALVE</td><td>▲</td> <td>STD POSIT</td><td>VD001-5</td> <td>CO-ORDS N:</td><td>1 000 000</td> <td colspan="2">DESIGNED</td> <td colspan="2">DESIGNED</td> <td colspan="3">CADD FILE: VV2374_1A.dgn</td> </tr> <tr> <td>GAS VALVE</td><td>⊕</td> <td>PRES. DETECT</td><td>VC005-17</td> <td colspan="2">CHECKED</td> <td colspan="2">POSITION</td> <td colspan="2">POSITION</td> <td colspan="3">SCALE 5 0 (1:200) 5 10</td> </tr> <tr> <td>SEWER MANHOLE</td><td>⊗</td> <td>VEH. GROUP OP</td><td>TS-TN-019</td> <td colspan="2">SITE CHECKED</td> <td colspan="2">DATE</td> <td colspan="2">DATE</td> <td colspan="3">FILE SF0000/000000</td> </tr> <tr> <td>TELECOM PIT</td><td>⊠</td> <td>DET. LOGIC OP</td><td>TS-TN-020</td> <td colspan="2">RECOMMENDED</td> <td colspan="2">DESIGN PREPARED BY</td> <td colspan="2">ACCEPTED</td> <td colspan="3">SUPERSEDES SHEET/ISSUE -/-</td> </tr> <tr> <td>ELECT LIGHT POLE</td><td>○</td> <td>PED. MOVEMNT OP</td><td>TS-TN-021</td> <td colspan="2"></td> <td colspan="2">ROAD DESIGN ENGINEERING</td> <td colspan="2">POSITION</td> <td colspan="3">REG No. DS0000/000000</td> </tr> <tr> <td>POWER POLE</td><td>○</td> <td></td><td></td> <td colspan="2"></td> <td colspan="2">ENGINEERING SERVICES</td> <td colspan="2">DATE</td> <td colspan="3">TCS No. 2374</td> </tr> <tr> <td>STAY POLE</td><td>⊙</td> <td></td><td></td> <td colspan="2"></td> <td colspan="2">ASSET MAINTENANCE</td> <td colspan="2"></td> <td colspan="3">SHEET 1</td> </tr> <tr> <td>TELEPHONE BOX</td><td>⊠</td> <td>SURVEYOR: N/A</td><td></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="3">Revision 1 - August 2014</td> </tr> <tr> <td>TELECOM PILLAR</td><td>●</td> <td>DATE: N/A</td><td></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="3">© COPYRIGHT ROADS AND MARITIME SERVICES</td> </tr> </table>	PUBLIC UTILITY LEGEND		REFERENCE PLANS		U.B.D. Ref. Map 000 A0		DESIGN APPROVAL		RMS ACCEPTANCE		ROADS AND MARITIME SERVICES			HYDRANT	☐	SYMBOLS/ABBS.	VD003-6	I.S.G. E:	000 000	APPROVED		RECOMMENDED		EXISTING <input checked="" type="checkbox"/> PROPOSED <input checked="" type="checkbox"/>			STOP VALVE	▲	STD POSIT	VD001-5	CO-ORDS N:	1 000 000	DESIGNED		DESIGNED		CADD FILE: VV2374_1A.dgn			GAS VALVE	⊕	PRES. DETECT	VC005-17	CHECKED		POSITION		POSITION		SCALE 5 0 (1:200) 5 10			SEWER MANHOLE	⊗	VEH. GROUP OP	TS-TN-019	SITE CHECKED		DATE		DATE		FILE SF0000/000000			TELECOM PIT	⊠	DET. LOGIC OP	TS-TN-020	RECOMMENDED		DESIGN PREPARED BY		ACCEPTED		SUPERSEDES SHEET/ISSUE -/-			ELECT LIGHT POLE	○	PED. MOVEMNT OP	TS-TN-021			ROAD DESIGN ENGINEERING		POSITION		REG No. DS0000/000000			POWER POLE	○					ENGINEERING SERVICES		DATE		TCS No. 2374			STAY POLE	⊙					ASSET MAINTENANCE				SHEET 1			TELEPHONE BOX	⊠	SURVEYOR: N/A								Revision 1 - August 2014			TELECOM PILLAR	●	DATE: N/A								© COPYRIGHT ROADS AND MARITIME SERVICES			PENRITH COUNCIL AREA TRAFFIC SIGNALS AT PARKER STREET AND SMITH STREET PENRITH DESIGN LAYOUT TCS No 2374		
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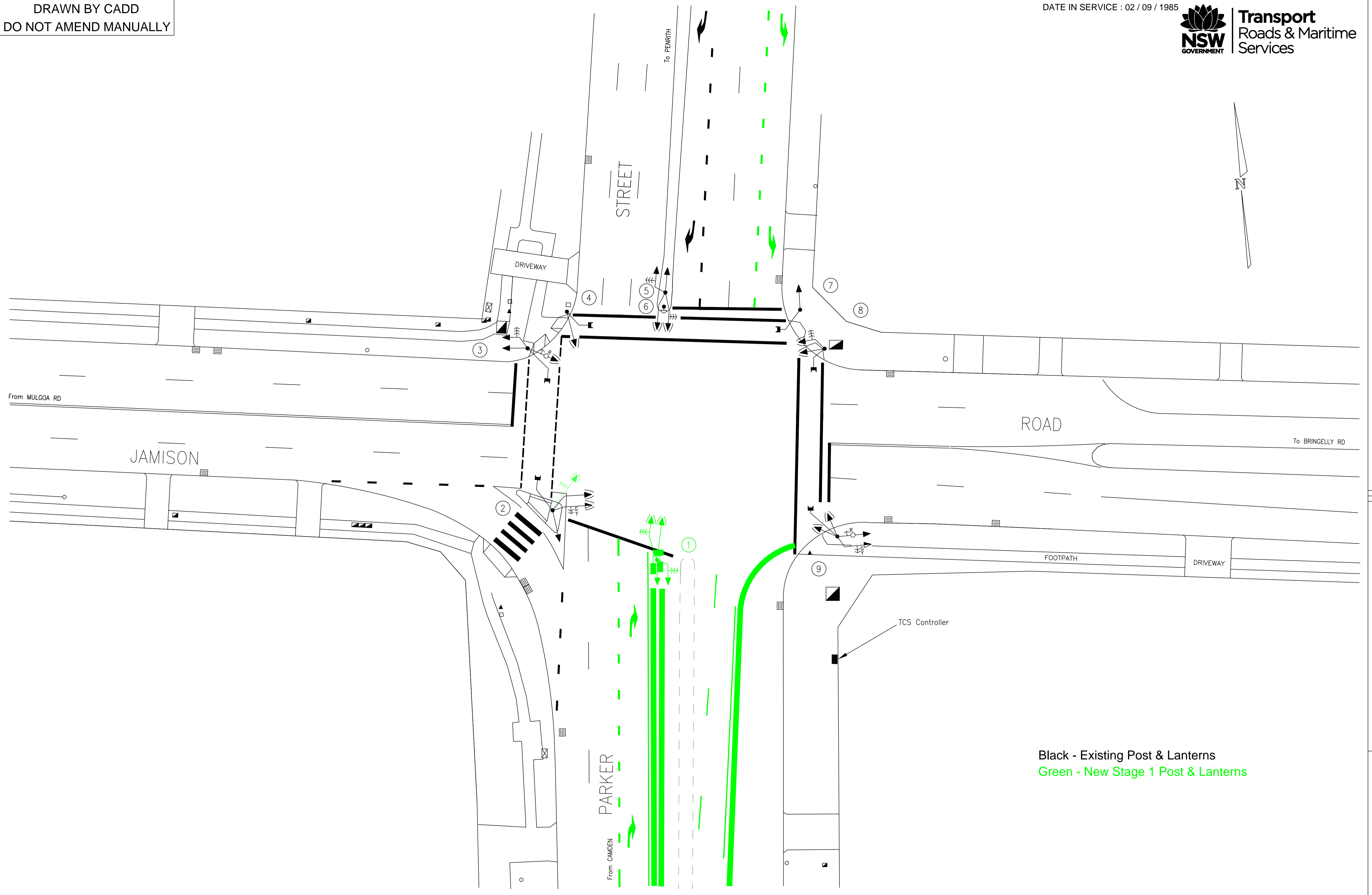
Black - Existing Post & Lanterns
Green - New Stage 3 Post & Lanterns

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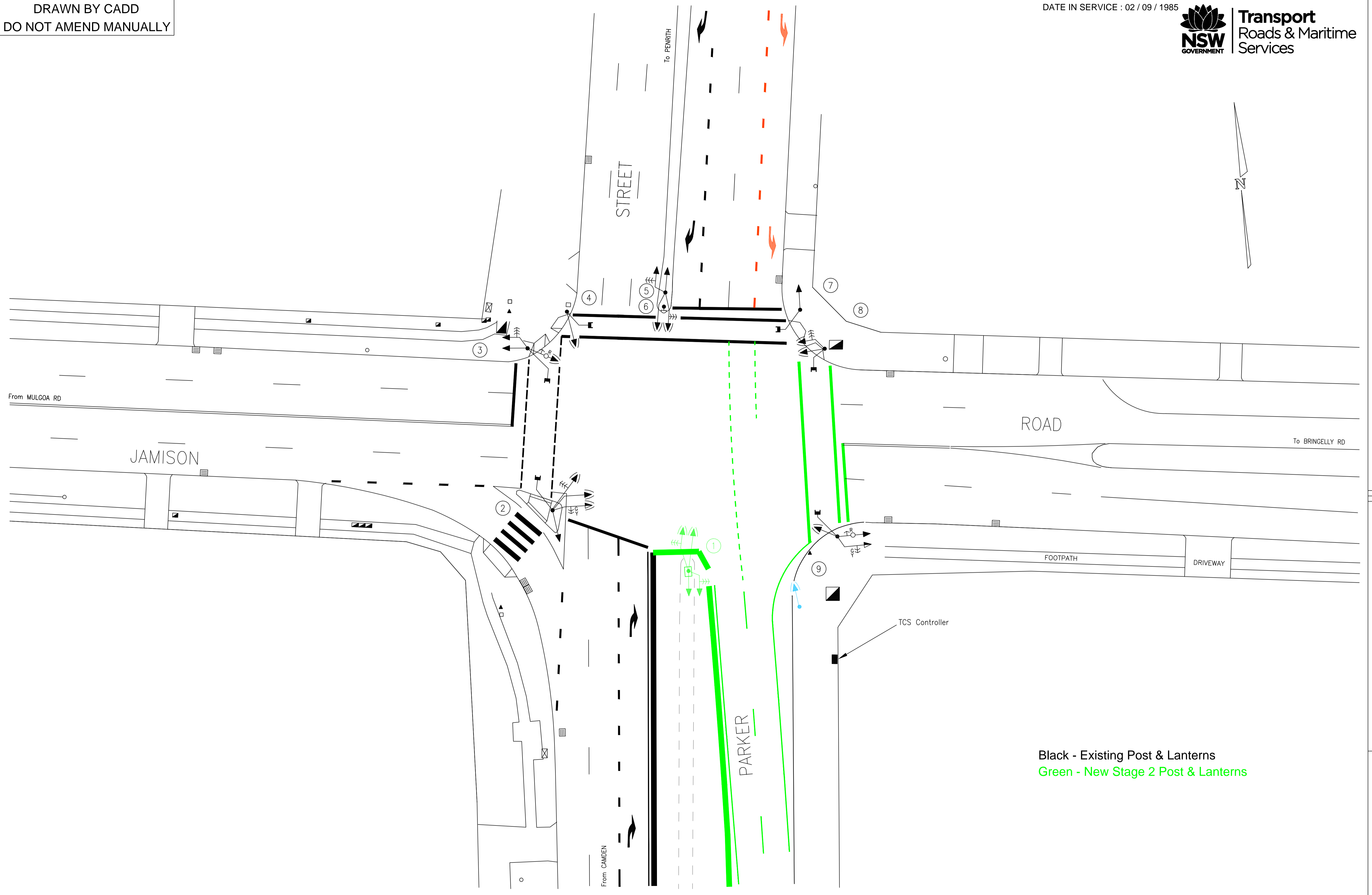
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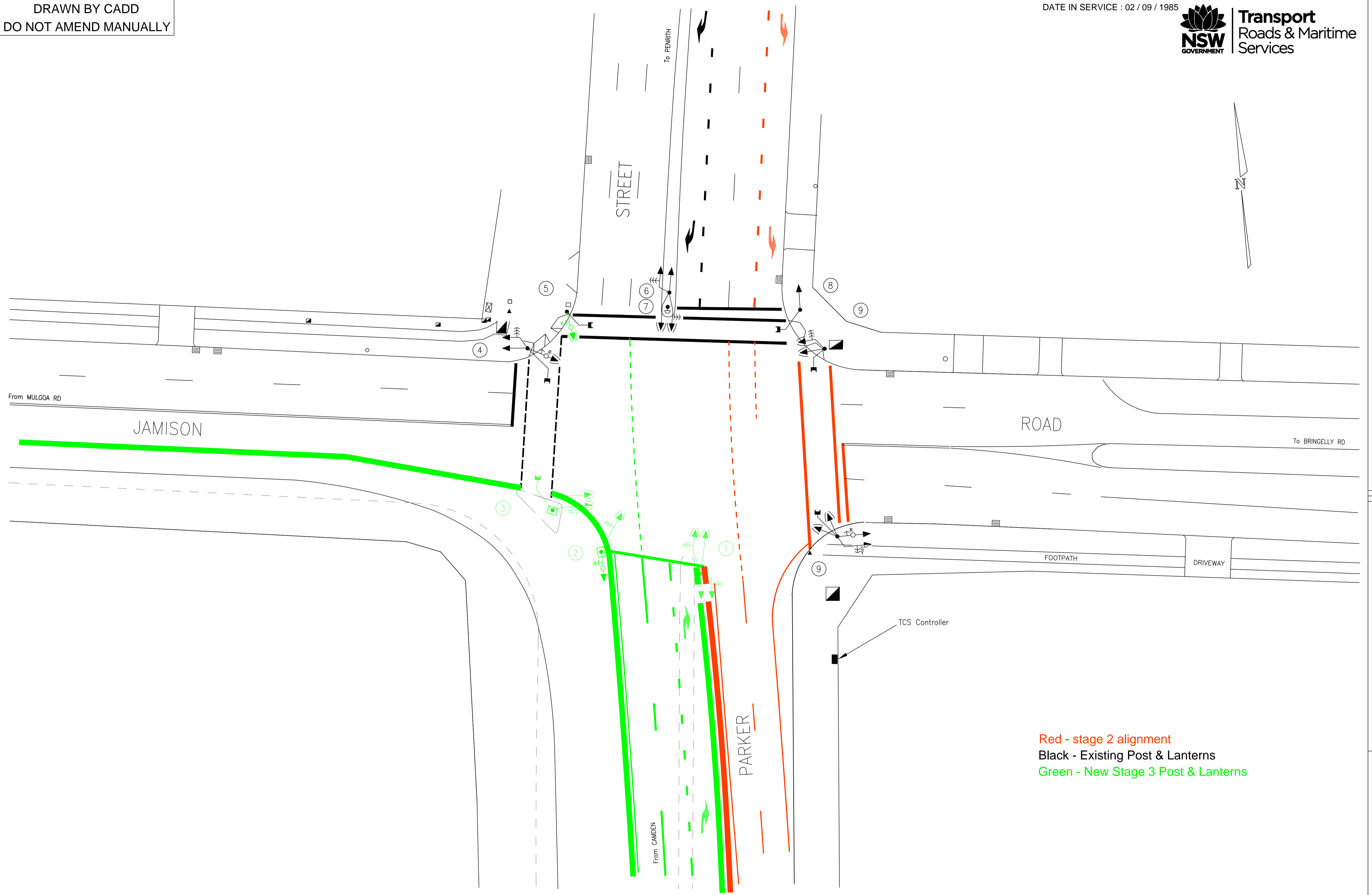
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**Exhibit A –
Scope of Works and Technical Criteria
Appendix 44 – Enterprise Training
Management Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

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Contract type:	Design and Construction
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Enterprise Training Management Plan



Volume 3-J:
Enterprise Training
Management Plan

Tender for The Northern Road Upgrade
– Stage 3 North Project

Western Sydney
Employment and Training Hub



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i. Definitions & Acronyms

Item	Definition / Acronym
Staff Member:	A person performing management or supervisory duties employed on a salaried basis under an individual contract of employment by the project
Employee:	An employee engaged by the project under the terms of an award or EBA
Other Employee(s):	An employee engaged on the project who is not a project partner employee
Subcontractor:	As appointed through individual contracts
Consultants:	As appointed for individual contracts
PMP:	Project Management Plan
ETMP	Enterprise Training Management Plan
PTMP	Project Training Management Plan
PM:	Project Director
OHSM:	Occupational Health & Safety Manager
QM:	Quality Manager
TC:	Employment & Training Coordinator; as appointed by the Project Director
WHS:	Work Health and Safety
EBA:	Enterprise Bargaining Agreement
QESE:	Quality, Environment, Safety & Engineering System Database
Structured Training:	A programme through which competencies are specified and lead to a recognised qualification; learning is planned, organised and sequenced to achieve workplace competence through assessment conducted by a qualified Assessor
Apprentice:	Any person registered as an apprentice under the NSW <i>Apprentice and Traineeship Act 2001</i>
Trainee:	Any person engaged in a formal traineeship as provided for in State Vocational Education and Training (VET) Legislation
Training:	The development of skills, knowledge and aptitude to perform a job
Competency:	Ability to perform a job to a satisfactory level in the workplace. Competence is assessed by a qualified Assessor and Statement of Attainment issued by RTO
Statement of Attainment:	Issued by a Registered Training Organisation after an individual has been assessed by a qualified assessor against a nationally recognised competency standard
Statement of Attendance:	Issued by an organisation or individual after delivery of non-structured training e.g. in-house training courses. Outcome of training does not lead to a recognised unit of competency or qualification
AQF:	The Australian Qualifications Framework (AQF) is a policy framework that defines all qualifications recognised in post-compulsory education and training within Australia. The AQF comprises titles and guidelines, which define each qualification, together with principles and protocols covering articulation and issuance of qualifications and Statements of Attainment
Qualifications:	AQF defined Qualifications range from Certificate 1 to IV, Diploma, Advanced Diploma, Degree, Graduate Diploma, Master's Degree and Doctorate
RTO:	A Registered Training Organisation (RTO) is a training organisation registered in accordance with the Australian Qualification Framework, within a defined scope of the registration. Only an RTO can issue qualifications that are recognised by the Australian Qualifications Framework

ii. Reference Documents

- Skills and Training in the Construction Industry and NSW Government Policy on Aboriginal Participation in Construction (1 May 2015)
- NSW Government Training Management Guidelines (February 2009);
http://www.dpc.nsw.gov.au/__data/assets/pdf_file/0008/43694/Training_Management_Guidelines_Apprentices.pdf
- NSW Government ProcurePoint Guidelines *Skills and Training in the Construction Industry*;
- Project Management Plan;
- Project Record Keeping Plan;
- Project Quality Management Plan;
- Project WHS Management Plan;
- Construction Environmental Management Plan;
- NSW Government Policy on Aboriginal Participation in Construction (May 2015);
- Project Aboriginal Participation Plan; and
- Lendlease Engineering Management System.

1. Western Sydney Employment & Training Hub

The RMS \$3.6 billion 10 year road investment program for the Northern Road Upgrade, as part of the Western Sydney Infrastructure Plan, will support integrated transport in the region and capitalise on economic benefits from the western Sydney airport at Badgerys Creek. The location, scale and aspirations of The Northern Road Upgrade Stage 3 North provide a fantastic opportunity to develop the skills of construction workers using innovative work-based training methods. During the construction phases, apprenticeship, Indigenous and sustainability skilling targets are mandated in all contracts. In addition, all employers are required to use their “best endeavours” to provide opportunities for workers to be up-skilled whilst working on The Northern Road Upgrade.

With ten years of development proposed by the Western Sydney Infrastructure Plan, The Northern Road Upgrade – Stage 3 North provides a significant opportunity to proactively contribute to the development of a skilled workforce through the delivery of skilling and training programs which meet the demand for an on-site workforce as well as responding to the broader national employment opportunities and agenda.

Detailed below is Lendlease’s strategy and framework to deliver on this significant opportunity to transform the model of skilling, training and employment in the construction industry. It is proposed that the scope and funding of this framework will be agreed in consultation with Roads and Maritime Services upon award.

1.1 WSETH Framework

Western Sydney Employment and Training Hub (WSETH) is a uniquely collaborative job brokerage, employment and training coordination facility that seeks to connect the local community to employment and skills opportunities.



As well as managing enquiries, applications and referrals directly with jobseekers who registered online, the WSETH will liaise with the community including employment, training and education service providers, industry and community organisations, and government agencies. This service will link jobseekers to job vacancies notified by on-site contractors who then made the decision to employ referred candidates based on required skills, experience and qualifications.

In summary the WSETH will (refer to Figure 1):

- Be the employment, skills and training hub for the Northern Road Upgrade construction project;
- Create skilled, semi-skilled and unskilled positions for local workers;
- Be the single point of contact for employers, jobseekers and training organisations; and
- Act as an on-site jobs hub, WSETH’s role is to match the right person with the right job a simple, one-stop process.

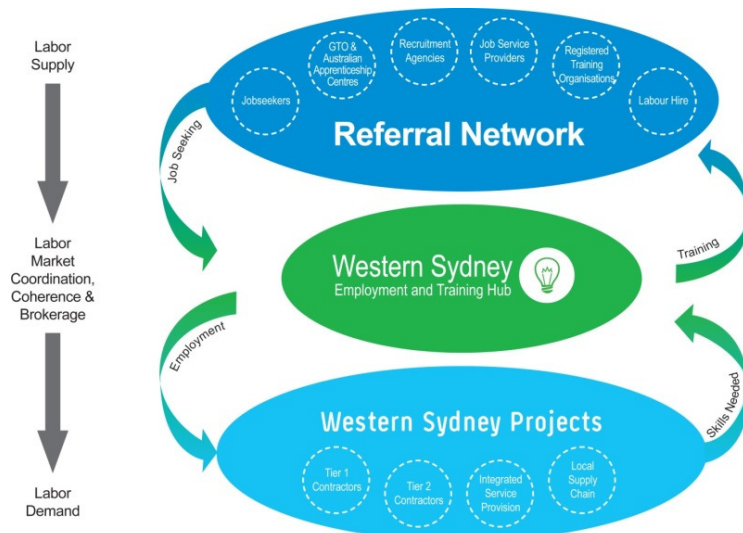


Figure 1: Western Sydney Employment and Training Hub overview

1.2 Key Partners

The success of our WSETH strategy rests on not only our relationship with our subcontractors but also on establishing a partnership with Government and key organisations to support the employment on the Northern Road Upgrade Project and the long term employment and skilling needs of the construction industry.

The WSETH will establish an informal employment and training network to provide a coordinated training and employment pathway into the project to ensure that sustainable employment outcomes are maximised in the local community. During the procurement process we will be engaging with a range stakeholders and organisations that will assist Lendlease with recruitment and pre and post-employment support. Lendlease proposes to partner with RMS and will seek partnerships with the following organisations.

Skilling and Training	Employment	Indigenous Engagement
		
		
		
		
		

The partners have also agreed in-principle to work together to secure funding grants that will further assist the employment and training outcomes for the benefit of the Northern Road Upgrade Project and for other construction projects that will follow.

1.3 Measuring Performance & Proposed Achievement Incentives

For each of the subgroups list below, targets are set and an action plan utilising tried and tested initiatives is deployed to achieve and exceed the targets. The table below lists the objectives and their weight for which the project team will be accountable for achieving.

It is proposed that at the completion of the project, performance against each of the KPIs be measured and the appropriate payment (or cost) calculated on the basis of results achieved. Details of the proposed KPIs and the payment (or cost) are provided in the following table.

Category A1 – Employment & Training

Ref.	KPI	Measures	KPI Performance Measures	
			BAU	Outstanding
A1.1	Learning Workers	Minimum total FTE of “learning Workers” for each year of the project. Measured as percentage of Training hours over total hours worked on the project	20%	25%
A1.2	Female Employment	Minimum percentage of female employees	2%	5%
A1.3	Aboriginal or Torres Strait Islander employment	Minimum percentage of Aboriginal or Torres Strait Islander employed	4%	8%
A1.4	Long term unemployed or social housing clients	Minimum percentage of long term unemployed or social housing clients employed	3%	6%
A1.5	Employment of People under 25yrs	Minimum percentage of persons under the age of 25 employed	3%	5%
A1.6	Trade Qualification	Percentage of apprentices / trainees as total percentage of Tradesmen on-site	20%	25%

1.4 Impact of WSETH in the Construction Industry & Western Sydney

The Australian construction industry has a workforce of 995,300 making it the third largest workforce sector employing over 8.6 percent of all Australian workers. Lendlease is one of the leading national enterprises in this sector. The industry, particularly in NSW, is emerging from the downturn experienced following the Global Financial Crisis into a period of improved activity. Projects of national significance such as Northern Sydney Upgrade are helping to provide jobs, create confidence in the market and demonstrate new ways industry can train the numbers it will need in the future.

In December 2015 the Hon. Mike Baird made the commitment to create 200,000 new jobs in Western Sydney by 2020. The WSETH will help transform Western Sydney by investing in the region’s people.

A significant number of workers on The Northern Road Upgrade project will live in the greater western suburbs of Sydney. For these workers, gaining qualifications will make them more employable and assist them to secure jobs post The Northern Road Upgrade. Through these improved income opportunities for workers, the economic benefits from The Northern Road Upgrade will also have flow-through benefits to western suburbs communities as increased disposable incomes also help local economies.

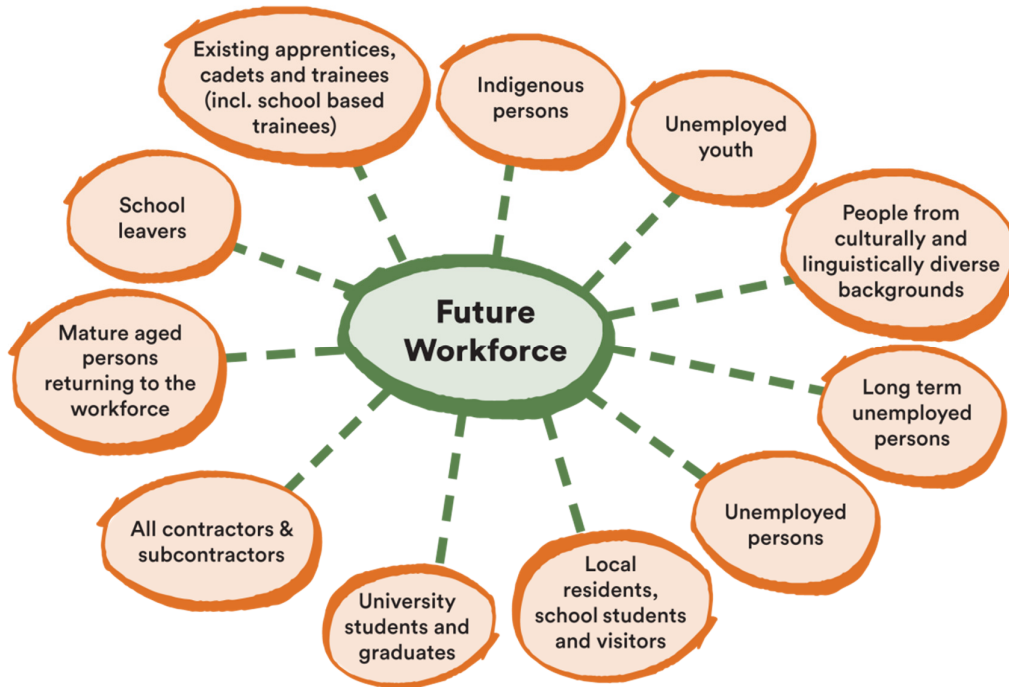
The WSETH will demonstrate the depth and breadth of learning and life outcomes that are possible with a model based on:

- Strong engagement and on-site presence that has de-stigmatised education and training and increased physical accessibility;
- Meeting both the personal and vocational development needs of workers;
- A flexible and responsive training program that meets the evolving needs of the site; and
- Developing workers at the worksite and creating a highly relevant training experience.

With an innovative approach of this scale, there is little doubt the WSETH can create a positive legacy for the Australian and NSW construction sector. The WSETH will be unprecedented in the infrastructure market in Australia, and other projects such as NorthConnex are already looking to replicate or adapt the WSETH on-site training model for their workers, therefore multiplying the potential impact of this project.

1.5 The Western Sydney Future Workforce

Western Sydney has the largest Indigenous population in NSW, a high level of youth unemployment and a large immigrant population. The WSETH will support these disadvantaged groups through training and work transitions so they can take advantage of new job opportunities, creating a more balanced workforce.



1.6 Engaging more Workers in Learning

The cross-sector collaborative approach of WSETH leverages the unique skills and talents of each contributing partner organisation to create real world and lasting outcomes for workers as well as the associated industries. The workers are the intended primary beneficiaries of WSETH, and by the workers benefitting from The Northern Road Upgrade Project, construction industry stakeholders also benefit. The WSETH will demonstrate new ways in the infrastructure industry to engage workers in training and education outside of the traditional classroom in a culture where training and advancement is not always considered to be the norm.

Many of the workers undertaking training would normally never attend TAFE or other formal institutions. However, with literacy and numeracy services available on-site the learning journey will be a supportive one, with workers undertaking training for National qualifications, safety, wellbeing, and preparation for WorkCover licenses.

The core objective of the WSETH will be to equip workers with the skills and qualifications that they need to fulfil their role. The WSETH team will:

- Provide workers with the range of skills that they and their supervisors and employers identify, with the results that the workers are **better able to perform** their roles, and in some instances progress to **more senior** or **more technical** roles;
- Engage workers who are less accustomed to formal learning to gain new skills and qualifications leading to **increased confidence and pride** enabling them to **aspire** to things that they hadn't thought they were capable of before;
- Provide training as a response to workplace incidents, to develop the skills and knowledge required to avoid similar incidents in future. In addition, the provision of counselling for workers after an event ensures that the **wellbeing** of workers is maintained;
- Support workers (particularly from non-English speaking backgrounds) with basic skills such as literacy, numeracy and computer skills giving them an **increased ability to participate in everyday activities** such as being able to help their children with homework and reading the newspaper;
- Support personal improvement, which combined with the confidence that workers gain through developing new skills and qualifications, provides some workers with a greater **sense of pride** in their achievements, and reason to feel that their families are also proud of them; and
- Provide a personal, individualised approach which is contributing to the **wellbeing of workers**.

1.7 General Recruitment Strategy

There are a number of different channels and strategies that will be used for WSETH to communicate and recruit the workforce on the Northern Road Upgrade Project. This will include a combination of digital, print and social media and face to face communication via the project networks, WSETH partners and on-site events.

Lendlease will advertise appropriately in a manner that encourages people with barriers to employment to apply for all jobs. When evaluating people for roles, Lendlease will ensure that the general targets for people with barriers to employment are achieved through the recruitment process.

As with all members of the Target Group, we will tailor our processes to each individual and make sure that they are ready and suitable for their nominated positions. Once they are in position, our focus shifts towards providing support and creating an environment that makes them want to keep working. By advancing people through the system, we create new opportunities for others coming in at entry level.

By focusing on the skills and advancement of people within our Target Group there are mutually beneficial outcomes for both the employer and the employee.

A summary of the different communication channels for recruitment and training is provided in the figure below.

Jobseekers	Stakeholders	Contractors	Channel	Activity
			Digital Media	Website <ul style="list-style-type: none"> • Registration • Login • Communications • Reporting
			Networks	<ul style="list-style-type: none"> • Australian Apprenticeship Centre • Australian Job Search • RTOs • Job Service Providers • Recruitment Agencies
			Print Media	Local Newspaper <ul style="list-style-type: none"> • Advertising • Advertorial • Media Releases
			Social Media	<ul style="list-style-type: none"> • Facebook • Newsfeed • LinkedIn • Twitter
			Physical	<ul style="list-style-type: none"> • On-site Location • Targeted internal and external events

1.8 Maximising Success – Pastoral Support for Individual Workers

Wherever possible, training will be conducted on the project at the WSETH or on-site at one of the live training locations. With all training being contextualised to job roles, workers and employers will receive a fast track benefit from their investment in training. In every case employers and employees will be consulted about the training program being undertaken.

Training providers will be required to train at the project and focus on individuals rather than class cohorts and this will provide a superior level of responsiveness to the needs of workers, employers and industry generally. All training will be integrated with an overall Lendlease Incident and Injury Free framework with individuals supported in a variety of ways to maximise successful outcomes.





Some of the ways that individuals will be supported include:

- Prior to undertaking any training, workers will be tested for English language and literacy so that support can be provided if needed. A specialist language, literacy and numeracy teacher will be based on-site, and available to assist any workers;

- On-the-job mentoring will be provided to all apprentices, Indigenous workers and workers undertaking specific programs (e.g. Supervisors Safety Programs);
- Digital literacy support will be available to all workers on-site;
- Online learning resources will be available and can be accessed on-site or from home for many courses;
- An online Recognition (RPL) application (Skills Locker) will be available to all workers enrolled in TAFE courses to allow them to collect on-site workplace evidence for RPL purposes;
- Training will be heavily contextualised to both the job role and the individual;
- Teaching will be customised to the learning styles of individual workers; and
- Mental Health and Drug and Alcohol Training will be offered to workers.

1.9 Additional Programs

In addition to the traditional vocational programs, the following programs will also be offered at the WSETH:

-  Women in Trades Program
-  Indigenous Employment and Training
-  Career Futures Program
-  Northern Road Upgrade Leaders Safety Program

Women in Trades

The NSW Government is committed to increasing the number of women working in male-dominated trades. Women currently make up only 13 percent of trade apprentices and trainees in NSW, with most women opting to pursue apprenticeships in areas such as hairdressing and catering. Less than two percent of automotive and engineering and construction and electro-technology trade workers in NSW are female.

Women NSW is developing strategies to encourage women and girls to undertake and complete training in these areas and to maintain employment as a tradesperson into the future.

To that end, Lendlease have developed a six week “Women in Trades” program for 16 Women from the Western Sydney region. The program is specifically targeting those in lower socio-economic circumstances. The program is designed as a Pre-Apprenticeship program to encourage women to explore the employment opportunities that construction has to offer in those non-traditional areas.

Lendlease partnered with White Lion and YourTown to assist in the delivery of the program, utilising the YourTown training facility in St Marys.





The successful mid-2015 program included four Indigenous women in the Western Sydney area. The women obtained certifications such as, Construction White Card, Traffic Management and Survey.

It is proposed that we will consider rolling in the “Women in Trades” program at the WSETH.

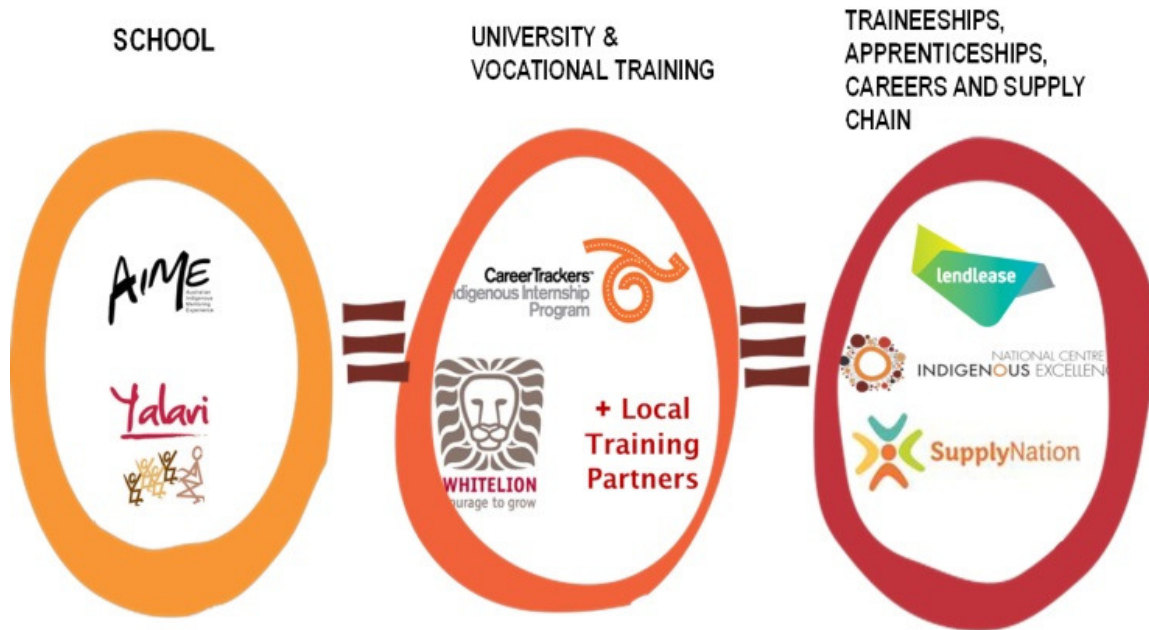
Indigenous Employment and Training

Lendlease’s vision for reconciliation is one in which all our employees acknowledge and celebrate the proud heritage of Australia’s First Peoples and promote opportunities for career development, sustainable business growth, and economic participation of Indigenous Australians within our sector.



Organisation / Program	Overview
	<p>Supply Nation</p> <ul style="list-style-type: none"> • Supply Nation is a current Lendlease RAP partner • It is Australia's premier business-to-business (B2B) membership body dedicated to growing diversity within the supply chain • Supply Nation's goal is to connect Australian corporate and government organisations with Indigenous business suppliers who are already achieving success or have the potential to develop into vibrant, vital businesses • Their aim is to ensure that small to medium Indigenous businesses have the opportunity to be integrated into the supply chains of Australian companies and Government agencies
	<p>Career Trackers</p> <ul style="list-style-type: none"> • CareerTrackers is a current Lendlease RAP partner • CareerTrackers is a national non-profit organisation that works with Indigenous university students and private sector companies to create career pathways through a structured internship program • CareerTrackers has successfully increased career and life opportunities for Indigenous Australians, by providing an innovative and comprehensive program that gives Indigenous university students the opportunity to fulfil their career aspirations and equip them with the tools needed to become leaders in the private sector and wider community • Career Trackers has successfully placed 630 students in the program and is working with 75 Corporate Partners at present • Since 2011, Lendlease has hosted over 80 Aboriginal and Torres Strait Islander interns throughout the business • In 2014 Lendlease signed a 10 year partnership with CareerTrackers to provide a minimum of 25 internship opportunities annually <p>Since 2015, 18 Career Tracker Indigenous Interns have worked within Lendlease's Engineering division.</p>
	<p>National Centres of Indigenous Excellence (NCIE) / Koori Job Ready (KJR)</p> <ul style="list-style-type: none"> • NCIE is a current Lendlease RAP Partner and is a sustainable Aboriginal company leading in the provision of training, employment and mentoring services that foster future Aboriginal leaders • KJR has an Aboriginal training and job placement centre located in the inner city suburb of Redfern offering real recruitment, training and employment pathways for Aboriginal people and employers • Training focuses on two industries that provide sustainable employment opportunities – hospitality and construction. Through theory, practical application and a mentoring system, the program offers students continued support throughout their training and future careers
	<p>Whitelion</p> <ul style="list-style-type: none"> • Whitelion is a non-profit community organisation operating nationally across four states, providing youth-focused gender and culturally-specific services in several areas which include; mentoring, employment, role-modelling, specialist outreach support and education-based prevention programs. It opens doors to opportunities, relationships and community for at-risk young people in the Australian community. Whitelion has been supporting at risk young people for more than 15 years, helping them to change their lives • It is focused on connecting young people aged from 10 to 24 years with the community. It provides them with practical and effective supports that enable them to make positive choices in their lives

To achieve our vision we have undertaken a number of Partnerships and close working relationships with Indigenous and Non-Indigenous organisations to work collectively to close the gap on Indigenous disadvantage in life expectancy, health, housing, education and employment by focusing on developing a pipeline of job ready Indigenous people and relevant support networks and programs which ensure Indigenous people are enabled equitable access to find and stay in long term careers, or develop sustainable businesses.



Lendlease will work with the following organisations to increase the training, employment and business opportunities for Indigenous Australians particularly in the Greater Western Sydney region.

Building on the successful work already being undertaken by Lendlease over the last 4 years in the development and implementation of the RAP, Lendlease will be looking for opportunities to work with the current Indigenous partners at the WSETH Indigenous Hub to achieve positive employment and training outcomes for local Indigenous communities and businesses. This approach has been very successful on the Lendlease Barangaroo Project in Sydney. To date, Barangaroo have employed over 186 Indigenous workers on-site.

Details of the RAP Partner organisations and other relevant organisations that we will contact to discuss establishment of a working relationship for the Northern Road Upgrade project are included in the following table.

Young Indigenous Pathways Program



Established in 2013 in partnership with the AFL Club, the Greater Western Sydney Giants (GWS), Lendlease developed the *Career Futures* program to encourage Indigenous youth to stay at school to make positive lifestyle choices, and to develop career pathways. The program was redeveloped in 2014 into the Young Indigenous Pathways Program (YIPP).



The program enlists the help of local Indigenous mentors and business to facilitate sessions that guide the students and are tailored to each individual, exposing their strengths and allowing students to focus on positive outcomes.

All students are becoming future leaders within their communities. The program is currently delivered to two schools in Western Sydney identified as having a high number of Indigenous students. The program tailors the student’s learning to encourage them to create an education and career path and we work closely with them to set achievable goals. To date the program has resulted in a 90% increase in school attendance, 80% increase in class engagement and all students who participated in 2013 demonstrated improved leadership skills, with several students now holding “Prefect / Leadership” positions with their school community.



Northern Road Upgrade Leaders Safety Program

By its nature, the construction industry poses risks to the health and safety of its employees. By providing training to increase the awareness of work health and safety (WHS) risks by employees, the WSETH will assist to reduce the number of WHS injuries.

One way of doing this is to ensure that all WSETH training is linked to the Lendlease Incident and Injury Free program. The site safety committee that will be made up of union officials, workers, subcontractors and Lendlease managers, will work closely with the WSETH to deliver programs aimed at removing or mitigating risk of injury or health related issues. Not only will the WSETH coordinate the delivery of various safety and awareness programs, it also will coordinate on-site health services to individuals such as skin checks and lung function assessments, etc.

The WSETH Leaders Safety Program will be based on the successful Barangaroo Leaders Safety Course and will be a program aimed at team leaders and supervisors to develop their knowledge and competencies in terms of workplace safety, culture and behaviour. This program has been mapped against both the Lendlease Environmental Health & Safety standards (EHS) and the Certificate IV in WHS. Candidates will not only undertake formal training about workplace safety legal and compliance obligations, risk identification and mitigation, but also undergo peer assessment through 360 degree evaluation, on the job mentoring and development.

1.10 Funding Opportunities

All Industry Partners and organisations working with the WSETH have also agreed in-principle to work together to secure funding grants that will further assist the employment and training outcomes for the benefit of the Northern Road Upgrade Project and for other construction projects that will follow.

Some of the funding opportunities are included in the table below. Upon award a detailed assessment will be undertaken to confirm and secure employment and training support from State and Federal funding programs.

State & Federal Training & Skilling funding opportunities

Skills for Education and Employment	Provides language, literacy and numeracy training to ensure job seekers can effectively operate in their chosen occupation
Adult Migrant English Program	Provides language tuition to enable successful participation in the workforce and training
Smart and Skilled	Nationally recognised qualifications at Certificate III and above for existing and new workers
Retrenched Workers Assistance	Provides training in part or full qualifications needed for new workers
Partnering for Jobs	Provides training for unemployed workers in specific areas to meet employer skills shortages
Pathways for School Leavers	Partnerships to assist school leavers to transition into employment
2015 Pre-Apprenticeship Training Program	Providing training to assist young people to transition into apprenticeships
Flexible pool of funds	Providing training to address jobseeker barriers [provided by specific arrangement with the Department of Employment]

State & Federal Employment funding opportunities

Jobactive	Provides wage subsidies to employers who hire eligible job seekers including mature age, long-term unemployed, Indigenous, youth or parents. Wage subsidies can assist with the costs of recruitment, including training and wages for new employees.
Australian Apprenticeships Incentives Programme	Provides wage subsidies to employers for the commencement of employment of apprentices, completion of apprenticeships, support of apprentices after 12 months of employment, mature age, rural, and apprentices with disabilities
Employment Assistance Fund	Provides financial help to employers for work-related equipment, modifications and services to adjust the workplace to suit employees with disability
Supported Wage System	Allows employers to pay a productivity-based wage for people with disability that matches an independently assessed productivity rate
Wage Subsidy Scheme	Provides subsidies to employers who employ a job seeker with disability, who is registered with a Disability Employment Service Provider
Indigenous Cadetship Support	Provides financial help for employers who want to offer work placements and ongoing employment to Aboriginal and Torres Strait Islander tertiary students

1.11 Lendlease Best Practice – A model for success

The development of the WSETH has been drawn from the successful programs that have been developed globally within the Lendlease business. Details of some of the more directly relevant programs are provided below.

1.11.1 Barangaroo Skills Exchange, Sydney, NSW

The WSETH will be developed and modelled off the highly successful Barangaroo Skills Exchange (BSX) on the Lendlease \$6B Barangaroo Urban Regeneration Project.



“The construction industry is being transformed at Barangaroo through the on-site facility and contribution of up-skilling provided by the Barangaroo Skills Exchange (BSX).

The Construction teams and the BSX staff have developed a close working relationship which has created an environment in which all construction workers feel free to participate in their own skill development regardless of the challenges such as language, literacy, numeracy or age.

The BSX is run by highly skilled and professional staff who have been embraced by the workforce, and a bond has been developed between all the parties which will ensure a lasting legacy for the culture and skill set of the construction industry into the future”

Danny Potocki,
NSW Environment Health & Safety Manager,
Lendlease.

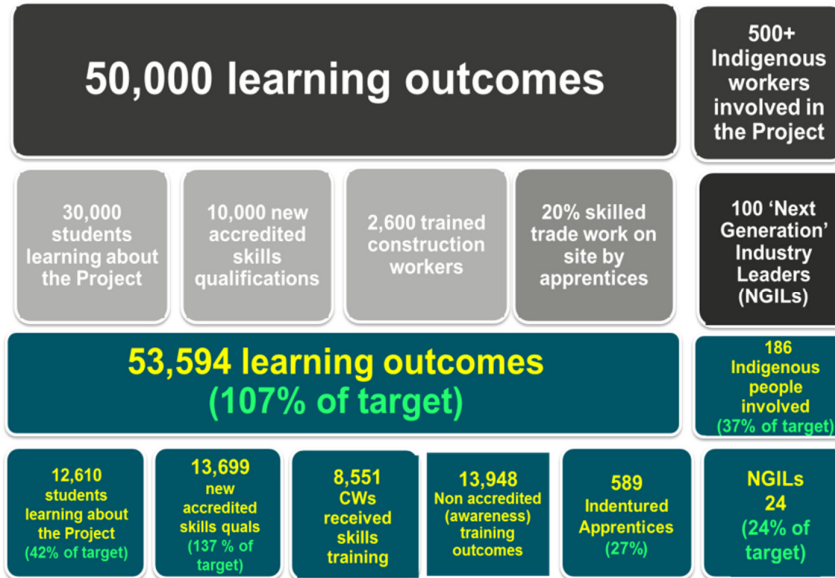
BSX – Ambitious Training Targets

Underpinning the drive to leave a positive skilling legacy from the construction phase of Barangaroo was a series of ambitious training targets. During the 10 year construction period at Barangaroo, the aim is to:

- Provide 10,000 people with new Accredited Skills Qualifications;
- Provide 50,000 learning outcomes;

- Build Indigenous capacity and capability in the construction sector and related industries for a minimum of 500 Aboriginal and Torres Strait Islanders;
- Develop 100 next generation construction industry leaders; and
- Run 2,600 Training Programs for construction workers by end of 2015.

To date (as at October 2015), the BSX have achieved the following outcomes:



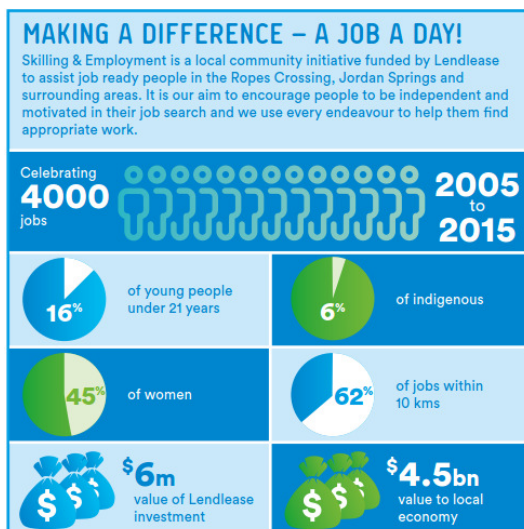
1.11.2 Skilling & Employment Centre, St Marys, Western Sydney

Skilling & Employment, a community initiative of Lendlease has an office at 51 Phillip Street, St Marys and works with local employers to identify the skills their employees need and coordinates relevant training for local jobseekers.

The Centre is home to a trade qualified Construction Employment Advisor who works directly with subcontractors and suppliers to secure employment for jobseekers as well as working with training organisations to develop skills for job seekers, existing workers, labourers without formal qualifications and transition options for workers made redundant through industry adjustment.

Work is linked to the residential building industry in the Sydney West & Blue Mountains Employment Priority Area to identify employers skill needs.

The Skilling and Employment Centre's achievements to date:



1.11.3 The Workshop, Sunshine Coast Hospital, QLD

The Workshop is the employment and skills hub for the Sunshine Coast Public University Hospital construction project. The construction phase of the project will create skilled, semi-skilled and unskilled positions for local workers.

The Workshop was a single point of contact for employers, jobseekers and training organisations on the public hospital project, acting as on-site jobs hub, matching the right person with the right job a simple, one-stop process.

This unique collaborative job brokerage and training coordination platform connected the local community to employment and skills opportunities.



1.11.4 BeOnsite, London, UK



BeOnsite was established by Lendlease in 2007 as a Not for Profit Company and provides jobs brokerage, bespoke support, training and advocacy services.

BeOnsite has provided a proven, award winning combination of:

- Opportunities for long-term unemployed, homeless, ex-offenders, serving prisoners, BAME, and people with disabilities;
- Training with a range of partner organisations, tailored to specific job roles;
- Working with industry supply chain and training organisations to develop and deliver training; and
- Direct employment with BeOnsite, providing a “foot in the door” to work and ongoing continuity of employment with one, stable employer, regardless of project duration.

Provided over 600 people with training, over 500 people with full-time paid employment and contributed to over 5,000 people securing jobs in the construction industry.



2. Commitment & Management Responsibility

2.1 Purpose

This Enterprise Training Management Plan (ETMP) has been prepared to satisfy Lendlease requirements, implement best practice skills development programs and workplace initiatives and at the same time respond to the New South Wales Government’s policies and concerns in relation to workplace training.

Therefore, the purpose of this Plan is to describe how Lendlease proposes to manage structured training during the construction phase of a project. This Plan identifies key issues affecting workplace training on a project and documents those system requirements that will be addressed to meet Lendlease, Client, Government bodies’ and legislative requirements.

This Plan will also establish the framework to which the subcontractors contracted to perform work must comply and also to establish the framework to allow Lendlease to monitor their compliance.

This ETMP has been structured to assist and guide Lendlease’s Project Management Teams to:

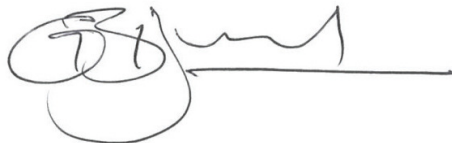
- Understand their operational and contractual responsibilities and provide the framework for evidencing compliance;
- Manage the interface with other organisations and affected parties; and
- Provide a process for the creation of a structured training program that will be customised to the needs of the individuals and the project, so as to effectively inform, train and up skill the workforce to meet present and future construction needs.

2.2 Attestation to provide a Project Training Management Plan

In the event of being successful in our bid, Lendlease will submit a project Training Management Plan compliant with the NSW Government’s Skills and Training in the Construction Industry (May 2015) and Training Management Guidelines (February 2009) to the RMS Representative prior to work commencing. This Training Management Plan will follow the Lendlease’s Engineering business’ guidelines and protocol.

Attestation

Lendlease Engineering Pty Ltd (Lendlease) attests that, if our bid is successful, we will prepare and submit to the RMS Representative a Project Training Management Plan that addresses and complies with the NSW Government Training Management Guidelines February 2009, before work begins on the Construction Site. Further, as part of our project planning, we will implement the Western Sydney Employment & Training Hub.



Gavin Reymond
General Manager NSW

2.3 Scope

This ETMP provides the necessary procedures, processes and management systems for Lendlease projects to meet obligations and commitments with respect to structured training requirements.

Each project will deliver on tight deadlines while operating within a safe, productive and environmentally friendly workplace all the while delivering a project of high quality. In order to achieve success, sound

technical skills and solid leadership, management and supervisory skills and knowledge will need to be present at all levels within a project.

Therefore, a Project-specific Training Management Plan (PTMP) is to be developed for each project and will cover all persons engaged either in physical construction work on the project or in a support role such as administration and management personnel whether employed directly by Lendlease, or employed by a company which contracts with Lendlease to perform work.

The PTMP is one in a number of Project Plans that falls under the Project Management Plan. The Project Management Plan is the umbrella plan that provides a framework for all Project Plans.

The PTMP will be prepared to satisfy the project requirements and to communicate Lendlease's commitment to implement appropriate workplace initiatives that respond to the New South Wales Government Training Guidelines, February 2009 and NSW Government ProcurePoint Guideline *Skills and Training in the Construction Industry*. It will demonstrate by reference to certain areas how the matter of structured training is integrated not only into industrial relations and safety, but also into the project's normal day-to-day procedures, practices and performance standards. These areas are:

- Training policy and training commitment;
- Minimum obligations and requirements for compliance;
- Human resources, including accountability and responsibilities of individuals and organisations in respect of the activities;
- Skills profile of the workforce and how its training needs will be identified;
- Structured Training Strategy to deliver the project requirements and objectives;
- Quality and Safety training;
- Workforce participation;
- Apprentice / trainee participation;
- Aboriginal participation;
- Subcontractors' obligation for training;
- Agreements and awards;
- Record keeping; and
- A system of internal review and monitoring to ensure the PTMP is being implemented effectively and achieves continual improvement in performance.

The objectives will be achieved by following the 'Plan-Do-Check-Act' process, which is incorporated in sections of this ETMP as follows:

- **Plan** Section 3 – Planning, Targets & Workforce Participation
- **Do** Section 4 – Accountability & Responsibility
- **Check** Section 7 – Evaluation & Review
- **Act** Section 9 – Monitoring & Reporting

2.4 Lendlease Policy

Lendlease values and recognises the importance of the human resources necessary for the successful delivery of a project. Therefore, training of persons engaged on a project is fundamental to Lendlease's workplace initiatives strategy. The primary objectives are:

- Provide certainty of delivery by maintaining a safe, harmonious and environmentally friendly workplace; and
- Maintain a highly skilled workforce that undergoes continuous upgrading of skills through structured training.

Lendlease is committed to providing structured training to employees who are required to have specific skills to carry out management and administration functions as well as certain classes of work on the project. Therefore, Lendlease supports the NSW Government Policy to promote employment, training and skills development opportunities in the construction industry and is committed to attaining the required training targets for apprentices and trainees set out in the NSW Government Training Management Guidelines.

A Training Coordinator (TC), who is to be appointed by the Project Director (PM), is responsible for managing training and will draw upon the objectives and procedures for delivering training from the

Lendlease Management Services System Manual and Procedures. It is also a requirement that subcontractors' personnel are trained for the tasks they undertake for Lendlease.

In addition to the continuous training to be carried out in the form of site inductions, "toolbox" training, consultation and safety risk assessment, the Training Coordinator will manage the process of workplace assessments and skills gap training and have an input into the staff development training. To assist in the monitoring of employee training and with the enhancement of training procedures throughout the project, a database of all training records will be maintained on the project's central database system.

2.5 Management Responsibility

It is the company's management team's responsibility to ensure training is planned, implemented, monitored, reviewed and reported in accordance with the ETMP, key roles and responsibilities are set out in Section 4 of this ETMP.

3. Planning, Targets & Workforce Participation

3.1 Plan Development, Authorisation & Control

3.1.1 Authorisation

This document is an Enterprise Training Management Plan. A separate Project Training Management Plan will be prepared and approved by the Project Director.

3.1.2 Distribution

Both the ETMP and the PTMP are controlled documents and will be distributed and revised in accordance with the system procedure for document and data control.

Controlled copy holders will be defined within the Record Keeping Plan.

Controlled copyholders will be provided with updated ETMP and PTMP by the Document Controller as revised plans are approved by the Project Director.

3.1.3 Revision

Both the EMPT and the PTMP will be revised and updated in response to areas identified for improvement or to changes over time that renders either document ineffective. As such, these Plans form a platform for continuous improvement.

The process for monitoring and review of the Plans or their implementation and operation are detailed in Section 9.

3.2 Compliance

Lendlease will comply with all of its statutory obligations and its obligations. The PTMP, in addition to complying with all statutory and regulatory requirements, will demonstrate how certain prescribed training requirements will be met. In aggregate, the Plan will satisfy six basic criteria:

1. Demonstrate how the project will provide a structured training programme to address how the project will comply with and meet training management targets for engineering projects as described in the NSW Government Training Management Guidelines, February 2009 and NSW Government ProcurePoint Guideline *Skills and Training in the Construction Industry*;
2. Comply with any enterprise or other industrial agreement applicable to the project;
3. Comply with the Project Quality Management Plan and Work Health and Safety Project Plan raised for the project;
4. Satisfy the project's obligations with respect to the environment, including statutory obligations and provision of an induction on environmental systems for all personnel engaged in the construction of the project;
5. Demonstrate how the project will ensure that minimum targets for training and participation levels described in the NSW Government Training Management Guidelines will be achieved. This requirement will be for the project itself, and each of its subcontractors; and
6. The project will ensure that all subcontractors that have a training obligation in their own Enterprise Bargaining Agreement (EBA) will observe such an obligation.

3.3 Strategy

To implement its training policy and to demonstrate its compliance with all prescribed requirements, the PTMP will focus on the strategic processes, actions and resources necessary to achieve the project's structured training objectives.

Selection of staff and project employees to undertake structured training will focus on Lendlease and the subcontractors' directly employed personnel. However, all other employees engaged through a Group Training Organisation or employment service and hosted by Lendlease and project subcontractors who are undergoing structured training or engaged as an apprentice or trainee will be included in the project training targets.

Lendlease and the subcontractors will engage Registered Training Organisations (RTOs) and Tertiary Education Institutions to deliver Structured Training to their directly employed personnel.

Project staff and employees participating in a structured training programme will have the opportunity of attaining nationally recognised Units of Competency, Statements of Attainments or Qualifications relevant to their role within the project depending on which stage of training they have completed.

A Statement of Attainment (SoA) or Certificate of Qualification is to be provided by each of the RTOs and Tertiary Institutions engaged to deliver the training, which allows each individual employee's level of competence in a particular skill to be recorded. The SoA and Certificate also acts as a detailed backup to each employee's skills profile and as a personal needs analysis of each employee's competence in the relevant standard.

Many employees who have a work history in the construction industry will have acquired considerable practical skills covered by the various competency standards. Emphasis will therefore be targeted at Recognition of Prior Learning and Recognition of Current Competencies, with training required more on the development of personal skills such as communication, OH&S, environmental awareness etc. and specialist skills, such as equipment operation and licensing.

Therefore, the PTMP will target the People Development Key Result Area. It will provide a clear framework to assess training requirements of both individuals and the project as a whole. By utilising this analysis and implementing programs to address the identified needs, the PTMP ensures appropriately skilled employees will deliver benefit to the project. This will be achieved by a training matrix comprising:

- Assessing all new employees' current qualifications and skills against the required skill sets for their specific position at recruitment / induction stages;
- Ensuring all employees receive appropriate entry requirement training as quickly as possible (e.g. white card, etc.);
- Ensuring role-specific training needs are identified;
- Addressing gaps in incumbent skills sets and role requirements through internal, external, off the job, on the job and one-on-one training;
- Analysing project phases to identify appropriate training courses and the most effective times for off the job training;
- Analysing cost elements with a view to optimise value for money in regard to the delivery of training;
- Appointing a dedicated Training Coordinator to manage the Policy and general training requirements;
- Identifying the project requirements to comply with NSW Training Management Guidelines and where possible maximising opportunities for success;
- Ensuring subcontractors are aware of their obligations under the PTMP and the NSW Government Training Management Guidelines and that these are included in their contracts; and
- Utilising Registered Training Organisations and Tertiary Institutions to deliver effective structured Training Services.

3.4 Workforce Participation

3.4.1 Apprenticeship & Training Targets

Under the NSW Government Training Management Guidelines, February 2009 and NSW Government ProcurePoint Guideline *Skills and Training in the Construction Industry*, Lendlease projects aim to achieve better than the minimum training targets and participation levels.

On projects, these targets should be achieved at or before 25% of the way through the construction period and be maintained until construction is at least 90% complete. The ProcurePoint Guidelines requires completion rates of at least 65% by December 2019 which will include the completion of this project. They will be monitored by the Training Coordinator and performance will be included in monthly reports to be submitted to the Project Director.

Apprenticeship and training targets are:

- 20% of the total Project Workforce participating in structured training during their employment on the project; which includes
- 20% of the Trade Work involved in the project to be undertaken by Apprentices or Trainees who are registered under the NSW Apprenticeship and Traineeship Act 2001.

3.4.2 *Estimated Workforce Size & Trade Workforce Size*

The workforce size will vary during the project depending on the project phase and the work packages undertaken during each phase. Therefore, the actual number of the project's workforce participating in structured training will be reviewed on a monthly basis as new employees and subcontractors are engaged.

A template Training Target worksheet to assist with estimating the workforce and trade workforce size for the construction stage of the project is located at **Appendix A**.

The template Training Target worksheet at **Appendix A** has been developed using the Project Participation formula on page 7 of the NSW Government Training Management Guidelines.

The workforce composition and training targets documented using the template at **Appendix A** will be monitored on a monthly basis and amended by the TC as required.

3.4.3 *Aboriginal Participation*

Lendlease is committed to providing opportunities in the construction industry for Indigenous Australians and will meet the requirements of the NSW Government Policy on Aboriginal Participation in Construction Guidelines (May 2015). The Guidelines' aims are to support and encourage more employment and business opportunities for Indigenous Australians on government construction projects.

Lendlease and its subcontractors are encouraged to engage Aboriginal apprentices, trainees and cadets, which will capture the individual under both the Aboriginal Participation and Apprentice Targets.

Specific details for Aboriginal participation will be addressed in the project's Aboriginal Participation Plan.

Aboriginal participation numbers for those participating in structured training will be included in the overall project training participation targets.

3.5 *Training Needs & Priorities*

Individual Staff Member and Project Employee training needs will be identified by the parent organisation at the time of confirmation of employment on the project and during the induction process.

3.5.1 *Preferred Workforce Qualifications*

A Training Needs Analysis has been undertaken by Lendlease to address the preferred qualifications required by an engineering project workforce. The results of this analysis can be viewed in **Table 3-1** of this ETMP. The TC and PM are to review the qualifications listed in **Table 3-1** and amend the list of preferred qualifications to suit their project requirements.

3.5.2 *Professional / Personal Development Skills Training Matrix*

A Skills Needs Analysis has also been undertaken by Lendlease to address professional and personal development opportunities. This Skills Needs Analysis is made available to project management teams and supervisors to assist in development of their Staff. The "Staff Skills Training Matrix" can be viewed at **Appendix B**.

Although professional / personal development training is crucial to successful project delivery it may not meet the requirements of structured training. Therefore, the outcome of all non-structured training should be the issue of a "Statement of Attendance" with the topics covered documented on the Statement so the training undertaken by an individual can be used, in the future, as evidence toward a recognised unit of competency or qualification.

3.5.3 *Workforce Training Priorities*

Lendlease and its subcontractors will determine priorities for the delivery of structured training for their employees and respective work packages based on the targets, goals and objectives identified in this Plan. Training priorities will be determined for individuals on a case by case basis and will be dependent on the following criteria:

- Project needs and benefit to the project;
- Impact on project;
- Cost;
- The existing skills and experience of the workers;
- Assessment of current labour market;

- The workers' interests in learning;
- The workers' career aspirations; and
- Skills requirements of the workforce identified for each position (**Table 3-1** and **Appendix B**).

3.5.4 Project Training Priorities Worksheet

Project training priorities will be identified by the Project Leadership Team (PLT) on the basis of:

- Skills required for the tasks to be undertaken;
- The priority to be allocated to each skill, e.g. needed by law, essential now, desirable soon, helpful now;
- When each skill will be needed e.g. short-term, medium term, long term; and
- Who will be required to have each of the skills e.g. employee or subcontractor.

This information will be compiled in a "Training Priorities Worksheet". An example worksheet, to be further developed by the TC in consultation with the PLT, has been included in **Appendix C**.

3.5.5 Skills Profile

This section has been provided as a guide for Lendlease and the subcontractors engaged on the project to examine the skills profile of their staff and employees to determine eligibility to participate in structured training in accordance with participation targets outlined in the NSW Government Training Management Guidelines. Considerations for the development of individual skills profile will include:

- Specific areas in which there may be a shortage or deficiency in the skill levels required to perform the work;
- General skill level and associated training needs for each selected Project Employee;
- Key tasks regularly performed;
- Interests in learning;
- Commitment to enterprise; and
- Future Development Needs (Career aspirations identified during the individuals' performance reviews).

Results of these surveys will reside in the individual's training file that will be maintained in confidence by the TC.

The results of this skills profile will allow the project to develop and continually review the various elements of their PTMP including:

- A Skills Formation Plan detailing training priorities for construction;
- How structured training outcomes will be achieved;
- Targets for addressing training needs; and
- Priorities.

A four-stage management process will be used to procure the necessary skills profile as follows:

- Stage 1 determines the various skills required to construct the project;
- Stage 2 determines whether skills are to be provided by a Project Employee or Other Employee;
- Stage 3 is an audit to determine from time-to-time, the skills available in current and/or future Project Employees; and
- Stage 4 is an analysis of any gaps which exist between the findings of Stage 1 and Stage 3.

Stage 1 will be performed primarily in the initial few months following the date of the Project Contract, during which time no physical construction work will be performed but recruitment and mobilisation of the project workforce required for the early construction activities will be effected. During this period, project staff responsible for construction will perform a "Needs Analysis" to determine the skills required to construct the project and the number of people with those skills that are needed. The Program will prioritise the timing for the implementation of the skills needed. This will then determine the appropriate skills needed by each employee to perform all the programmed work activities.

Stage 2 constitutes part of the project's procurement process to determine, for each activity, whether it will be performed directly by the project or by an appropriate subcontractor. The subcontractor selection in this regard may well be influenced by skills considerations.

Stage 3 is the periodic assessment to determine what skills are held by all Project Employees. The skills audit encompasses all Project Employees either transferred to the Project or earmarked for transfer and all Other Employees who will be employed by subcontractors with a workforce capability known to the project.

Stage 4 is an analysis of the findings of Stages 1 and 3. Its aim is to match the skills available amongst the Project Employees with the skills needed to construct the Project. Skills gaps are evident as a result of this process and it becomes the basis on which a training program is developed. Skills gaps are assessed in accordance with the relevant National Training Package to determine what gaps exist either in general skills for the project, or skills specific to the individual employees.

The skills audits will cover project staff employed as Managers, Engineers and Construction Supervisors as well as employees in the general classifications of office staff, labourers and operators on construction sites. The results of the audits will document the skills, abilities and work experience of the individuals interviewed.

3.5.6 Master Training Register

A Master Training Register will assist in determining personal training requirements for individuals with consideration of the Staff Skills Matrix, the Preferred Qualifications Table and the performance review undertaken with an individuals' relevant manager. This information will allow an appropriately structured and relevant training program to be developed.

In addition to the process outlined in "Section 8: Records", individual training requirements are to be entered into the Master Training Register provided at **Appendix D**, which is to be further developed by the Training Coordinator. The Master Training Register will assist the Project Management Team and the Training Coordinator to identify and monitor the project training targets and employees' progress using a single document.

The training register will address:

- Training required (Individual Training Plan);
- Status (whether the training has been completed, if it is required or if it is not applicable);
- Date completed;
- Revision completed (if applicable); and
- Expiry date (if applicable).

3.6 Description & Details of the Project Workforce

The preferred minimum competencies for various field positions that will be filled on the project and the expected potential for up-skilling is detailed in **Table 3-1**.

Table 3-1: Description & Details of the Project Workforce

Position Description	Skill Base – Preferred Minimum Competency	Potential Up-skill Competency
Plant Operators	Relevant licence for high-risk equipment. Statement of Attainment listing the competency unit for the equipment to be operated	Cross Training in competencies in other Prescribed Occupations or Certificate III in Civil Construction (Plant Operations) or Construction and Maintenance
Doggers	Relevant licence for high-risk equipment	Certificate III in Dogging
Riggers	Relevant licence for high-risk equipment	Certificate III in Rigging
First Aider	Senior First Aid	Occupational First Aid
Traffic Control Public Area	NSW WorkCover: Traffic Controller's ticket	
On-site	Project Spotter training	NSW WorkCover Traffic Controller's ticket
Surveyor	Diploma of Surveying (Mining and Engineering) Advanced Diploma of Surveying (Mining and Engineering)	Degree qualified (e.g. Bachelor of Spatial Science)
Survey Assistant	General Construction or Cert II in Survey (Survey Assistant)	Associate degree in Spatial Science
Office Administration	Desktop Computer training – Microsoft software	Cert III / Cert IV Business Administration
Procurement Officer(s)	Training / Certificate or experience in Purchasing	Diploma Contract Management
Mechanical Fitters	Trade qualification	Micro-level Plant-specific training
Trades Assistants	Apprenticeship / Traineeship	Trade qualification
Environmental Officer(s)	GCS Generic guideline units: Sustainability or Cert II Conservation and Land Management	Cert III Conservation and Land Management
Quality Management	Three years of quality-related experience	Auditing skills training
Oxy / Welding	Certificate II for Civil Construction	Certificate III Civil Construction
Plumbing	Trade qualification	Micro-level Plant-specific training
Trades Assistants	Apprenticeship / Traineeship	Trade Qualification
Carpenters	Trade qualification	Micro-level Plant-specific training
Trades Assistants	Apprenticeship / Traineeship	Trade Qualification
Boilermakers	Trade qualification	Micro-level Plant-specific training
Trades Assistants	Apprenticeship / Traineeship	Trade Qualification
Electricians	Trade qualification	Micro-level Plant-specific training
Trades Assistants	Apprenticeship / Traineeship	Trade Qualification
Landscaping / Land Management	Support Landscape Work or Cert II in Horticulture	RTF03 Amenity Horticulture
Engineers – Technical	Bachelor of Engineering	Post-graduate qualifications Advanced Diploma Project Management and/or Cert IV Office Administration
Engineers - Management	Bachelor of Engineering Advanced Diploma Project Management	Advanced Diploma Business Management Grad Cert Mgt Master Business Administration Targeted Selection (Behavioural interviewing techniques)

Position Description	Skill Base – Preferred Minimum Competency	Potential Up-skill Competency
Supervisors (Foremen)	Industry experience / employment history	Cert IV in Civil Construction (Supervision or Operations)
Superintendent	Cert III in Civil Construction (Plant Operation or Road Construction Maintenance)	Cert IV in Front Line Management Targeted Selection (Behavioural interviewing techniques) Conflict Resolution Techniques
Graduates	Cert IV Civil Construction Supervisor or Operations	Diploma Front Line Management Diploma Project Management
Vocational Employment	1st Year qualified Bachelor of Engineering (Civil & Building)	Diploma Business, Graduate Diploma or Master's Degree
	Current student of Bachelor of Engineering (Civil & Building)	
Safety	Certificate IV in Occupational Health and Safety	Diploma in Occupational Health and Safety
Trainers	Cert IV in Workplace Assessment & Training (BSZ 098) or Cert IV in Training & Assessing TAA40104 (upgrade course) plus any relevant qualification in specialist training field	TAE 10 Cert IV in Training & Assessment
Labourers	Employment History or Cert I in Civil Construction or General Construction	Cert II or III in Civil Construction or General Construction

3.7 Structured Training

Structured Training is a program through which competencies are specified and lead to a recognised qualification; learning is planned, organised and sequenced to achieve workplace competence through workplace assessment conducted by a qualified Assessor.

Structured training consists of:

- National units of competency;
- RTO delivered and RTO qualification awarded; or
- Tertiary Institution delivered and Tertiary qualification awarded; and
- Lead to a National Recognised Qualification as listed in the Australian Qualification Framework (AQF).

It is not necessary to provide a full qualification but participants in structured training must have the opportunity to achieve Units of Competency or a Statement of Attainment that can be used toward a recognised qualification.

If the employer conducts the training then there needs to be a mechanism for recognition of this training.

WorkCover Work Health & Safety (WHS) training can be counted as structured training as long as there is some recognised certification.

3.7.1 Selection of Personnel for Structured Training

A selection of staff members and employees to participate in a Structured Training Program will be considered by the parent organisations' management team and/or Human Resources Department so as to align with their career stream development. Structured Training is to be provided through a Registered Training Organisation or Tertiary Institution.

Staff and employees will be required to provide evidence of previous training and qualifications held during the induction process to assist in determining their level of skills and may be given the opportunity to enhance their skills level. Staff and employees will be selected for training after discussion with or on the recommendations of the employee's immediate manager.

Apprenticeships and Traineeships will be available in a range of vocations including but not limited to, traditional trades, civil construction, general construction and business administration.

Over a relatively short period of time and with the right application, workers can achieve trade recognition in their chosen fields after completing the specified modules for that trade. These career paths are available under the umbrella of an RTO.

Cadetships and post-graduate courses will be available in a range of careers depending on the candidates' field of employment.

In developing the timeframe for achievement of training priorities on the project, the Employer must consider the duration of training agreements (cadetship or apprenticeship) and the duration of the project.

For skills training, a key feature of Competency Based Training and assessment is that trainees learn skills at different rates. The employer will endeavour to ensure that optimal outcomes are achieved during the project taking into account employees' different learning rates, the project requirements and the NSW Government requirements.

3.7.2 Structured Training Programs

To achieve the targets for structured training in a fluctuating workforce, the training programme will focus on directly employed Lendlease personnel and employees of the subcontractors. The training program will address the workforce skill needs identified during the Project Training Needs Analysis and the priorities identified at **Appendix C**. Outcomes of training should be aligned to the preferred minimum competencies for various project employment categories outlined in **Table 3-1**. All training requirements also coexist with the mandatory induction for all persons as described in the Quality Management and Work Health and Safety Project Plans.

The Employer will make available to selected new or existing staff and employees, the following training opportunities:

- General skill training will include, where appropriate:
 - Job-specific skills immediately useful within the project;
 - Practical and manual skills (for example, safe lifting techniques and equipment operation skills);
 - Familiarity with new technology and the ability to apply this knowledge in particular occupations; and
 - Improved literacy and numeracy needed in particular workplaces. Examples of such training include measurement and calculation, recording technical information, oral and/or written reporting, the ability to listen and respond to directions and the ability to read warning and information signs;
- NSW WorkCover WHS required training including:
 - First aid certificates;
 - Safety committee training;
 - Manual handling;
 - Confined space;
 - Hazardous substances and dangerous goods;
 - Elevated Work Platforms;
 - Working at heights;
 - Scaffolding;
 - Traffic Control;
 - Equipment Operator Certification;
 - Dogman;
 - Risk Management for Supervisors; and
 - WHS for Construction Supervisors (SuperSafe).
- Qualification training including:
 - Twelve month traineeship for selected Project Employees in vocations relevant to project requirements, e.g. Certificate II level;
 - Further traineeships for selected existing project staff and employees in vocations relevant to project requirements that would take them to a higher qualification, e.g. Certificate III, Certificate IV or Diploma;
 - Cadetships; and
 - Graduate and Post-graduate courses for selected staff (supervisors and managers).

Apprentice / Traineeships and structured training up to Advanced Diploma level is to be provided through a Registered Training Organisation.

Cadetships and post-graduate structured training including Degree, Graduate Diploma and Master's Degree, is to be provided through a higher education registered Tertiary Institution.

The parent organisation (employer) will be responsible for the administration and management of the apprentice, trainee and cadetship process for their employees.

The Lendlease Training Advisor will be responsible for the management of and coordination of the apprentice and traineeship process for Lendlease's directly employed personnel in conjunction with the RTO and Apprentice Centre.

3.7.3 Training Providers

Training providers will be registered with the appropriate Government body and employ appropriately trained, qualified or experienced trainers in accordance with legislation and Client requirements. In the event that no specific requirement has been prescribed, their suitability will be assessed by the Training Coordinator.

3.7.4 Training Methods

All structured training is to be delivered by, or in partnership with, Registered Training Organisations or a Tertiary Institution.

The preparation and content of structured training material and presentation of training courses is to be undertaken by a person with the relevant Certificate IV Training and Assessing qualification, or for Tertiary Institutions a relevant teaching qualification.

The selection of external training courses and providers will be based on the skills requirements, skill profile and the staff training register.

3.7.5 Training Material

A trainer holding at least Certificate IV in Workplace Training and Assessment will review training materials used on the project excluding the Site-specific Induction, which is the responsibility of the Safety Manager. Training materials will be reviewed on an as-needed basis or following comments raised by the training evaluation process.

Training Providers (RTOs) engaged to deliver structured training will be required to provide all training and assessment materials.

3.8 Quality & WHS Training

3.8.1 Induction Training

Project Induction is fundamental to the strategy of maintaining security over the safety of the construction site to the extent that no person will be permitted to enter the construction site before that person has undertaken the required Project Induction.

All personnel including subcontractors engaged to work on the Project Site will be provided with a site induction. Persons presenting themselves for site induction will be required to show their Construction Induction Card (White Card), which must include the WorkCover Number, or WorkCover Certificate of Attainment. A copy of the Induction Card or letter of attainment will be held for each person working on-site.

Specific details and instructions for inductions are outlined in the Quality Management and Work Health and Safety Project Plans.

Induction training does not comply with the definition of structured training and therefore cannot be included as part of the Project Training Targets.

3.8.2 Toolbox Talks

Toolbox talks are to be held prior to the commencement of major activities to ensure that roles, responsibilities, workmanship, safety and environmental requirements are known.

All personnel including subcontractors will, from time to time, be required to undertake or attend area / site toolbox talks relating to the activity or the work area in which they are undertaking construction

activities. Records of these toolbox talks / training sessions conducted by subcontractors will be maintained and made available to Lendlease upon request.

Specific details and instructions for the conduct and recording of toolbox talks are outlined in the Quality and Safety Plans.

Toolbox talks / meetings do not comply with the definition of structured training and therefore cannot be included as part of the Project Training Targets.

4. Accountability & Responsibility

This section of the Training Plan describes how structured training outcomes will be achieved.

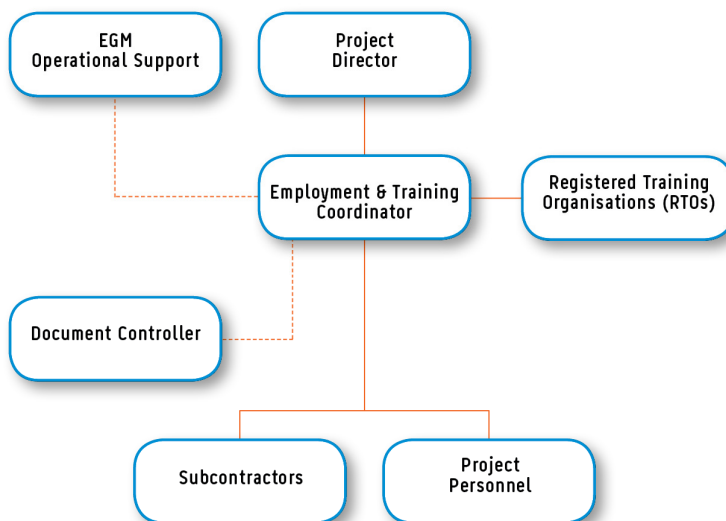
4.1 Organisation Structure & Responsibility

4.1.1 Organisational Structure

The organisational structure across Lendlease and its relationship to personnel nominated in the Training Plan is outlined in the Organisation Chart shown in **Figure 4-1**, below.

Complete project organisational charts are included in the Project Management Plan (PMP).

Figure 4-1: Organisational Structure



4.1.2 Management Responsibilities & Accountability

The Training Plan sets out key roles and responsibilities of the project team (**Table 4-1**). Each key staff member is issued with a Position Description for Roles, Responsibilities and Authorities.

Managers at each level will be held accountable for identifying training requirements and for the release of staff and employees to attend scheduled training, including both on the job and off the job training. Regular management reporting will include an on-going assessment of training delivery against the Project Training Targets and the Master Training Register for efficiency and effectiveness.

The Project Director and the Training Coordinator will ensure that managers and supervisors are provided with the support and assistance that they require to meet training obligations, including personal coaching and mentoring where required.

Table 4-1: Key Responsibilities

Training Plan	Responsibility
Training Plan:	
<ul style="list-style-type: none"> Plan Objectives and targets Prepare and update Plan Maintain a copy of Plan on-site Authorise Plan Monitor Plan Review Plan Distribution of Training Plan updates 	<ul style="list-style-type: none"> Project Leadership Team Training Coordinator Training Coordinator Project Director Training Coordinator Training Coordinator & Project Leadership Team Project Document Controller

Training Plan	Responsibility
Workplace Training Participation Plan:	
<ul style="list-style-type: none"> • Determine skill requirements and priorities for the project • Set actions to achieve required skills • Determine minimum training requirements and targets • Method, resources and timing for training • Responsibility for organising, undertaking and recording Training • Measurement and recording 	<ul style="list-style-type: none"> • Training Coordinator in conjunction with Managers, Superintendents and Senior Foremen • Training Coordinator • Training Coordinator • Training Coordinator • Training Coordinator • Training Coordinator
System for recording training and assessing compliance	Training Coordinator & Project Record Keeper
Demonstration of compliance with statutory requirements including subcontractors	Training Coordinator
Coordination of training needs with Site Managers and Superintendents	Training Coordinator
Budget for training	Project Director & Training Coordinator
Assess qualifications of external training providers	Training Coordinator
Audit subcontractors	Training Coordinator / Internal Auditor

5. Resources

Lendlease will fulfil its training obligations as described in this Training Plan by using in-house trainers (e.g. Safety / Quality / Environmental personnel) or call on external industry-specific training professionals to deliver and assess structured skills training. Existing Lendlease personnel may be identified as potential trainers / assessors and trained accordingly to ensure effective implementation of the Training Plan.

Training may be delivered on-site or at a venue to be approved by the Training Coordinator. The facility selected for the conduct of training will accommodate the need for off-the-job training and will be equipped with furniture and training aids appropriate for the presentation of high-quality training. The facility will be large enough to perform inductions and a number of different skills training programs. A copy of the PTMP will be maintained and made continuously available at the Project Site Office. The Training Coordinator will be kept updated to reflect any changes to the construction processes and changes to other Project Plans.

The TC will either directly control or have access to resources comprising:

- Accredited trainers and assessors (Certificate IV in Training and Assessment) employed by Lendlease or a Registered Training Organisation;
- Suitably qualified persons employed by Lendlease to perform WHS and Quality inductions;
- Suitably qualified persons employed by Lendlease to perform environmental inductions;
- Accredited trainers / training providers outsourced for specific skills capability or for peak training periods;
- Accredited assessors to evaluate individual skill capabilities; and
- Administrative staff to manage the training database.

To provide certainty of achieving Lendlease's desired and mandatory training outcomes, the Training Coordinator will outsource any particular technical training capability required that is not available as part of the above resources. The Training Coordinator, or a person nominated by the Project Director, will be responsible for and/or will perform various tasks including:

- Coordinating with the construction supervisors;
- Assessing any person chosen to deliver training to ensure that appropriate qualifications are held;
- Ensuring that all companies engaged on the project comply with:
 - NSW Government Skills and Training in the Construction Industry (May 2015) and Training Management Guidelines (February 2009);
 - NSW Government Policy on Aboriginal Participation in Construction (May 2015); and
 - Statutory obligations relating to WHS&R training;
- Identifying, coordinating and managing training for the project;
- Organising and coordinating internal training for Lendlease and other employees;
- Arranging external training for Project Employees on a needs basis; and
- Inputting all employees' training records into and maintaining Lendlease's database.

The training records will not only maintain and update all forms of completed training, but also provide an indication of any refresher training that is needed. Access to all training reports and information will be available to all managers and supervisors.

The Training Coordinator will be supported by appropriate physical and human resources to achieve the training targets including:

- Corporate Training Personnel as requested;
- Accredited (Certificate IV in Training and Assessment) trainers; and
- Accredited (Certificate IV in Training and Assessment) assessors to evaluate skill capabilities.

Additional resources will be available as required via outsourcing, including the engagement of a Registered Training Organisation to assist in the development, delivery and management of structured training and traineeships.

6. Subcontractors

6.1 Compliance

Subcontractors will be required to comply with statutory requirements in relation to training. This requirement will be fully explained to them and included in their contract. Subcontractors may be, at the Project Director's discretion, requested to submit Training Plans for approval prior to commencement of work. Any deficiencies will be reported to the subcontractor so that alterations can be made.

Subcontractors will be required to provide regular evidence of conformance and will be subject to periodic audits to monitor conformance. A non-conformance report will be issued for any identified non-conformances.

6.2 Subcontractor Workforce & Apprentices

Also, to be included in the subcontractors' contract will be a requirement to provide a personnel list of their total workforce, which is to include positions and identify those that are employed as a tradesman, apprentice or trainee and those that are undertaking a structured training course.

6.3 Subcontractor Training

All subcontractors engaged to work on the Project Site will be provided with a site induction. Persons presenting themselves for site induction will be required to show their Construction Induction Card (White Card), which must include the WorkCover Number, or WorkCover Certificate of Attainment. A copy of the Induction Card or letter of attainment will be held for each person working on-site.

Subcontractors will, from time to time, be required to undertake or attend area / site toolbox talks relating to the activity or the work area in which they are undertaking construction activities. Records of these toolbox talks / training sessions conducted will be maintained and made available to project management upon request.

7. Evaluation & Review

7.1 Evaluation of Training

The effectiveness of training provided will be assessed and the training modified in response to:

- Training participants;
 - Each participant in structured training will be required to complete a Course Evaluation Form;
- Participant's Supervisor and Manager;
 - On assessment of information from participants' course evaluations;
 - On assessment of participants' performance in the workplace; and
 - On assessment of the project needs;
- Trainer;
 - On assessment of participants' course evaluations;
- Training Coordinator;
 - On assessment of information provided by the trainer / assessor and the participants' course evaluations;
- Project Management.

Measurement and evaluation of training may include Project KPIs, Training Evaluations, Individual Performance Reviews, Quality Audits to identify increased productivity and reduced reworks, and also Safety audits to identify reduced Lost Time Injuries (LTIs). Results of audits and evaluations will be recorded and used to identify areas where corrective action is required and can be attributed to training.

7.2 Training Material

A trainer holding at least Certificate IV in Workplace Training and Assessment will evaluate training materials used on the project excluding the site-specific induction, which is the responsibility of the Safety Manager. Training materials will be reviewed and amended on an as-needed basis or following comments raised by the training evaluation process. Training Providers (RTOs) engaged to deliver structured training will be required to provide all training and assessment materials.

7.3 Non-conformance & Corrective Action

Any non-conformance identified through the measurement, evaluation and review process and the subsequent corrective action will be in line with the Project Management Plan.

7.4 Review

The Training Management Plan will be reviewed and adjusted in response to feedback from training evaluations and will be subject to a quarterly internal review to ensure that it has been implemented effectively across the workplace. This review will verify that the training management activities match those stated in the Plan, with results of the review reported to the Project Director.

As such, the Plan forms a platform for continuous improvement. Some initiators for changes to the Plan could include:

- Changes in the scope of works or technical criteria;
- Changes in the design or construction sequence, staging, method, process or resourcing;
- Progress in the project work;
- Requests by a statutory authority;
- Internal and external audits;
- Suggestions and comments from project personnel;
- Preventative action for a non-conformance;
- Necessity for corrective action; and
- Senior management review.

The PTMP and training outcomes may be subject to audits by the Client. Assistance will be provided to the external reviewer during the review process as required.

Any changes to the Plan must be approved by the Project Director.

8. Records

8.1 Training Records Management

All records generated for training will be adequately recorded to meet legal and administrative requirements. Training records are legal documents and may be subject to scrutiny by persons external to the project.

Training records will not have any personal comments attached. Comments in relation to the subject matters are acceptable.

All Lendlease personnel training records will be retained on the project site. Line Managers and Supervisors will be provided access to all training management records to assist them while undertaking performance reviews.

The Training Coordinator will be responsible for ensuring that records are updated on a regular basis and an up-to-date copy of the Project Training Management Plan is maintained on project site.

Lendlease will utilise and maintain the QESE database to:

- Record all forms of training conducted;
- Flag refresher training required; and
- Assist in production of reports.

Refer to **Appendix E** for relevant System Procedures and Forms.

8.1.1 Subcontractor Training Records

Subcontractor workforce apprentices, trainees and those participating in other structured training are to be included in the project training participation reports.

Relevant records of training for all subcontractor employees will be retained by the subcontractor with results of completed training courses provided to the Lendlease TC for recording in the QESE database at the time of site induction with updates undertaken as required.

The Lendlease TC will be provided access to all training records as part of the auditing process to ensure that the subcontractors are conforming to their obligations for training under the NSW Government's Skills and Training in the Construction Industry (May 2015) and Training Management Guidelines (February 2009)..

8.1.2 Confidentiality

The following training records listed in **Table 8-1** are confidential and their content must not be disclosed to unauthorised persons.

Table 8-1: Access to Training Records

Record	Authorised Persons	When
Training Needs & Skills Assessment	Individual, Individual's Supervisor, Individual Area Managers, Site Manager & Project Services team	On request
Employee Induction Record	Individual, Site Manager, Project Services Team	On request

8.2 Compliance with Statutory Requirements

Documentation evidencing compliance with statutory requirements will be prepared and submitted by the Training Coordinator as required.

9. Monitoring & Reporting

Lendlease and its subcontractors will be required to comply with the PTMP and all statutory requirements in relation to training. This requirement will be fully explained to the subcontractors and included in their contract. The subcontractors may be requested to submit Training Plans to the Lendlease Project Director for approval prior to commencement of work. Any deficiencies will be reported to the subcontractors so that alterations can be made.

Lendlease will be required to provide regular evidence of conformance for themselves and their subcontractors. The subcontractors will be subject to periodic audits to monitor conformance. A non-conformance report will be issued for any identified non-conformances.

To enable Lendlease to estimate and monitor monthly workforce numbers, the TC will be required to:

- Use Lendlease Procedures as a minimum standard for compliance;
- Provide the following information on Lendlease's and subcontractors' existing workforce to the Project Director:
 - The number of Aboriginal participants, apprentices and trainees employed or hosted by Lendlease and subcontractors;
 - The number of staff and employees undertaking structured training; and
 - The number of workers, including their position and trade, employed or hosted by Lendlease or its subcontractors.

The TC is to submit periodic structured training and apprentice / trainee participation reports monthly or as required to the Project Director.

A template, to be further developed by the TC, for monitoring and reporting labour force and training participation is located in **Appendix F**.

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Appendix A

Workforce Structured Training Targets

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Appendix A: Training Target & Workforce Participation Template

Estimated Project Training Targets (example only)



INPUT DATA INTO GREEN CELLS ONLY Construction Phase from 01-Mar-13 to 01-Dec-15 to 24-Aug-15 NOTE: Dates to the left for Structured Training Period are automatically calculated.

NOTE: Include subcontractor workforce

	2013												2014											
	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February
A	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300	0	0	0	0	0	0	0	0
B	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0
C	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0
D	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0
E	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	0	0	0	0	0	0	0	0

EXAMPLE ONLY

That is:

Therefore 300 represents the peak work force estimated to be on site (Example shows peak period is Jun 2014)
of which 60 people are estimated to participate in Structured Training for the peak period
of which 35 is the estimated number tradespeople on site
of which 9 are to be apprentices or trainees
Therefore 51 Project employees are required to participate in Structured Training for the month identified

$$B \quad 60 \quad \text{Project Training Target for peak period}$$

$$D \text{ minus } 9 \quad \text{Apprentice Target}$$

$$E = 51.25 \quad \text{Training Target (structured)}$$

Training Target Formula:

$$\text{Project Training Target} = \text{Apprentice Target} + \text{Training Target}$$

REFERENCE: Page 7 of NSW Training Management Guidelines February 2009

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Appendix B

Professional / Person Skills Training Matrix

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Appendix C

Training Priority Worksheet

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Appendix C: Training Priority Worksheet

The Training Priority Worksheet is to be further developed by the Training Coordinator in consultation with the Project Management Team.

Training Priority Worksheet

What are the skills needed?	Priority	When are these skills needed?	Nominate who will be trained?
Traffic Control – Stop / Go	1	3	Labourers
Traffic Control	2	3	Labourers
Traffic Control	1	3	Engineers
First Aid	2	3	All
First Aid (Occupational)	1	1	First Aiders
Elevated Work Platform	1	2	Labourers / Operators
Supervision & Team Leadership	3	2	
Roller Operation	3	3	Labourers
Dogman	4	3	Labourers
Management Systems	2	1	Engineers, Systems Coordinators
WHS Consultation	1	1	Safety Committee members
Risk Management for Supervisors	3	3	Foremen, Engineers

Priorities:	1	Required by law
	2	Essential / now
	3	Desirable / soon
	4	Helpful / eventually
When needed:	1	Short-term (up to six months)
	2	Medium-term (six months – one year)
	3	Long-term (one – three years)

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Appendix D

Master Training Register

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Appendix E

System Procedures & Forms


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Appendix E: System Procedures & Forms

Procedure

LLE1002

Worker Induction and Training



1. PURPOSE AND SCOPE

To ensure that all workers employed on projects are properly inducted prior to commencing work and have their training needs and the training needs of other workers not on specific projects are identified to ensure they are properly skilled, qualified and competent to perform their assigned duties.

Likewise, all subcontractors and visitors to the project must be similarly inducted and the qualifications of subcontractors' workers checked as suitable for their prescribed duties.

Also, subcontractor's workers must have been inducted into the Subcontractor's Management System.

2. DEFINITIONS

- None applicable.

3. REFERENCES

- AS 4801, Clause 4.4.2, Training and Competency
- AS/NZS ISO 14001, Clause 4.4.2, Competence, Training and Awareness
- AS/NZS ISO 9001, Clause 6.2.2, Competence, Awareness and Training
- S.R. OHSAS 18001
- AS 4292.1, Clause 4.2, Rail Safety Worker Competence
- [LLE601 Safety Risk Management](#).

4. RESPONSIBILITIES

State General Manager/Operations Manager

- Select staff based on their experience, knowledge and competency required to undertake their given duties;
- Ensure skills assessments are undertaken for all workers and training is provided as required; and
- Monitor and review individual worker's training through the annual Performance Review process.

Project Manager

- Determine labour requirements and identify the level of competence required in each labour group;
- Employ project day labour on the basis of their suitability, experience and competence for the task for which they are specifically employed;
- Ensure that workers have appropriate qualifications for their type of employment, e.g. tradesmen, plant operators, traffic controllers, rail safety workers etc.;
- Determine additional training necessary including training by accredited external providers, and
- Monitor and review individual worker's training through the annual Performance Review process.

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LLE1002 Workers Induction and Training



Project Systems Coordinator

- Induct the site management in their specific roles and responsibilities in the management system, particularly in respect to quality, safety and environment;
- Induct all workers of both the Company and subcontractors in respect of those matters relating to quality issues;
- Ensure that all workers of both the Company and subcontractors hold proof of general industry induction and where necessary specific industry induction such as rail industry safety induction (RISI);
- Induct all workers of both the Company and subcontractors in respect of those matters relating to work health and safety issues particularly as they relate to the site and work activity induction training. Such training should be based on hazard identification, risk assessment and control measures implemented;
- Induct all workers of both the Company and subcontractors in respect of those matters relating to environmental issues particularly as they relate to the site and work activity and task training and the need to ensure environmental compliance;
- Check that subcontractors' personnel are aware of their responsibilities in respect of the subcontractors' and the Company's management system and where such awareness is lacking, liaise with the subcontractor to redress the situation;
- Check subcontractor's personnel are properly qualified for the duties they are required to undertake;
- Determine the need for and organise toolbox meetings as required to provide refresher and additional information and training; and
- Input induction, competency and training records into the QESE database within ten (10) days.

State Learning and Development Manager/Advisor

- Assist General and Operations Managers in selecting and assessing suitable training courses and workers who should attend;
- Assess training courses for content and relevance;
- Request and analyse feedback from training course participants;
- Maintain records of worker training; and
- Review the ongoing relevance and adequacy of training courses.

Subcontractors

- Contractors, consultants and service provider workers with health and safety roles and responsibilities (related to legal and/or Company Management System requirements) must ensure all key personnel are aware of their health and safety responsibilities and are suitably trained to address any competency requirements or technical qualifications relevant to their role;
- Ensure that all their workers have attended general industry induction or where necessary specific industry induction such as rail industry safety induction (RISI);
- Provide evidence prior to the site induction that their workers have been inducted into the subcontractor's management system;
- Ensure all their workers are put through the Company induction process before commencing activities on site;
- Ensure that their workers hold the appropriate qualifications for the tasks they perform; and
- Maintain training records for their workers.

5. METHOD

5.1. Induction

All workers who are required to perform a construction activity on site must attend a site specific induction. Prior to attending the site specific induction the worker needs to provide evidence of the following:

- General construction industry induction; and
- SWMS induction including sign off on the applicable SWMS;
- High risk work licence, certificates of competence or statement of attainment as applicable for the work that is to be performed.

LLE1002 Workers Induction and Training



[LLE1002 Attachment 1 Workplace Induction Agenda](#) must be used as the basis for the specific site induction. Note this will require expansion to meet those risks identified during the development of [LLE601A Project Safety Risk Register](#).

Equally, workers and subcontractors and their workers must be aware of the importance of conformance to environmental policy and procedures to ensure the impact of their work activities is minimised and understand their role and responsibility in complying with environmental procedures and the potential consequences of noncompliance. Environmental awareness will be included in the worker site induction.

A record of each worker and subcontractor and their workers induction is to be completed and retained on site using [LLE1002A Workplace Induction Record](#).

When it is noted by an inductee on their induction record, that their preferred language is not English, the inductor should ascertain the inductee's level of understanding particularly as it relates to the understanding of safety signage and the ability to comprehend health and safety training. In some instances or on certain projects it may be necessary to produce induction and training packages and signage in a foreign language where the ethnic background of the work force dictates this. Alternatively, in isolated instances it may suffice to use a translator for specific training purposes.

A person's level of literacy may raise additional difficulties as such issues can potentially cause embarrassment to the person involved. If the inductor considers the inductee may have such issues by virtue of difficulties in completing the induction record, the issue should be approached sensitively as again safety may be a concern notwithstanding modern safety signage is often identified with symbols rather than with words.

Visitors to the project depending upon the frequency and/or purpose of their visit will also be inducted. However in some circumstances where the visits will be infrequent it will be sufficient to provide a visitors induction, sign the [LLE1002H Visitor Register](#) and provide an escort to the visitor on the basis they do not access any working area unless in the company of the escort. The escort will themselves be inducted and must remain with the visitor at all times and ensure that the visitor is provided with or had provided themselves appropriate safety equipment.

Notwithstanding the major focus of the Company's activities is project based, workers in the Company's major state offices will also be inducted. This induction will as well as delivering details of policy will also contain details of emergency procedures particularly in relation to emergency evacuation. Subcontractors employed in state offices will be given similar emergency evacuation training whereas visitors will be accompanied by the workers they have come to visit. Visitors will be required to 'sign-in' and will be required to wear identification and to 'sign-out' on leaving.

All visitors will be required to attend the site office or report to a supervisor before accessing the work site and failure to do so will mean refusal to and removal from the site.

5.2. Training

Where a Company staff member, worker or subcontractor worker has a position or responsibility that requires statutory training or accreditation (e.g. statutory operator of plant/equipment, high risk work license), the Company staff member, worker or subcontractor worker must undertake the relevant industry/statutory training and must not fulfil the task/responsibility until certified to do so. Included is [LLE1002 Attachment 2 General Training Plan](#), which provides a generic outline of training proposed on a company-wide basis. More specific training in respect of projects is included in other documents and records.

Training will be carried out on two levels which identify the need to:

- Provide training which ensures that personnel are capable of performing their work; and;
- Provide training which ensures that personnel are aware of their specified responsibilities.

LLE1002 Workers Induction and Training



Training is therefore both specific, directed at the performance of assigned tasks, and general, directed at heightening awareness.

All Company workers must be familiar with LLE's vision to operate Incident and Injury Free and complete all work health and safety training applicable to their role.

An example of training directed at the senior management, project management and supervisor levels of the Company is the "pulse" safety leadership program which is a national training program aimed at providing this level of management with the skills to determine how effectively the Company safety system and procedures are being implemented and how to improve. All management in these categories are required to attend the training which comprises of four (4) core units and twelve (12) elective units which if all are completed leads to a Certificate IV Qualification. The number of units required for completion is determined by the level of management with the framework having been endorsed by the Federal Safety Commission. The core units contain a component relating to safety legislation. Attendance at this course provides a platform to ensure that as worker's progress through the supervisory or management hierarchy they are provided with suitable training to manage their safety responsibilities. The effectiveness of this training will be monitored during the annual Employee Performance Review process which will be used as a vehicle to discuss both received and future individual training requirements.

Examples of training directed to project based workers include training in traffic management ranging from advanced worksite and basic worksite training to traffic controller training, basic survey and set-out skills, plant operation, first aid, contract management, financial control, etc.

All workers and subcontractor workers must be trained in the requirements of safe work method statements (SWMSs) and any new and previously unforeseen amendments and changes to them and are consulted through this process to become involved in their development ([LLE601 Safety Risk Management](#) refers). SWMSs address as well as the hazard controls to be adopted by the persons involved in the activity, the requirements for what personal qualifications and experience may be requires, the permits that must be in place and the relevant regulatory requirements.

In a specific construction environment such as working on rail projects, workers will also need to be trained in areas such as track safety awareness, operation of track machines and vehicles, communication protocols, etc., in accord with the requirements of the various State and rail operating authorities. Additionally, in the rail industry there are requirements that such training be in certain circumstances covered by Certificates of Competency. Further details in respect of training requirements in the rail industry are addressed in [LLE1002 Attachment 3 Training of Rail Workers](#).

Members of the general workforce will be employed on the basis of their qualifications, competence, training and/or experience as required to carry out their particular work assignments and to maintain a labour resource capable of providing a quality product.

Proof of competence (certificates, licences, training records, or knowledge testing) must be provided for any workers of contractors/service providers conducting specialist or high risk activities.

All supervisors must be assessed as competent to supervise prior to undertaking any works. Refer to [LLE1002F Approval to Supervise](#).

In addition quality awareness will be included in the site induction.

Records of project staff training will be maintained on site and recorded on form [LLE1002B Staff Training Register](#).

Additional training and information to all workers including subcontractors, using Pre-Work Briefing will be provided prior to the commencement of work each shift.



LLE1002 Workers Induction and Training

Specific requests for training, particularly external training courses and conferences can be made using [LLE1002D Request for Training](#).

Where training is carried out and it is determined that feedback is required in respect of the training provided, the trainee should be requested to complete [LLE1002E Course Evaluation Request](#) which should then be forwarded to the relevant state Learning and Development Section for review with the relevant discipline manager to evaluate current training and future needs.

Training courses that form the training program will be reviewed on regular basis based on the feedback received from course participants. This provides for continuous and ongoing review in response to participant's views on relevance and content.

Annual performance reviews also provide a source of information whereby both the worker and their supervisor have the opportunity to discuss and assess the worker's development plan.

Demands for competency and skill development and proposed training and development activities discussed and recorded by the parties provides a reference point by which existing courses can be augmented and new courses can be developed.

5.3. QESE Database

QESE has been developed and established to manage quality, engineering, safety and environmental records on a project site.

The QESE data base provides an ongoing and updated record of all people including Company Staff, workers and subcontractor workers who have received induction on a particular project site, details of their industry induction, copies of competency documents and training information. This information can be made available to other projects or on a needs basis and provides a tool for managing, updating and providing access to these records.

Where QESE is utilised for record management purposes the need to complete and retain hard copies of the various records can in most part be eliminated.

6. RECORDS AND ATTACHMENTS

- [LLE1002 Attachment 1 Workplace Induction Agenda](#)
- [LLE1002 Attachment 2 General Training Plan](#)
- [LLE1002 Attachment 3 Training of Rail Workers](#)
- [LLE1002A Workplace Induction Record](#)
- [LLE1002B Staff Training Register](#)
- [LLE1002C Meeting Training Record](#)
- [LLE1002D Request for Training](#)
- [LLE1002E Course Evaluation Request](#)
- [LLE1002F Approval to Supervise](#)
- [LLE1002H Visitor Register](#)



LLE1002B Staff Training Register

Project:	
Name:	
Position:	

Training	Status (C / R / NA)	Date Completed	Expiry Date (if applicable)
QA System:			
OH&S System:			
Environmental System:			
First Aid:			
General Induction:			
Site Specific Induction:			
Work Activity Induction:			
1.			
2.			
3.			
4.			
Traffic Management			
■ Advanced			
■ Basic			
Contract Management:			
First Aid:			
Other Training:			

KEY:
 C Completed (from previous projects or this project)
 R Required
 NA Not Applicable



LLE1002E

Course Evaluation Request



Course Name: _____

Name: _____ Course Date: _____

Position Title: _____ Presenter: _____

Project: _____ Provider: _____

Thank you for taking the time to complete this evaluation form. The quality of your experience is very important and your comments are an integral part of our quality control.

Please return this form to the Learning & Development Department at the relevant regional office.

Course Organisation (Please select one grade for each criteria)				
	Very Good	Good	Average	Needs Improving
Was the course organized in a professional manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the course organized in a timely manner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did L&D provide a course suitable to your means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any areas of the course organisation process that you would improve? If so, please advise.	<input type="checkbox"/> Yes <input type="checkbox"/> No			

Further Comments: _____				

The Presenter (Please select one grade for each criteria)				
	Very Good	Good	Average	Needs Improving
Knowledge of subject matter:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Explanation clear and complete:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional, organized and prepared:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Used good examples:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Controlled learning environment:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Presentation skills:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: _____				

Version 5
As at 18 March 2015

Functional Owner: DM

Authored: DM

Authorised: JV
Page: 1 of 2


LLE1002E Course Evaluation Request

Course Content (Please select one grade for each criteria)				
	Very Good	Good	Average	Needs Improving
Course relevance to your needs:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Course presented in a logical manner:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Course pace:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training manual (if applicable):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Course length sufficient for topic?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <input type="text"/>				

Training Facilities (Please select one grade for each criteria)				
	Very Good	Good	Average	Needs Improving
Classroom set up on time:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comfort of classroom:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cleanliness:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer equipment functionality (if applicable):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpfulness of staff:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <input type="text"/>				

Additional Questions (Please select one grade for each criteria)		
	Yes	No
Would you recommend this course and/or instructor to others?	<input type="checkbox"/>	<input type="checkbox"/>
Would you recommend the same facilities?	<input type="checkbox"/>	<input type="checkbox"/>
Do you believe the primary target audience was present for this course?	<input type="checkbox"/>	<input type="checkbox"/>
Are there areas that you feel should have been covered but were not?	<input type="checkbox"/>	<input type="checkbox"/>
Overall, did you find this course satisfactory?	<input type="checkbox"/>	<input type="checkbox"/>
Comments: <input type="text"/>		
Further Comments: <input type="text"/>		

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Appendix F

Monthly Workforce & Training Participation Reports

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**Exhibit A –
Scope of Works and Technical Criteria
Appendix 45 – Initial Workplace Relations
Management Plan
for**

Design and Construction of

**Western Sydney Infrastructure
Plan - The Northern Road
Upgrade - Stage 3 North Project**

Penrith, New South Wales

Contract number: 15.3662.2254

November 2016

Document Author: Roads & Maritime Services

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About this document

Project data

Project name:	Western Sydney Infrastructure Plan, The Northern Road Upgrade - Stage 3 North Project
Contract type:	Design and Construction
Contract number:	15.3662.2254
Location:	Penrith, New South Wales
Road name:	The Northern Road and M4 Motorway
Local government area(s):	Penrith City Council

Data for this document

Document name:	WSIP The Northern Road Upgrade - Stage 3 North Project Exhibit A - SWTC Appendix 45
Version and date:	Contract Execution V1
Prepared by:	Roads & Maritime Services
Objective document ID and Version No.	qA1764323

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Initial Workplace Relations Management Plan



Appendix 3-K:
**Workplace Relations
Management Plan**

Tender for The Northern Road Upgrade
– Stage 3 North Project

June 2016

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1. Introduction & Scope

1.1 Policy & Objectives

1.1.1 Policy Statement

The success of the Project depends largely on the capability, commitment and productivity of our employees. The Lendlease Industrial Relations Policy outlines our approach to management of our employees.

1.1.2 Coverage

The Workplace Relations Management Plan and associated policies adopted for the site are intended to be applicable to all personnel involved in delivering the Project.

1.2 Purpose & Application

This Workplace Relations Management Plan (WRMP) has been developed to provide a framework for the general approach Lendlease Engineering Pty Ltd (Lendlease) will take to managing its employees and subcontractors regarding industrial relations on the Project. The objectives of this WRMP are:

- Ensure compliance with the New South Wales Code of Practice for Procurement, the Implementation Guidelines to the New South Wales Code of Practice for Procurement: Building and Construction (July 2013), the Building Code 2013 (Cth) and if required, the Fair and Lawful Building Sites Code 2014 (Cth) if enacted by Parliament;
- Establish a safe, productive, harmonious and stable working environment;
- Motivate all Lendlease employees, novated consultants and subcontractors to contribute their best efforts to the Project;
- Establish good working conditions, in step with industry standards;
- Minimise the risk of lost time and industrial disputation;
- Ensure ongoing compliance with all legislative and regulatory requirements; and
- Meet and exceed the client's expectations with an industrial relations strategy that does not compromise the need to complete the Project on time and at an acceptable cost.

1.3 Definitions

Term	Definition
Lendlease	Lendlease Engineering Pty Ltd
FWBC and CCU	Fair Work Building Commission and Construction Compliance Unit
Project	The Northern Road Upgrade – Stage 3 North Project
Industrial Instrument	An industrial/enterprise agreement or award made under the Fair Work Act 2009 (Cth) or State industrial legislation
IMS Systems	Lendlease's Integrated Management System
State Act	Work Health and Safety Act 2011 (NSW)
NSWCOP or Code	New South Wales Code of Practice for Procurement: Building and Construction, and the Implementation Guidelines to the New South Wales Code of Practice for Procurement: Building and Construction and Building Code 2013

1.4 Workplace Relations Objectives

The following are key Workplace Relations deliverables for the successful execution of the Project.

Core Workplace Relations Deliverables	
A.	The use of Industrial Instruments to assist in creating a stable Workplace Relations environment.
B.	Placement of staff, including Managers and Supervisors, as well as selection of contractors, who can apply leadership and technical skills to create the best productivity outcomes for the Project and maintain a focused and motivated Project workforce.
C.	Continual development of our frontline Managers and Supervisors to better manage their employees through both “on the job mentoring” and formal training where appropriate.
D.	Compliance by all Project partners and subcontractors with their legal and regulatory obligations prior to being engaged (in accordance with section 1.1.2 of this Plan).
E.	Sound and consistent employment and industrial relations decisions and actions that resolve issues in an appropriate and timely manner, minimising industrial disputation and potential for productivity losses.

1.5 Track Record

In August 2013, Abigroup Contractors Pty Ltd changed its name to Lendlease Engineering Pty Ltd and on 2 February 2016 to Lendlease Engineering Pty Ltd. The entity is referred to as Lendlease’s Engineering business or Lendlease.

Over the past three years, Lendlease’s Engineering business has not lost time due to Industrial Action in New South Wales.

On 19 October 2011, 40 Man-Hours was lost to an incident on the Hunter Expressway – Kurri Kurri to Branxton project, relating to a contractor suffering a heart attack on-site and 20 members of the site’s staff finishing work two hours before the end of shift in sympathy. Fair Work rules require the unsanctioned time not worked to be recorded.

Below is a record of all projects in NSW completed by Lendlease’s Engineering business over the last three years, demonstrating performance to time and budget.

Project	Initial Contract Value	Final Adjusted Contract Value	Original Contract Completion Date	Actual Completion Date	Reason for Variance	Lost Time due to IR
Ravensworth North Project, Rail Civil Works & Track Construction, NSW Xstrata Coal	\$12m	\$14m	Jun 2013	Jun 2013	Client variation	0
Redbank Tunnel Deviation, Tahmoor, NSW Xstrata	\$21m	\$21m	Apr 2013	Jul 2013	Approved completion date Jun 2013	0
Mt Arthur Intersection Upgrade & Tailings Storage Facility Expansion Stage 1, NSW BHP Billiton	\$16.6m	\$18m	Oct 2013	Aug 2013	Approved completion date Oct 2013 (11 weeks ahead of approved completion date)	0

Project	Initial Contract Value	Final Adjusted Contract Value	Original Contract Completion Date	Actual Completion Date	Reason for Variance	Lost Time due to IR
Newcastle Port Road, Mayfield, NSW Newcastle Port Authority	\$3.6m	\$3.8m	Jun 2013	Aug 2013	Client scope change	0
Holbrook Bypass – Hume Highway, NSW RMS	\$152m	\$170m	Aug 2013	Sep 2013	Approved completion date Feb 2014	0
Hunter Expressway, Kurri Kurri to Branxton, NSW Roads and Maritime Services	\$461m	\$611m	Jul 2013	Apr 2014	Client scope change	40 Man Hours **
Great Western Highway Upgrade - Woodford to Hazelbrook, NSW Roads and Maritime Services	\$80m	\$98.9m	Mar 2014	Jul 2014	Client scope change	0
M5 West Widening, NSW Interlink Roads	\$316m	\$321.5m	Dec 2014	Dec 2014	Client variations	0
The Northern Road, NSW Lendlease Communities	\$23.1m	\$31.7m	Mar 2015	May 2015	Client variation Client scope change	0
Hunter Water Alliance, NSW Hunter Water Corporation	\$204.4m	\$210.9m	Jul 2014	Nov 2014	Client variations	0
North West Growth Centre, NSW Sydney Water	\$34.4m	\$40.sm	Oct 2014	Sep 2015	Client variations	0

** Resulting from a contractor suffering a heart attack on-site and 20 members of the site's staff finishing work two hours before the end of shift in sympathy. Fair Work rules require the unsanctioned time not worked to be recorded.

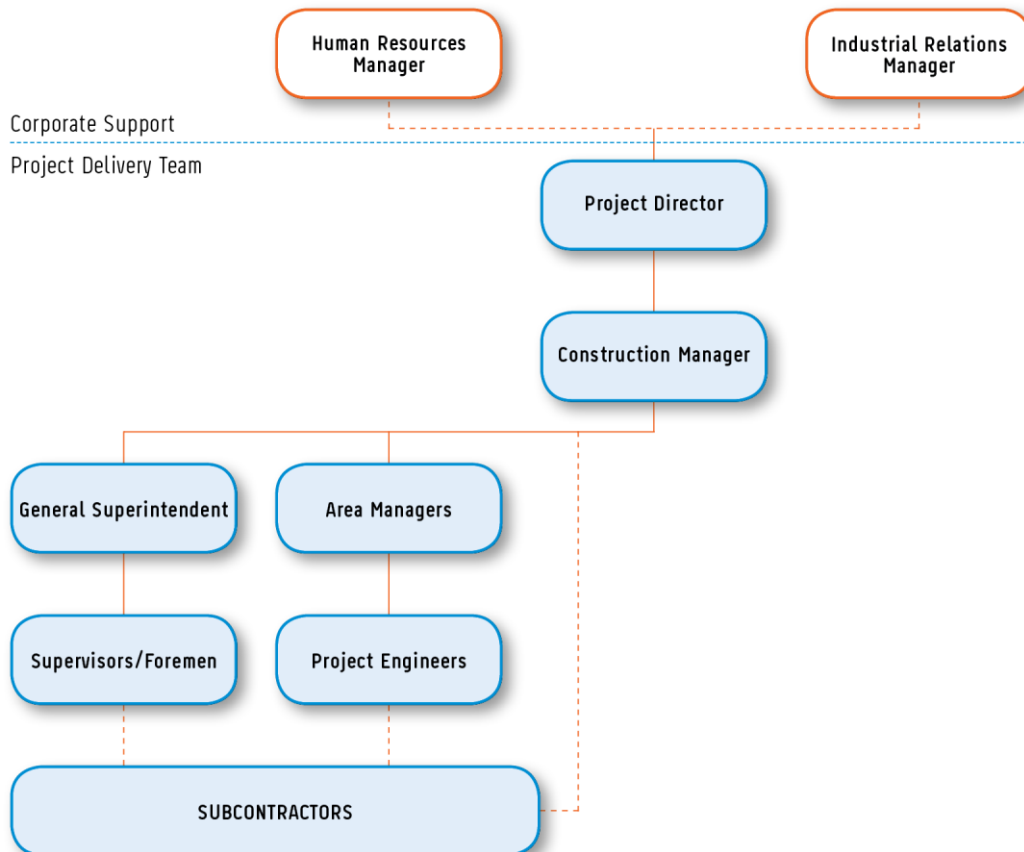
Examples of Productive Work Practices

Project	Example of Productive Work Practices
Hunter Expressway, Kurri Kurri to Branxton, NSW	<ul style="list-style-type: none"> • Despite over 35% of lost time due to inclement weather the project opened in excess of five months ahead of the Contractual end date. • The project received a Contractor Performance Report score of 10 out of 10 for Time Management over four consecutive months. • During the project, the paving team achieved a record paving production day of 2,665m³ in a single day. Paving productivities have been exceptional and widely noted as industry-leading in terms productivity and quality.
Pacific Hwy, Macleay River & Floodplain Bridge	<ul style="list-style-type: none"> • Design innovation for eliminating pilecaps enabled programme acceleration. • Use of GPS placement for piles within a mobile frame to 75mm tolerance. • The project was handed over on 14th December 2012, one week ahead of the tendered date and three months ahead of the revised contractual handover date.
Pacific Hwy, Banora Point Upgrade Alliance	<ul style="list-style-type: none"> • Working alongside up to 55,000 vehicles a day in a highly constrained, urban area. • Opening completion was achieved on 10th August 2012, with final completion on 12th October, more than two months ahead of the original contract date of 15th December and 3% under the agreed Total Out-turn Cost.
Pacific Hwy, Karuah to Bulahdelah Sections 2&3	<ul style="list-style-type: none"> • Although the project experienced 46 weeks of inclement weather, the ongoing reprogramming of critical activities enabled substantial completion ahead of schedule on the 29th September 2009, with 100% opening to traffic in time for the September school holiday period. • Subsequent defect-free Practical Completion was achieved just 10 days later, on 9th October 2009.
Pacific Hwy, Yelgun to Chinderah	<ul style="list-style-type: none"> • Despite one day in three being affected by rain (with an annual rainfall of 2,000mm) substantial completion of major engineering activities was achieved in June 2002 and the project opened to traffic on 6th August 2002, well ahead of the 15th December 2002 fixed completion date. • Additionally, the project was completed within the agreed budget and there were no matters in dispute between any of the parties to the contract.
Pacific Hwy, Bonville	<ul style="list-style-type: none"> • Construction of the bridges involved the use of a purpose-built launching truss, specifically designed and built by Lendlease to launch Super-T girders into position on multiple-span bridges, particularly over water or areas inaccessible to large cranes, eliminating the need for large expensive crane pads or hiring large cranes. • Precast concrete noisewalls were cast on-site to enable larger size panels to be installed eliminating the traditional constraints imposed in transportation of such panels on the public road network which enabled a tight construction programme to be met.
Windsor Flood Evacuation Route (Jim Anderson Bridge)	<ul style="list-style-type: none"> • The alternative design developed by the Lendlease team during the tender period featured a span-by-span, match-cast segmental bridge which offered the RMS a solution to help mitigate risks associated with soft soils at the eastern abutment. This ensured the bridge structure could be built without delay, avoiding the extended settlement periods required for embankment construction over soft soils and effectively reducing the RMS's originally anticipated programme by approximately 50 weeks. • It also provided a cost saving, as a substantial period of ground preloading would otherwise have been required to ensure that settlement occurred prior to final trim and pavement construction.
Googong Dam Spillway Upgrade	<ul style="list-style-type: none"> • There were a number of unique geotechnical, structural and logistical problems that required innovative thinking and problem solving. An example was the use of 1m³ precast concrete blocks for formwork in the 6,500m³ mass concrete backfilling of a void in the eroded spillway, improving the programme and reducing any risk associated with installing conventional formwork. • The Alliance delivered Value for Money in achieving the project objectives by delivering the complete scope of works for a 3% saving under the estimated Target Outturn Cost (TOC). Additionally, the Alliance achieved an overall project Key Performance Indicator (KPI) Score 35% higher than the required Minimum Conditions of Satisfaction (MCOS).
Hume Hwy, Table Top to Woomargama	<ul style="list-style-type: none"> • The project was opened to traffic almost four months ahead of schedule and completed under budget. On 8 September 2009, less than three weeks after opening the highway to the public, the Alliance signed off on defect-free completion.
Albury Wodonga Hume Freeway	<ul style="list-style-type: none"> • Besides the issues posed by the construction process interfacing with live rail infrastructure, the project encountered lengthy heritage approval delays and environmental challenges. Despite this, the road was officially opened to traffic on 6 March 2007, four months ahead of schedule.

2. Administration

2.1 Responsibilities & Authorities

The allocation of employees managing Industrial relations matters on this Project is summarised below. A complete Project Organisation Chart is included in the Project Management Plan.



The following is an overview of each of the key roles.

2.1.1 Project Director

The Project Director (PD) will have overall authority in the determination of all matters affecting the Project.

The PD is accountable for the overall management of Workplace Relations on the Project and will have access to corporate support as required.

The PD will be accountable for the following activities and functions with respect to staff, contractors and subcontractors based at the Project Worksite:

- Reviewing and implementing the project-specific WRMP;
- Assigning responsibilities to project employees for actions defined within the Project-specific WRMP;
- Ensuring all project employees are suitably trained, and possess the necessary skills to undertake their responsibilities;
- Continual monitoring of performance to ensure compatibility and continued compliance with Project's Workplace Relations policies and procedures;
- Participating in reviews of the management system and WRMP;
- Ensuring compliance checks are undertaken;
- Monitoring and controlling Right of Entry provisions as stipulated by legal and regulatory requirements;

- Coordinating and implementing actions from Project risk assessment workshops and the Project Risk Register;
- Ensuring participation in training regarding industrial relations legal and regulatory requirements (e.g. Right of Entry) where necessary;
- Ensuring legal and regulatory compliance checks are undertaken and adhere to applicable Right of Entry protocols at all times;
- Selecting multiple subcontractors to tender for work packages wherever possible;
- Managing day-to-day interaction with Union Officials following the Right of Entry Protocol at all times;
- Assembling suitable site layout and amenities, and
- Responding efficiently to concerns raised.

2.1.2 General Superintendent

The General Superintendent will assist the Project Director in relation to workforce and subcontractors on site with respect to the following:

- Monitoring his staff in relation to their responsibilities defined within the Project-specific WRMP;
- Continual monitoring of performance to ensure compatibility and continued compliance with Project's Workplace Relations policies and procedures on site;
- Participating in reviews of the management system and WRMP;
- Monitoring and controlling Right of Entry on site and advise the PD immediately when unions arrive on site;
- Coordinating and implementing actions from Project risk assessment workshop;
- Ensuring participation of their staff in training regarding industrial relations requirements;
- Managing day-to-day interaction with Union Officials following the Right of Entry Protocol on site at all times; and
- Responding efficiently to concerns raised.

2.1.3 Industrial Relations Manager (Head-Office Based)

The Lendlease Industrial Relations Manager can provide the following services:

- Facilitate training on industrial relations legal and regulatory requirements;
- Conduct internal audits for compliance of subcontractors and Right of Entry protocols;
- Advise on best practise performance management systems for employees engaged under their own Industrial Instrument; and
- Seek advice and/or support as required from the Australian Industry Group (AIG) and/or the Master Builders' Association NSW (MBA).

Negotiations with union officials will be led by the PD's nominated contact person or the Lendlease Industrial Relations Manager in consultation with the PD.

2.1.4 Human Resources Manager (Head-Office Based)

Human Resources Manager and their personnel will:

- Assist Management with day-to-day activities to ensure a harmonious and productive work culture;
- Respond efficiently to concerns raised by employees; and
- Support the PD and liaise with the Industrial Relations Manager as needed.

2.1.5 Project Engineers

Project Engineers will be responsible for:

- Monitoring productivity;
- Providing support to the induction process;
- Setting and monitoring performance metrics;
- Understanding Right of Entry in order to elevate issues as appropriate;
- Planning site setup and involvement in mobilisation; and
- Managing subcontractor performance.

2.1.6 Supervisors/Foremen

Supervisors/Foremen will be responsible for:

- Setting up of site including site clearance, fencing, security, utilities supply, setup of offices and amenities and laydown areas;
- Participating in inductions;
- Monitoring productivity;
- Understanding Right of Entry in order to elevate issues as appropriate;
- Managing day-to-day safety on-site;
- Managing day-to-day subcontractor works;
- Having involvement in direct labour hire; and
- Having involvement in grievance management process.

2.1.7 Subcontractors

The PD is responsible for overall subcontractor management. Subcontractors will be advised and contractually bound to:

- Be responsible for the performance and supervision of their employees;
- Apply the terms and conditions of their Industrial Instrument (e.g. award, enterprise agreement) and adhere to the applicable Dispute Settlement Procedure;
- Advise of any potential/actual industrial dispute/issue immediately to the PD;
- Remain compliant with legal and regulatory obligations while performing Project work;
- Adhere to the legislated Right of Entry process;
- Comply with the requirements of the Project's Work Health & Safety Management Plan; and
- Comply with the requirements of the Project's Quality Management Plan.

3. Risk Assessment

3.1 Project Workplace Relations Risk Analysis

Potential risks and opportunities are identified during the tender phase through system procedure LLE109 Engineering Risk and Opportunity Management System and included on [LLE109A Risk & Opportunity Register](#). An initial R&O Register has been developed for this project. At the project launch ([LLE501](#)), this R&O Register will be handed over by the tender team to the project for continual update and monitoring.

3.2 Project-Specific Risks

The following have been identified as potential Workplace Relations risks that could potentially affect our ability to comply with the Code and/or NSW COP on this Project:

- Managers on the Project not understanding the impact that their decisions and/or leadership style can have on Workplace Relations;
- Not providing an adequate response to, or resolution of, minor on-site issues raised by an employee;
- Not following the requirements of [LLE503 Subcontracting and Purchasing](#) and not providing sufficient analysis of the selection of subcontractors from a Workplace Relations perspective;
- Insufficient monitoring of a subcontractor's approach to managing their own workforce;
- Insufficient monitoring and auditing of subcontractors to ensure they follow the Project's overall approach to positive Workplace Relations, Code and NSW COP compliance and adhere to their own Industrial Instruments;
- Inadequate management of occupational safety and environmental issues;
- Breaches of legislative Right of Entry provisions; and
- Not providing an adequate response to, or resolution of, issues raised by unions with membership on the Project.

These risks can be mitigated by ensuring compliance with Lendlease's Industrial Relations Guidelines implementation of the [Lendlease Code Compliance Kit](#).

The Project R&O Register will be further developed to capture all potential workplace relations risks as well as mitigation and control strategies. This is a live document which will be maintained through the life of the Project.

Throughout the Project, the risk analysis will be reviewed periodically to reflect changes in the industrial relations/employee relations climate on the Project and across the industry which may have a potential impact on the Project.

3.3 Management of Workplace Relations Risks

The following have been defined as the key initiatives to monitor and manage Workplace Relations risks. The PD will ensure as far as reasonably possible and practicable:

- A safe work environment;
- An appropriate Health & Safety Representative delegate;
- PD and other appropriate Project members will be trained where relevant to thoroughly understand the applicable Industrial Instrument and the requirement of their early intervention and appropriate resolution of any employee issue that may arise;
- Managers will promptly address any concern or issue raised by an employee;
- The Project will understand and adhere to legislative Right of Entry Protocols (refer Figure 1);
- Site facilities for employees are of a uniformly high standard and kept clean throughout the Project;
- Procedures are developed and utilised to ensure the selection of subcontractors who have an appropriate Workplace Relations track record of compliance with legal and regulatory requirements;
- A risk assessment of subcontractors and major suppliers ([LLE503B Subcontractor Supplier Consultant Letting Approval](#), whether site based or off-site based, may be carried out to determine the potential risk of protected industrial action, or which have an acceptable strategy in place to mitigate that risk, will be engaged for the Project;

- Risk assessment to include transport requirements in accordance with [LLE626 Chain of Responsibility Compliance](#).
- Where appropriate, monitoring and auditing of subcontractors to ensure they follow their declared systems and processes of Workplace Relations management, and comply with legal and regulatory requirements, and their own Industrial Instrument,
- Managers will promptly respond to any issues raised by unions with membership engaged by the Project; and
- Any imminent safety issues raised are to be acted upon immediately.

The PD has direct access to Lendlease's National Industrial Relations Manager and may, at his/her own discretion, arrange internal legal and regulatory compliance audits as necessary.

The risk register may be reviewed by the Regional Industrial Relations Advisor. This will allow lessons learnt from other Projects (refer to Knowledge Base/Lessons Learnt portal) to be considered in relation to the Project.

Lists of potential IR Issues/ Risks has been included at Appendix A.

4. Site Establishment

The Project shall implement appropriate site security procedures to ensure proper access to work sites. Induction procedures will include instructions on lawful access, and measures to prevent:

- Unauthorised access to the Site and Project office areas;
- Unauthorised public access to the Site;
- Theft and property damage;
- Unrestricted use of motor vehicles; and
- Unaccounted-for persons in an emergency.

An important factor in developing and maintaining a productive workforce is ensuring that facilities such as crib rooms, toilets and showers are modern, air-conditioned and are provided with sufficient amenities (microwaves, fridges, etc.). The ongoing maintenance of these facilities is the role of the Site Cleaner and is an extremely important one when it comes to ensuring workforce engagement and productivity.

4.1 Project-Specific Site Establishment Considerations

A Site Management Plan will be developed. The Plan will include information covering site arrangements such as office, amenities, parking, laydown areas, fencing, security, provision of utilities, access and employee movements through, as well as to and from, site.

Lendlease's procedure [LLE602 Emergency Preparedness](#) will require that a proper Site Layout be prepared showing all amenities including site office layout, evacuation and assembly areas.

[LLE625 Managing Workplace Amenities](#) requires the proper and safe setting up and maintenance of workplace facilities such as site offices, first aid, ingress and egress, security fencing which must satisfy Lendlease's GMRs and the relevant State and Federal legislations.

5. Subcontractor Management

Subcontractors/Suppliers will be administered under Lendlease Engineering's Management System's [LLE503 Subcontracting and Purchasing](#) procedure:

- LLE503 Attachment 1 Selection of Subcontract/Agreement Type;
- LLE503A Record of Tender Interview;
- LLE503B Subcontractor/Supplier/Consultant Letting Approval;
- LLE503C Subcontractor/Supplier/Consultant Performance Assessment;
- LLE503D Minimum Requirements;
- LLE503E Subcontractor Energy Consumption Monthly Progress Report;
- LLE503F Tender Invitation Pack;
- LLE503G Tender Schedules 1-20;
- LLE503 H Induction Pass – Subcontractor; and
- LLE503 I Subcontract Transmittal Form.

Additional information is available in the [Lendlease Code Compliance Kit](#).

5.1 Subcontractor Selection

Multiple subcontractors will be asked to tender for work packages wherever possible. Subcontractors will be selected not only on price but also on the basis of previous track record (including safety and quality) and ability to comply with their legal and regulatory obligations, including administrative ability (such as payroll), and provisions for managing grievances ([LLE503G](#)). A pre-commencement interview process may cover these topics.

5.1.1 IR Management Capability

The selection and effective utilisation of subcontractors and their key personnel are critical in achieving the objectives of this WRMP. The Project will ensure that the prequalification and bid evaluation process for subcontractors on this contract will give significant weight to industrial relations management considerations.

This will ensure that subcontractors:

- Have appropriate industrial relations arrangements (Federal, State Awards & Agreements, FWBC etc.) in place for the term of their participation in the contract (subject to legal and regulatory compliance);
- Have access to industrial relations advice and/or representation if required, prior to tendering for work on the contract;
- Commit to informing the Project and the site manager of any potential or actual industrial dispute that may affect their ability to carry out work on the contract;
- Commit to obtaining approval for engaging any lower tier subcontractors prior to mobilisation on-site;
- Commit to binding any lower tier subcontractors to the same contractual terms (subject to legal and regulatory compliance); and
- Commit to perform to ensure an acceptable safety rating [LLE503 Attachment 2 Subcontractor Safety Risk Rating](#).

5.1.2 Advice of Legal & Regulatory Compliance

All invitations to subcontractors to provide submissions, tenders or expressions of interest, will include any required applicable model tender documentation, subject to compliance with our legal and regulatory obligations.

5.1.3 Information Sessions

Subcontractor tenders will be sought and accepted on the explicit understanding that they are submitted together with a copy of the Industrial Instrument which applies to the subcontractor's employees (whether it be, for example, an award or enterprise agreement). Where requested by Lendlease, Subcontractors must provide a letter from the Department of Employment confirming that their Industrial Instrument has been reviewed and is deemed to be Code compliant. In assessing Code compliance of

subcontractors, Lendlease will not apply any direct or indirect coercion or pressure on subcontractors to have particular workplace arrangements in place.

5.2 Subcontractor Management

5.2.1 Subcontractors' Workplace Relations Conduct

Subcontractors will be contractually prohibited from any activity that may place the subcontractor or the Project in a position of being in breach of its legal and regulatory obligations.

5.2.2 Audit

The Project will satisfy itself that the non-complying activities referred to above are not occurring by conducting audits commencing from site mobilisation.

5.2.3 Processes for Communications

Lendlease recognises that subcontractors and other contractors may have elected employee representatives and that they too have a genuine role to play in relation to industrial relations and safety matters on the Project. Lendlease is prepared to work with elected representatives so that they can perform their legitimate functions and meet their responsibilities both in relation to industrial relations and occupational health and safety without undue hindrance or interference to work.

Lendlease will continue to observe a management process that includes a structured approach to communications meetings. The approach will be similar for all direct labour and subcontractors involved in the Project and will include:

- Daily pre start talks;
- Toolbox talks;
- Safety briefings;
- Work Health and Safety committees; and
- Progress meetings.

5.2.4 Monitoring

Monitoring and auditing of subcontractors will be undertaken to ensure subcontractors follow their declared systems and processes of industrial relations management, comply with the NSW COP, relevant legislation and their own Industrial Instrument.

5.2.5 Productivity

Refer to Section 9 for details on measuring and managing subcontractors' productivity on-site ([LLE503C Subcontractor Supplier Consultant Performance Assessment](#)). Also refer to [LLE106 Internal Auditing](#) and [LLE507A Monthly Project Reports](#) tracking productivities of major activities.

5.2.6 Industrial Relations & Grievance Management

Refer to Section 13 for details of our grievance management process ([LLE1005 Workplace Grievance Process](#)).

5.2.7 Compliance by Subcontractors with WRMP

Lendlease will ensure that all subcontractors comply with this WRMP and their legal and regulatory obligations.

If the PD or Human Resources / Industrial Relations Manager come to the view that an actual or threatened industrial dispute may have implications beyond any single subcontractor, a meeting of relevant subcontractor principals will be called to brief all parties on the issues and on the Project's requirements for the management of the dispute. The client will also be advised in accordance with any notification obligations.

6. Conditions of Employment

Human resources requirements are covered under Lendlease procedures as follows:

- LLE1001 Recruitment, Engagement and Termination of Labour
- LLE1002 Worker Induction and Training
- LLE1003 Employment of Salaried Staff
- LLE1004 Termination and Redundancy of Salaried Staff
- LLE1005 Workplace Grievance Process
- LLE1006 Discrimination and Harassment Counselling
- LLE1007 Education Assistance
- LLE1008 Performance Management
- LLE1012 Indigenous Engagement

In addition, Lendlease will ensure that all parties comply with all applicable industrial relations legislation and Industrial Instruments (e.g. award or enterprise agreement). Furthermore, Lendlease will not allow any party to avoid its legal obligations by entering into arrangements designed to avoid them, such as 'sham' contracting, allowing strike pay or circumventing compliance with Right of Entry requirements. Our core industrial relations strategy has been to ensure that we have industrial arrangements in place that:

- Are relevant to the scope of the Project works; and
- Provide fair and reasonable pay, conditions and dispute resolution processes targeted at resolving all issues at site level.

Lendlease intends to use an enterprise agreement to govern the terms and conditions of employment of its direct employees on the Project. We will use the Lendlease Engineering's Abigroup Contractors Pty Ltd New South Wales Engineering Agreement 2013-2016 (expires 2 October 2016) to deliver these works.

6.1 Common Law Contracts

A Letter of Offer, setting out the terms and conditions of employment, will be sent to the prospective employee. Engagement will only be confirmed when the prospective employee returns the signed letter accepting the offer.

These letters and the accompanying employment pack outline Lendlease's expectations in relation to compliance with industrial relations legal and regulatory obligations, including freedom of association, grievance and dispute resolution as well as industrial action.

6.2 Employee Representative

Lendlease has enterprise agreement obligations to recognise elected Employee Representatives and to provide reasonable time and facilities for them to perform this role. Employees are free to choose whether and by whom they are represented.

Each elected Employee Representative will be a working employee and in no circumstances will Lendlease impose any requirement on a subcontractor to engage a non-working representative, nor hire an individual nominated by a union to perform this role.

Lendlease is prepared to work with elected Employee Representatives so that they can perform their legitimate functions and meet their responsibilities both as representatives of employees and as employees of their respective contractors, without undue hindrance or interference to work on the event as follows:

Recognition

An Employee Representative will be recognised as the accredited representative of the employees on behalf of the relevant union. The Project will make adequate administrative facilities available to Employee Representatives to assist them in properly executing their functions.

Absence from Job

Before leaving the job, an Employee Representative must first obtain permission from his/her Supervisor, informing him/her where he/she is going, who he/she will see, the nature of his/her business and approximate duration of his/her absence.

The Supervisor will check that the person the Employee Representative wishes to see is available and if the meeting can be arranged during a rest break. Permission will not unreasonably be withheld. It is only when absence from the job becomes unreasonable that permission for the Employee Representative to leave the job is refused.

It is essential that the Supervisor knows the “where, who, why and how long” associated with the absence. These factors will assist the Supervisor in deciding whether to grant permission for the absence.

Where an Employee Representative wishes to enter another area of the site he/she must report to the Supervisor of that area.

Returning to the Job

On returning to the job, the Employee Representative must report to the Supervisor or other appropriate person to advise of his/her return.

Administration

Supervisors will be required to record the time lost by Employee Representatives together with a brief description of the issue.

7. Recruitment of Project Labour

Lendlease has a loyal and experienced core workforce that has been developed through proven performance on numerous recent projects. This loyalty has been achieved through a culture of mutual trust and strong relationships built between site Supervisors and their work crews.

We plan to leverage this existing pool of loyal workers to form the bulk of our Project workforce.

Recruitment on the project will be undertaken in line with Lendlease Engineering's Management System Part 10: Human Resources.

7.1 Labour Sourcing

A baseline strategy for the recruitment of labour to the Project is as follows:

- Use a nucleus of current labour from other projects. An advantage of using current Lendlease labour will be their knowledge and experience with Lendlease systems and procedures in particular safety systems, Workplace Relations and leadership;
- Should we need to engage additional labour, the Project will run a recruitment campaign to search for the required skills; and
- Lendlease also remains in contact with a number of skilled former employees who are currently working throughout Australia. This contact allows us to approach former employees to enquire whether they would be interested / available to work on other projects.

7.2 Recruitment Process for Wages Employees

The following outlines the process that the Project will use to recruit construction employees for the Project, if the nucleus of current labour from other projects (as described above) is not sufficient to resource the Project:

- The PD, in consultation with relevant parties, will be responsible for determining both the number and type of employees to be recruited / engaged at any one time;
- The PD or their delegate will be responsible for advertising, handling applicant enquiries, receipt and registration of applications for employment, conducting initial applicant interviews in conjunction with site management and finally, detailed reference checks;
- Potential employees must submit a written application detailing previous work history;
- All initial applications for employment will be sent to the PD;
- A completed Performance Appraisal Form will be sought (from previous Supervisor) for any related company employees who apply for a position;
- Where required, the PD will ensure pre-placement medicals (including Drug and Alcohol test) for all successful applicants;
- Where required, the PD will ensure trade competence testing; and
- A Letter of Offer setting out the terms and conditions of employment will be sent to the applicant.

Engagement will only be confirmed when the applicant returns the signed letter accepting the offer.

7.3 Casual Employees

Casual employees will only be employed on the Project with the prior approval of the PD and will be used, where possible, for work peaks of limited duration. The use of casual employees is not anticipated for this Project. However, this WRMP is not intended to impose any limits on the engagement of casual labour.

7.4 Staff

All direct-hire Project staff will have common law contracts of employment. Before commencing work on the Project each new recruit will sign off on a Letter of Offer, which sets out the remuneration and conditions applicable to the staff member for the duration of the Project. Transferees may sign a new Letter of Offer or a Transfer form as per Section 7.6.

All new employees will be made aware of the Project's expectations in relation to Lendlease's legal and regulatory obligations, grievance management, unlawful industrial action and freedom of association rights.

7.5 Selection of Supervisors

Lendlease has a nucleus of very experienced Supervisors to draw on for each project undertaken. The Supervisors/Foremen nominated for the Project have been with Lendlease for a number of years. This experience of the industrial relations climate in New South Wales combined with their knowledge of NSW Work Health and Safety (WHS) legislative requirements will prove invaluable to the Project. All relevant staff is required to have undertaken training covering such issues as:

- Compliance with Awards and Legal Obligations;
- Freedom of Association;
- Rights of Entry;
- Industrial Action;
- Dispute Settlement; and
- Workplace Reform.
- Compliance with Building Code 2013 and NSW Code and Guidelines July 2013.

7.6 Transfers to & from the Project

No employee, staff or wages, will transfer to or from the Project unless an Employee Change of Transfer Form has been signed off by the PD and a letter confirming transfer and employment conditions provided to the employee.

All transfers are to be effected in accordance with the established Lendlease Transfer of Employee Procedures ([LLE1003C Notification of Transfer Between Projects](#)).

8. Induction & Mobilisation

8.1 Inductions

All employees, including those of subcontractors, shall undertake appropriate inductions prior to commencement of work on the Project. As a minimum, the inductions will cover health and safety, workplace relations (including unlawful industrial action, unlawful coercion, freedom of association, unlawful discrimination, Right of Entry) and other legal and regulatory requirements, as well as Project-specific matters. Reporting mechanisms for employees will also be outlined in the Project induction ([LLE1002 Worker Induction and Training](#)).

The Project will also induct suppliers where regular deliveries are a requirement of the Project. This will promote regular drivers being allocated to service the Project.

The Project will attempt to ensure that all employees have a full understanding of their rights and obligations while working on this Project.

8.2 Mobilisation

A Project-specific mobilisation procedure will be developed to ensure efficient mobilisation to site.

[LLE501 Project Launch](#) covers the process of handover by the Tender Team to the Project Team.

9. Labour Productivity

Value for money is a key consideration for the Project, and a key tool in achieving this is labour productivity. The Project will implement a number of process and initiatives to support this. They include, but are not limited to, the following items:

9.1 Labour

To support labour productivity, actions will include:

- Monitoring construction programmes;
- Reviewing results and identify obstacles and opportunities;
- Reviewing alternative methods, plant, resource allocations, and risks associated with works;
- Using innovations;
- Improvements from Lessons Learnt;
- Monitoring safety and quality of works; and
- Progress meetings with the site team.

Progress meetings will determine appropriate plans of action to maintain progress, increase progress, or removed obstacles.

Mitigation measures may include:

- Re-programming the works where there are clashes in activities;
- Re-programming the works where there are delays in procurement;
- Redesign of permanent or temporary works;
- Increase/decrease resources; and
- Amendment of work process.

The risks to productivity may be captured on the Project Risk and Opportunity Register, through assessment at time of tender and during the Project.

A structured approach to communication with the wider team is critical in ensuring an engaged and motivated team. This will be the same for all of the team whether direct labour, subcontractors, or staff. These communication forums will include:

- Daily pre-starts talks;
- Toolbox talks;
- Safety briefings;
- Work Health and Safety committees;
- Progress meetings;
- Business Improvement initiatives focused on work force productivities ([LLE115 Construction Lean](#)); and
- Social milestone celebrations.

These meetings will provide an opportunity for all the team to be given information around the Project as well as discussing any issues relevant to their particular aspects of work.

9.2 Subcontractors

Subcontractor labour productivity will be measured in accordance with achieving program milestones within the contracted rates. Subcontractor performance will also be measured through safety observations and inspections and quality outcomes.

Regular progress meetings will be held with the subcontractor to review progress and performance metrics, as well as review any potential issues. This will be led by the relevant Project Engineers, with attendance from the PD and General Superintendent as and when required.

9.3 Staff

9.3.1 Position Descriptions & Key Performance Indicators

All staff positions on the Project shall have Position Descriptions in place prior to mobilisation of any person to the position.

The PD shall be responsible for ensuring that clear and measurable KPIs for the ensuing 12 months are established for each staff position prior to mobilisation of any person to the position.

9.3.2 Probation

All external recruits to salary positions on the Project will be subject to a probation period of three months.

During the third month of the probation period, the performance of the employee will be reviewed by the Supervisor/Manager concerned and the outcome of the review discussed with the employee. Any deficiencies in performance or opportunities for improved performance will be addressed through specific action plans.

Where it is concluded by the Supervisor or Manager in consultation with the PD that an employee will be unable to meet the required standard of performance at the end of the probation period, appropriate steps will be taken to terminate the employee's employment with the Company.

The Contract of Employment will allow for a written agreement between the employee and the PD for an extension of the probation period beyond three months for a maximum of one month to allow the employee the opportunity to meet the performance standards required by the Project.

9.3.3 Authority to Terminate an Employee

The PD will be the only employee authorised to remove a Lendlease employee from the Project.

9.3.4 Termination for Cause – Dismissal Without Notice

Certain situations may warrant the summary dismissal of an employee. The decision to terminate an employee without notice will not be made until an appropriate investigation has been conducted.

9.3.5 Disciplinary Reasons – Warnings Given

In the event an employee's behaviour and/or performance is below the required standard their Supervisor will discuss the matter with the employee in accordance with the respective Lendlease disciplinary procedures ([LLE1001 Recruitment, Engagement and Termination of Labour](#)).

10. Performance Metrics

KPIs will be developed. Please refer to Section 9 Labour Productivity for further details of how labour productivity and performance will be measured and reported on this Project. Project KPIs will be reviewed by the responsible member of the site team and also elevated to the PD and Supervisor for consideration if performance is unsatisfactory and not meeting targets.

10.1 Management Reporting

The Project Daily Site Diaries record all data relating to internal and external labour and plants including lost time and productivities. The information is the basis of:

- Supervisors verifying that productivities are reasonable and consistent;
- Engineers comparing tendered and actual productivities;
- PD's calculation of productivities in accordance with [LLE507A Project Monthly Report](#) and review by senior managers as required by [LLE510 Project Reviews](#) held quarterly.

Overall site data such as lost time, and delays and disruptions due to industrial matters will be captured in the monthly report, which is generated by the PD and reviewed by the senior management team and addressed as required.

11. Freedom of Association

11.1 Union Management, Interaction & Freedom of Association

Refer to Lendlease's Industrial Relations Guidelines which set out:

- Union membership;
- Delegates of Employee Representatives;
- Site Registers/ Inductions;
- Union Rights of Inspection & Interview;
- Disputes;
- Union Meetings; and
- Fairwork Building & Construction.

Lendlease respects the right of employees to elect their own WH&S and delegate representatives. As the principal contractor, Lendlease will ensure an appropriate Health & Safety Representative structure is developed in compliance with WH&S legislation. Lendlease will ensure that appropriate channels for consultation are properly established and functioning before the Project is fully resourced and that there are no potential breaches of freedom of association. The Project will not at any time contemplate payment for lost time due to industrial action. Contracts with subcontractors will expressly forbid the practice and require subcontractor principals to advise the Project in writing if any claim for such payment is made. Any such claim, whether made to the Project or its subcontractors will be referred to the appropriate regulator/s.

Employees will be made aware of activities that may, subject to applicable legal and regulatory requirements, place the Project in a position of being in breach of Freedom of Association rights. Such activities may include, but are not limited to:

- The provision of new staff, subcontractors' or prospective subcontractors' and their employees' or prospective employees' details to unions other than as required by law;
- The display of 'no-ticket, no start' signs;
- 'Show card' days or the like;
- Encouraging or discouraging employees to become or remain union members;
- The employment of any person for the purpose of being a full-time or substantially full-time employee representative or shop-steward;
- The use of employment application or induction forms which seek to identify the status of employees as union members or not;
- The conduct of any unauthorised site meetings;
- Union involvement or attempted involvement in site inductions, except as otherwise permitted by law/applicable Industrial Instruments;
- Providing Right of Entry which is not in accordance with legislation and applicable Industrial Instruments;
- Refusing to employ or terminating an employee because of their union status; and/or
- Refusing a reasonable request from a workplace delegate to represent employees in relation to grievances, disputes or discussions with members.

As part of our regular site inspections, we include crib hut inspections to ensure cleanliness, suitability and checking for non-compliant material.

Communicating and ensuring Freedom of Association is an important part of our workplace relations activities. It is integrated into our delivery framework through formal staff communications including Letters of Offer and inductions, and included as part of the training for relevant staff such as Supervisors and Foremen.

11.2 Notification of Alleged Breach

Lendlease will notify the CCU and RMS of any alleged breaches of the NSW Code and NSW Guidelines in respect of Freedom of Association laws within 24 hours of becoming aware of the alleged breach.

12. Right of Entry

Subject to its legal and regulatory obligations, Lendlease will strictly enforce the relevant Right of Entry provisions of the *Fair Work Act 2009* (Cth) (**the Act**), and any Right of Entry requirements under applicable Industrial Instruments. Subcontractors will be contractually bound to enforce the Right of Entry provisions of the Act and applicable Industrial Instruments. Lendlease has clear procedures relating to Right of Entry and will ensure that all relevant personnel are instructed in their application.

Accredited union officials have access to the Project site in accordance with the obligations contained within the Fair Work Act, the *Work Health and Safety Act 2011* (NSW), and if applicable, Industrial Instruments, and must comply with these and site safety requirements.

Refer to Lendlease’s Guide to Industrial Relations Management, section “Right of Entry”.

12.1 Breach or Misuse

We have a detailed process for reporting breach or misuse of Right of Entry, contained within Lendlease Engineering’s *Code Compliance Kit*, which is a component of the Lendlease Management System.

All Supervisory staff and subcontractors are to immediately notify the PD of any Right of Entry requests. The PD will then coordinate the request in accordance with the Right of Entry Protocol. Training related to union Right of Entry will be given to all relevant staff and subcontractors.

Officials must have, and upon request show, a permit issued by the Fair Work Commission and, if exercising a right under WH&S legislation, a permit issued by WorkCover NSW. These permits will be sighted by the Project’s appointed representative. Union

Officials must give at least 24 hours prior notice of their intended visit to site (with the exception of suspected breaches of applicable WH&S legislation).

The Union Official must advise if the intended Right of Entry relates to:

- A breach of the Act;
- A breach of an Industrial Instrument (applicable award/enterprise agreement);
- Discussion with employees; or
- A breach of applicable WH&S legislation.

The Union Official must not intentionally hinder or obstruct any employee or employer. Prior to going on the site, the official will be made aware that:

- They must comply with all site rules/procedures covering especially Safety/PPE/Induction;
- They will be escorted while on-site by a Project team representative; and
- They must comply with the Act.

This process is subject to compliance with Lendlease’s legal and regulatory requirements.

Subcontractors will be contractually bound to enforce the Right of Entry provisions under the Act and the *Work Health and Safety Act 2011* (NSW), and if applicable, relevant Industrial Instrument/s. This will be monitored on-site and discussed and reinforced through progress meetings.

A flowchart illustrating our Right of Entry Procedure has been included below, and a Right of Entry Report has been included at Appendix B.

12.2 Notification of Alleged Breach

Lendlease will notify the CCU and RMS of any alleged breaches of the NSW Code and NSW Guidelines in respect of Right of Entry laws within 24 hours of becoming aware of the alleged breach.”

UNION RIGHT OF ENTRY UNDER THE FAIR WORK ACT 2009 – FLOW CHART

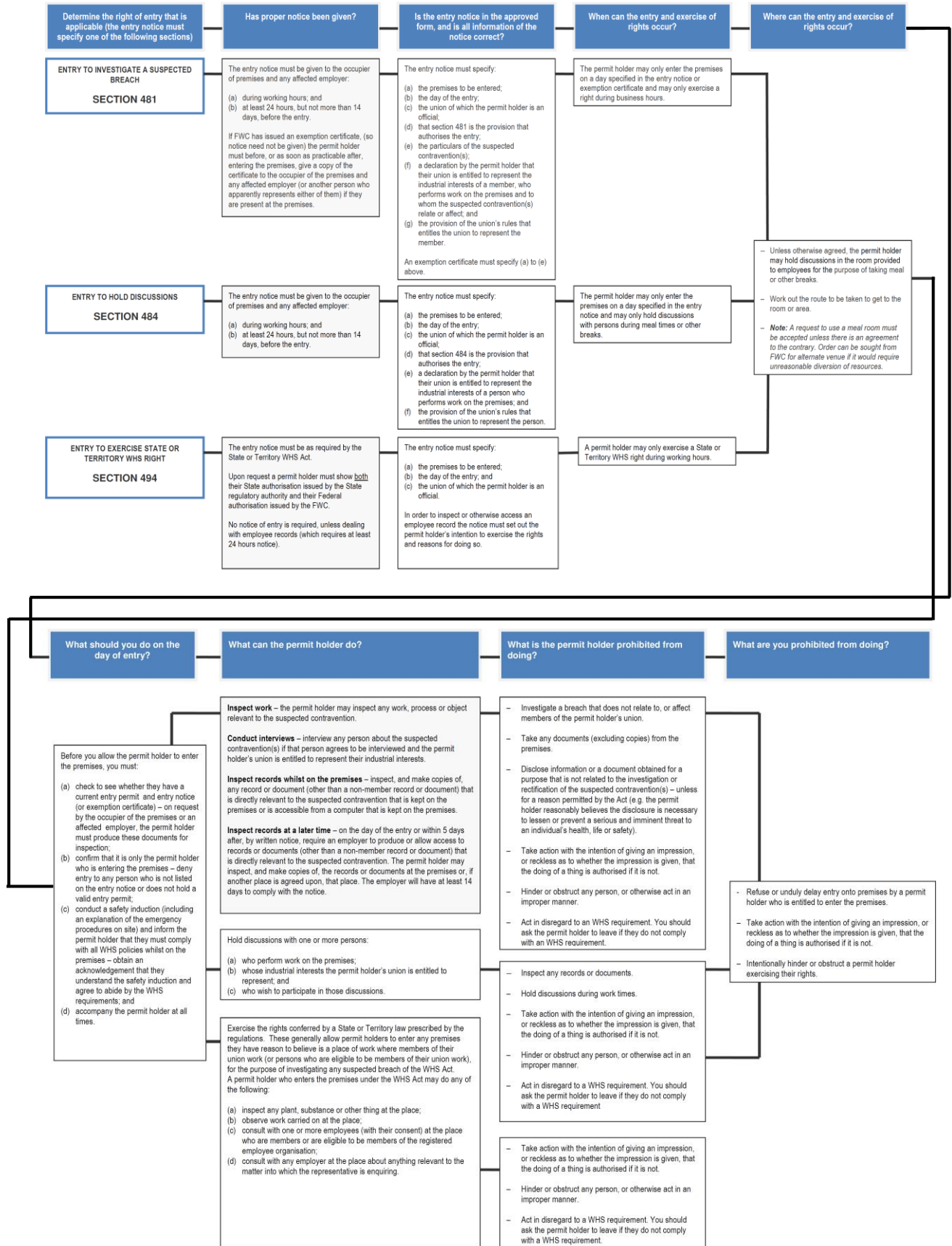


Figure 1: Right of Entry Flowchart

13. Grievance Management

An essential ingredient in effective Workplace Relations is to maintain an informed workforce. On the project, the key consultative and communication processes with workforce will be:

- Daily Pre-start Talk;
- Toolbox Meetings; and
- “Big Picture” Presentations on various topics.

13.1 Privacy of the Employer/Employee Relationship at the Enterprise Level

The Project is committed to the principle that the integrity of individual Industrial Instruments be maintained. Subcontractors are responsible for all aspects of the management of their own employees and are expected to effectively manage grievances. With exception to the Work Health & Safety Committee, the Project will therefore not establish a consultative mechanism on the Project that covers more than one subcontractor’s employees.

Where a subcontractor’s Industrial Instrument requires the establishment of a formal consultative process, the Project will ensure the subcontractor complies fully with that provision.

13.2 Management of Site-Wide Grievances & Disputes

The Project will maintain its awareness of grievances and concerns amongst staff, and amongst subcontractors’ employees as part of the regular review of subcontractors’ performance.

The PD may schedule a site staff meeting, which may include subcontractors’ principals, to discuss any employee or Workplace Relations matter that has implications across the Project.

13.3 Grievance & Dispute Resolution

Grievance and dispute resolution will be managed in accordance with Lendlease’s relevant Industrial Instrument, in respect of its wages employees on the Project.

Initially, the employee will seek resolution of the issue with their Supervisor. If it is not possible to reach resolution between the parties, the relevant employer or the employee (or their representative) may escalate the matter to the Fair Work Commission. Information sessions relating to the grievance procedure and the management of issues will be conducted with all employees and their managers.

A Project-specific process will be developed to log and report grievances and disputes, with reference to [LLE1005 Workplace Grievance Process](#) procedure. The data will be reviewed monthly to identify common issues, trends or risks to the Project.

The PD will monitor and review the grievance process to ensure it complies with the procedure outlined in Lendlease’s Industrial Instrument, and also to ensure that the employee’s right to choose representation is implemented. Each employee is free to choose whether and by whom to be represented.

14. Management of Unlawful Industrial Action

The Project approach to managing each of the industrial relations risks is outlined in the subsections below. The Human Resources and / or Industrial Relations Manager will establish an effective and clear reporting structure to enable early identification of any industrial dispute or grievance and determine whether it has arisen from, or resulted in, a NSW COP breach. Industrial relations risk workshops will be held to proactively identify potential industrial threats to program delivery. These workshops will involve senior site staff including the PD and General Superintendent.

14.1 Dispute Resolution in the Event of Incidents

Lendlease will encourage and assist all parties to resolve the issue at site level wherever possible. In all circumstances, disputes should be dealt with following the applicable Industrial Instrument's Dispute Resolution Procedure. If this cannot be achieved and it has not been possible to reach resolution between the parties, the relevant employer, or the employee (or their representative) may refer the matter to the Fair Work Commission.

As part of the regular review of subcontractor performance, Lendlease will maintain its awareness of grievances and concerns among subcontractor employees. The PD may schedule a meeting that includes subcontractor principals to discuss any employee or industrial relations matter that has implications across the Project.

Grievance and dispute resolution will be managed according with each subcontractor's Industrial Instrument.

14.2 Dealing with Demarcation Disputes

Should any demarcation issues arise with the potential to affect the works, Lendlease will endeavour to communicate with senior management from the respective unions and/or subcontractor's representative and broker a solution acceptable to all parties. If this cannot be achieved and the issue is affecting the works or has the potential to affect the works, the matter will be referred to the Fair Work Commission. If necessary, interlocutory injunctions will be sought against any party behaving in a manner that causes or threatens to disrupt the Project. This course of action would be a last resort after every other option had been exhausted.

14.3 Response to Industrial Action

If the Human Resources/Industrial Relations Manager determines that actual or threatened industrial action has or may occur, the matter will be reported to the National Industrial Relations Manager.

If the Human Resources/Industrial Relations Manager determines that an actual or threatened industrial dispute may have implications beyond any single subcontractor, a meeting of subcontractor principals will be held to brief all parties on the issues and on the Project's requirements for management of the dispute.

The PD will advise the Client of threatened or actual industrial action as required under applicable legal and regulatory obligations.

14.4 Managing Disputes in Relation to Rights of Entry

Lendlease sites will operate in strict compliance with Right of Entry requirements under applicable legislation and Industrial Instruments. Where there is a dispute in relation to Right of Entry, Lendlease will advise the party they are trespassing and need to leave site immediately. If this does not occur, police may be called to enforce the order to leave.

We believe that discussing protocols with relevant unions before Project mobilisation can minimise the instance of disputes in relation to Right of Entry. Right of Entry protocol is covered during Project induction. Subcontractors will be contractually bound to abide by and enforce legal Right of Entry requirements.

14.5 Achieving No Lost Time or Limitations due to Industrial Disputes

Should unlawful industrial action be taken by any union, Lendlease will call an out of cycle Project meeting and discuss all options to resolve or bring to an end to the unlawful industrial action, including pursuing legal action where possible. Any legal action will be conducted in a manner consistent with the guiding principles and objectives of the NSWCOP, such as compliance with the law, supporting outcomes of productivity in delivering the Project on time and within budget, maintaining a high standard of safety and protecting freedom of association.

In all instances it will be Lendlease's intention to communicate with senior management from the respective unions and/or contractor's representative in order to broker a solution acceptable to all parties.

Lendlease will report any threatened or actual industrial action that may impact the Project, Project costs, related contracts or timelines to the CCU and the client, within 24 hours. Lendlease will provide regular updates to the CCU (or its nominee) and the client about the steps being taken to resolve the industrial action.

Lendlease will strictly enforce that payments will not be made for strike action (strike pay). Contracts with subcontractors will expressly forbid the practice and require subcontractor principals to provide written advice if such a claim is made. Any claim for payment during industrial action, or threats made to Lendlease or its subcontractors, will be referred to the relevant regulator/s for further investigation.

15. Audit & Review

Prior to Project delivery, the PD, and/or Human Resources / Industrial Relations Manager in consultation with appropriate parties, will ensure set performance measures are in place to assess the areas covered in this WRMP. The measures will include as a minimum site and labour efficiency, productivity initiatives, industrial related matters and lost time. For the life of the Project, data will be collated and reported against these measures by the PD or their nominated representative.

This WRMP will be regularly reviewed (minimum six monthly and as required) by the PD, Human Resources / Industrial Relations Manager and any other relevant parties for the life of the Project, which includes half yearly auditing by a competent person to ensure compliance with legal and regulatory requirements, changes in any other applicable laws, suitability or to improve Project performance and productivity.

This WRMP will be reviewed and if necessary amended, to address any issues that arise upon occurrence of any of the following:

- Industrial Action;
- Practical Completion of a significant section of the Project; or
- Significant change in site conditions.

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Appendix A

Potential IR Risk Management Issues

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Potential IR Risk Management Issues

Key: Risk Level ■ Low ■ Moderate ■ High

Issue	Potential Impact	Likelihood	Rating of Risk	Risk Detail	Risk Management Measures
Demarcations	■	■	■	Union demarcations and job demarcations are a risk on construction projects. Particularly the AWU and the CFMEU may become involved in a dispute over the membership of employees working on the Project.	Lendlease will seek to work with the unions to resolve demarcation issues. Lendlease will refer matters not able to be resolved to the Fair Work Commission (FWC) to avoid any unlawful stoppages. Lendlease may also seek the assistance of Unions NSW, the peak union body in NSW, to resolve demarcation disputes. The HR/IR support for the Project will keep abreast of issues and keep Project personnel informed of appropriate actions through networking.
Wage Disparity	■	■	■	The removal of Project awards has increased the likelihood of wage disparity of people working alongside each other. The unions have many concerns over this inequity and they may raise this as an issue.	Lendlease will follow procurement procedures to ensure that the 'best for project' subcontractor is selected. Where there is wage disparity Lendlease will listen to concerns raised but at all times ensure that the law is adhered to. Matters may be referred to the FWC where they are not able to be resolved at project level.
IR Compliance	■	■	■	A risk on construction projects is the issue of real or perceived non-compliance of employers with the industrial framework/standards by unions. This non-compliance often results in claims being made against the principal contractor under section 127 of the <i>Industrial Relations Act 1996</i> (NSW).	Lendlease's IR Compliance Procedure is the main tool for managing this risk. The procedure will reduce the risk of non-compliance. Lendlease's PD and HR/IR Manager will adopt an approach based on consultation and communication with subcontractors, employees and unions where non-compliance is alleged, and will ensure that compliance with legal obligations occurs.
Industry Issues	■	■	■	Union campaigns over particular issues can influence project industrial relations and must be considered.	Union campaigns over particular issues (e.g. use of supplementary labour, wage campaigns or political protests e.g. <i>Fair Work Act</i> etc.) will be approached on an individual basis, and Lendlease will at all times advise the Client, and its representative of any likely stoppages. Lendlease will attempt to resolve such issues initially via negotiation with Unions, and thereafter by reference to relevant industrial tribunals.
Enterprise Agreement Negotiations	■	■	■	Enterprise bargaining between employers and unions (or employees) or expectations by unions that all employers enter into enterprise agreements with a union can result in industrial action. In particular, protected industrial action by unions during the bargaining for enterprise agreements under the <i>Fair Work Act</i> may present a risk.	Lendlease has negotiated an enterprise agreement to apply in NSW with the AWU and the CFMEU, this enterprise agreement has been approved by the Fair Work Commission. It applies from 2/10/2013 and expires 2/10/2016. During this period Lendlease employees are not able to take protected industrial action.

Issue	Potential Impact	Likelihood	Rating of Risk	Risk Detail	Risk Management Measures
Safety	■	■	■	Safety issues can influence project industrial relations, with a high correlation between actual safety incidents and industrial disharmony.	<p>Safety risks or issues arising on-site will be managed in accordance with the Work Health and Safety Act 2011 via safety committees established under the act, and in accordance with the relevant safety disputes settlement procedures that apply under relevant Industrial Instruments. All parties to the Project will be required to observe procedures aimed at isolating affected areas where safety disputes arise and quickly rectifying any problems.</p> <p>It will be important to ensure that Project procedures for dealing with real or alleged WH&S risks are enforced. In particular, employees will be required to adhere to the directions of the WH&S Committee and not stop work unless directed to do so by the WH&S Committee or Project management or they may be breaching the law. Stoppages under the guise of WH&S concerns have been used to pursue industrial agendas by employees on major construction projects. Lendlease will therefore adopt a strict policy of no payment for time lost where the WH&S procedures are not followed.</p>
Change of Government	■	■	■	A change of government could see a surge in protest-type action.	Lendlease will keep in contact with its Industry Associations (MBA & AIG) and legal advisors to keep abreast of related issues.
Inclement Weather	■	■	■	The role of weather and not following the correct procedure can lead to lost time in the areas of surface work, which may affect operations.	Lendlease will adopt a strict policy of no payment for time lost where the relevant procedures are not followed. Relevant procedures are contained with relevant Industrial Instruments (Lendlease's enterprise agreement, subcontractors' enterprise agreements and the modern award).
New IR Laws	■	■	■	The Fair Work Act 2009 is in place and neither side of Federal Politics is talking about major changes to the Act.	Lendlease's HR team is continually involved in the IR network and monitoring any developments that may impact on Lendlease's operations, particularly its client's projects.
Union Disputes with Subcontractors over Renegotiation of Agreements	■	■	■	When subcontractors are used for the Project there is a chance of a number of subcontractor enterprise agreements expiring during the life of the Project. Any disputes with subcontractors and unions or delays in negotiation of agreements may affect the Project.	Lendlease will assess the subcontractor's management ability with regard to industrial relations during the procurement process and will expect the subcontractor to manage the ongoing industrial relations within their workforce and inform Lendlease of any industrial relations issues that affect or are likely to affect the Project.
Subcontractors - Payment of Entitlements	■	■	■	Subcontractors may not meet their employment obligations with their employees through payment of wages or entitlements under relevant industrial instruments.	Subcontractors are to declare they are complying as a part of their monthly progress claim. The HR/IR Manager will routinely audit subcontractors to ensure compliance.

Issue	Potential Impact	Likelihood	Rating of Risk	Risk Detail	Risk Management Measures
Workforce Redundancies	■	■	■	Retrenchments increase the likelihood of industrial disputation, e.g. challenging fairness of process and order of selection, especially in light of the 'genuine redundancy' provisions in the <i>Fair Work Act</i> .	Dedicated HR personnel to develop and manage redundancy strategy, procedure and consultation processes before retrenching workforce.
Project Demobilisation – Staff	■	■	■	Retrenchments increase the likelihood of industrial disputation, e.g. challenging fairness of process and order of selection	Dedicated HR personnel to manage Project demobilisation. Active communication with parent company. Where retrenchments need to occur, they will follow the home organisation's procedures.

Project Risk Assessment

A pro-forma assessment is included below as a guide.

Key: Current Assessment Rating ■ Low ■ Moderate ■ High

Risk / Opportunity Description	Controls	Current Assessment Rating				Additional Controls / Mitigation Strategy
		Control Effectiveness	Consequence	Likelihood	Level of Risk / Opportunity	
Subcontractor performance not per the NSW COP	<ul style="list-style-type: none"> Review of subcontract agreements Assessment of NSW COP performance Training of Supervisors on NSW COP requirements Good issue resolution process Good WH&S Rep structure and training Confirmation from Subcontractors that they are NSW COP compliant 	■	■	■	■	<ul style="list-style-type: none"> Implementation of the assessment process Training of Supervisors and OH&S reps on the management of NSW COP performance
Industry wide action conducted by the Unions	<ul style="list-style-type: none"> Site remains open for work No payment when no attendance Recruitment process Project culture and positive links to the Project 	■	■	■	■	<ul style="list-style-type: none"> Seek advice from National IR Manager
Union demarcation dispute	<ul style="list-style-type: none"> Understanding the risk profile of the subcontractors Effective WH&S Reps 	■	■	■	■	<ul style="list-style-type: none"> Smaller packages of works to allow flexible delivery methods such as self-performance, different subcontractors and labour hire Multiple plant hire companies

Risk / Opportunity Description	Controls	Current Assessment Rating				Additional Controls / Mitigation Strategy
		Control Effectiveness	Consequence	Likelihood	Level of Risk / Opportunity	
Unprotected industrial action	<ul style="list-style-type: none"> • Site establishment / amenities layout • Security • Safety Management • Issue / Dispute resolution • Proactive management to head off small problems / complaints • Right of Entry process / tools <ul style="list-style-type: none"> – Right of Entry for union per Fair Work Act (Satisfactory control) – Right of Entry for union for safety issue (Ineffective control) • Good relationship between Project management and workers • Workforce welfare program <ul style="list-style-type: none"> – Exercising legal options available (e.g. Fair Work orders) to stop unprotected industrial action 	■	■	■	■	<ul style="list-style-type: none"> • Blue collar performance process managed • Programming the works to avoid needing favours such as working on RDOs • Internal Audits on Agreed practices • Develop a procedure on handling Right of Entry for a safety issue (Imminent Danger) • Training on Right of Entry on safety grounds • Review of site layout and security • No milling areas outside of the fence • Meeting room for unions - Right of Entry • Lockable area • Linking of the security and layout to the Emergency Management Plan; e.g. multiple exit point and review of plan by local emergency services
Unions conducting an Industry wide strategy to achieve higher standards / conditions	<ul style="list-style-type: none"> • Fair and consistent approach to the enterprise agreement negotiations • Well managed site • Understanding the industry wide positions regarding projects and agreements • Training and education of managers and Supervisors 	■	■	■	■	Seek advice from National IR Manager
Safety issue being used for Industrial dispute	<ul style="list-style-type: none"> • Nominated Right of Entry person (Supervisor) 	-	-	-	-	Training of safety rep on Industrial Relations and Right of Entry regarding safety issues (NSW and Commonwealth legal obligations).

Appendix B

Right of Entry Report

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Attachment 6 – Right of Entry (ROE) Report

Region:

Division:

Project:

Name(s) of union official(s):

Name of union(s) represented:

Date ROE notice(s) received (if applicable):

Date of ROE:

Arrival time of union official(s):

Departure time(s) of union official(s):

PART 1: - ROE PERMIT(S)

Did the union official(s) allow you to inspect their Federal ROE permit(s)?

Yes No

What is the expiry date of their Federal ROE permit(s)?

What is their Federal ROE permit number(s)?

*(Note: A check can be made to see if the union official(s) has a valid Federal ROE permit through the following link:
http://www.fwa.gov.au/index.cfm?pagename=entryfind_test)*

If the ROE was for OHS purposes:

In addition to their Federal ROE permit(s), did the union official(s) allow you to inspect their OHS permit? **(OHS permit is required to be shown by union official(s) if ROE involves OHS)**

Yes No N/A

What is their OHS permit number?



PART 2: - PURPOSE OF EXERCISING ROE

For which of the following reasons did the union official(s) exercise ROE:

- To investigate a suspected contravention of the Fair Work Act, an enterprise agreement, or an award (s. 481 of the Fair Work Act)
(Answer Section 1 of Part 2, then proceed to Part 3)
- To hold general discussions with employees (s. 484 of the Fair Work Act)
(Answer Section 2 of Part 2, then proceed to Part 3)
- To investigate a suspected OHS breach (s. 494 of the Fair Work Act; State OHS legislation)
(Answer Section 3 of Part 2, then proceed to Part 3)
- To consult and advise workers on health and safety matters (s. 494 of the Fair Work Act; State OHS legislation)
(Answer Section 4 of Part 2, then proceed to Part 3)
- To represent employee/s as part of a dispute settlement process
(Answer Section 5 of Part 2, then proceed to Part 3)
- To represent employee/s as a bargaining representative in negotiations for a new enterprise agreement
(Answer Section 6 of Part 2, then proceed to Part 3)

Section 1: ROE to investigate a suspected contravention (other than an OHS breach)

Did the union official(s) provide 24 hours notice in the prescribed ROE notice? (If yes, attach the prescribed ROE notice to this form)

Yes No

Did the ROE notice clearly indicate that the reason for ROE was to investigate a suspected contravention and refer to section 481 of the *Fair Work Act 2009* (Cth)?

Yes No

Did the ROE notice clearly state which part of the union's rules gives the union official(s) the right to represent the industrial interests of employees to whom the suspected contravention relates?

Yes No

Was the ROE notice also sent to the **affected employer** (if a subcontractor was involved)?

Yes No N/A

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How do you know this?

If yes, has the **affected employer** provided Lend Lease with a copy of the ROE notice that they received?

Yes No

Were any directions given to the union official(s) that they follow sign-in procedures, follow a particular route, use a particular room, adhere to any OHS requirements, wear PPE etc, not complied with by the union official(s)?

Yes No

If yes, provide details of their non-compliance:

Did the union official(s):

- Cause work to stop? Yes No
- Investigate issues not relating to the suspected contravention? Yes No
- Recruit or attempt to recruit members? Yes No
- Ask Lend Lease to provide information and/or documents? Yes No

(Note: unless the alleged contravention pertains to Lend Lease, it is likely that information cannot be provided.)

(If a union official(s) requests access to document/s on site, generally these can only be provided if those document/s relate to a member of their union, or the employee/s to whom the requested document/s relate has consented to them being provided to the union. Document/s requested by a union official(s) must also be directly relevant to the suspected contravention alleged by the union official(s)).

SECTION 1: - ROE TO HOLD DISCUSSIONS WITH EMPLOYEES

Did the union official(s) provide 24 hours notice in the prescribed ROE notice? (If yes, attach the prescribed ROE notice to this form)

Yes No

Did the ROE notice clearly indicate that the reason for ROE was to hold discussions and refer to section 484 of the *Fair Work Act 2009* (Cth)?

Yes No



Did the ROE notice clearly state which part of the union's rules gives the union official(s) the right to represent the industrial interests of employees performing work on the premises?

Yes No

Were any directions given to the union official(s) that they follow sign-in procedures, follow a particular route, use a particular room, adhere to any OHS requirements, wear PPE etc, not complied with by the union official(s)?

Yes No

If yes, provide details of their non-compliance:

Did the union official(s) speak to employees only during a meal break or rest pause?

Yes No

If no, please provide details (*Note: if the union official(s) entered the premises to hold discussions with employees, then holding such discussions outside the meal break or rest pause is a contravention of the Fair Work Act 2009 (Cth)*)

SECTION 2: - ROE TO INVESTIGATE A SUSPECTED OHS BREACH

What was the nature of the alleged OHS breach?

Were details about the alleged OHS breach provided? (If in Victoria, please attach the ARREO to this form, for all other States please attach any notification provided either before or after the entry).

Yes No

What did the union official(s) inspect?

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Did the union official(s) consult with anyone?

Yes No

If yes, please provide details:

Did the union representative:

- Cause work to stop? Yes No
- Investigate issues not relating to the alleged OHS breach? Yes No
- Talk about non-safety issues? Yes No
- Recruit or attempt to recruit members? Yes No
- Issue a Safety Rectification Notice? (if yes, attach a copy) Yes No
- Ask Lend Lease to provide information and/or employee records? Yes No

(Note: A union official(s) must provide 24 hours notice to access an employee record/s as part of ROE for a suspected OHS breach)

- If the safety concern genuine, has it been rectified? Yes No
- If no, what is the timeframe for rectification?

- Has the relevant safety authority in the State/Territory been notified? Yes No

SECTION 3: - ROE TO CONSULT AND ADVISE WORKERS ON HEALTH AND SAFETY MATTERS

Did the union official(s) provide 24 hours notice in the prescribed ROE notice? (If yes, attach the prescribed ROE notice to this form)

Yes No

Did the ROE notice clearly indicate that the reason for ROE was to consult and advise workers on health and safety matters by reference to State legislation.

Yes No

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Did the union official(s) consult with anyone?

Yes No

If yes, please provide details:

Did the union representative:

- Cause work to stop? Yes No
- Investigate issues not relating to the alleged OHS breach? Yes No
- Talk about non-safety issues? Yes No
- Recruit or attempt to recruit members? Yes No
- Issue a Safety Rectification Notice? (if yes, attach a copy) Yes No
- Ask Lend Lease to provide information and/or employee records? Yes No

(Note: A union official(s) must provide 24 hours notice to access an employee record/s as part of ROE for a suspected OHS breach)

- If the safety concern genuine, has it been rectified? Yes No
- If no, what is the timeframe for rectification?

- Has the relevant safety authority in the State/Territory been notified? Yes No

SECTION 3: - ROE TO CONSULT AND ADVISE WORKERS ON HEALTH AND SAFETY MATTERS

Did the union official(s) provide 24 hours notice in the prescribed ROE notice? (If yes, attach the prescribed ROE notice to this form)

Yes No

Did the ROE notice clearly indicate that the reason for ROE was to consult and advise workers on health and safety matters by reference to State legislation.

Yes No



Did the ROE notice clearly state which part of the union’s rules gives the union official(s) the right to represent the industrial interests of employees performing work on the premises?

Yes No

Were any directions given to the union official(s) that they follow sign-in procedures, follow a particular route, adhere to any OHS requirements, wear PPE etc., not complied with by the union official(s)?

Yes No

If yes, provide details of their non-compliance:

Did the union representative:

- Cause work to stop? Yes No
- Investigate issues not relating to the alleged OHS breach? Yes No
- Talk about non-safety issues? Yes No
- Recruit or attempt to recruit members? Yes No
- Issue a Safety Rectification Notice? (if yes, attach a copy) Yes No
- Ask Lend Lease to provide information and/or employee records? Yes No

(Note: A union official(s) must provide 24 hours notice to access an employee record/s as part of ROE for a suspected OHS breach)

SECTION 4: - ROE TO REPRESENT EMPLOYEE/S AS PART OF A DISPUTE SETTLEMENT PROCESS

Who is the employer(s) affected by the dispute?

What are the applicable industrial instrument(s) and the relevant dispute resolution clause(s)?

Has the dispute been resolved?

Yes No

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Did the union representative:

- Cause work to stop? Yes No
- Investigate issues not relating to the dispute the subject of the dispute resolution procedure(s)? Yes No
- Recruit or attempt to recruit members? Yes No
- Ask Lend Lease to provide information in relation to the alleged dispute? Yes No

Has the dispute been reported to the client?

Yes No

SECTION 5: - ROE TO REPRESENT EMPLOYEE/S AS A BARGAINING REPRESENTATIVE IN NEGOTIATIONS FOR A NEW ENTERPRISE AGREEMENT

Who is the affected employer?

Is the affected employer in the process of bargaining for a new Agreement?

Did the union representative:

- Cause work to stop in any way that affected other employers on site? Yes No
- Seek to address matters unrelated to the bargaining of the new Agreement with the affected employees? Yes No
- Recruit or attempt to recruit members? Yes No

PART 3: - OTHER ROE REQUIREMENTS

Did the union official(s) hinder or obstruct any person, or otherwise act in an improper manner?

Yes No

If yes, provide details:



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In any previous exercise of any ROE, has the union official(s):

- Hindered or obstructed Lend Lease or a subcontractor? Yes No
- Otherwise harassed Lend Lease or a subcontractor? Yes No

Did the union official(s) assert that Lend Lease has:

- Hindered or obstructed the union official(s) exercising their rights? Yes No
- Refused or unduly delayed the union official(s) entry onto the premises? Yes No
- Otherwise acted in an improper manner? Yes No

If yes, provide details:

If the union official caused work to stop on the site (other than for the purposes of a meeting for which proper notice was given to Lend Lease):

- Did any Lend Lease workers withdraw their labour during the meeting or after it? Yes No
- Did employees of any subcontractors withdraw their labour during the meeting or after it? Yes No

If yes, which subcontractors?

Report completed by

Name	Position	Signature	Date
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Distribution

1. Copy for site; and
2. If a contravention or suspected contravention of ROE has occurred, copy to the National Industrial Relations Manager

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