Prospect Highway Upgrade

Addendum review of environmental factors

Roads and Maritime Services | September 2019

NSW GOVERNMENT

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Prepared by SMEC Australia and Roads and Maritime Services

Document controls

Approval and authorisation

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Executive summary

The proposed modification

Roads and Maritime Services (Roads and Maritime) propose to modify the Prospect Highway upgrade (PHU) project to include additional work resulting from refinements to the approved design (proposed modification).

Key features of the proposed modification would include:

- Realignment of retaining wall RW03 along Prospect Highway
- Property adjustments at some sections along the road
- Additional alignment work at the M4 Western Motorway (M4 Motorway)
- Changes to the road surface and work methodology
- Demolition of residential property and ancillary structures located at 30 Topaz Crescent, Seven Hills
- Changing the posted speed limit from 60 to 70 kilometres an hour for the full length of the proposal area.

Other potential proposed modifications to the project REF include:

- Realignment of the shared path at Tudor Avenue and St Martins Crescent
- The use of an existing site compound area located at the intersection of Tarlington Place and the Great Western Highway, Prospect
- Minor ancillary work such as installation of handrails at bus shelters.

Background

A Review of environmental factors (REF) was prepared for the Prospect Highway upgrade (referred to in this addendum REF as the project REF). The project REF was publicly displayed from June 2014 at two locations and was available on the Roads and Maritime's project website. A Submissions Report was prepared to respond to issues. The project REF was determined September 2014. In 2016 an addendum to the project REF (referred to in this addendum REF as addendum 1) was prepared to address changes to the approved scope of work for the Prospect Highway upgrade. Addendum 1 was determined 12 July 2016.

Subsequent to the work described in the project REF and addendum 1 REF, Roads and Maritime have further refined the project. The modifications involve the extension of the project REF boundary and additional works not covered under the planning approvals outlined in the project REF or addendum 1 REF

Need for the proposed modification

Chapter 2 of the project REF outlines the strategic need for the project, the project objectives and the options that were considered. The strategic need for the proposed modifications described and assessed in this addendum REF are consistent with the project REF and addendum 1 REF.

The proposed modification is needed to support the main work of the PHU project. The proposed modification is needed to further refine the scope of work and construction area to support road safety and traffic improvements.

Proposal objectives

Section 2.3 of the project REF identifies the proposal objectives and development criteria that apply to the proposed modification. No additional criteria or objectives have been identified for the proposed modification.

Options considered

Roads and Maritime investigated the 'do nothing' option and one other option for the proposed modification:

- 'Do nothing' option – This option involves carrying the project as described in the project REF and addendum 1 REF, without any additional scope of work.
- Option 1 - The option involves making adjustments to the project boundary, property adjustments and alignment of structures (i.e. RW03), revising the pavement material and speed limit, demolition of a Roads and Maritime owned residential property and an increase in the scope of work at various locations to facilitate construction of the project.

The 'Do nothing' option would involve no additional work outside the scope of the project REF, and addendum 1 REF. The do nothing option does not address the identified need and would therefore only be preferred in circumstances where the costs and environmental impact of proceeding were assessed as outweighing identified benefits. That was not the case and therefore the do nothing option was not pursued further.

Option 1 would meet the specific needs and objective of proposed modification. This option would allow for the safe permanent placement of some surplus spoil within the existing road corridor through the minor realignment of retaining wall RW03, effectively reducing the amount of landfill generated by the PHU project. Option 1 supports the current design and location of approved noise wall SB02b through the demolition of existing structures at 30 Topaz Crescent. In addition, Option 1 provides a fit-for-purpose solution to the need for a site compound in the southern extent of the PHU alignment. Furthermore, Option 1 also accounts for the works associated with the utility early work and adjustment of existing utilities; a necessary aspect of the overall project REF scope.

Statutory and planning framework

The proposed modification can be assessed under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Roads and Maritime also considers clause 228 of the Environmental Planning and Assessment Regulation 2000 and matters of national environmental significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) applies to this proposal. Clause 94 of the ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

The proposed modification would be unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land. A referral to the Australian Government Department of the Environment and Energy under the Environment Protection and *Biodiversity Conservation Act 1979* (EPBC Act) is therefore not required.

Community and stakeholder consultation

The consultation strategy for the project remains as outlined in section 5.1 of the project REF. No changes to the consultation strategy were required for this addendum.

Ongoing consultation for the proposal would be carried out in accordance with the CCIP developed for the approved project (refer to section 5.1 of the project REF). Consultation will include:

- Providing current proposal information through the project website and a Community Update newsletter
- Ongoing consultation with relevant stakeholders, including Blacktown City Council
- Completion of property access adjustment agreements and notification of the intent to install noise walls at locations near residential properties

- Informing and updating Blacktown City Council, nearby residents and the school community about the proposed kiss and ride facility, including when construction is proposed to commence, of any proposed night-work and any changes to access or parking
- Informing and updating Blacktown City Council and the relevant property owners of the proposed noise walls, including noise wall locations, when work is expected to start and if any night-work is to be carried out
- Providing the relevant stakeholders with contact details, a helpline for further information and to raise concerns, and a project information telephone number for the construction phase.

Environmental impacts

Assessment of the potential environmental impacts associated with the proposed modification identified the following:

Traffic and transport

- Access points (e.g. existing driveways) along Prospect Highway would generally be maintained during the construction period. Temporary disruptions to local access may occur during construction. Prior to any unavoidable disruption to access, consultation would be undertaken with the affected property and/or business owners. There would be no impact to access points along the highway during operation.

Noise and vibration

- The proposed modification would result in minor additional short term noise impact from plant and machinery such as during upgrading driveways and early utility work. The demolition of 30 Topaz Crescent would not result in additional noise impact to those already assessed in the project REF and the addendum 1 REF. During operation the revised noise barrier location for NB01 is predicted to result in a negligible change to those already assessed in the project REF and the addendum 1 REF.

Biodiversity

- The proposed modification would occur mostly in the areas previously assessed in the project REF and addendum 1 REF. This addendum provides assessment of any likely additional impacts as a result of the proposed modification
- The proposed site compound to be used as part of the proposed modification would be in keeping with the existing use of the site. This area was previously assessed as having limited biodiversity habitat and cleared of native vegetation except for some eucalypts that would not be impacted by the proposal
- Tests of significance were carried out for all threatened fauna species and ecological communities considered likely to be affected by the proposed modification, these being the Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) and Little Bentwing-Bat (*Miniopterus australis*). Through these assessments and in consideration of mitigation measures, it was concluded that the proposed modification is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act and therefore a Species Impact Statement is not required
- The proposal is not likely to significantly impact threatened species, populations, ecological communities or migratory species, within the meaning of the EPBC Act.

Contaminated lands and hazardous materials

- All existing structures at 30 Topaz Crescent would be demolished as part of the modification. All materials would be removed and transported to licensed disposal facilities. The site would be treated and remediated in accordance to the recommendations of the HBMSR (SMEC, 2019a) and disposed of in licensed facilities. It is not anticipated that there would be any residual risk at the operational
- The project REF Preliminary Erosion and Sediment Control Plan (PESCP) (SMEC, 2019b) was updated to incorporate changes to controls and measures based on changes the key features of the modification described in this addendum REF.

Non-Aboriginal heritage

- The proposed modification impact are considered to be minor and temporary in nature to items of heritage value.

Landscape, visual amenity and urban design

- The visual impact of the realignment of noise wall NB01 is minor in nature, and no other viewpoints would be impacted by the proposed realignment.

Air quality

- The potential impact to air quality as a result of the proposed modifications described in this addendum REF would be minor and temporary in nature.

Resource use and management measures

- There would be a minor increase in the amount of waste generated due to work carried out because of property adjustments and the demolition of 30 Topaz Street. Where possible, spoil from any of the individual activity would be recycled within the approved project boundary.

Adverse environmental effects would be minimised and managed through the implementation of safeguards outlined in this addendum REF. The consolidated list of safeguards and management measures detailed in this addendum REF would apply to the proposed modification.

Justification and conclusion

This addendum REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

While there would be some additional environmental impact as a consequence of the proposed modification, they would be avoided or minimised wherever possible through site specific safeguards. The beneficial effects are considered to outweigh the adverse impacts and risks associated with the proposed modification. On balance the proposed modification is considered justified.

Significance of impact under NSW legislation

The proposed modification would not result in a change to the findings of the project REF, the Submissions report and the subsequent addendum REF (Addendum 1) and would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required. The proposed modification is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

Significance of impact under Australian legislation

The proposed modification would not likely cause a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of the Environment and Energy is not required.

Tables

Appendices

Appendix F	Preliminary Erosion and Sediment Control Plan
Appendix G	Statutory consultation checklists
Appendix H	AusConnex design drawings
Appendix I	Historical Archaeological Test Excavation Report

1. Introduction

1.1 Proposed modification overview

Roads and Maritime Services (Roads and Maritime) propose to modify the Prospect Highway upgrade (PHU) project to include additional work as described below resulting from refinements to the approved design (proposed modification).

A Review of environmental factors (REF) was prepared for the Prospect Highway upgrade (referred to in this addendum REF as the project REF). The project REF was publicly displayed from June 2014 at two locations and was available on the Roads and Maritime's project website. A Submissions Report was prepared to respond to issues. The project REF was determined September 2014. In 2016 an addendum to the project REF (referred to in this addendum REF as addendum 1) was prepared to address changes to the approved scope of work for the Prospect Highway upgrade. Addendum 1 was determined 12 July 2016.

Subsequent to the work described in the project REF and addendum 1 REF, Roads and Maritime have further refined the project. The modifications involve the extension of the project REF boundary and additional works not covered under the planning approvals outlined in the project REF or addendum 1 REF.

A comparison of the project REF and addendum 1 boundary and the extended proposal area presented in this addendum REF is shown at Figure 1-1.

Key features of the proposed modification would include:

- Realignment of retaining wall RW03 along Prospect Highway
- Property adjustment at some sections along the road
- Additional alignment work at the M4 Western Motorway (M4 Motorway)
- Changes to the road surface and work methodology
- Demolition of residential property and ancillary structures located at 30 Topaz Crescent, Seven Hills
- Changing the posted speed limit from 60 to 70 kilometres an hour for the full length of the project.

Other potential proposed modifications to the project REF include:

- Realignment of the shared path at Tudor Avenue and St Martins Crescent
- The use of an existing site compound area located at the intersection of Tarlington Place and the Great Western Highway, Prospect
- Minor ancillary work such as installation of handrails at bus shelters.

Key features of the modification as well as all other potential changes have been assessed in this addendum REF. The proposed modification are shown in in the below Figure 1-1 to Figure 1-9. Chapter 3 describes the proposed modification in more detail.

Figure 1-1: Location of the proposed modification

Figure 1-2 Comparison map – southern extent of the proposal area

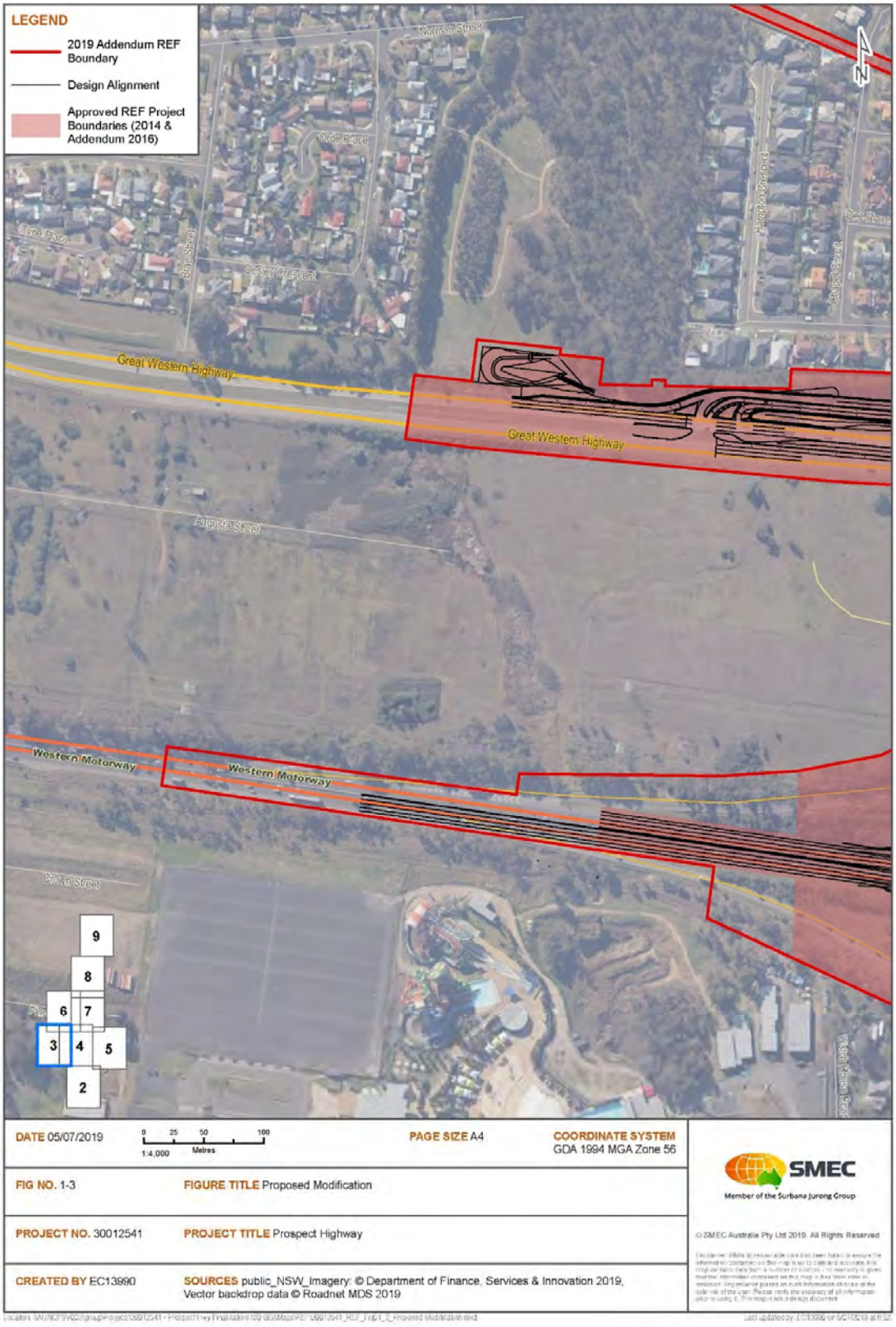


Figure 1-3 Comparison map – western extent along the M4 Motorway and Great Western Highway

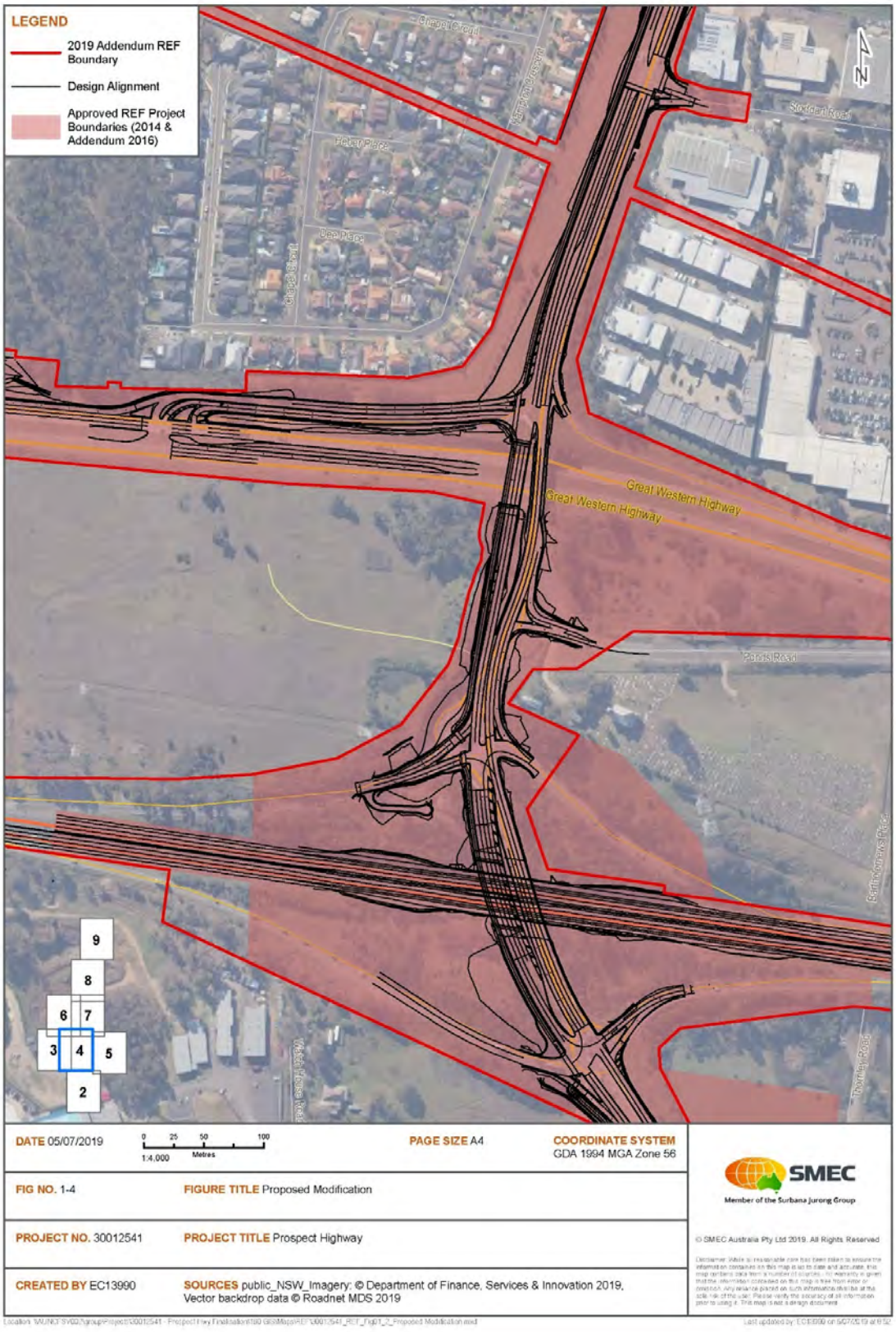


Figure 1-4Comparison map – intersection of the Prospect Highway/M4 Motorway and Prospect Highway/Great Western Highway

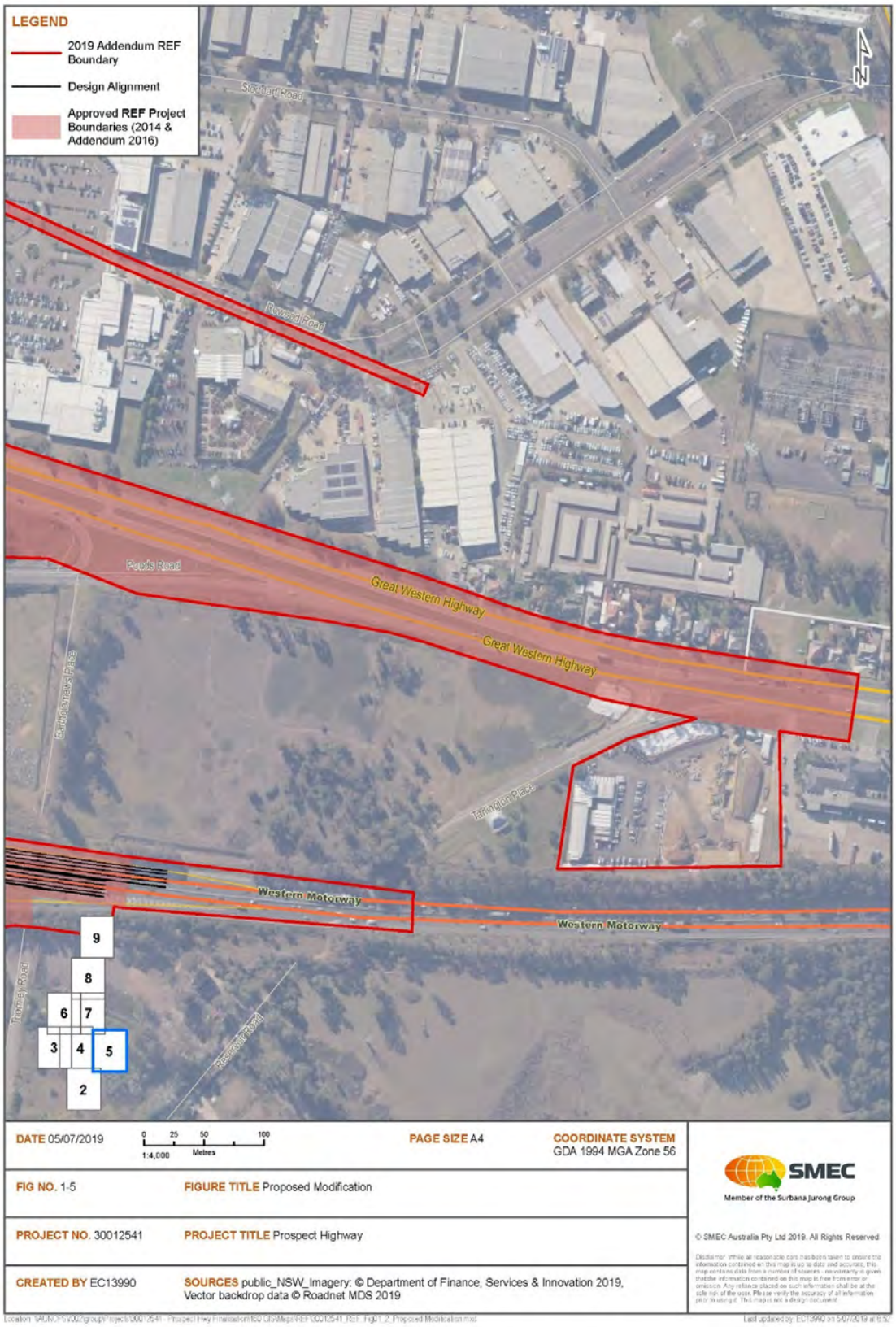


Figure 1-5 Comparison map – eastern extent of the M4 Motorway and Great Western Highway near proposed site compound

Figure 1-6 Comparison map – western extent, Blacktown

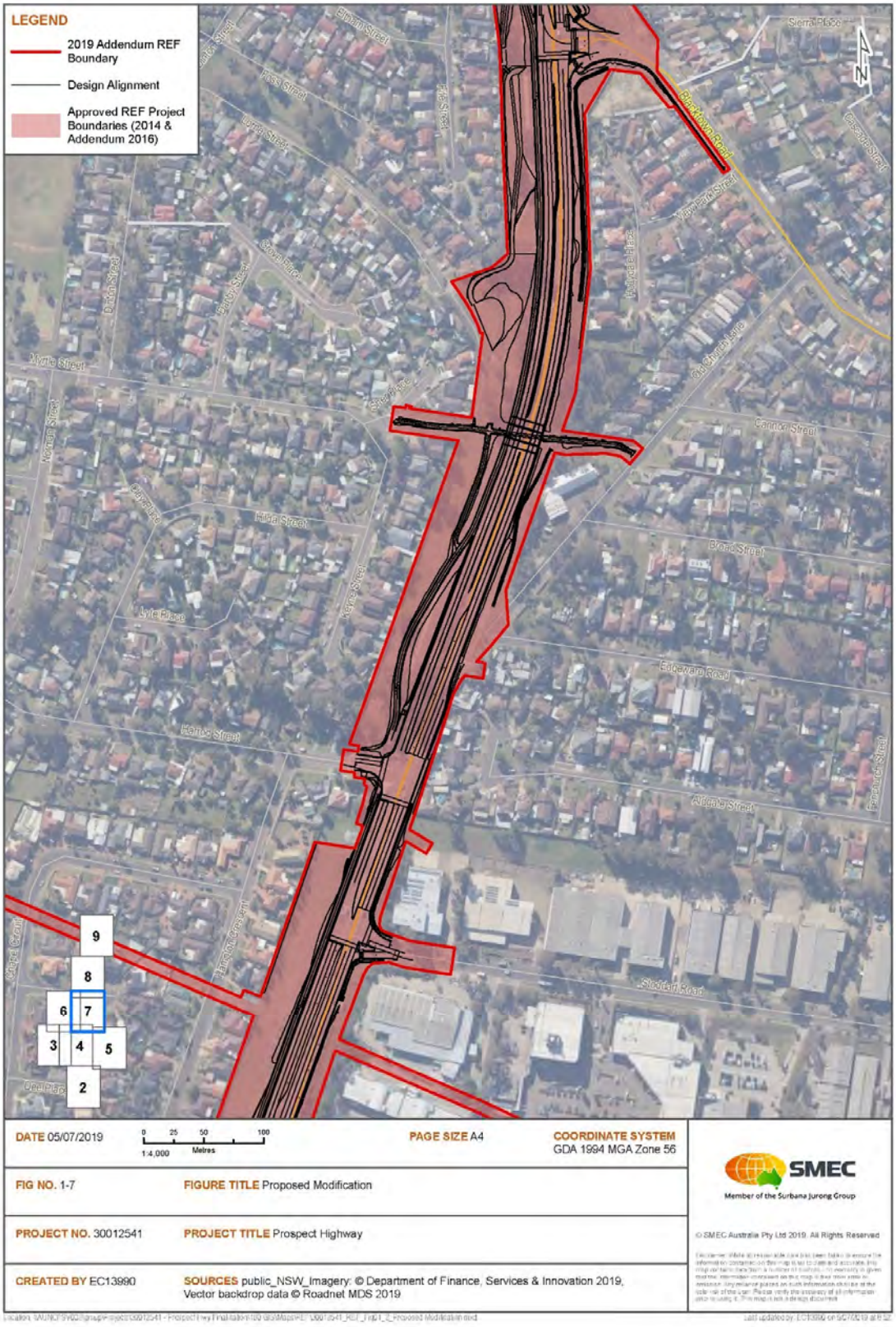


Figure 1-7 Comparison map – middle extent of the Prospect Highway alignment, Blacktown

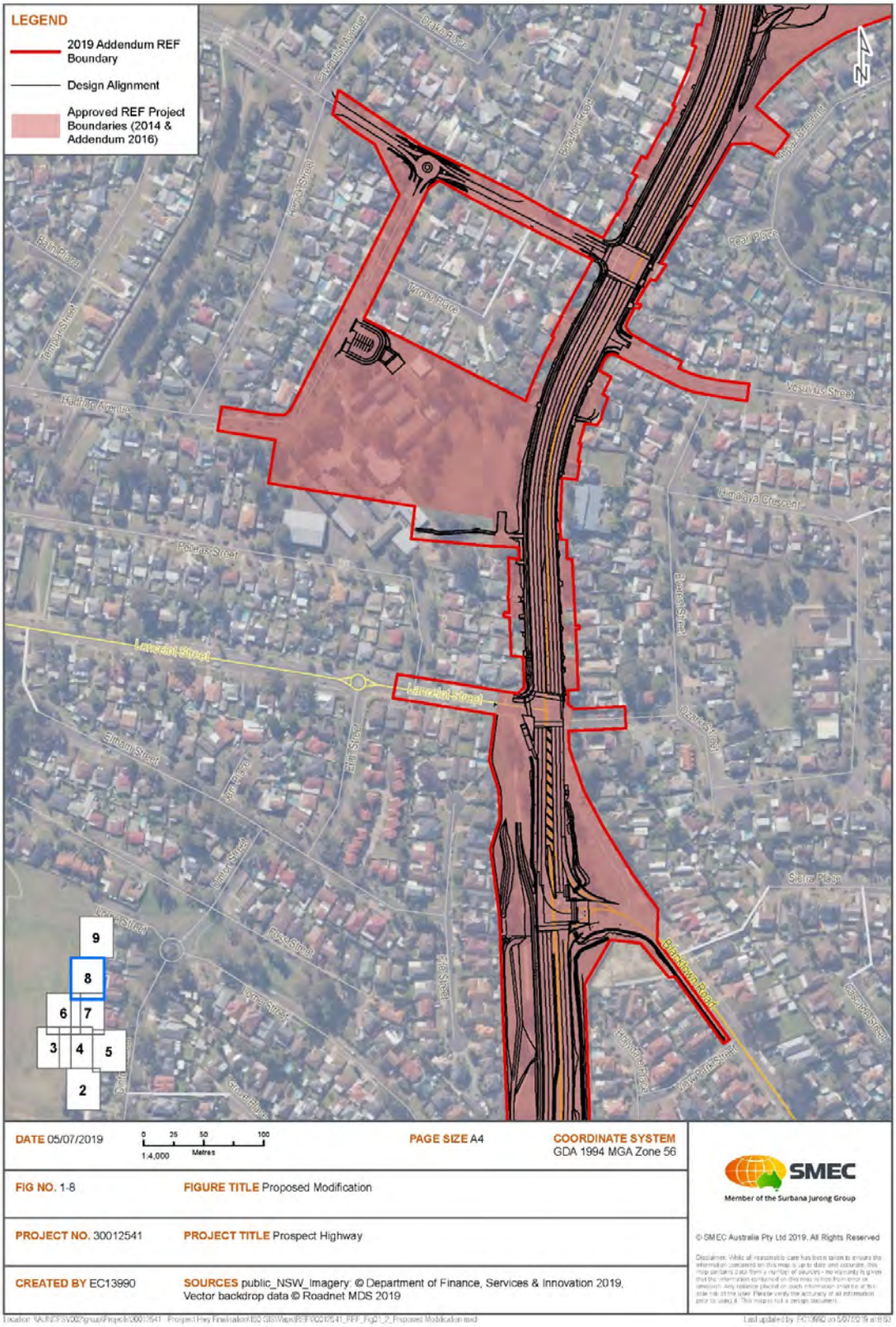


Figure 1-8 Comparison map – middle extent near the intersection of Prospect Highway and Lancelot Street, Blacktown

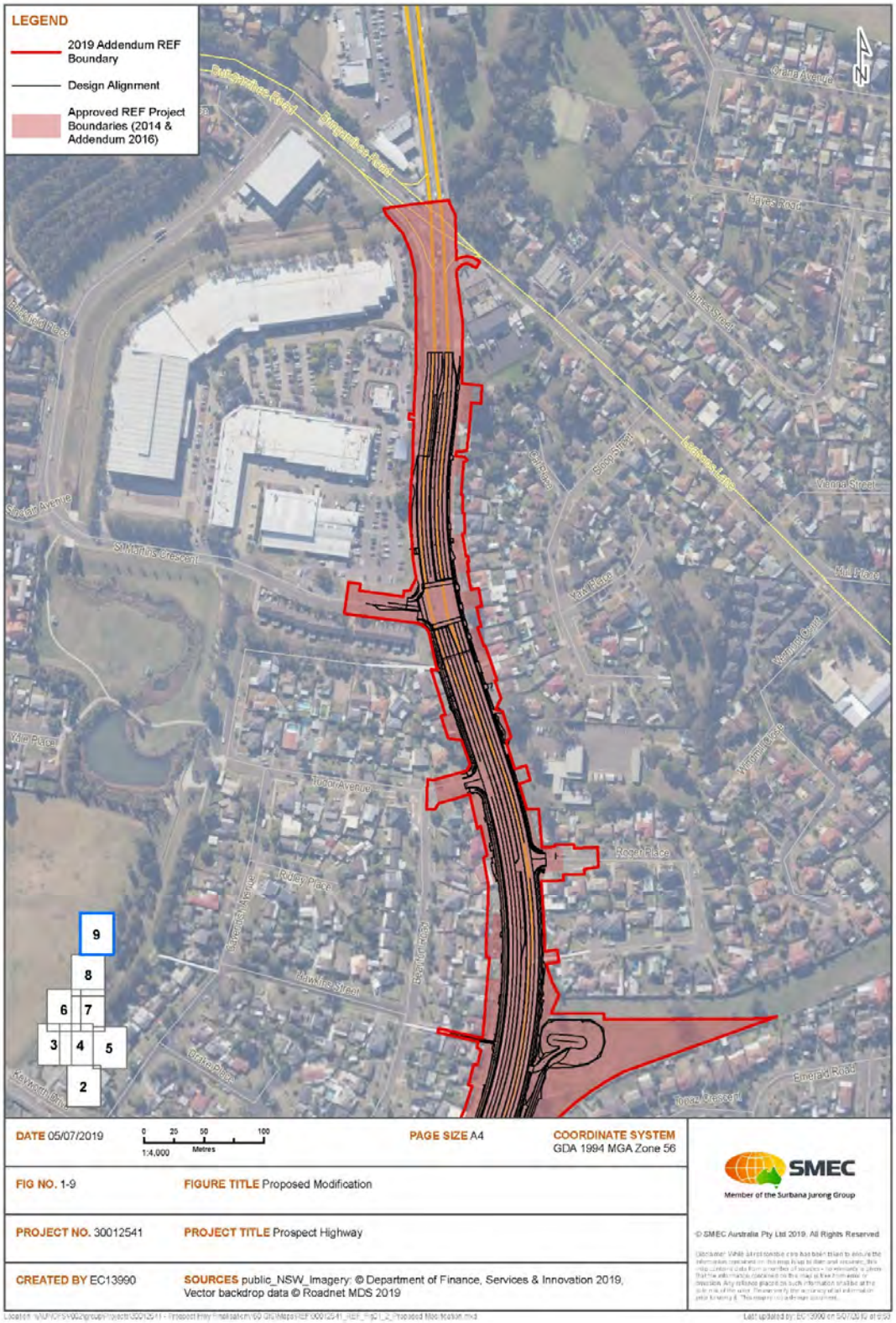


Figure 1-9 Comparison map - northern extent of the proposal area

1.2 Purpose of the report

This addendum REF has been prepared by SMEC Australia Pty Ltd (SMEC) on behalf of Roads and Maritime. For the purposes of these works, Roads and Maritime is the proponent and the determining authority under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This addendum REF is to be read in conjunction with the project REF, submissions report and addendum 1 REF for the project. The purpose of this addendum REF is to describe the proposed modification, to document and assess the likely impacts of the proposed modification on the environment, and to detail mitigation and management measures to be implemented.

The description of the proposed work and assessment of associated environmental impacts has been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000, *Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979* (*Is an EIS Required?* guidelines) (DUAP, 1995/1996), *Roads and Road Related Facilities EIS Guideline* (DUAP, 1996), the *Biodiversity Conservation Act 2016* (BC Act), the *Fisheries Management Act 1994* (FM Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

In doing so, this addendum REF helps to fulfil the requirements of:

- Section 5.5 of the EP&A Act including that Roads and Maritime examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of this addendum REF would be considered when assessing:

- Whether the proposed modification is likely to result in a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The significance of any impact on nationally listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and whether offsets are required and able to be secured
- The potential for the proposed modification to significantly impact any other matters of national environmental significance or Commonwealth land and therefore the need to make a referral to the Australian Government Department of the Environment and Energy for a decision by the Australian Government Minister for the Environment on whether assessment and approval is required under the EPBC Act.

2. Need and options considered

2.1 Strategic need for the proposed modification

Chapter 2 of the project REF outlines the strategic need for the project, the project objectives and the options that were considered. The strategic need for the proposed modifications described and assessed in this addendum REF are consistent with the project REF and addendum 1 REF.

The proposed modification is needed to support the main work of the PHU project. The proposed modification is needed to further refine the scope of work and construction area to support road safety and traffic improvements.

2.2 Proposal objectives and development criteria

Section 2.3 of the project REF identifies the proposal objectives and development criteria that apply to the proposed modification. These objectives remain unchanged.

The main objective of the project REF is to provide increased capacity on the Prospect Highway between Reservoir Road, Prospect and 200 metres north of St Martins Crescent, Blacktown to allow for forecast traffic growth to 2031. Other objectives are to:

- Reduce traffic congestion and improve traffic flow
- Support public transport
- Support freight movement
- Support growth areas
- Improve safety
- Enable property access adjustments to allow safety exiting from properties with direct access along Prospect Highway
- Undertake the necessary utility adjustment along the proposed alignment
- Provide adequate space for the permanent storage of surplus spoil within the existing road corridor
- Identify suitable location for Roads and Maritime site compound to support the completion of the works
- Provide noise mitigation in accordance with the requirements of the Environmental Noise Management Manual and Roads and Maritime's Noise Mitigation Guidelines
- Safely demolish and remove of hazardous building material from 30 Topaz Crescent.

There are no development criteria for this proposed modification.

2.3 Alternatives and options considered

A number of the proposed design refinements have emerged as a consequence of detailed design development and constructability of some approved works, such as noise walls and pavement.

2.3.1 Methodology for selection of preferred option

The proposed modification (as described in section 3.1) involves several changes that have arisen during detailed design and did not require consideration of other options. In this context, the process of option evaluation had two broad stages:

- A consideration of whether the proposal in any configuration could be justified. This is an evaluation of the 'do nothing' option
- An evaluation of other options by reference to the respective impacts and benefits.

2.3.2 Identified options

The following options were considered for the proposed modification:

- 'Do nothing' option – This option involves carrying the project as described in the project REF and addendum 1 REF, without any additional scope of work.
- Option 1 - The option involves making adjustments to the project boundary, property adjustments and alignment of structures (i.e. RW03), revising the pavement material and speed limit, demolition of a Roads and Maritime owned residential property and an increase in the scope of work at various locations to facilitate construction of the project.

2.3.3 Analysis of options

'Do nothing' option

The 'Do nothing' option would involve no additional work outside the scope of the project REF, and addendum 1 REF. In the 'Do nothing' option, retaining wall RW03 along the Prospect Highway would not be realigned. As a result, there would be no provision for the permanent placement of surplus spoil within the approved road corridor. If the 'Do nothing' option were selected, surplus spoil would be disposed of off-site leading to additional construction traffic.

The acquisition of 30 Topaz Crescent was assessed in the previous REF prepared for the PHU project. However, demolition was not assessed. Existing structures at 30 Topaz Crescent conflict with the alignment of approved noise wall SB02b. Without demolishing these structures, the approved noise wall SB02b could not be constructed, and the noise mitigation requirements of the project REF and addendum 1 REF would not be met.

Asset relocation was identified in the project REF as an aspect of the PHU project. Two Endeavour Energy assets were specified in the early development of the concept design as potential risks to the PHU project (see 5.5 project REF). Roads and Maritime has consulted with Endeavour Energy from the proposal's inception to identify a design solution that meets the requirements of both parties. In addition, the readjustment of the Jemena high-pressure gas pipeline was recently identified as a necessary aspect of the PHU project. The design solutions developed in response to these risks were not assessed in the project REF and addendum 1 REF.

In the 'Do nothing' option, the project REF boundary would remain unchanged. The existing project REF boundary would not provide an additional access buffer plant, equipment and personnel at approved structures such as bridges and detention basins.

A site compound is required in the southern section of the proposed alignment, however the proposed location in the addendum 1 REF was found to be unsuitable for the proposed purposes. The 'Do nothing' option does not provide satisfactory options for the site compound at the south end of the PHU alignment.

To support approved work to the bridge at the M4, the project REF boundary would need to be wide enough to allow safe access for plant, equipment and personnel during the construction stage of the upgrades. Option 1 does not allow for this.

In addition, the existing posted signage of 60 kilometres per hour along the Prospect Highway alignment would need to be increased to 70 kilometres per hour to meet the objectives of the project. Option 1 does not consider the impact of the change in speed limit.

The do nothing option does not address the identified need and would therefore only be preferred in circumstances where the costs and environmental impact of proceeding were assessed as outweighing identified benefits. That was not the case and therefore the do nothing option was not pursued further.

Option 1

Subsequent to the works described in the project REF, and addendum 1 REF, Roads and Maritime have further refined the PHU project. A gap analysis was carried out to identify the spatial extent and environmental factors for which additional assessment would be necessary in consideration of these gaps. A review of the proposed changes and the project REF boundary are presented in Table 2-1 below.

Table 2-1 Need for alternatives and options assessment

Project change	Outside of approved project boundary	Options considered
Property adjustment at some sections along the road corridor within the project boundary	Yes	No - property adjustments to facilitate construction
Additional work at the M4	Yes	No - adjustments to facilitate construction
Additional work at the M4 ramp intersections on the Prospect Highway	No	No - adjustments to facilitate construction works already underway as part of the M4 Smart Motorway project
Changes to the pavement design and construction methodology	Yes (partially)	No - design refinements to facilitate construction, and to reflect a significant deterioration in existing pavement quality since 2016.
Demolition of residential property located at 30 Topaz Crescent, Seven Hills NSW	No	No - the property is owned by Roads and Maritime, and there is a structure on the property that is directly impacted by one of the proposed noise walls outlined in addendum 1 REF. All of the structures on the property would need to be demolished to complete the works.
Early utility work and adjustments of existing utilities	No	No - design refinements to facilitate construction

Project change	Outside of approved project boundary	Options considered
The realignment of the shared path at Tudor Avenue and St Martins Crescent	No	No - design refinements to facilitate construction
The use of a new site compound area located at the corner of Tarlington Place and the Great Western Highway, Prospect	Yes	Yes - several potential site compounds were assessed in the project REF and addendum 1. These sites did not satisfy the project requirements. The proposed site compound in this addendum REF is currently a Roads and Maritime site compound and is the preferred compound location.
Minor ancillary work such as installation of handrails and work at bus shelters.	No	No - design refinements to facilitate construction, improve safety for pedestrians, and meet new bus shelter product specifications.
Speed zone increase to 70 kilometres per hour along the entire PHU alignment.	No	No - the existing speed zones are required to be updated to meet the safety and efficiency objectives of the work.

The additional work described in Option 1 would meet the specific needs and objective of this addendum REF. This option would allow for the safe permanent placement of some surplus spoil within the existing road corridor through the minor realignment of retaining wall RW03, effectively reducing the amount of landfill generated by the PHU project. Option 1 supports the current design and location of approved noise wall SB02b through the demolition of existing structures at 30 Topaz Crescent. In addition, Option 1 provides a fit-for-purpose solution to the need for a site compound in the southern extent of the PHU alignment. Furthermore, Option 1 also accounts for the works associated with the utility early work and adjustment of existing utilities; a necessary aspect of the overall project REF scope.

The impact of the proposed modification have been assessed and found not to be significant. Refer to Chapter 6 (Environmental assessment).

2.4 Preferred option

Based on the constraints of the analysis process, and in consideration of the needs and objectives of the work, ‘Option 1’ was selected as the preferred option. Option 1 was selected based on being the most reasonable solution to the refinements outlined in the previous sections. As the refinements have not resulted in any significant change to the existing road alignment design, the scope of the environmental impact assessment are limited to revisiting previous studies of the relevant environmental factors, in consideration of the revised proposal boundary. This addendum REF provides the environmental impact assessment in consideration of all of the proposed construction methodology changes and expansion of the project REF and addendum 1 boundary.

3. Description of the proposed modification

3.1 The proposed modification

Roads and Maritime proposes to modify the PHU to incorporate refinements to the project REF construction methodology, and minor changes in pavement design. This has resulted in the modification of project REF boundary. The proposed modification is shown in Figure 1-2 to Figure 1-9. The proposed location for surplus spoil is within the project REF boundary and is shown in Figure 3-1.

Key features of the proposed modification would include:

- Realignment of retaining wall RW03 along Prospect Highway. This allows for permanent placement of surplus spoil within the project REF boundary (at the south west corner of the intersection of the Prospect Highway and Great Western Highway)
- Property adjustment at some sections along the road corridor outside the project REF boundary
- Additional alignment work at the M4 Motorway. This allows the realignment of a noise wall and associated ramp and signalised intersections with the Prospect Highway
- Changes to the approved pavement material as assessed in the project REF and addendum 1. There would be minor changes to the construction methodology
- Demolition of residential property and ancillary structures located at 30 Topaz Crescent. Existing structures currently conflict with the alignment of noise wall (SB03b)
- Early utility work and adjustments of existing utilities
- Changing the posted speed limit from 60 to 70 kilometres an hour for the full length of the project.

Other potential changes to the project REF include:

- Realignment of the shared path at Tudor Avenue and St Martins Crescent
- The use of an existing site compound area located at the intersection of Tarlington Place and the Great Western Highway, Prospect
- Minor ancillary work such as installation of handrails at bus shelters.

3.1.1 Overall proposal

There has been no change to the road alignment design presented in the project REF (Jacobs, 2014) and addendum 1 (SMEC, 2016). Since the determination of the project REF and addendum 1, there have been changes to the proposed pavement work and materials, and subsequent pavement construction methodology.

A gaps analysis was carried out to identify the potential environmental implications of the refinements to construction methodology and project REF boundary. One of the outcomes of the gaps analysis was the potential for a reduction at certain areas of the approved project boundary, and an expansion of the boundary in other areas. A meeting was held 12 June 2019 between Roads and Maritime and SMEC to discuss the implications of the refined construction methodology and revised project REF boundary. At this meeting, it was decided that the proposal area in this addendum REF would be refined along the eastern side of the alignment near Reservoir Road and between the intersections of the Prospect Highway and the Great Western Highway and the M4 Motorway. The project boundary has also been extended where required (refer to Figure 1-1).

The proposal area in this addendum REF has been extended to capture additional realignment and property adjustment works along the Prospect Highway Road corridor and M4 Motorway. The overall proposal area is delineated by the red polygon. The north and south extent of the project boundary remains unchanged. The proposed works/designs for the PHU alignment are presented in yellow.

The expansion of the proposal area has occurred in a small number of key areas:

- The southern part of the construction footprint has been revised and extended about 250 metres to the east and west at the intersection of the M4 Motorway and Prospect Highway (refer to Figure 1-3 to Figure 1-5). The extension of the footprint at this location would be temporary in nature. The expansion of the construction footprint would allow for the safe operation of plant and equipment and personnel during approved works for the bridge over the M4 motorway. A permanent emergency breakdown bay and retaining wall directly next to the M4 Motorway would provide for the safe parking of vehicles (e.g. because of a breakdown). All proposed work is located within the revised proposal area
- Realignment of retaining wall RW03 along Prospect Highway. The aim of these realignment works is to allow for the permanent placement of some surplus spoil within the project REF. The location of this spoil would be at the north west corner of the intersection of the Prospect Highway and Great Western Highway Link road. The surplus spoil would be within the existing road corridor, as demonstrated in Figure 3-1
- The proposed site compound (Lot26/DP801210) in south east region of the project REF was found to be unsuitable for the purposes of a site compound (Figure 1-2). An alternative site compound has been identified at the intersection of Tarlington Place and the Great Western Highway, Prospect (Lot 1/DP1192514), about one kilometre east of the intersection of the Great Western Highway and Prospect Highway. The site is lockable and partially sealed. The compound currently serves as site compound for stockpiling and site office for the Roads and Maritime
- The approved project boundary has been expanded at several locations along Prospect Highway, north of the M4 Motorway. Most of these expansions are planned to occur in residential areas in Seven hills and Blacktown. The reason for the expansion is to account for adjustments to underground residential utilities associated with the proposed early utility works and adjustments of existing utilities. The proposal area has also been expanded around the future detention basins site on the eastern side of the Prospect Highway, about 300 metres north of Vesuvius Street. The reason for expansion is to provide adequate buffer for access for staff, plant and equipment during the construction of the basin infrastructure
- In the south west, the proposal area the around the approved detention basin in the public recreation reserve. The detention basin is about 440 metres west of the Prospect Highway intersection of the Great Western Highway. There have been no changes to the basin design as described in the addendum 1 REF. The reason for expansion is to provide adequate buffer for access for staff, plant and equipment during the construction of the basin infrastructure.

There is a vacant residential property located at 30 Topaz Crescent in the north eastern region of the Prospect Highway. The property is located at Lot177/DP557378 and is owned by Roads and Maritime. The structures on the property are scheduled to be demolished as part of the refined construction methodology presented in this addendum REF. The vacant residence at 30 Topaz Crescent is located within the approved project boundary. The environmental risks associated with the demolition have been investigated in greater detail in this addendum REF than in the project REF or addendum 1 REF. A detailed specialist Hazardous Building Material Survey Report (HBMSR) (SMEC, 2019a) has been prepared accordingly and has been summarised in section 6.5 of this addendum REF. The full HBMSR can be found at Appendix E.

All other aspects of the existing environment have not changed since the preparation of the addendum 1 REF.

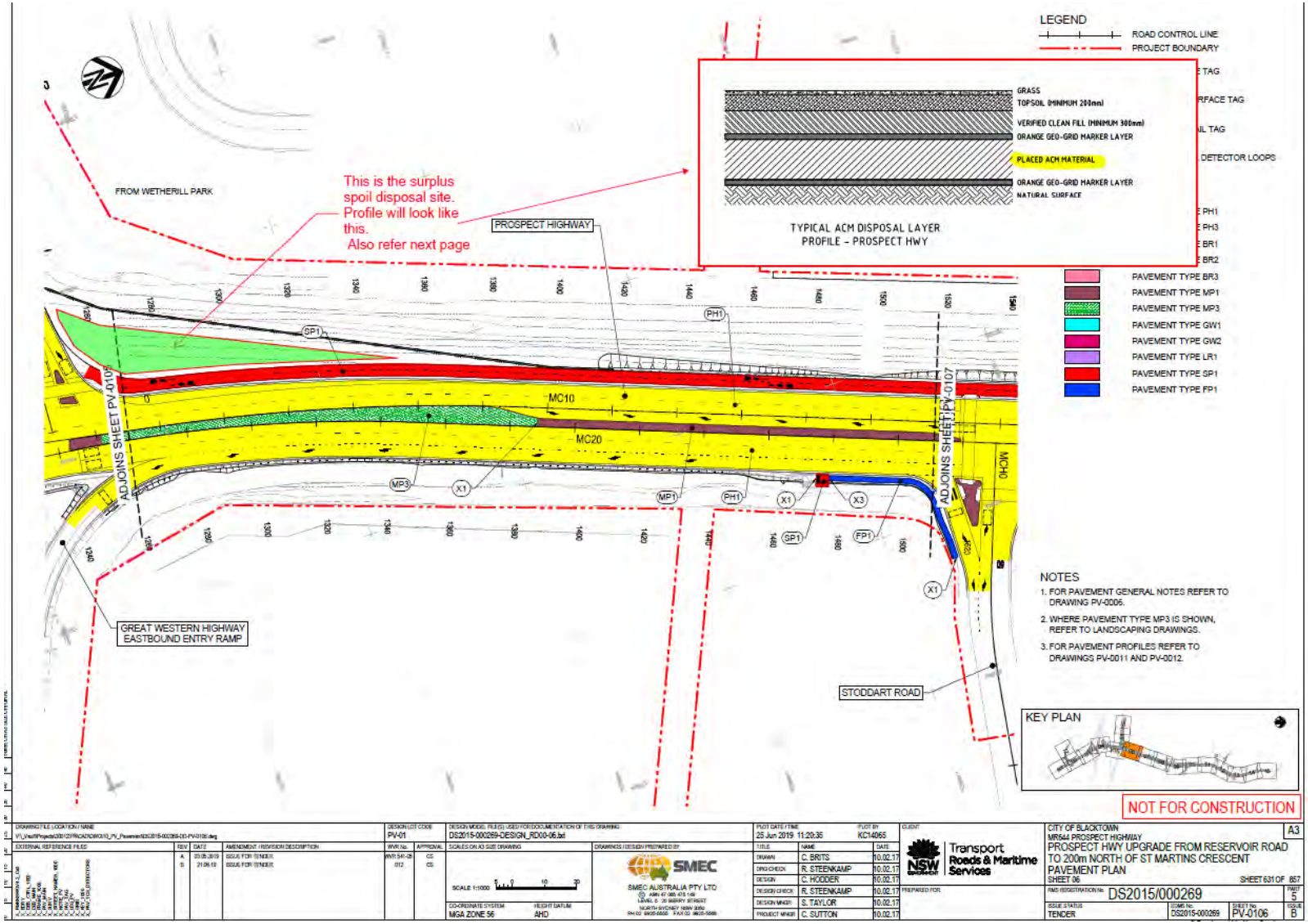


Figure 3-1 Proposed location of surplus spoil with project REF boundary

3.2 Design

3.2.1 Design criteria and Engineering constraints

The relevant design standards and design criteria are outlined in the project REF and addendum 1 REF. Details relating to design standards and engineering constraints are outlined in *Prospect Highway Upgrades: Roads Detailed Design Report* (SMEC, 2016a).

3.2.2 Main features of the modification

The main features of the modification are limited to an expansion of the project REF boundary to account for refinements to the scope of works presented in the project REF (the extended proposal area). There are no substantial changes in the design since the addendum 1 REF. The newly extended proposal area is also to allow for a safe access to approved activities structures, such as bridges and detention basins, and for access to approved compounds. Details of the main features of the proposed modification are provided below.

Realignment of retaining wall RW03 long Prospect Highway

The retaining wall RW03 is approved to be located along the Prospect Highway. As part of the scope of works presented in this addendum REF, the retaining wall would involve a minor realignment to the west of the approved location. The reason for this realignment is the creation of a large space to allow disposal of surplus materials as backfill behind the wall. This space wold would allow for the permanent placement of surplus spoil within the project REF. The location of this spoil would be at the north west corner of the intersection of the Prospect Highway and Great Western Highway Link road. Through realignment of retaining wall RW03, surplus spoil generated from the PHU works could be disposed on site, rather than as landfill. The proposed location is within the existing road corridor and there would be no change to the approved land use of the site.

Property adjustment at some sections along the road corridor within the project REF boundary

The property adjustment would allow for additional access buffer in addition to the project REF boundary at various locations along the Prospect Highway alignment. The addresses and timing of these proposed adjustments are presented in Table 3-1.

Table 3-1 Details of proposed property adjustment

Address	Lot/DP	Proposed adjustment	Timing
501 Prospect Highway, Prospect	1-2/1645	Concrete pavement setout points adjusted. 900mm wide strip for garden bed adjacent to the house to remain.	During contract execution in 2020/2021
231 Blacktown Road, Seven Hills	4/9074	Existing driveway to be replaced with new concrete pavement.	During contract execution in 2020/2021

Address	Lot/DP	Proposed adjustment	Timing
207 Blacktown Road, Seven Hills	2/233671	REF boundary adjusted to capture full extents of domestic services connection	During contract execution in 2020/2021
205 Blacktown Road, Seven Hills	2/567858	REF boundary adjusted to capture full extents of domestic services connection	During contract execution in 2020/2021
133 Blacktown Road, Seven Hills	12/243340	REF boundary adjusted to capture full extents of domestic services connection	During contract execution in 2020/2021
125, Blacktown Road, Seven Hills	16/243340	REF boundary adjusted to survey of house on property.	During contract execution in 2020/2021
123 Blacktown Road, Seven Hills	17/243340	REF boundary adjusted to capture full extents of grass reinforcement installation	During contract execution in 2020/2021
115 Blacktown Road, Seven Hills	21/243340	REF boundary adjusted to capture full extents of concrete pavement.	During contract execution in 2020/2021
109 Blacktown Road, Seven Hills	24/243340	Adjustment to proposed domestic services connection.	During contract execution in 2020/2021
154 Blacktown Road, Blacktown	376/236429	REF boundary adjusted to capture full extents of domestic services connection	During contract execution in 2020/2021
158 Blacktown Road, Blacktown	374/236429	REF boundary adjusted to capture full extents of domestic services connection	During contract execution in 2020/2021
170 Blacktown Road, Blacktown	368/236429	Driveway to be replaced with new concrete pavement. REF boundary adjusted to capture full concrete pavement and domestic services extents.	During contract execution in 2020/2021
174 Blacktown Road, Blacktown	336/236429	Adjustment to proposed domestic services connection. REF boundary adjusted to capture full concrete pavement extents.	During contract execution in 2020/2021

Address	Lot/DP	Proposed adjustment	Timing
178 Blacktown Road, Blacktown	364/236429	Concrete pavement setout points adjusted. REF boundary adjusted to capture full pavement extents.	During contract execution in 2020/2021
190 Blacktown Road, Blacktown	358/236429	Existing driveway to be replaced with new concrete pavement.	During contract execution in 2020/2021
198 Blacktown Road, Blacktown	354/236429	Concrete pavement setout points adjusted. REF boundary adjusted to capture full domestic services extents.	During contract execution in 2020/2021
Shelley Public School, Hadrian Avenue, Blacktown	1/136286 2/231213	REF boundary adjusted to capture full pavement and footpath extents.	During contract execution in 2020/2021
226 Blacktown Road, Blacktown	1/231212	Concrete pavement setout points adjusted.	During contract execution in 2020/2021
228 Blacktown Road, Blacktown	2/231212	New concrete pavement to replace existing driveway.	During contract execution in 2020/2021

Additional work at the M4 Motorway

The southern part of the construction footprint has been revised and extended about 250 metres to the east and west at the intersection of the M4 Motorway and Prospect Highway (refer to Figure 1-2 to Figure 1-9). The extension of the footprint at this location would be temporary in nature. The expansion of the construction footprint would allow for the safe operation of plant and equipment and personnel during approved works for the bridge over the M4 motorway. A permanent emergency breakdown bay and retaining wall directly next to the M4 Motorway would provide for the safe parking of vehicles (e.g. because of a breakdown). All proposed work is located within the revised proposal area.

Changes to the approved pavement works and materials, and subsequent pavement construction methodology

The pavement design along the PHU alignment has been revised since the project REF and addendum 1 REF. The initially design proposed small sections of the alignment pavement to be treated as 'Mill and Resheet' work. The pavement treatment methodology has since been refined and full reconstruction is now required at isolated areas along the proposal area. There are no changes to the extent of pavement work.

Demolition of residential property located at 30 Topaz Crescent, Seven Hills NSW

The vacant residential property located at 30 Topaz Crescent in the north eastern region of the Prospect Highway is scheduled to be demolished as part of the refined construction methodology presented in this addendum REF. The property is located at Lot177/DP557378 and is owned by Roads and Maritime. There are multiple ancillary structures on the site, including two garages and a shed. The justification for the demolition is that one of the ancillary structures would be directly impacted by the proposed approved noise wall (SB03b). The property is located within the approved project boundary, however, environmental risks

associated with the demolition were not assessed in the project REF or addendum 1 REF. A detailed specialist HBMSR (SMEC, 2019a) has been prepared accordingly and has been summarised in section 6.5 of this addendum REF. The full report can be found at Appendix E.

Early utility work and adjustment of existing utilities.

The project REF boundary has been extended in this addendum REF to include adjustment and property alignment associated with the AusConnex/Endeavour Energy Early works requirements. The works are for an asset relocation of the 33kV Transmission Feeder 467 from Leabons Lane to Prospect Highway/Blacktown Road. The works would involve:

- Installation/removal of poles
- The modification of pole tops to the transmission side
- Undergrounding of transmission feeder and associated assets for a total length of 1,017 metres.

A Summary of Environmental Report (SER) was prepared by Endeavour Energy (2019) for the early works. The AusConnex design drawings are located at Appendix H of this addendum REF. In addition, the readjustment of the Jemena high-pressure gas pipeline was recently identified as a necessary aspect of the PHU project. The design solutions developed in response to these risks were not assessed in the project REF and addendum 1 REF.

Speed zone increase along the entire PHU alignment

The speed zone along the PHU alignment has been increased from 60 to 70 kilometres per hour. The justification for the increase is to support the objectives of the PHU project.

The realignment of the shared path at Tudor Avenue and St Martins Crescent

This would involve work capturing about 50 metres of the existing shared path along Prospect Highway between Tudor Avenue and St Martins Crescent. The project REF boundary would be extended in this area and the shared path realigned to accommodate additional road furniture associated with the widening of the addendum 1 REF.

The use of a new compound area located east pf the of the Great Western Highway

The southern site compound proposed within the boundary of the project REF was found to be unsuitable for the purposes of the PHU project. An alternative site compound has been identified at the corner of Tarlington Place and the Great Western Highway (Lot 1/DP1192514), about one kilometre east of the intersection of the Great Western Highway and Prospect Highway. The site is lockable and partially sealed. The compound currently serves as site compound for stockpiling and site office for the Roads and Maritime.

3.3 Construction activities

3.3.1 Work methodology

The construction methodology is described in section 3.4 of the project REF and section 3.3 of addendum 1 REF. Section 3.4 of the project REF includes the work methodology, staging, construction hours and duration and plant and equipment to complete the proposed work. There would be no change to the construction staging presented in the project REF and/or addendum 1 REF.

3.3.2 Construction hours and duration

Construction hours would generally be as per the project REF, which are:

- Monday to Friday 7am to 6pm
- Saturday 8am to 1pm
- Sunday and Public Holidays, no work.

Due to the importance of maintaining through traffic on Prospect Highway, particularly during peak periods, work outside of normal hours would be required. Out of hours work is carried out to minimise disruptions to motorists while also reducing safety risks for workers and the travelling public.

Work outside of standard construction hours and extended construction hours would be carried out in accordance with the Environment Protection Licence (EPL) and the Interim Construction Noise Guideline (DECC, 2009) and in accordance with Roads and Maritime's *Environmental Noise Management Manual Practice Note VIII.* Out-of-hours work would generally occur Sunday to Thursday. Work on Friday or Saturday nights would be avoided where possible, but circumstances could occur that may require work on these nights.

Activities carried out at night would minimise road safety risks, minimise disruption to daytime regional and local traffic flows, and minimise impacts as a consequence of utility outages. Examples of such activities include aspects of the early utility work and adjustment to existing utilities (Endeavour Energy, 2019). It is anticipated that some pavement works would also be carried out during night hours to minimise impacts on existing traffic, transport and access. Other specific activities may require out-of-hours works and these would be determined and agreed with Roads and Maritime on a case-by-case basis.

Works would be carried out in accordance with a detailed construction noise and vibration management plan required to be prepared under the project REF. This would include notifying local residents prior to any construction activities carried out outside of standard construction hours and complaints handling procedures.

The majority of the proposed refinements would be undertaken within the 18-24-month contract period as described in the project REF. Some enabling works where possible would be carried out ahead of the main construction works, such as the AusConnex/Endeavour Energy Early Works, and site establishment at the proposed site compound.

3.3.3 Plant and equipment

Section 3.3 of the project REF provides a list of the plant and equipment that would be required for construction of the works. It is not anticipated that any additional plant and equipment would be required to carry out the work described in this addendum REF.

3.3.4 Earthworks

Some earthworks would be required for the construction of the proposed refinements, including underboring and trenching for the early utility work and adjustment of existing utilities, and shared path realignment at between Tudor Avenue and St Martins Crescent and retaining wall alignment amendment on the corner of Prospect Highway and Great Western Highway Link Road. The earthworks required to undertake the modifications as described in this addendum REF would be minor in the context of earthworks required for the overall project REF.

3.3.5 Source and quantity of materials

Construction of the proposed modifications as described in this addendum REF would require various materials and pre-cast elements, many of which are described in the project REF and addendum 1 REF. The key difference between source and quantity of materials between the addendum 1 REF and this addendum REF include:

- Small quantities of general fill for use in earthworks
- Pavement materials
- Aggregate for use in concrete and asphalt
- Sand
- Cement and concrete
- Bitumen
- Water
- Handrails for the kiss and ride facility
- Power poles and electrical wires.

A more comprehensive list of construction materials needed for the overall PHU is provided in section 5.4. of the project REF and section 3.3 of addendum 1 REF. Construction materials would be sourced from local commercial suppliers where feasible.

3.3.6 Traffic management and access

Traffic management

Generally, traffic management associated with the proposed refinements would be carried out as part of the approved project. Standard traffic management measures would be employed to minimise short-term traffic impacts that could be expected during construction. These measures would be identified in a traffic management plan (TMP) for the proposal and would be developed in line with the Roads and Maritime's *Traffic Control at Work Sites Manual* (Roads and Traffic Authority, 2010) and Roads and Maritime *G10 Specification for Traffic Management* (Roads and Maritime, 2011). Similar traffic management measures would be adopted for the construction of early works activities including the AusConnex/Endeavour Energy Early Works.

Access

Generally, access would be as detailed in the project REF. Construction vehicles would access Shelley Public School from Hadrian Avenue and pedestrian and vehicular access would be maintained to school throughout construction.

Access to the shared path in a north/south direction between Tudor Avenue and St Martins Crescent along the Prospect Highway would be temporarily interrupted during the construction stage of the realignment works. Access would be reinstated once operational. Minor ancillary works such as installation of handrails and work at bus shelters are also likely to interrupt access to these individual bus shelters during the construction stage of the works. Access to these bus shelters would be reinstated at the operational stage of the works. The provisional of handrails is likely to improve accessibility of these upgraded bus shelters.

Access to 30 Topaz Crescent would be permanently closed at the commencement of construction. Access to neighbouring properties may potentially be interrupted due the construction stage of the works due to plant, equipment and demolition vehicles parking on the street to undertake the demolition. Temporary

disruptions for neighbouring properties would be resolved at the completion of the demolition and removal of waste materials from the site.

There is the potential for access to specific driveways to be obstructed as a result of property adjustment at some sections along the road corridor. The proposed adjustments would support the refined pavement works as well as the utility early works and adjustments to existing utilities. Some driveways would be replaced with the new concrete pavement (Table 3-1). It is expected that any access impacts would be minor and confined to the construction stage of the works, and all existing access would be completely reinstated at the operational stage of the proposed works.

3.4 Ancillary facilities

Temporary compound sites would be established during construction of the approved project. Five potential sites were identified in the project REF and two additional sites were considered in the addendum 1 REF. One additional site compound area has been described in this addendum REF. This proposed site compound would be located at the intersection Tarlington Place and the Great Western Highway, Prospect (Figure 1-5). The proposed compound is currently used as a Roads and Maritime project compound. The additional site compounds would be utilised in a manner consistent with the activities described in the project REF.

3.5 Public utility adjustment

Public utility adjustments associated with the approved project have been assessed as part of the project REF. The details of the adjustments to underground utilities services are detailed in the SER (Endeavour Energy, 2019). The asset relation works would involve:

- Relation and replacement of existing pole and conductors, where assets are located within or close to the proposed road alignment
- Removal and installation of poles/stays where required
- Undergrounding 33kV cabling and streetlight connections for a length of 1,017 metres
- Trimming and/or removal of vegetation to allow for the proposed works to be installed.

A high-pressure Jemena gas main crossing structure would be replaced as part of the proposed works. The main and valve would be replaced at depths in accordance with Roads and Maritime requirements. The location of this road crossing is at 233 Blacktown Road, Blacktown.

The proposed utility works would be wholly located within the Blacktown Road, road alignment (Endeavour Energy, 2019). Blacktown Road is a State Road that is owned and managed by Roads and Maritime. Side streets leading to Blacktown Road are owned by Blacktown City Council (Council).

3.6 Property acquisition

Details of property acquisition are provided in section 3.6 of the project REF and the addendum 1 REF. The structures located at 30 Topaz Crescent (Lot177/DP557378) were formerly residential. The property was acquired by Roads and Maritime as part of the project REF and is within the project REF boundary. The location of the site is presented in Figure 6-3.The majority of the proposed modifications described in this addendum REF would be contained within the road corridor. No additional acquisitions would be required to complete the works described in this addendum REF.

Matter	Comment
(a) The aim of this Policy, as set out in clause 2	The proposed modification would not adversely affect the range of activities available to users of the Parklands. It would facilitate public access to the Parklands.
(b) The impact on drinking water catchments and associated infrastructure	The proposed modification would not affect a drinking water catchment.
(c) The impact on utility services and easements	The proposed modification includes the relocation of utility infrastructure as detailed ion the addendum REF. There would be impact to other utility services and/or easements in the vicinity of the proposal.
(d) The impact of carrying out the development on environmental conservation areas and the natural environment, including endangered ecological communities	The proposed modification would encroach an environmental conservation area as mapped by the Parklands SEPP. The modifications are located within previously cleared areas and would not disturb recognised vegetation communities. Further, the proposal would not encroach on areas identified as Core Habitat or Habitat Corridor.
(e) The impact on the continuity of the Western Parklands as a corridor linking core habitat such as the endangered Cumberland Plain Woodland	The proposed modification would not disrupt Core Habitat and/or Habitat Corridors.
(f) The impact on the Western Parkland's linked north-south circulation and access network and whether the development will enable access to all parts of the Western Parklands that are available for recreational use	The proposed modification would have no impact on north-south circulation. Access to recreational areas would be unaffected by the proposed modification.
(g) The impact on the physical and visual continuity of the Western Parklands as a scenic break in the urban fabric of western Sydney	The proposed modification does involve the introduction of further urban elements to the Parklands environment. The proposed modifications are associated with the existing road. The proposal is not of a scale that would affect the overall 'green corridor' function of the Parklands.
(h) The impact on public access to the Western Parklands	No impact on public access.
(i) Consistency with: (i) any plan of management for the parklands, that includes the Western Parklands, prepared and adopted under	The plan of management for the parkland describes the Parklands. The Trust has divided the Parklands into precincts. The proposed modification are within the precinct

Part 4 of the Western Sydney Parklands Act 2006, or (ii) any precinct plan for a precinct of the parklands, that includes the Western Parklands, prepared and adopted under that Part	boundary of Precinct 7. The Precinct Plan for Precinct 7 identifies certain environmental attributes and has been considered as part of this addendum REF.
(j) The impact on surrounding residential amenity	The proposed modifications are associated with the existing road network. Refer to section 6.7 of this report for the assessment of the proposed modifications to the existing landscape character.
(k) The impact on significant views,	The proposed modifications are associated with the existing road network. Refer to section 6.7 of this report for the assessment of the proposed modifications to the existing landscape character.
(l) The effect on drainage patterns, ground water, flood patterns and wetland viability	No impact.
(m) The impact on heritage items	There are a number of existing heritage items surrounding the highway. Potential impact that may arise during the construction stage of the proposed modifications are described in Table 6-11. The overall potential impact is considered to be minor/unlikely as detailed in Table 6-12. There would be no impact to heritage items during operation.
(n) The impact on traffic and parking	No impact.

4. Statutory and planning framework

4.1 Environmental Planning and Assessment Act 1979

4.1.1 State Environmental Planning Policies

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposed modification is for a road and road infrastructure facilities and is to be carried out by Roads and Maritime, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under State Environmental Planning Policy (Coastal Management) 2018 (CM SEPP), State Environmental Planning Policy (State and Regional Development) 2011 or State Environmental Planning Policy (State Significant Precincts) 2005.

Part 2 of ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in chapter 5 of this addendum REF.

State Environmental Planning Policy (Western Sydney Parklands) 2009

State Environmental Planning Policy (Western Sydney Parklands) 2009 (WSP SEPP) aims to put in place planning controls that will enable the Western Sydney Parklands Trust to develop the Parklands into a multi-use urban parkland for the region of western Sydney.

Part of the proposed modification boundary extends into an area mapped at as 'Western Sydney Parklands' under the WSP SEPP. The area is located along Reservoir Road, Prospect as shown on Figure 4 1. Sydney Water currently has ownership of this land. Roads and Maritime has carried out consultation with Sydney Water to carry out the proposed modification.

Clause 11 of the WSP SEPP states that development for the purpose of a road is permissible without consent within the parklands if carried out by or on behalf of a public authority. Clause 12 outlines the matters which need to be considered by a consent authority for any development. Table 4-1 outlines the matters for consideration and their relevance to the proposal.

Table 4-1 Western Sydney Parklands matter for consideration

Matter	Comment
(a) The aim of this Policy, as set out in clause 2	The proposed modification would not adversely affect the range of activities available to users of the Parklands. It would facilitate public access to the Parklands.

Matter	Comment
(b) The impact on drinking water catchments and associated infrastructure	The proposed modification would not affect a drinking water catchment.
(c) The impact on utility services and easements	The proposed modification includes the relocation of utility infrastructure as detailed ion the addendum REF. There would be no impact to other utility services and/or easements in the vicinity of the proposal.
(d) The impact of carrying out the development on environmental conservation areas and the natural environment, including endangered ecological communities	Part of the proposed modification boundary extends into an area mapped as 'Western Sydney Parkland' under the WSP SEPP. The modifications are located within previously cleared areas and would not disturb recognised vegetation communities. Further, the proposal would not encroach on areas identified as Core Habitat or Habitat Corridor..
(e) The impact on the continuity of the Western Parklands as a corridor linking core habitat such as the endangered Cumberland Plain Woodland	The proposed modification would not disrupt Core Habitat and/or Habitat Corridors.
(f) The impact on the Western Parkland's linked north-south circulation and access network and whether the development will enable access to all parts of the Western Parklands that are available for recreational use	The proposed modification would have no impact on north-south circulation. Access to recreational areas would be unaffected by the proposed modification.
(g) The impact on the physical and visual continuity of the Western Parklands as a scenic break in the urban fabric of western Sydney	The proposed modification does involve the introduction of further urban elements to the Parklands environment. The proposed modifications are associated with the existing road. The proposal is not of a scale that would affect the overall 'green corridor' function of the Parklands.
(h) The impact on public access to the Western Parklands	No impact on public access.
(i) Consistency with: (i) any plan of management for the parklands, that includes the Western Parklands, prepared and adopted under Part 4 of the *Western Sydney Parklands Act 2006*, or (ii) any precinct plan for a precinct of the parklands, that includes the Western	The proposal is consistent with the plan of management for the parklands. The Trust has divided the Parklands into precincts. The proposed modification are within the precinct boundary of Precinct 7. The Precinct Plan for Precinct 7 identifies certain environmental attributes and has been considered as part of this addendum REF.

Matter	Comment
Parklands, prepared and adopted under that Part	
(j) The impact on surrounding residential amenity	The proposed modifications are associated with the existing road network. Refer to section 6.7 of this report for the assessment of the proposed modifications to the existing landscape character.
(k) The impact on significant views,	The proposed modifications are associated with the existing road network. Refer to section 6.7 of this report for the assessment of the proposed modifications to the existing landscape character.
(l) The effect on drainage patterns, ground water, flood patterns and wetland viability	No impact.
(m) The impact on heritage items	There are a number of existing heritage items surrounding the highway. Potential impact that may arise during the construction stage of the proposed modifications are described in Table 6 13. The overall potential impact is considered to be minor/unlikely as detailed in Table 6 14. There would be no impact to heritage items during operation.
(n) The impact on traffic and parking	No impact.

Clause 13 sets out specific requirements for bulk water supply infrastructure not to be impacted by development. The proposed modification would have a neutral impact on the quality of the water in the bulk water supply infrastructure. The work would not impact on the integrity, security and/or increase the risk of illegal access to the bulk water supply infrastructure. Access to the bulk water supply infrastructure for maintenance would be maintained.

Clause 14 sets out specific requirements for development in or adjoining a nature reserve (within the meaning of the National Parks and Wildlife Act 1974) or an identified environmental conservation area. The proposal does encroach or adjoin a nature reserve or an environmental conservation area. The modifications are located within previously cleared areas and would not disturb recognised vegetation communities. Further, the proposal would not encroach on areas identified as Core Habitat or Habitat Corridor.

Clause 15 regulates development affecting heritage items. The proposal would not affect any of the heritage items identified by Schedule 1 of the Parklands SEPP.

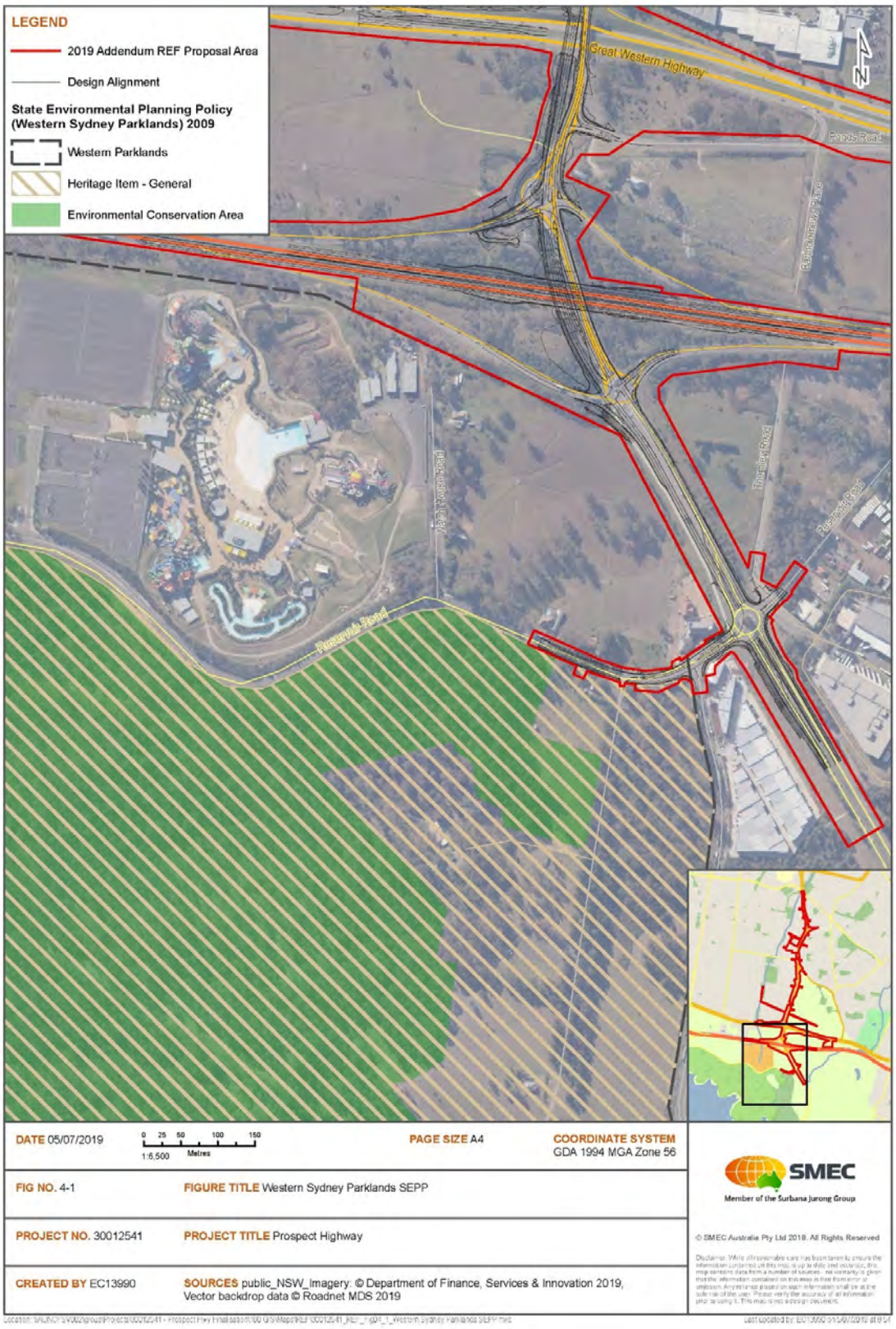


Figure 4-1 Location of Western Sydney Parklands SEPP boundary

4.1.2 Local Environmental Plans

Blacktown Local Environmental Plan 2015

As outlined in section 4.1.1, the ISEPP removes the requirements for development consent.

Development within the Blacktown Local Government Area (LGA) is generally subject to the provisions of the Blacktown LEP 2015. The provisions of the LEP zonings within the proposal area are identified in Table 4-2.

Table 4-2 Zoning relevant to the proposed activities assessed in this REF

Zoning	Objectives
Realignment of approved retaining wall RW03 along the Prospect Highway	
SP2 - Infrastructure (Classified Roads)	To provide for infrastructure and related uses
Property adjustment at some sections along the road corridor within the project REF boundary	
R2 – Low Density Residential	To provide for the housing needs of the community and to enable land uses that provide facilities or services to meet the day to day needs of the residents.
Additional alignment work at the M4 Motorway and associated M4 ramp signalised intersections with the Prospect Highway	
SP2 – Infrastructure (Classified Roads)	To provide for infrastructure and related uses.
Changes to the pavement works and materials, and subsequent pavement construction methodology	
E2 – Environmental Conservation	To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values
RE1 – Public Recreation	To enable land to be used for public open space or recreational purposes
Demolition of residential property at 30 Topaz Crescent, Seven Hills	
R2 – Low Density Residential	To provide for the housing needs of the community and to enable land uses that provide facilities or services to meet the day to day needs of the residents.
Early utility work and adjustment of existing utilities	
IN2 – Light Industrial	To provide a wide range of light industrial, warehouse and related land uses

Zoning	Objectives
RU4 – Primary Production Small Lots	To enable sustainable primary industry and other compatible land uses
R2 – Low Density Residential	To provide for the housing needs of the community and to enable land uses that provide facilities or services to meet the day to day needs of the residents.
Realignment of the shared path at Tudor Avenue and St Martins Crescent	
R2 – Low Density Residential	To provide for the housing needs of the community and to enable land uses that provide facilities or services to meet the day to day needs of the residents.
B1 – Neighbourhood Centre	To provide a range of small-scale retail, business and community uses that serve the needs of people who live or work in the surrounding neighbourhood
The use of a new site compound area located at the corner of Tarlington Place and the Great Western Highway, Prospect	
RU4 – Primary Production Small Lots	To enable sustainable primary industry and other compatible land uses
Minor ancillary work such as installation of handrails and work at bus shelters	
SP2 – Infrastructure (Classified Roads)	To provide for infrastructure and related uses
Speed zone increase to 70 kilometres per hour along the entire PHU alignment	
SP2 – Infrastructure (Classified Roads)	To provide for infrastructure and related uses

The key features of the modifications described in this proposed addendum REF are consistent with the objectives of the land zones outlined in Table 4-2, bar the objectives of E2 and RE1. However, as this addendum REF would be assessed per the requirements of the Infrastructure SEPP, the objectives of the relevant land zones under the Blacktown LEP 2015 would not be applicable.

Clause 5.9 of Blacktown LEP 2015 sets out the requirements for the preservation of trees or vegetation and requires that trees or vegetation must not be cut or removed without (3)(a) development consent or (3)(b) permit granted by Council.

However, clause (8)(d) provides “this clause does not apply to or in respect of … action required or authorised to be done by or under the *Electricity Supply Act 1995*, the *Roads Act 1993* or the *Surveying and Spatial Information Act 2002*”.

No mature trees are proposed to be removed as part of the modification works described in this addendum REF. However, if found to be required, the removal of mature trees would be associated with works to be

done under the Roads Act and therefore no application to Blacktown City Council (Council) would be required.

4.2 Other relevant NSW legislation

4.2.1 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) and its supporting regulations commenced on 25 August 2017. The BC Act repeals the *Threatened Species Conservation Act 1995* (TSC Act) along with other natural resource management legislation including the *Native Vegetation Act 2003*. The BC Act sets out the assessment framework for threatened species and ecological communities for Division 5.1 activities (amongst other types of development).

Part 7 of the BC Act requires that the significance of the impact on threatened species, populations and endangered ecological communities listed under the BC Act or FM Act, are assessed using a five-part test. Where a significant impact is likely to occur, a SIS or Biodiversity Assessment Report (BAR) must be prepared in accordance with the Secretary's requirements.

The BC Act, together with the *Biodiversity Conservation Regulation 2017*, outlines the framework for addressing impacts on biodiversity from development and clearing. It establishes a framework to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offsets Scheme (BOS). Roads and Maritime would prepare a BAR in accordance to the requirements set out in the BC Act. For Part 5 (REF) projects, if the Biodiversity assessment concludes that there will be a significant effect on threatened species or threatened ecological communities or their habitats, Roads and Maritime would either:

- Prepare a Biodiversity Development Assessment Report (BDAR) in accordance with the Biodiversity Assessment Method (BAM) using an accredited assessor
- Prepare a Species Impact Statement and obtain the concurrence of the Chief Executive of the NSW Office of Environment & Heritage (OEH).

Due to the time of assessment of these previous REFs, Clause 29(1a) transitional provisions of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* applied to the project REF and addendum 1 REF, as the environmental impact assessment of the activity began under Division 5.1 of the EP&A Act before the commencement of the BC Act and is pending assessment under Division 5.1 of the EP&A Act. However, this addendum REF has been assessed under the provisions of the BC Act. Please see section 6.4 for the details of this assessment.

4.2.2 National Parks and Wildlife Act 1974

The harming or desecrating of Aboriginal objects or places is an offence under section 86 of the *National Parks and Wildlife Act 1979* (NPW Act). Under section 90, an Aboriginal heritage impact permit may be issued in relation to a specified Aboriginal object, Aboriginal place, land, activity or specified types or classes of Aboriginal objects, Aboriginal places, land, activities or persons.

The Office of Environment and Heritage (OEH) has published the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010). The due diligence process outlined in Section 8 of that publication has been followed for the project REF (Jacobs, 2014a) and it was determined that an application for an Aboriginal heritage impact permit would not be required.

A Stage 1 assessment for the addendum1 REF (SMEC, 2016) was prepared under the Roads and Maritime Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) (Roads and

Maritime, 2011). The PACHCI assessment identified that the proposal is unlikely to harm known Aboriginal objects or places and that no permit would be required.

4.2.3 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides for the conservation of buildings, work, relics and places that are of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance to the State. Matters protected under the Act include items subject to an Interim Heritage Order and items listed on the State Heritage Register (SHR), the heritage schedules of local council LEPs, and the heritage and conservation registers established under section 170 of the Act by NSW state government agencies (section 170 Registers). The Act also provides for the protection of archaeological 'relics', being any deposit, object or material evidence that relates to the non-Aboriginal settlement of NSW and is of State or local heritage significance.

Approval under section 60 of the Heritage Act is required for any action that would adversely affect an item that is subject to an Interim Heritage Order or a listing on the State Heritage Register. An excavation permit under Section 139 of the Act is required for activities that would result in or are likely to result in the disturbance or excavation of a 'relic'. A Section 139 excavation permit would not be required for the proposed refinements due to the low likelihood of archaeological potential.

The project REF identified the potential to impact on a section of the former Great Western Road at Prospect, now Reservoir Road. At the time of approval, the State Heritage Register nomination was still pending. The Former Great Western Road was formally gazetted on 27 June 2014. The listing included an exemption for needing approval under section 57(1) of the Heritage Act, subject to all excavation or disturbance of land being carried out in accordance with any archaeological management plan required in accordance with a determination of environmental assessment by the determining authority under Part 5 of the EP&A Act.

As outlined in section 4.3 of the addendum 1 REF, Roads and Maritime is now proposing to undertake an archaeological test excavation to support the application for exemption in accordance with Exemption 2(b). The Heritage Council has advised they understand the works to fall under Site Specific Exemption 1 and that no further comment or approval from the Heritage Division would be required.

4.2.4 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is administered by the NSW Environment Protection Authority (EPA). It provides an integrated system of licenses to set out protection of the environment policies and to adopt more innovative approaches to reduce pollution in the environment, having regard to the need to maintain ecologically sustainable development.

The approved project constitutes a scheduled activity (main road construction of more than three kilometres in length in a metropolitan area as per Schedule 1) under the POEO Act and therefore would require an EPL. The proposal would not alter this requirement. The EPL issued for the project REF would incorporate restrictions on working hours, noise levels, and air and water quality impacts.

4.2.5 Western Sydney Parklands Act 2006

The Parklands were established under Part 4 of the *Western Sydney Parklands Act 2006*. The Western Sydney Parklands were established as part of the NSW Government's vision for contemporary, urban living in Western Sydney. They contain sporting facilities, popular picnic areas, cycle/walking track and native bushland. It is intended that the Parklands demonstrate best practice in integrated urban parklands by:

- Providing a mix of recreation and conservation uses
- Protecting and promoting ongoing agriculture in suitable areas
- Developing park tourism and commercial uses on sites along the major transport corridors
- Maintaining secluded areas for interaction with nature
- Delivering significant regional community and recreation facilities.

The approved project and the proposed modification would improve safety and access for local and through traffic and improve cyclists and pedestrian access to the area. Potential impacts are considered as part of chapter 6 of this addendum REF.

4.3 Commonwealth legislation

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered at Appendix B and section 6.4 of the addendum REF.

A referral is not required for proposed road actions that may affect nationally listed threatened species, endangered ecological communities and migratory species. This is because requirements for considering impact to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

Potential impact to these biodiversity matters are also considered as part of chapter 6 of the addendum REF and Appendix B.

Findings – matters of national environmental significance (other than biodiversity matters)

The assessment of the proposed modification's impact on matters of national environmental significance and the environment of Commonwealth land found that there would be no change to the findings of the determined activity and would be unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land. A referral to the Australian Government Department of the Environment and Energy is not required.

4.4 Confirmation of statutory position

The proposed modification is categorised as development for the purpose of a road and road infrastructure facilities and is being carried out by or on behalf of a public authority. Under clause 94 of ISEPP the proposed modification is permissible without consent. The proposed modification is not State significant infrastructure or State significant development. The proposed modification can be assessed under Division 5.1 of the EP&A Act. Consent from Council is not required.

5. Consultation

5.1 Consultation strategy

Consultation for the PHU is detailed in Chapter 5 of the project REF and accompanying Submissions Report (Jacobs, 2014b). A Communications and Community Involvement Plan (CCIP) prepared for the project REF, and community consultation for the proposed modifications described in this addendum REF would be carried out in accordance to the CCIP.

Meetings with the following stakeholders have occurred since determination of the project REF:

- Blacktown City Council
- Shelley Public School
- Bus operators
- State Emergency Services
- Local Emergency Services such as police, ambulance, St John Ambulance and the fire service
- Property owners for properties that require adjustments.

The consultation strategy for the project remains as outlined in section 5.1 of the project REF. No changes to the consultation strategy were required for this addendum.

5.2 ISEPP Consultation

Part 2, Division 1, clauses 13-15 of the ISEPP specify consultation requirements for infrastructure development to be carried out under the ISEPP. These largely relate to the requirement for public authorities other than local councils to consult with the relevant local council as part of the assessment process. Consultation is required if the proposal would affect council infrastructure or services, impact on a local heritage item or if development would impact on flood-liable lands.

Table 5-1 provides a summary of the consultation requirements for the proposal with reference to the ISEPP.

Table 5-1 Summary of ISEPP consultation requirements

Clause	Details	Response
13(1)(a)	Likely to have a substantial impact on stormwater management services provided by council.	No
13(1)(b)	Likely to generate traffic to an extent that will strain the capacity of the road system in the local government area.	No
13(1)(c)	Involves connection to, and substantial impact on the capacity of any part of a sewerage system owned by council.	No
13(1)(d)	Involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by council.	No

Clause	Details	Response
13(1)(e)	Involves the installation of a temporary structure on, or the enclosing of, a public place that is under council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential.	No
13(1)(f)	Involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which council is the roads authority under the Roads Act.	No
14(1)(a)	Is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area.	No
15(2)	Development that is to be carried out on flood liable land that may be carried out without consent and that would change flood patterns other than to a minor extent.	No
16(2)(a)	Development adjacent to land reserved under the *National Parks and Wildlife Act 1974*.	No
16(1)(b)	Development adjacent to a marine park declared under the *Marine Parks Act 1997*.	No
16(2)(c)	Development adjacent to an aquatic reserve declared under the *Fisheries Management Act 1994*.	No
16(2)(d)	Development in the foreshore area within the meaning of the *Sydney Harbour Foreshore Authority Act 1998*.	No
16(2)(e)	Development comprising a fixed or floating structure in or over navigable waters – the Maritime Authority of NSW.	No
16(2)(f)	Development for the purposes of an educational establishment, health services facility, correctional centre or group home, or for residential purposes, in an area that is bushfire prone land (as defined by the Act).	No

5.3 Government agency and stakeholder involvement

Roads and Maritime has also maintained regular consultation with Council about the project. Recent consultation includes:

Sydney Water currently has ownership of the small portion of the proposal area located within the Western Sydney Parklands. Roads and Maritime has undertaken consultation with Sydney Water and reached an in-principle agreement for the proposed works.

Roads and Maritime has consulted with Endeavour Energy and other utility providers to co-ordinate the relocation of utilities required for the project REF and the proposed refinements identified in this addendum REF (Endeavour Energy, 2019). Endeavour Energy certification for the underground asset relocation design would be provided prior to the commencement of construction of the works described in this addendum REF.

5.4 Ongoing or future consultation

Ongoing consultation for the proposal would be carried out in accordance with the CCIP developed for the approved project (refer to section 5.1 of the project REF). Consultation will include:

- Providing current proposal information through the project website and a Community Update newsletter
- Ongoing consultation with relevant stakeholders, including Blacktown City Council
- Completion of property access adjustment agreements and notification of the intent to install noise walls at locations near residential properties
- Informing and updating Blacktown City Council, nearby residents and the school community about the proposed kiss and ride facility, including when construction is proposed to commence, of any proposed night-work and any changes to access or parking
- Informing and updating Blacktown City Council and the relevant property owners of the proposed noise walls, including noise wall locations, when work is expected to start and if any night-work is to be carried out
- Providing the relevant stakeholders with contact details, a helpline for further information and to raise concerns, and a project information telephone number for the construction phase.

6. Environmental assessment

This section of the addendum REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposed modification of the PHU project. All aspects of the environment potentially impacted upon by the proposed modification are considered. This includes consideration of the factors specified in the guidelines *Roads and Related Facilities EIS Guideline* (DUAP, 1996) and *Is an EIS required?* (DUAP, 1999) as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000. The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 are also considered in Appendix B.

Site-specific safeguards and management measures are provided to ameliorate the identified potential impacts.

Issue identification

The proposal described in this addendum REF has been reviewed in the context of the receiving environment to identify any new issues for assessment. The review is documented below in Table 6-1.

Table 6-1 Issues summary review for this addendum REF

Environmental factors (section in project REF)	Assessed in this addendum REF	Proposed modification/reason
Traffic, transport and access (section 6.1)	Yes	The proposed modification is likely to temporality impact existing shared path access during construction. It is likely that access to bus stops would also be affected during upgrades to these shelters, such as the installation of hand rails. Property access at Topaz Crescent may also be temporarily impacted during construction. In addition, the proposed site compound at the Great Western Highway and Tarlington Place was not considered in the project REF or addendum 1 REF, and the traffic, transport and access impacts are assessed in this addendum REF.
Noise and vibration (section 6.2)	Yes	Construction noise generated from the works would be consistent with those assessed in the project REF and addendum 1 REF. Specifically, the noise impacts associated with the demolition of structures at 30 Topaz Crescent would be captured with the construction noise assessment presented in the project REF. Construction noise impact have not been revisited in this addendum REF.
Biodiversity (section 6.3)	Yes	The entire proposal area as described in this addendum REF reviewed to assess the potential impacts of the proposed modification not previously captured in the project REF or addendum 1 REF.

Environmental factors (section in project REF)	Assessed in this addendum REF	Proposed modification/reason
		Specifically, the temporary extension of the construction footprint along the M4 Motorway has triggered the need for additional assessment of potential impact on biodiversity. Tests of significance were carried out to assess the impacts of the proposed works on biodiversity (Appendix C).
Landscape character, visual amenity and urban design (section 6.7)	Yes	A key feature of the proposed modifications described in this addendum REF are the early utility works and adjustments of existing utilities (Endeavour Energy, 2019). These works would primarily involve the relocation of existing underground assets/utility services to above ground wires, fixed to poles and structures. It is likely that these works would result in minor changes to the existing visual amenity of the existing environment.
Water quality and hydrology	No	There are no changes to the proposed drainage structures outlined in the project REF or the addendum 1 REF. Two new sub-catchments were identified in 2019 relating to existing or approved detention basins. However, these sub-catchments would have no impact on hydrology than previously described in the project REF or addendum 1 REF. As a result, a review of water quality and hydrology was not relevant to the scope of works described in this addendum REF.
Non-Aboriginal heritage (section 6.6)	Yes	There are a number of non-Aboriginal heritage items located in the project area. Specifically, the revised proposal area described in this addendum REF has required additional assessment of heritage items at Lancelot Road and the Great Western Highway to those assessed in the project REF and addendum 1 REF.
Aboriginal heritage	No	There were no Aboriginal heritage items identified as being impacted by the PHU in the project REF. PACHCI clearance letters were prepared for the addendum 1 REF. As a measure of due diligence, an AHIMS search was carried out 20 June 2019 to account for the revised proposal area assessed in this addendum REF (Appendix D). No additional Aboriginal heritage items were

Environmental factors (section in project REF)	Assessed in this addendum REF	Proposed modification/reason
		identified within 200m of the revised proposal area for this addendum REF.
Socio-economic and land use	No	The project REF and addendum 1 REF clearly and accurately assess the relevant socio-economic environment of the PHU project. Additional property acquisitions are not required to fulfil the modifications of this addendum REF. Furthermore, the other key features of the modification described in the addendum REF are not considered to result in any additional socio-economic impacts.
Landform, geology and soil (section 6.5)	Yes	All of the proposed works would be located within previously disturbed areas within the project REF boundary. The permanent storage of surplus spoil within the project REF boundary at the south west intersection of Prospect Highway and Great Western Highway would result in a change of existing land use at the site (Figure 3-1). The impacts of this on existing geology, landforms and soil have been assessed.
Contaminated land and hazardous material (section 6.4)	Yes	A contaminated lands or hazardous materials assessment was not completed for the project REF or addendum 1 REF. The proposed demolition of the vacant property at 30 Topaz Crescent, Seven Hills has triggered the need for the preparation of the HBMSR (SMEC, 2019a) (Appendix E). The potential impacts of this key feature of the proposed modification have been assessed in this addendum REF.
Air quality (section 6.8)	Yes	Demotion of the vacant residential property at 30 Topaz Crescent has the potential for adverse impacts to air quality. The property is likely to contain hazardous material and the impacts on air quality would need to be considered. The proposed site compound at Tarlington Place is outside the project REF boundary. The air quality impacts of vehicles frequenting the proposed site have been considered in this section of the addendum REF. The permanent location of surplus spoil south west of the intersection of the Great Western Highway and Prospect Highway may result in minor but long-term changes to existing air quality of the local environment.

Environmental factors (section in project REF)	Assessed in this addendum REF	Proposed modification/reason
Greenhouse gas emissions and climate change	No	The construction and operational impacts of the key features of the modifications described in this addendum REF are consistent with those identified in the project REF.
Resource use and waste management (section 6.9)	Yes	A key feature of the modifications described in this addendum REF is the widening of the proposal area to provide for the permanent storage of surplus spoil at the south west intersection of Prospect Highway and Great Western Highway.
Cumulative environmental impacts (section 6.10)	No	The cumulative impacts of the key features of the propose modifications as described in this addendum REF are consistent with those outlined in the project REF.

6.1 Traffic, transport and access

The existing environment for traffic, transport and access are described in detail in section 6.1 of the project REF and the Traffic and Transport Assessment (TTA) (SMEC, 2014) in Appendix D of the project REF. As several key features of the proposed modifications are outside the project REF boundary, a desktop assessment of traffic, transport and access was carried out to inform the potential impacts of the works described in this addendum REF.

6.1.1 Existing environment

A Traffic and Transport Assessment (TTA) (SMEC, 2014) was prepared for the project REF. The TTA identified the current transport patterns and conditions of the highway and to assess the construction and operational impacts of the proposal. These conditions are generally considered relevant and valid to the existing conditions for this addendum REF. The conditions traffic, transport and access conditions relating to the modifications outlined in this addendum REF are described below.

Road corridor

The existing traffic environment of the Prospect Highway was described in section 6.1 of the project REF. The current speed limit is 60 kilometres per hour.

The proposed realignment of the shared path on the western side of the highway would occur between Tudor Avenue and St Martins Crescent, Blacktown. At this location, the road corridor expands from two lanes to six lanes. There are power poles and transmission lines running parallel to the road. There is a signalised t-intersection at St Martins Crescent and non-signalised t-intersection at Tudor Avenue.

Topaz Crescent is a two-lane local road located about 66 metres east of Prospect Highway, Seven Hills. Topaz Crescent intersects Columbia Road at two locations and is about 420 metres long. Topaz Crescent primarily services a residential area and there is a public park located at 17-25 Topaz Crescent (Lot/180/DP242049). The speed limit is 50 kilometres per hour.

The road corridor relevant to the proposed site compound site at the Great Western Highway and Tarlington Place is typical of the Great Western Highway. Traffic flows in an east/west direction, totalling six lanes. There is a dedicated T2 Transit lane in the west direction which bypasses the Tarlington Place intersection. The signalised intersection of the Prospect Highway and Blacktown Road/Clunies Ross Street is located about 190 metres east of the proposed site compound (Figure 1-5). The site currently is a Roads and Maritime site compound. Heavy vehicles, passenger vehicles, freight vehicles. plant and equipment frequent the area. The intersection of Blacktown Road and the Great Western Highway is about 14 metres east of the proposed compound. The intersection involves six lanes in the east/west direction along the Great Western Highway and four lanes in the along Blacktown Road to the north, and Clunies Ross Street to the south. The intersection is signalised and includes provisions for a bus turning lane from the eastern approach of the Great Western Highway onto Blacktown Road. The speed limit in the north/south direction is 60 kilometres per hour.

Public transport

Section 6.2 of the addendum 1 REF identifies a total of eleven bus stops and shelters located within project REF boundary on the east and west sides of Prospect Highway. No additional bus stops have been added to the alignment between and the time of preparation of this addendum REF. There are no trains stations or rail-crossings within the revised proposal area or project REF boundary.

Active transport

Shared path facilities for active transport are provided along the western side of the Prospect Highway alignment. These facilities begin at the intersection of Reservoir Road in the south and continue to the intersection of Bungarribee Road in the north, spanning 3.6 kilometres. The proposed realignment of the shared path at Tudor Avenue and St Martins Crescent, Seven Hills, is located at the northern extent of the project REF boundary. The shared path currently provides two lane pedestrian and/or cycling in the north/south direct, parallel to Prospect Highway between St Martins Crescent and Tudor Avenue. There is single lane shared path access west of the intersection of Prospect Highway on the north side of St Martins Crescent and Tudor Avenue. There are no provisions for active transport to access the proposed site compound at the intersection of Tarlington Place and the Great Western Highway (Figure 1-5).

6.1.2 Potential impacts

It is anticipated that the proposed modifications outlined in this addendum REF would be minor adverse and temporary in nature. The potential impacts of the proposed modifications on traffic, transport and access are described in the following section.

Construction

Construction is likely to require about 100 construction vehicle movements per day (see section 6.1.4 of the project REF). The additional heavy vehicle movements associated with construction is within the daily variation of heavy vehicle volumes and is not expected to have a substantial impact on existing traffic volumes along Prospect Highway.

Traffic impacts during construction would occur due to the movement of construction vehicles along Prospect Highway and along surrounding roads, for the hauling of construction materials and movement of construction equipment and personnel. These movements would be along Prospect Highway to construction gates and along the Great Western Highway, Tarlington Place and Blacktown Road.

The potential impacts of the construction of the proposed modifications described in this addendum REF are outlined in Table 6-2.

Table 6-2 Potential impacts to traffic, transport and access during construction

Aspect	Potential impacts/duration	Description
Road corridor		
Realignment of retaining wall RW03 Prospect Highway	Nil Temporary	The proposed realignment along the Prospect Highway road corridor related to the realignment of retaining wall RW03. The realignment of RW03 would allow the necessary space to allow spoil of materials to backfill behind the wall. The realignment of this retaining wall would not generate additional impacts to traffic, transport and access than those described in the project REF or the addendum 1 REF.

Aspect	Potential impacts/duration	Description
Speed zone increase to 70 kilometres per hour along the entire PHU alignment	Minor Permanent	The permanent speed zone increase from 60 kilometres per hour to 70 kilometres per hour would is required to support the objectives of the project.
Additional work at the M4 Motorway	Nil	The southern part of the construction footprint has been revised and extended about 250 metres to the east and west at the intersection of the M4 Motorway and Prospect Highway (refer to Figure 1-3 to Figure 1-5). The extension of the footprint at this location would be temporary in nature. The expansion of the construction footprint would allow for the safe operation of plant and equipment and personnel during approved works for the bridge over the M4 motorway. A permanent emergency breakdown bay and retaining wall directly next to the M4 Motorway would provide for the safe parking of vehicles (e.g. because of a breakdown). All proposed work is located within the revised proposal area.
Use of new compound south east Great Western Highway	Nil	The proposed site compound located at the intersection of Tarlington Place and the Great Western Highway is currently used as a Roads and Maritime site compound. The existing conditions at the site and surrounding related roads (Blacktown Road, Clunies Ross Street and Tarlington Place, for example) not be impacted during the construction stage of the proposed works.
Early utility works and adjustments of existing utilities	Minor adverse Temporary	The utility early work and adjustments of existing utilities described in this addendum REF relate to the adjustment of existing underground assets adjustments and asset relocation connecting residential properties in the northern region of the proposal area. There is the potential for this realignment to temporality impact traffic and access along the road corridor during construction. An example of this might be plant and equipment stationed at relocation sites during the relocation of underground utility services. These impacts would be minor adverse and temporary in nature. Traffic controls are also likely to be required where disruptions likely to arise from plant and equipment being parked along roadside or driveways for any period of time. To minimise traffic impacts, it is likely

Aspect	Potential impacts/duration	Description
		that some works would be carried out at night (Endeavour Energy, 2019).
Demolition of residential property at 30 Topaz Crescent	Moderate adverse Temporary	The demolition of 30 Topaz Crescent would likely result in an increase of plant, equipment and personnel vehicles in the immediate area. There may be interruptions to local flows of traffic and access to the public park located on Topaz Crescent. It is likely that the amount of available on-street parking would be reduced during construction, due to temporary congestion and parking of construction plant and equipment on the street.
Property adjustment at some sections along the road corridor within the project boundary	Nil	All of the property adjustments related to this addendum REF are located at the rear of residential properties, away from the existing road corridor. This proposed modification would not impact the road corridor during construction.
Access		
Property adjustment at some sections along the road corridor within the Approved Project REF boundary	Minor adverse Temporary	As outlined in section 3 of this addendum REF, the works would involve minor adjustments to property boundaries to capture the refined scope of work. Temporary disruptions to local access (i.e. driveways) may occur during pavement work and/or work on services connections. Access would be reinstated at the operational stage of the work. Direct access would be preserved and/or improved under the proposed modification, with no significant impact anticipated.
Public transport		
Minor ancillary works – handrails and work at bus shelters	Minor-moderate adverse Temporary	It is likely that pedestrian access to bus shelters may be temporarily obstructed by construction activities. This may be an issue during periods of heat or inclement weather. There would be no change to the location of bus stops during construction, and there would be no alteration to existing timetables and schedules.
AusConnex/Endeavour Energy Early Works	Minor adverse Temporary	It is likely that works would impact the existing bus lanes and subsequently affect local bus services (Endeavour Energy, 2019).

Aspect	Potential impacts/duration	Description
Active transport		
Changes to the pavement work and materials, and subsequent pavement construction methodology	Nil	The changes to the pavement material design would not have any impact on the existing traffic, transport and access assessed in the project REF and addendum 1 REF.
Realignment of the shared path at Tudor Avenue and St Martins Crescent	Minor adverse Temporary	It is likely that the shared path between Tudor Avenue and St Martins Crescent, Prospect Highway would be partially or wholly inaccessible during the realignment construction. The shared path would be completely reinstated at operation.

Operation

Once operational, the proposed modifications of this addendum REF are not anticipated to have any additional impact on traffic, transport and access than those described in section 6.1 of the project REF and section 6.2 of the addendum 1 REF. The existing road corridor would not be permanently altered, and as such, the operational stage of the proposed works would not affect existing road corridor extent or functionality.

It is likely that access to bus shelters would be enhanced by the proposed modifications. The implementation of hand rails and other minor ancillary works are likely to increase the usability and functionality of the existing bus shelters. Shared paths would be completely reinstated at the completion of construction.

6.1.3 Safeguards and management measures

No additional safeguards and management measures are recommended for the potential traffic and transport and access impact assessed in this addendum REF.

6.2 Noise and vibration

Noise Catchment Areas (NCA) are described in section 6.2 of the project REF. The property at 30 Topaz Crescent is located within NCA7 (refer to section 6.2 of approved project REF) and would be demolished as part of the modifications described in this addendum REF. The noise impacts associated with the demolition of structures at 30 Topaz Crescent were not specifically assessed in the construction noise assessment presented in the project REF. Construction noise impact have not been revisited in this addendum REF as there has been no change to the proposed construction methodology.

An Operational Traffic and Construction Noise and Vibration Assessment (OTCNVA) report was prepared by Jacobs (2014a) for the project REF. During detailed design, SLR Consulting (SLR) prepared an Acoustic Assessment (2015) to assess the potential impacts of design changes made since the project REF was prepared. Since then, it has been proposed that the location of retaining wall RW03 and associated noise wall NB01 be altered to allow space for a shared path parallel to the Great Western Highway near the Prospect Highway intersection in NCA03. The location of these proposed works is presented in Figure 6-1.

6.2.1 Existing environment

The existing environment of the proposal corridor and its surroundings are described in detail in Section 6.2 of the project REF. The noise assessment report prepared by SLR (2015) adapted the NCAs from the SKM report to present a simplified nine NCAs and various sensitive receivers throughout the proposal area. The NCAs and their descriptions are provided in section 6.3.1 of addendum 1 REF.

The NCAs relevant to noise barriers NB01, retaining wall RW03, 30 Topaz Crescent and the AusConnex/Endeavour Energy Early Works are described in Table 6-3 below. The refined alignments to approved NB01 are presented in Figure 6-1.

Table 6-3 Noise catchment areas and sensitive receivers (source: SMEC, 2016).

Aspect	NCA	Location	Existing noise environment
Relocation NB01 Realignment RW03	03	West of Prospect Highway, between Harrod Street and the Great Western Highway.	• Nearest residential receiver is around 35 metres to the west of Prospect Highway • Typical setbacks are around 40-50 metres from the dwellings to the road edge.
Demolition – house at 30 Topaz Crescent	07	East of Prospect Highway	• Large block of residential receivers, closest receiver is around 30 metres away • Typical setbacks of 30-40 metres from dwellings to road edge • Blacktown Road Children's Centre is included in this catchment • Grace Baptist Church and Jehovah's Witness Kingdom Halls are included in this catchment

Aspect	NCA	Location	Existing noise environment
AusConnex/Endeavour Energy Early Works	06	West of Prospect Highway, north of Harrod Street.	• Large block of residential receivers • Nearest residential receiver is around 70 metres to the west of Prospect Highway • Shelley Public School is located in this NCA around 45 metres west from Prospect Highway.
	09	East of Prospect Highway	• Closest residential receiver is around 20 metres away from Prospect Highway • Typical setbacks of 20-30 metres.
	12	West of Prospect Highway.	• Closest residential receiver is around 35-40 metres away • Setbacks around 30 metres to nearest building.

Figure 6-1 Alignment of original Detailed Design noise wall NW_NB01 (red) and new proposed alignment (blue)

6.2.2 Potential impacts

Construction

The construction plant and equipment required for the proposal and associated sound power levels for the equipment during each stage of the main construction activities is outlined in section 6.3 of the addendum 1 REF.

The potential impacts noise impacts of the demolition of the vacant residential building would be relevant to 30 Topaz Crescent would be relevant to NCA07 and would include[1]:

- Noise from power tools while fixtures, such as awnings and downpipes are removed in preparation for the demolition
- The sound of negative air units being operated 24 hours a day.

[1] ***https://www.fairtrading.nsw.gov.au/housing-and-property/loose-fill-asbestos-insulation/information-for-the-community/demolition-information-for-neighbours***

- While the structure is being demolished, there may be the sound of heavy machinery to undertake structural demolition. Trucks may also be audible when transporting waste safely away from site.

The demolition would not result in additional noise impacts to those already assessed in the project REF and the addendum 1 REF. The construction noise impacts of noise wall SB03b were assessed and approved in the addendum 1 REF. The proposed demolition would be consistent with the construction noise assessment for SB03b. The demolition works would comply with regulations under the POEO Act and in accordance with the Roads and Maritime EPL.

The sources of noise associated with the AusConnex/Endeavour Energy Early Works would be typical of the noise generated by construction plant and equipment (Endeavour Energy, 2019). The use of heavy machinery to complete the works is likely to cause annoyance to nearby residents and businesses. Heavy machinery may include:

- Backhoes
- Generators
- Mobile cranes
- Borers.

Based on the background noise levels at each NCA, noise management levels (NMLs) were determined for each of the key activities identified (Table 6-3). Predicted noise levels at the nearest sensitive receivers were calculated based on the plant and machinery identified for the typical construction activities identified for each activity.

It should be noted that predictions are the maximum noise levels, assuming that works occur at the closest point to each receiver; which would take place during construction works. The predicted noise levels are also based on all machinery operating concurrently, which is used as a conservative estimate for the worst-case scenario.

The actual magnitude of predicted noise impacts would vary due to the duration of work at that location, the equipment used, operating methods, the type of construction activity and the actual distance to the nearest receiver.

Operation

The change in noise levels resulting from the revised location of NB01 has been assessed (SLR, 2019) and summarised in Figure 6-2. The figure shows the noise level change for the controlling scenario from the ONA (SLR, 2015).

For the revised location of noise barrier NB01, noise levels are typically consistent with the OTCNVA (SLR, 2015), with most receivers behind the barrier being subject to minor changes in noise of around +/-1dB. Results of the operational assessment show that the proposed modification to NB01 is predicted to result in a negligible change to those already assessed in the project REF and the addendum 1 REF.

Figure 6 2 Predicted noise levels as a result of the changes to noise wall NW_NB01

6.2.3 Safeguards and management measures

No additional safeguards and management measures are recommended for the potential noise and vibration impact assessed in this addendum REF.

6.3 Biodiversity

The project site boundary comprises areas of potential biodiversity value listed under the *Biodiversity Conservation Act 2016* (BC Act*), Fisheries Management Act 1994* (FM Act) and/or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) such as threatened species, threatened populations, threatened ecological communities (TEC) and supporting habitat. Any impact to flora and fauna or their habitat that is additional to the project REF and/or addendum 1 REF would need to be considered with the combined impact for this proposal.

The biodiversity study area for this addendum REF was determined as those areas that has the potential to be directly impacted along with areas outside the biodiversity study area likely to be indirectly impacted by the proposal.

The biodiversity study area is shown in Figure 6-2 and includes the boundaries assessed under the project REF and addendum 1 REF as well as:

- The south-eastern part of Shelly Public School incorporating the area proposed for a formal turn-around bay for garbage trucks to access bins, and the extension of the sealed path down to the school

- The proposed site compound located at the intersection of Tarlington Place and the Great Western Highway, Prospect.

6.3.1 Methodology

Desktop assessment

A desktop review assessment was carried out including:

- The Biodiversity Impact Assessment prepared for the project REF
- The project REF
- The Prospect Highway Upgrade Addendum Review of Environmental Factors (Addendum 1)
- A search of the Atlas of NSW Wildlife maintained by the NSW Office of Environment and Heritage (OEH June 2019) (5km and 10km buffer from the project site boundary)
- A search of the Atlas of Living Australia maintained by CSIRO
- A Protected Matters Search Tool search provided under the EPBC Act (June 2019) (10km buffer from the project site boundary)
- Updating vegetation mapping The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 VIS_ID 4489 (OEH, 2016a).

The desktop assessment for this addendum identified additional threatened species which have been recorded previously or are predicted to occur in the locality since the project REF and/or addendum 1 REF.

Field survey

A field survey was carried out on 12 June 2019. Surveys carried for the proposal equated to about 10-person hours in total. The survey included the alignment of Blacktown Road/Prospect Highway, M4 Motorway and Great Western Highway. Areas of suitable habitat for threatened species were considered using broadly the methods identified in the project REF. Where native vegetation was identified, the vegetation type relative to listed threatened ecological communities was determined. Suitable potential non-vegetated habitat was noted as part of the survey.

The survey was carried out based on the nature of direct or predicted indirect impacts, likely biodiversity habitat and mapped vegetation. Accessibility was limited to vegetation patch A (i.e. area outside the biodiversity study area) and the proposed Roads and Maritime compound to the south of the Great Western Highway. The areas identified as patch B and the area directly south east of Shelly Public School were viewed remotely as no public access to the area was available at the time of the field survey (refer to Figure 6-2). Table 6-4 details the additional species which have been recorded previously or are predicted to occur in the location of the project. Other species considered in the project REF are considered to still have their assessed likelihoods as current for the broader combined study areas of the project REF and the addendum REF.

Table 6-4 Threatened species records within 10km, additional to SKM (2014)

Species	Status EPBC Act ^	Status BC Act ^	Distribution and habitat requirements*	Source+	Potential preferred habitat in the biodiversity study area	Likelihood of occurrence in the biodiversity study area
Rhodamnia rubescens	-	CE	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	1	Absent – no rainforest or Wet sclerophyll Forest	Low
Bush Stone-Curlew (*Burhinus grallarius*)	-	E	Only in northern Australia is this species still common and in the south-east it is either rare or extinct throughout its former range. It inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber.	1	Marginal – some open forests and woodlands with sparse understorey but is likely to only be a rare visitor to the locality	Low
Dural Land Snail (*Pommerhelix duralensis*)	E	E	The species is a shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris.	6	Marginal – biodiversity study area not on transitional soil landscapes	Low

Species	Status EPBC Act ^	Status BC Act ^	Distribution and habitat requirements*	Source+	Potential preferred habitat in the biodiversity study area	Likelihood of occurrence in the biodiversity study area
Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)	-	V	Primarily inhabits dry, open eucalypt forests and woodlands, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. Also found in farmland, usually at the edges of forest or woodland.	21	Potential habitat widespread	**Moderate**
Little Bentwing-Bat (*Miniopterus australis*)	-	V	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.	14	Potential habitat widespread	**Moderate**
Sooty Owl (*Tyto tenebricosa*)	-	V	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	1	Absent – no rainforest or moist sclerophyll Forest	Low
Squirrel Glider (*Petaurus norfolcensis*)	-	V	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas.	1	Absent – while the biodiversity study area supports very small areas of Box and Ironbark, they are isolated, disturbed and	Low

Species	Status EPBC Act ^	Status BC Act ^	Distribution and habitat requirements*	Source+	Potential preferred habitat in the biodiversity study area	Likelihood of occurrence in the biodiversity study area
					not old-growth woodlands	
White-Bellied Sea-Eagle (*Haliaeetus leucogaster*)	-	V	In NSW it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	5	Marginal - vegetation on site has some connectivity value to habitat of Prospect Reservoir but is not considered likely to support roosting habitat	Low

^ CE – critically endangered, E – endangered, EP – endangered population, V – vulnerable, M – Migratory/Marine

* Distribution and habitat requirement information adapted from:

- Australian Government Department of Sustainability, Environment, Water, Populations and Community http://www.environment.gov.au/biodiversity/threatened/index.html • NSW Office of Environment and Heritage ***http://www.environment.nsw.gov.au/threatenedspecies/***
- Department of Primary Industries – Threatened Fish and Marine Vegetation ***http://pas.dpi.nsw.gov.au/Species/All_Species.aspx***

+ Data source includes

- Number of records from the NSW Office of Environment and Heritage Wildlife Atlas record data (Accessed June 2019); and
- Identified from the Protected Matters Search Tool (PMST) Australian Government

6.3.2 Existing environment

The existing environment for this addendum is generally consistent with the description provided in section 6.3 of the project REF and refined as described in the addendum 1 REF.

Areas not previously assessed have been considered for additional direct and indirect impact. Areas of direct and indirect are shown in Figure 6-2

Cumberland Plain Woodland

The project REF identified the presence of Cumberland Plain Woodland (CPW) within the project REF boundary. A small extent of Cumberland Plain Woodland to the north of the M4 Western Motorway off-ramp (east-bound) to Prospect Highway as shown as vegetation patch A in Figure 6-2 was identified during the survey as part of this addendum.

This extent of CPW does not meet the condition thresholds for the EPBC Act as it is about 0.23 hectare area and is less than the 0.5 hectares required to meet the EPBC listing. A narrow area of about 0.03 hectare of this CPW occurs within the extended proposal boundary, this area is outside the biodiversity study area as there are no direct or indirect impact to the biodiversity values as part of the proposal.

An area of about 0.15 hectare of potential habitat for threatened species located directly south of the M4 Motorway off-ramp (west-bound) to Prospect Highway as shown as vegetation patch B in Figure 6-2**.** The assessment identified the area as being predominately planted local natives with a weedy understorey and ground layer. The native vegetation present is not likely to support any listed TEC. Proposed work in this area is limited to roadwork signage on the road shoulder and is not likely to have a direct or indirect impact and has not been considered as part of the biodiversity study area.

Threatened species

A threatened species assessment was carried out for the project REF. The biodiversity study area within the extended proposal boundary, while supporting some native vegetation, does not support any likely suitable habitat for the threatened flora species such as *Grevillea juniperina* subsp. *juniperina* or *Pimelea*

spicata. The CPW of patch A

Figure 6-2) is outside the biodiversity study area, however was surveyed as per the *NSW Guide to Surveying Threatened Plants* (OEH 2016b) for both species and were not located on site. The disturbed, weedy and planted nature of patch B. Figure 6-2 is not considered to be suitable habitat for these plant species.

The previously assessed Cumberland Plain Land Snail (*Meridolum corneovirens*) (listed as Endangered under the BC Act) was identified as having a high potential to occur in the study area based on local records and habitat preferences. The survey carried out for this addendum did not identify suitable habitat within the study area (refer to Figure 6-2).

The project REF found that remnant and planted vegetation to be impacted provides limited but potential habitat for some threatened fauna species, with 13 'mobile' species identified in the background review as having a moderate potential to occur. The biodiversity assessment found no additional impact to remnant or planted vegetation, and as such does not identify any additional impact to potential vegetated or non-vegetated habitats identified in the project REF.

A Test of significance as per section 7.3 of the BC Act for the additional species identified in Table 6-4 have been prepared for this addendum **(**refer to Appendix C). Species include Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) and Little Bentwing-Bat (*Miniopterus australis).*

Figure 6-2 Biodiversity study area and additional native vegetation

6.3.3 Potential impacts

Construction

Construction work would be largely restricted to areas previously assessed in the project REF and addendum 1 REF. For this addendum, additional potential direct and indirect impact not previously assessed are discussed above. The habitat values assessed on site were restricted to exotic dominated managed lawn/mulched areas and mixed native trees including a potential remnant area of a likely locally native Ironbark Eucalyptus species. No trees are expected to impact as a result of the proposal described in this addendum.

The proposed site compound to be used as part of the PHU would be in keeping with the existing use of the site. This area was previously assessed as having limited biodiversity habitat and cleared of native vegetation except for some eucalypts that would not be affected by the proposal.

Additional species requiring assessment have been addressed as Tests of Significance at Appendix C.

Operation

Operational of the proposal are not expected to be additional in nature or extent from the assessment carried out in the project REF and addendum 1 REF.

Test of significance

Tests of significance were conducted for all threatened fauna species and ecological communities considered likely to be affected by the proposed modification, these being the Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) and Little Bentwing-Bat (*Miniopterus australis*). Through these assessments and in consideration of mitigation measures, it was concluded that the proposed modification is unlikely to have a significant impact on the Dusky Woodswallow and Little Bentwing-Bat.

The proposed modification is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act and therefore a Species Impact Statement is not required.

The proposal is not likely to significantly impact threatened species, populations, ecological communities or migratory species, within the meaning of the EPBC Act.

6.3.4 Safeguards and management measures

No additional safeguards and management measures are recommended for the potential biodiversity impact assessed in this addendum REF.

6.3.5 Biodiversity offsets

The proposed modification would require the removal of about 0.23 hectare of Cumberland Plain Woodland. The additional Cumberland Plain Woodland to be removed as part of the proposed modification does not result in a significant impact and does not require biodiversity offsets to be secured in accordance with Roads and Maritime's Offset Policy (2011).

6.4 Contaminated lands and hazardous materials

A contaminated lands assessment was not included in the project REF or the addendum 1 REF. A desktop assessment was also carried out to identify any potential sources of contamination relevant to the revised proposal area. To identify possible sources of contamination and hazardous materials, the following databases were viewed 25 June 2019:

- The NSW Environmental Protection Authority (EPA) list of notified sites
- National Pollutant Inventory (NPI)

No new EPA notified sites or NPI locations were located within the existing project REF boundary or the revised proposal area.

A Hazardous Building Material Survey Report (HBMSR) was prepared by SMEC in 2019 for the demolition of 30 Topaz Crescent (Appendix E). The HMBSR surveyed hazardous materials including asbestos/products like to have asbestos containing material (ACM), lead-based paint, Polychlorinated Biphenyls (PCB) and Synthetic Mineral Fibres (SMF). Specific details of the assessment for each contaminant are provided in section 2.2 of the HBMSR (SMEC, 2019a). The findings of the HBMSR are summarised in the following chapter.

6.4.1 Methodology

To inform the HBMSR, a site survey was carried out 18 April 2019. The survey involved a visual inspection of the interior and exterior of the buildings, from floor to ceiling. The objectives of the HBMSR were to:

- Identify the presence of hazardous building materials, within accessible areas of the site, and provide an updated Hazardous Building Materials register to inform the future demolition process
- Prepare a report detailing the HBMSR identified in accessible areas of 30 Topaz Crescent to inform the appropriate demolition contractors of the hazards.

The investigation methodology for the HBMSR included:

- An inspection of the accessible building materials at the site to identify the presence of asbestos, lead paint, SMF and PCB containing materials. The assessment was limited to accessible portions of the building at the time of field work
- Intrusive sampling/testing of representative samples where considered necessary. Potential HBM was sampled if the nature or type of the material was not clear (e.g. asbestos containing materials, SMF or potential lead paint)
- Selected representative lead paint samples were dispatched for laboratory analysis at a National Association of Testing Authorities (NATA) accredited laboratory
- Field assessment of lead base paints using swab test
- Field review of lighting containing PCB capacitors (where accessible)

The survey was limited to those areas which were accessible at the time of inspection. Samples were not taken where the act of sampling would endanger the surveyor or affect the structural integrity of the item concerned.

6.4.2 Existing environment

There are currently three buildings on the site at 30 Topaz Crescent; one residential dwelling and two garages/sheds. The site is located at Lot 177/DP 557378. The area of assessment is about 1,050 m^2. The residence is an older “fibro” house and garage that appears to have been constructed prior to at least 1950. The location of the house is provided in section 3.6 of the project REF and Figure 6-3 below.

To the south of the house is a three-car garage primarily constructed with brick walls, asbestos cement sheeting (fascia on north and south sides) and a corrugated iron roof. To the east there is a one car garage constructed with concrete block, asbestos cement sheeting (gables) and corrugated asbestos cement fibre roofing material. One Telstra pit is located north of the eastern porch and another is located adjacent to the brick wall on the northeast side of one of the garages. Roads and Maritime did not provide an asbestos register for the site.

A summary of the contaminant results from the HBMSR is presented in Table 6-5 below.

Table 6-5 Hazardous building material assessment summary (SMEC, 2019a)

Contaminant	Results
Asbestos	Non-friable ACM was detected in the exterior walls (large portion) and the bathroom walls (portions are behind particle board) in the residence and the fascia on the east and west sides of one garage. ACM is presumed to be present in: the bathroom ceiling, the western wall of the kitchen (beneath the particle board in a portion of the wall) and the backing boards beneath the fuse boxes located on the wall on the western porch (exterior), the Telstra pits located beside the residence and beside one garage; and the fuse box backing board, the gables, the roofing materials (super six) and an asbestos fabric attached to the rafters in the other garage. ACM fragments were also observed in the soil adjacent to the southeast side of the residence.
Lead	Lead-based paint is present on: the exterior and interior walls, doors and ceilings, and some of the window frames at the residence; the fascia, gutters, doors and door trim in the garages. Lead is presumed to be present within the stained-glass windows of the residence.
Synthetic Mineral Fibres	SMF was detected in the pink insulation in the attic and the linoleum on the kitchen floor. SMF material may also be present within the hot water heater located on the east side of the residence.
Polychlorinated Biphenyls	Fluorescent light fittings were observed above the door on the east side of the residence and the rafters in both the garages. A text description identifying the fixtures was not visible. Therefore, the light fixtures could not be cross-checked against the ANZECC “Identification of PCB-containing capacitors” database (1997). Therefore, all fluorescent light fittings are presumed to include PCB containing capacitors until proven otherwise.
Other	Although not included in the scope of this study, fire detectors and typically contain radioactive material which should be considered during demolition or refurbishment.

Figure 6-3 Locality map of 30 Topaz Crescent, Seven Hills NSW (source: SMEC, 2019a)

6.4.3 Potential impacts

Construction

It is likely that the demolition of 30 Topaz Crescent would result in the disturbance of hazardous materials located at the vacant residence. This exposure poses a risk to the health personnel and the environment if not properly managed. The potential impacts of each contaminant to human and environmental health are described in Table 6-6.

Table 6-6 Contaminants and potential impacts (construction)

Contaminant	Potential impacts
Asbestos	The health effects associated with asbestos exposure relate to the inhalation of airborne respirable asbestos fibres. In general, asbestos fibres cannot be released or become airborne in significant quantities unless the asbestos-containing material is disrupted, for example in the case of excavating, breaking, cutting and other material disturbing activities
Lead	Lead in any form is toxic to humans when ingested or inhaled and lead poisoning can result from accumulation after repeated exposure. Lead paint removal poses two potential routes of exposure. Firstly, by inhalation or ingestion by workers and public near the works, and secondly by the deposition of particles on nearby footpaths, streets or soil where they may be resuspended, tracked into houses or buildings where it can be inhaled or ingested.
Synthetic Mineral Fibres (SMFs)	The International Agency for Research on Cancer (IARC, 2002) evaluated certain SMF materials as being possibly carcinogenic to humans. The similarity in application and appearance to asbestos has resulted in some community concern regarding the health effects associated with exposure to SMF and as such the National Occupational Health and Safety Commission investigated typical levels of exposure associated with various manufacturing and user processes, possible health effects and, based upon collected information, recommend exposure standards and appropriate safe working practices
Polychlorinated Biphenyls (PCB)	PCBs can be absorbed through the skin, inhaled as a vapour or ingested; therefore, contact with them should be prevented. PCB are often found in old transformers and metallised capacitors of fluorescent light fittings.

Operation

All existing structures at 30 Topaz Crescent would be demolished as part of the works. All materials would be removed and transported to licensed disposal facilities. The site would be treated and remediated in accordance to the recommendations of the HBMSR (SMEC, 2019a). If contaminated and potentially contaminated material is properly treated and disposed of in licensed facilities, it is not anticipated that there would be any residual risk at the operational stage of the works described in this addendum REF.

6.4.4 Safeguards and management measures

A summary of the contaminated lands and hazardous materials safeguards and management measures is presented in Table 6-7 below.

Table 6-7 Contaminated lands safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Hazardous materials	A hazardous materials assessment will be carried out before demolishing structures within the proposal area. The assessment will include, but not limited to: • Details of hazards and risks associated with the activity • Measures to be implemented during construction and disposal to minimise these risks • Selecting adequately licensed contractors to undertake demolition work of hazardous material such as asbestos • Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials • A monitoring program to assess performance in managing the identified risks • Contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations. The assessment will be prepared in accordance with relevant guidelines and standards, including relevant Commonwealth, state, and/or local council guidelines and legislation, Safe Work Australia Codes of Practice, and EPA or Office of Environment and Heritage publications.	Construction contractor	Pre-demolition	Appendix E
Hazardous materials	A Removal Control Plan (Asbestos Management Plan) will be prepared in accordance with Safe Work NSW (2016) for the removal of any asbestos material	Contractor	Pre-demolition	Appendix E

Impact	Environmental safeguards	Responsibility	Timing	Reference
	The plan will be made available for inspection under the WHS Act to all workers and other personal on-site during the duration of the licensed asbestos removal work Asbestos control air monitoring should be performed during the removal of ACM from structures and during demolition.			
Hazardous materials	Fluorescent light fittings should be inspected by an appropriately qualified professional for PCB containing capacitors prior to demolition or refurbishment and, if found, be disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility	Contractor	Pre-demolition	Appendix E
Hazardous materials	Following demolition of the structures at the site, the soils should be assessed for the presence of lead, asbestos, heavy metals and pesticides	Contractor	Post-demolition	Appendix E

6.5 Landform, geology and soils

The project REF Preliminary Erosion and Sediment Control Plan (PESCP) (SMEC, 2019b) was updated to incorporate changes to controls and measures based on changes the key features of the modification described in this addendum REF. The current PESCP can be found at Appendix F of this addendum REF.

6.5.1 Existing environment

The existing landforms, geology and soils for this addendum REF are consistent with those described in section 6.9 of the project REF. The entire Prospect Highway alignment is located on Blacktown soil landscapes. The proposed location of surplus spoil, immediately west of the intersection of Prospect Highway and the M4 is located on Blacktown soil landscapes. Soil classification has been carried out at two locations to support the spoil placement (SMEC, 2019e and SMEC, 2019f). Both locations are within the project REF boundary. The findings of the soil classification reports relate to waste classification and are addressed in section 6.10.

The proposed site compound at the intersection of Tarlington Place and the Great Western Highway was not captured in the project REF or the addendum 1 REF. This area is underlain by a mixture of Blacktown and South Creek soil landscapes Areas at the northern and southern extent of the project REF area are

also underlain by South Creek landscapes (

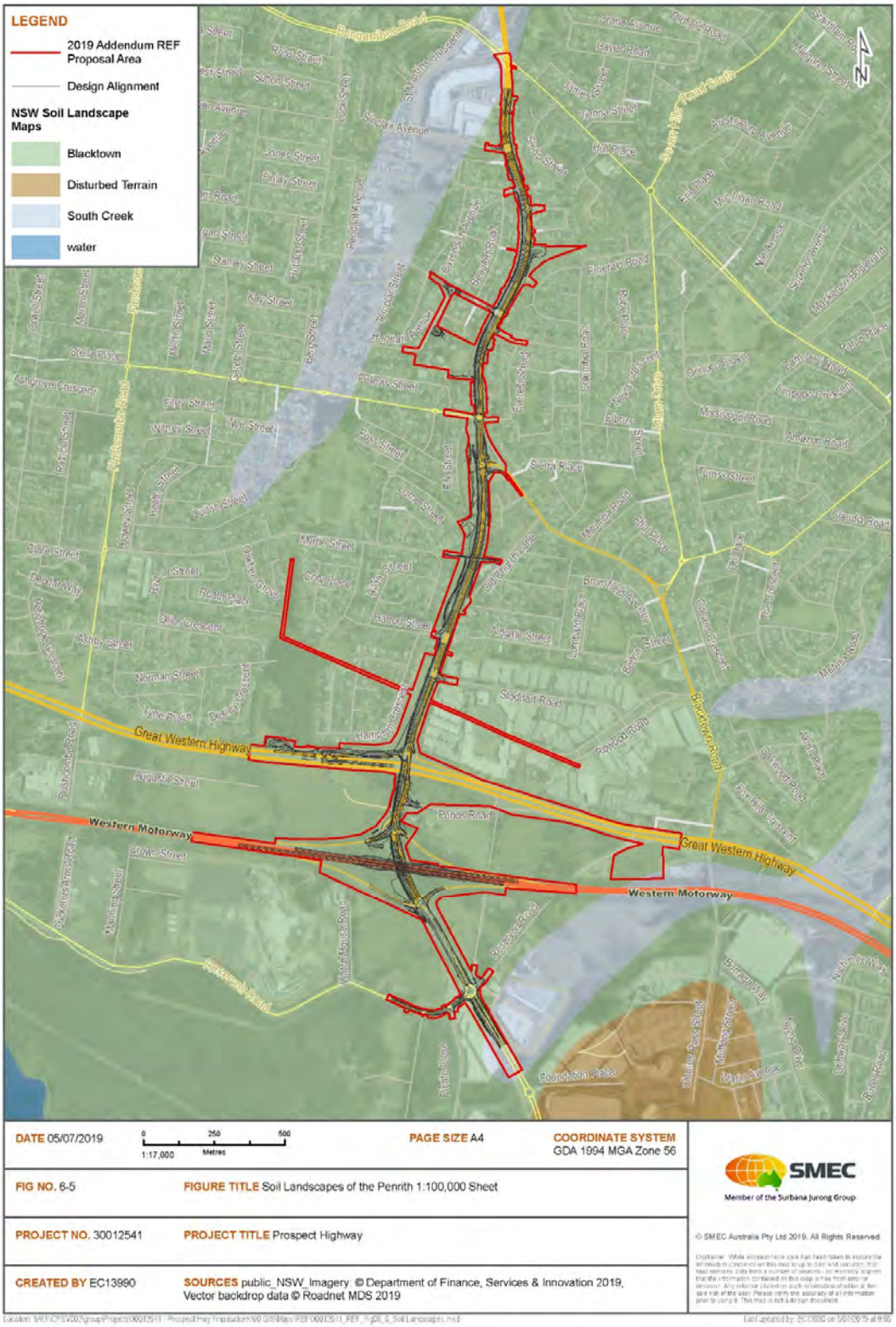


Figure 6-4). The soil landscapes relevant to the proposed site compound are presented in Table 6-8 below.

Table 6-8 Soil landscapes of the proposed compound site (Penrith 1:100,000 sheet)

Landform	Geology	Soils	Constraints
Blacktown (bt)			
Gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually >5%. Broad rounded crests and ridges with gently inclined slopes. Cleared Eucalypt woodland and tall open-forest (dry schlerophyll forest).	Wianamatta Group—Ashfield Shale consisting of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury. Sandstone consisting of fine to medium-grained quartz lithic sandstone.	Shallow to moderately deep (>100 cm) hardsetting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.	Localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil, localised surface movement potential.
South Creek (sc)			
Floodplains, valley flats and drainage depressions of the channels on the Cumberland Plain. Usually flat with incised channels; mainly cleared.	Quaternary alluvium derived from Wianamatta Group shales and Hawkesbury Sandstone.	Often very deep layered sediments over bedrock or relict soils. Where pedogenesis has occurred structured plastic clays or structured loams in and immediately adjacent to drainage lines; red and yellow podzolic soils are most common terraces with small areas of structured grey clays, leached clay and yellow solodic soils.	Flood hazard, seasonal waterlogging, localised permanently high watertables, localised water erosion hazard, localised surface movement potential.

Upon revision of the project REF PESCP (SMEC, 2019b), two construction sub-catchments were identified relevant to approved or existing detention basins. These sub-catchments are within the project REF boundary, but some connections to drainage networks are not. The sub-catchments are presented in Figure 6-6 and described below.

Chainage 2,600 (west) S2C78

The new sub-catchment, S2C78, is located at CH2,600 western side of proposed alignment. This catchment is generated by additional service access footpath and driveway pavements as required for the Shelly Public School waste bins area. The sub-catchment has an about upgradient clean water catchment of 0.13 hectares and a disturbed soil exposure area of 0.006 hectares.

Chainage 3,100 (east) S2C77

This operational water quality basin has a construction footprint of 0.24 hectares and is proposed to be connected to existing under road stormwater drainage network that connects to Beaufort Road which is outside of the project REF boundary. Connection design to Blacktown Creek drainage infrastructure is not known, however it is assumed that the existing Beaufort Road stormwater network is upgradient of Blacktown Creek at about 350 metres to the west of the project REF boundary. The project REF did not identify Blacktown Creek as a sensitive receiver going to be impacted the proposed works.

Table 6-9 summarises the Revised Universal Soil Loss Equation (RUSLE) assessment findings for each construction sub-catchment within the proposal area. The locations of these sub-catchments are presented in Figure 6-5 and Figure 6-6.

Table 6-9 Sub catchment soil loss changes.

Chainage and catchment ID	Catchment size (ha)	Soil loss (m^3/ha/yr)	Sediment basin required? (Y/N)	Sediment traps/sump volume (m^3)
CH2,600 - S2C78	0.13	34	N	-
CH3,100 - S2C77	0.39	36	N	1

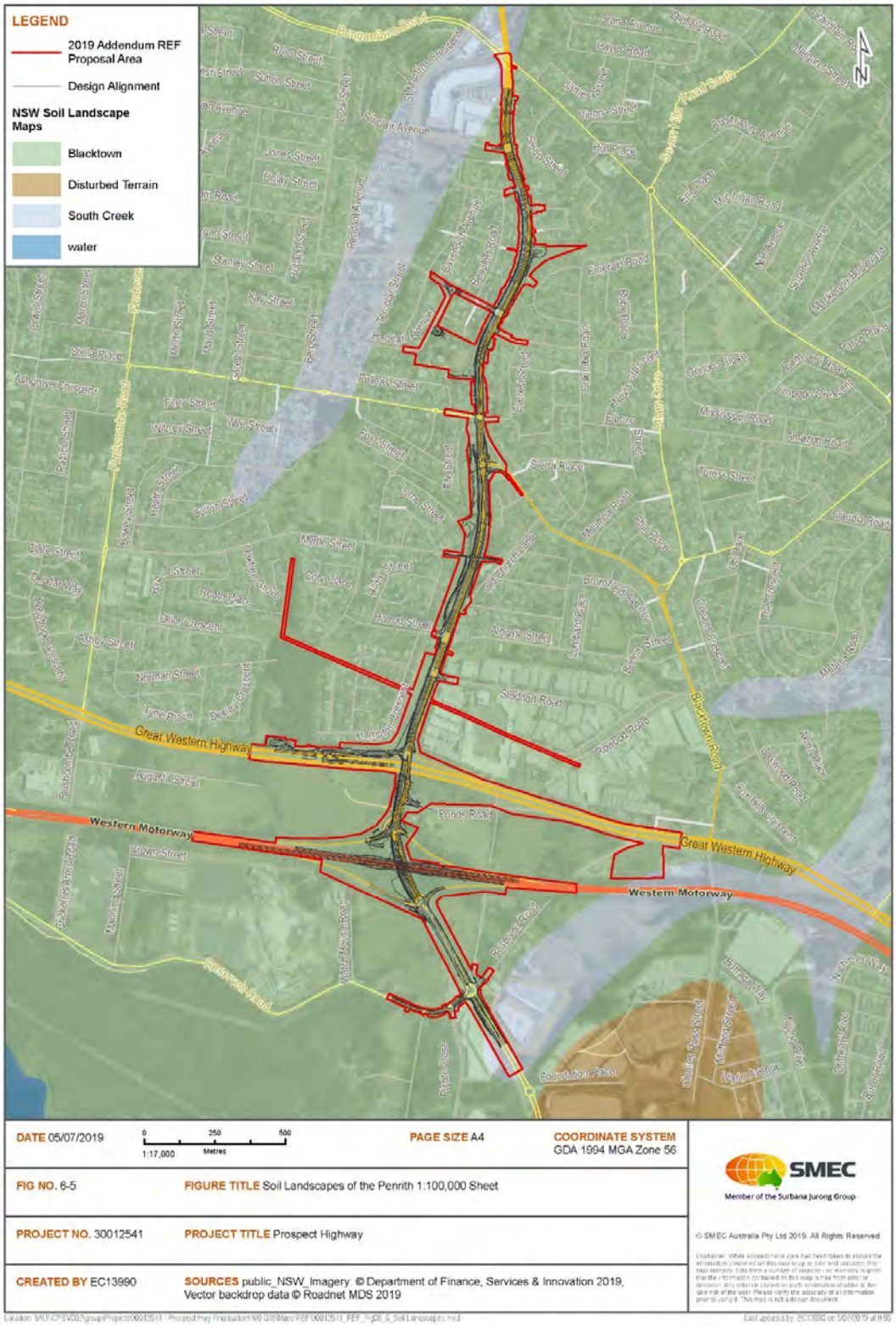


Figure 6-4 Soil landscapes of the Penrith 1:100,000 sheet

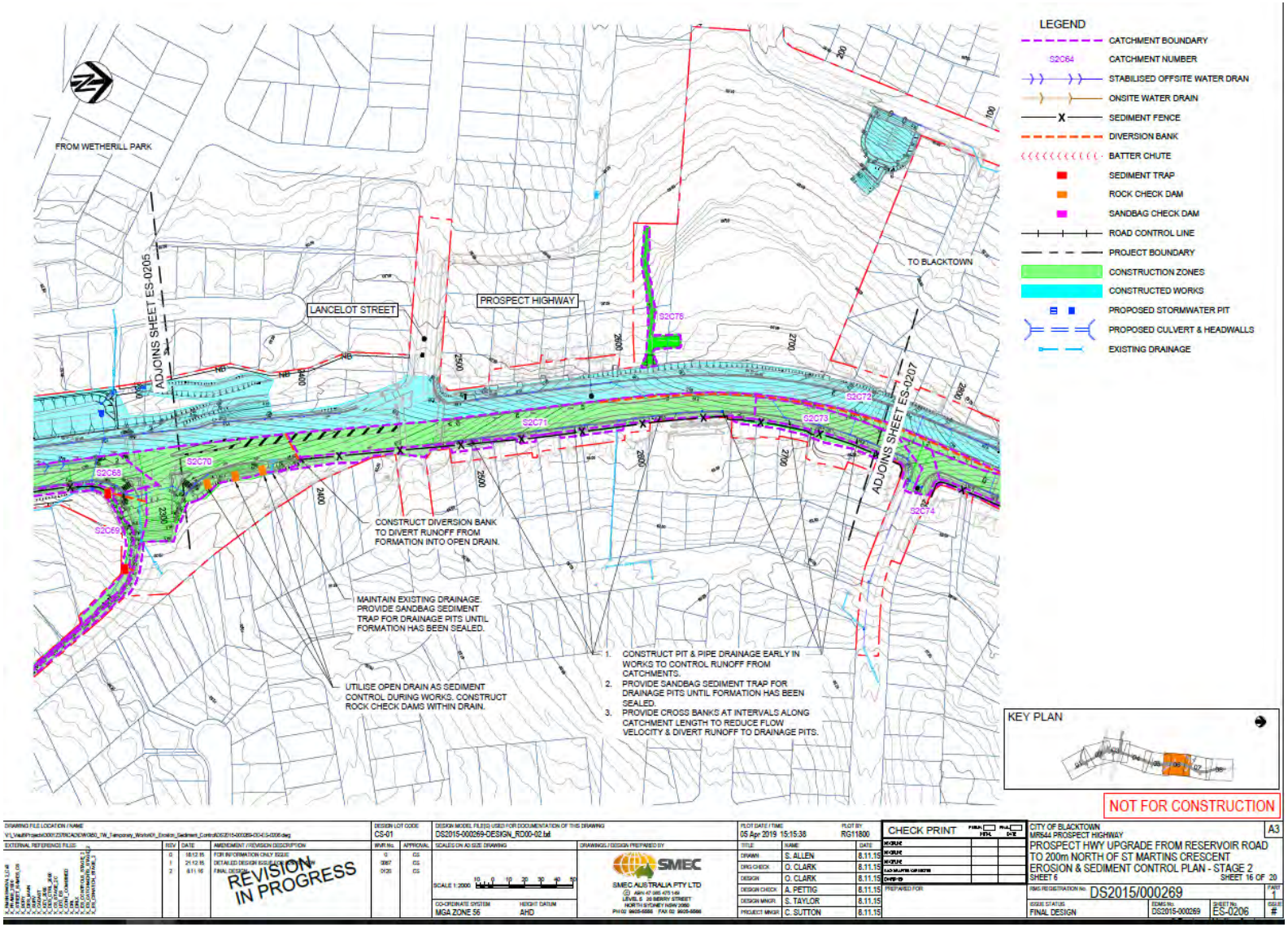


Figure 6-5 Location of sub-catchments (source: SMEC, 2016)

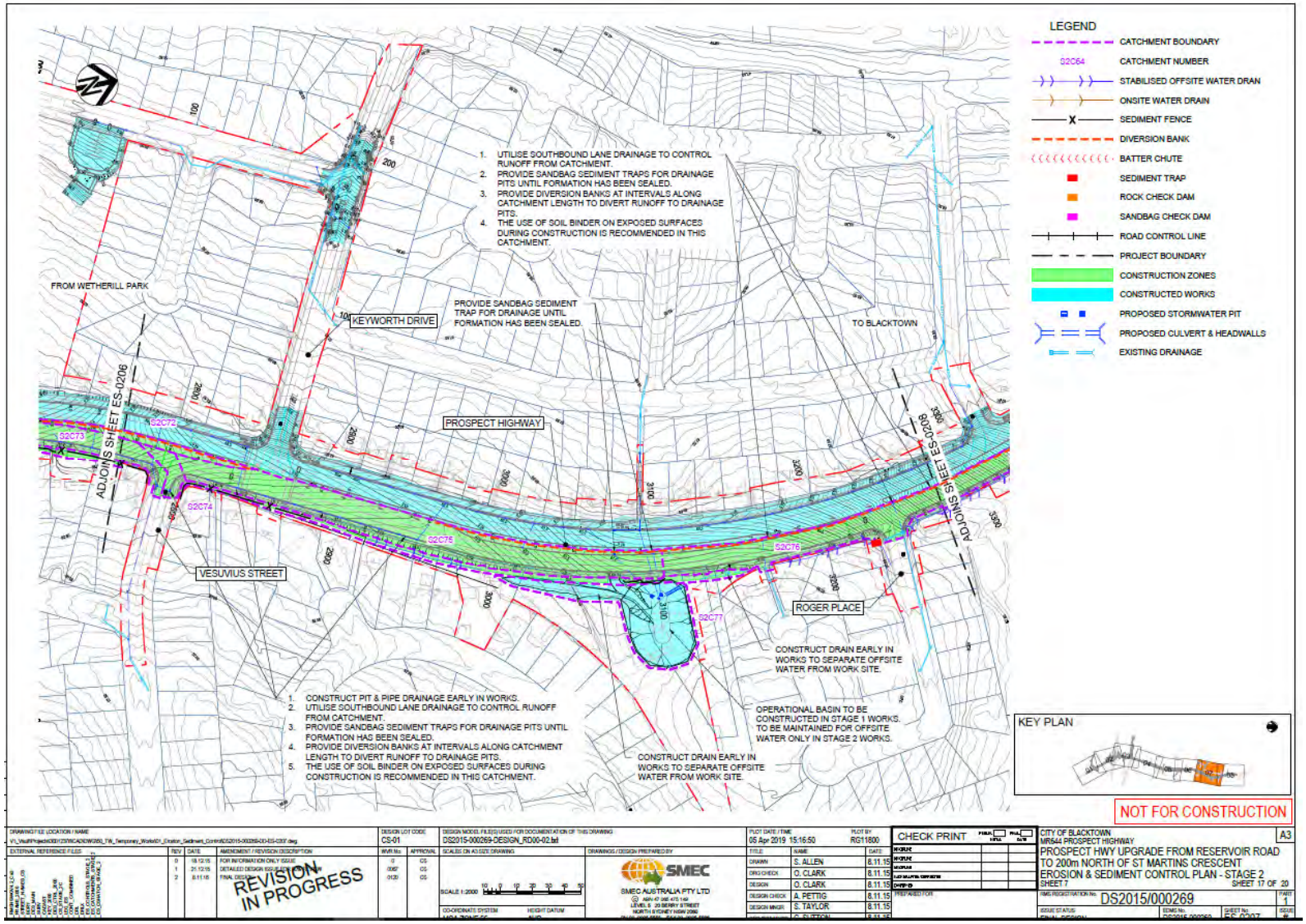


Figure 6-6 Location of sub-catchments (source: SMEC, 2016)

6.5.2 Potential impacts

Construction

The project REF assessment area is considered high risk for erosion. Sizing of detailed construction sub catchments may need to be further defined once construction staging planning is underway to make provision for potentially larger up gradient stormwater catchments that may need to be considered during higher erosion risk activities, such as redirecting live stormwater assists, changes to pavement drainage, or when bridge deck surface water is connected site water.

Construction stormwater relevant to the construction of the sub-catchment at Chainage 3,100 (east) S2C77 may be released if not controlled in accordance with best practice.

The proposed site compound id located on Blacktown soil and South Creek soils. These soil landscapes are prone to water logging with high water tables. There is a risk of water erosion occurring at the proposed site compound if not properly managed.

The early utility works and adjustment of existing utilities would involve the excavation of trenches, open points and pole holes. All of these would have the potential for erosion and sedimentation to occur as a result of ground disturbance and stockpiling. The proposed works are limited to trenching, new and old pole holes (Endeavour Energy, 2019). These works would be confined to the existing road corridor would not be considered extensive with respect to the works described in the project REF.

Operation

The proposed surplus spoil site is located on Blacktown soil landscapes. As outlined in section 6.9 of the project REF, these soils are subject to localised flooding, water erosion and localised surface movement. In addition, there is the potential for localised seasonal waterlogging and water erosion hazard, due to these soils being moderately reactive and highly plastic subsoil. Some localised movement may also occur if not properly managed.

6.5.3 Safeguards and management measures

A summary of landform, geology and soils safeguards, and management measures is presented in the following section and in Table 6-10 below.

Chainage 2,600 (west) S2C78

This sub-catchment may be managed as a standalone catchment for the purposes of soil the PESCP (SMEC, 2019b). No additional non-standard controls required for this location and no specific discharge point is required if best practise is applied during construction. No further controls required once vegetation is re-established.

Chainage 3,100 (east) S2C77

Standard and non-standard erosion and sediment controls and measures are required for managing the construction of the operational water quality basin at CH3,100. Additional consideration to erosion and sediment controls maybe required if the upgradient areas to the east are to be used as ancillary site purposes during the construction stage of the works.

Table 6-10 Landform, geology and soils safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Soils and Water	A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.	Construction Contractor	Pre-Construction Construction	Appendix F
	A soil conservation consultant is required to work in collaboration with the design team.	Roads and Maritime	Pre-Construction	Appendix F
Water Discharge	Outlet discharge requirements for the proposal will will be in accordance with Roads and Maritime *Technical Guideline: Temporary stormwater drainage for road construction 2011*	Construction Contractor	Operation	Appendix F

6.6 Non-Aboriginal heritage

6.6.1 Existing environment

The existing environment and historical context of the revised proposal area locality is described in section 6.6 of the project REF. An Historical Archaeological Test Excavation Report and Historical Archaeological Management Plan (AMP) (Artefact, 2019) was prepared for the works at the intersection of Prospect Highway and Reservoir Road. The full report is located at Appendix I of this addendum REF, and the findings are summarised below:

Three archaeological test trenches were excavated in the study area by Artefact Heritage on 22 and 23 May 2019. No significantly intact remains associated with the former alignment of the Great Western Road were identified during excavations, although partial remains that likely relate to the first phase of road construction were identified. The test excavation program found that there is low archaeological potential within the footprint of Reservoir Road due to ongoing road construction and maintenance in the heritage study area. Evidence has been recovered that would indicate that better preserved elements of the Great Western Road may be present beneath the road verge and/or road reserve immediately south of the test excavation locations.

In addition, a desktop review of the following heritage databases was carried out 19 June 2019 to identify any addition heritage items not previously addressed in the project REF or addendum 1 REF:

- Blacktown LEP 2015 Heritage conservation register
- NSW State Heritage Register
- National heritage list
- Commonwealth heritage list

The heritage items presented in Table 6-11 are relevant to the revised proposal REF boundary described in this addendum REF. The relevant non-Aboriginal heritage items to this addendum REF are presented in Figure 6-7.

Table 6-11 Non-Aboriginal heritage items

Heritage item	Location/Lot DP	Listing/ID	Significance	Proximity to proposal area
Seven Milestone, Great Western Highway	Great Western Highway, Prospect	Blacktown LEP HER/I29	Local	Within
Great Western Highway (former alignment)	Reservoir Road, Prospect	Blacktown LEP HER/I60	State	Immediately east of the proposed site compound
Old post office cottage	23 Tarlington Place, Prospect (Lot 140/ DP 1003460)	Blacktown LEP HER/I65	Local	Immediately east of the proposed site compound

Heritage item	Location/Lot DP	Listing/ID	Significance	Proximity to proposal area
Prospect Post Office (former)	23 Tarlington Place, Prospect (Lot 140/ DP 1003460)	State Heritage Register	State	Immediately east of the proposed site compound
House	2 Erith Street, Blacktown (Lot 12/DP 627441)	Blacktown LEP HER/I9	Local	40m east of revised proposal area at Lancelot Street, Blacktown

Seven Milestone, Great Western Highway

Milestone seven (7) is within the revised proposal area along the Great Western Highway, about 500 metres east of the Prospect Highway overpass. The indirect impacts on the original works on this milestone were assessed in section 6.6 of the project REF. Milestones are small sandstone obelisks with notations embedded in the stone indicating distances in Roman numerals. They are significant because they mark the highway between Sydney and Penrith and the distance to and from each. It is likely these milestones are part of a series that were erected along the Great Western Road under instruction from Governor Macquarie between 1810 and 1825.

Great Western highway (former alignment)

As described in section 6.6 of the project REF, the Former Great Western Road, Prospect (nominated for SHR listing) is aligned along the undulating ground to the north of Prospect Hill and Prospect Reservoir and a section of the old road is now called Reservoir Road.

A section of Reservoir Road to the east of the roundabout, measuring around 80 meters, would be directly impacted by the works described in this addendum REF. However, this section has already been affected by traffic work at the roundabout. The project REF notes that “the Former Great Western Road, Prospect nomination for listing on the SHR will include a series of site-specific exemptions under section 57(2) of the Heritage Act primarily relating to the archaeological potential of the area that would be impacted by the proposal”.

Old post office cottage/Prospect Post Office

The former post office building is one of the last physical structures from the village of Prospect and is a reminder of the development of the area that has connection with the earliest establishment of the district. It was constructed between the years of 1871 and 1890.The property is currently vacant and contains a brick post office building and the remains of a timber collapsed structure to the rear of the building.

The property retains substantial potential for archaeological research with several formerly associated buildings on the site including:

- Original Post office and Butchers shop
- Original Cottage
- Sulky Shed
- Stables
- Workers cottage

- House treadmill
- Well
- Butchers shop (sausage mincing and smoking house).
- Toilet

The remaining post office building includes 10 rooms within a full brick building with a five-room core under a Pyramidal roof with an added frontage facing gable and room and a rear lean too kitchen and servants' rooms. The building has a bullnose verandah to the front. The frontage and gable room are rendered but the remainder of the building is face brick.

The building was the home of the Watts family, a prominent local family who were instrumental in the development of the village and local commerce and community facilities. With the surviving church, the building provides a physical link to the history of the area and allows an understanding of the nature of the village and the relationship of the village to the church.

House, 2 Erith Street, Blacktown

The house at 2 Erith Street is described in project REF. However, due to the revised proposal area, the proximity to the heritage house to the PHU upgrades has been reduce. For this reason, the assessment of the item has been revised in this addendum REF.

The house at 2 Erith Street (also known as 17 Lancelot Street), Blacktown is located about 40 metres west of the revised proposal area assessed in this addendum REF. It is a single storey brick house with a 'hipped galvanised iron roof and bull-nose veranda' on the front and side. The front section of the house contains full height shutters surrounding double hung French doors. The house is of historic significance to the Blacktown region as a remaining Victorian farmlet homestead, indicating the previous use of the area as a food producing area for Sydney.

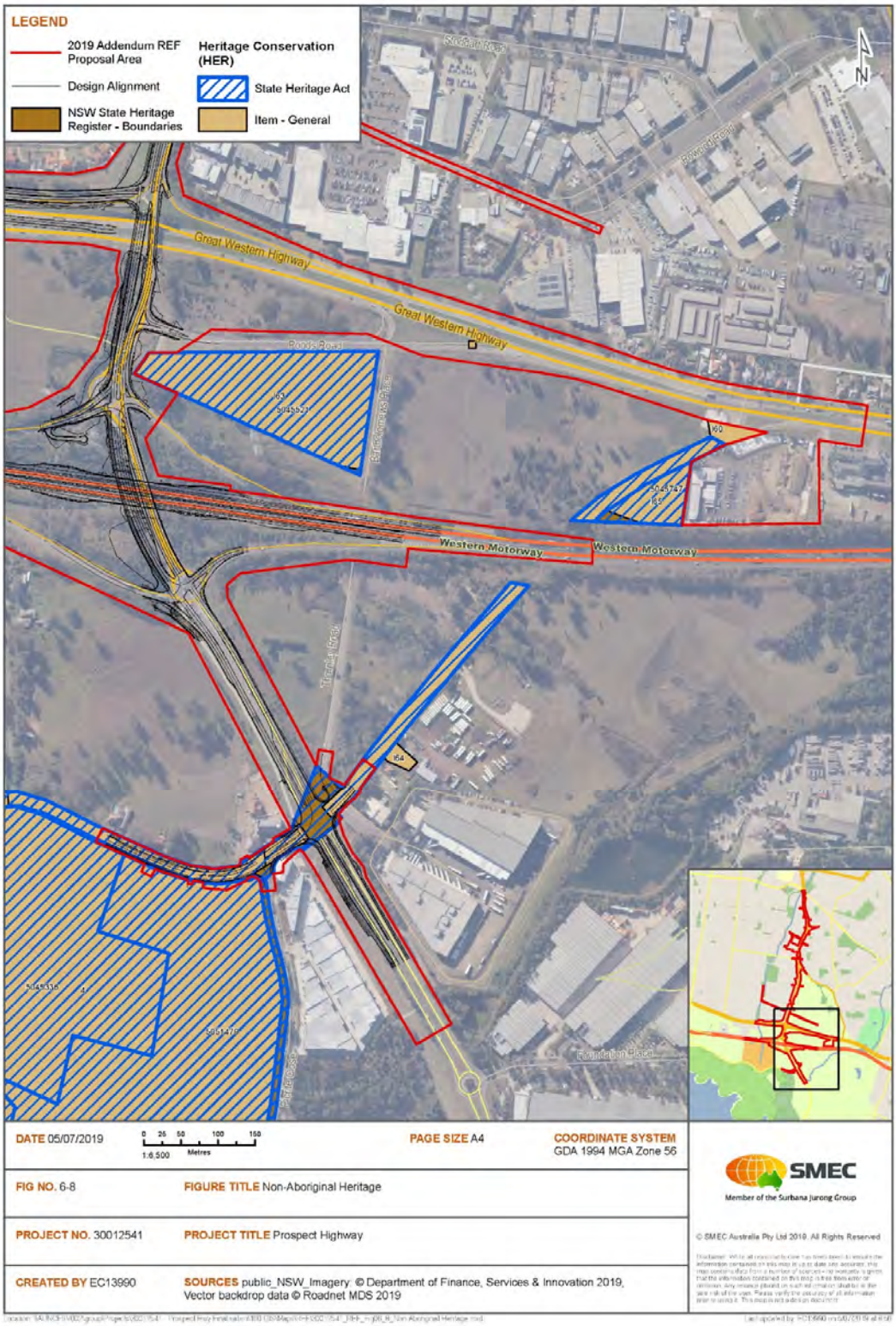


Figure 6-7 Non-Aboriginal heritage items

6.6.2 Potential impacts

In accordance with the AMP strategy (Artefact, 2019) a section 57 (2) exemption under the NSW Heritage Act was sought by Roads and Maritime to permit archaeological test excavations at Reservoir Road to the west of the Prospect Highway / Reconciliation Road intersection. A section 57 (2) exemption was provided by the NSW OEH on 6 March 2019 (OEH reference DOC 19/51899), under site specific exemption 2B.

The potential impacts of the proposed construction and operation of the proposed change in construction methodology and revised proposal area are detailed below.

Construction

There are a number of potential impacts that may arise during the construction stage of the proposed modifications described in this addendum REF. These potential impact are detailed in Table 6-12 below.

Table 6-12 Potential impacts to non-Aboriginal heritage during construction

Heritage item	Potential impacts	Magnitude/justification
Seven Milestone, Great Western Highway (I29)	There will be no physical works within this section of the revised proposal area. It is likely that the construction contractor would install temporary signage in this area to facilitate altered traffic conditions.	Minor/unlikely There would be no change to the existing road alignment along the Great Western Highway at this location. There is a low risk that construction vehicles, staff, plant or equipment may strike the milestone during mobilisation and construction staging.
Great Western Highway (former alignment) (I60)	This heritage item currently forms part of Reservoir Road and is an existing, active road. It is unlikely that the former Great Western Highway alignment would be impacted by the key features of the modification.	Minor/unlikely The extent of this area of road has previously been captured in the project REF and addendum 1 REF. The revised proposal area has resulted in an additional 20m of the heritage former alignment to be assessed. As noted in the project REF, any impacts are considered to be minor and temporary. The increase in heavy vehicles along the alignment may accelerate degradation and general wear and tear of the alignment. However, as the works
Old post office cottage (I65)	There is the potential for noise and vibration from vehicles, plant and equipment frequenting the proposed site compound to indirectly impact the structure of the old post office cottage.	Minor/unlikely The proposed compound is an existing Roads and Maritime site office. The site currently is frequented by construction plant, equipment, personnel and freight vehicles. Because of the existing land use at the site, any noise and vibration generated by the proposed use of the site

Heritage item	Potential impacts	Magnitude/justification
		as a compound for the Prospect Highway Upgrade project would be consistent with the existing environment.
Prospect Post Office (former) (SHR nominated)	There is the potential for noise and vibration from vehicles, plant and equipment frequenting the proposed site compound to indirectly impact the structure of the old post office cottage.	Minor/unlikely The proposed site compound is an existing Roads and Maritime site compound. The site currently is frequented by construction plant, equipment, personnel and freight vehicles. Because of the existing land use at the site, any noise and vibration generated by the proposed use of the site as a compound for the Prospect Highway Upgrade project would be consistent with the existing environment.
House 2 Erith Street, Blacktown NSW (I9)	There is the potential for noise and vibration generated by the AusConnex/Endeavour Energy Early works to impact the structure of the heritage house.	Minor/unlikely The indirect impacts of the construction of the PHU alignment were assessed in the project REF. The utility alignment works would wholly be contained within the existing road corridor (Endeavour Energy, 2019) There may be intermittent periods of underboring and trenching as services and assets are relocated to overhear structures. This would be temporary in nature. There would be no changes to the indirect impacts previously assessed.

Operation

None of the operation of additional works outlined in this proposed modification are anticipated to have any impacts on the non-Aboriginal heritage items identified in the previous sections.

6.6.3 Safeguards and management measures

A summary of the additional safeguards and meditation measures for non-Aboriginal heritage are presented in Table 6-13 below.

Table 6-13 Non-Aboriginal heritage safeguards and mitigation measures -

Impact	Environmental safeguards	Responsibility	Timing	Reference
Non-Aboriginal heritage	A s57 exemption for the project works within the SHR curtilage should be obtained prior to	Roads and Maritime	Pre-Construction	Appendix I

Impact	Environmental safeguards	Responsibility	Timing	Reference
	works commencing. Note the following: • The exemption is unlikely to allow impact to, or removal of, archaeological remains which have not been previously identified in the archaeological assessment for the project • The exemption is unlikely to allow impact to, or removal of, state significant relics • Where substantial intact archaeological relics of state or local significance, not identified in the original assessment or during the test excavation program, are unexpectedly discovered during excavation, work must cease within the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the NSW Heritage Act. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area			
	Works north of the southern fog line of Reservoir Road Prospect may proceed without further archaeological investigation	Construction contractor	Construction	Appendix I

Impact	Environmental safeguards	Responsibility	Timing	Reference
	and should be managed under the Roads and Maritime Standard Management Procedure for Unexpected Finds. An unexpected archaeological find would be anything of potential heritage significance which has not been identified in the previous archaeological assessment for the project, or identified during the archaeological test excavation	Roads and Maritime		
	The low archaeological potential within the Reservoir Road corridor would be appropriately managed through adherence to the Roads and Maritime Standard Management Procedure for Unexpected Finds	Construction contractor Roads and Maritime	Construction	Appendix I
	Works that will involve excavation south of the fog line of Reservoir Road Prospect should be archaeologically monitored to detect and prevent damage to potentially better-preserved elements of the Great Western Road, and to establish the original width and position of the Great Western Road in this location.	Construction contractor	Construction	Appendix I
	Results of this archaeological monitoring will be provided in the form of an addendum Appendix I.	Contractor Roads and Maritime	Post-Construction	Appendix I

6.7 Landscape, visual amenity and urban design

A Landscape Character and Visual Impact Assessment (LCVIA) report was prepared for the project REF. An additional Landscape Character and Visual Amenity assessment of the proposed noise walls was carried out to inform the addendum 1 REF (SMEC, 2016).

A desktop reassessment of the LCVIA has been carried out for this addendum REF. The key reasons for this are:

- Realignment of noise barrier NB01, at the intersection of the Great Western Highway and Prospect Highway – the proposed location of this noise barrier differs slightly from that presented in the project REF and addendum 1 REF
- The utility early works and adjustments of existing utilities- these works would involve the adjustment of existing utilities. The asset relocation would require underboring, trenching and amendments to several poles near St Martins Village
- Demolition of 30 Topaz Crescent - the demolition of a building would likely affect the landscape character and visual amenity of the area both during construction and operation
- Site compound at Tarlington Place - the proposed site compound is a key feature of the modifications described in this addendum REF and was not assessed in the project REF or addendum 1 REF
- Realignment of the approved retaining wall RW03 to allow for the permanent storage of surplus spoil generated by the works – the visual impacts of the surplus spoil were not assessed in the project REF or addendum 1 REF.

A high-level review of the impacts of the proposed works as described in this addendum REF have been assessed in accordance with the Guideline for Landscape Character and Visual Impact Assessment (Roads and Maritime, 2018).

6.7.1 Existing environment

Overall project corridor

The existing environment of the proposal corridor and its surroundings are described in detail in section 6.4 of the project REF and section 6.5 of the addendum 1 REF. A total of nine landscape character zones (LCZ) were identified in the project REF. No additional LCZs have been added in the preparation of this addendum REF.

The viewpoints and visual envelopment of the project REF boundary are presented in section 6.4 of the project REF. Four new viewpoints were added in the addendum 1 REF. To account for the extension of the proposal area in this addendum REF, two new viewpoints have been added in this visual impact assessment. Viewpoints are shown in Figure 6-8

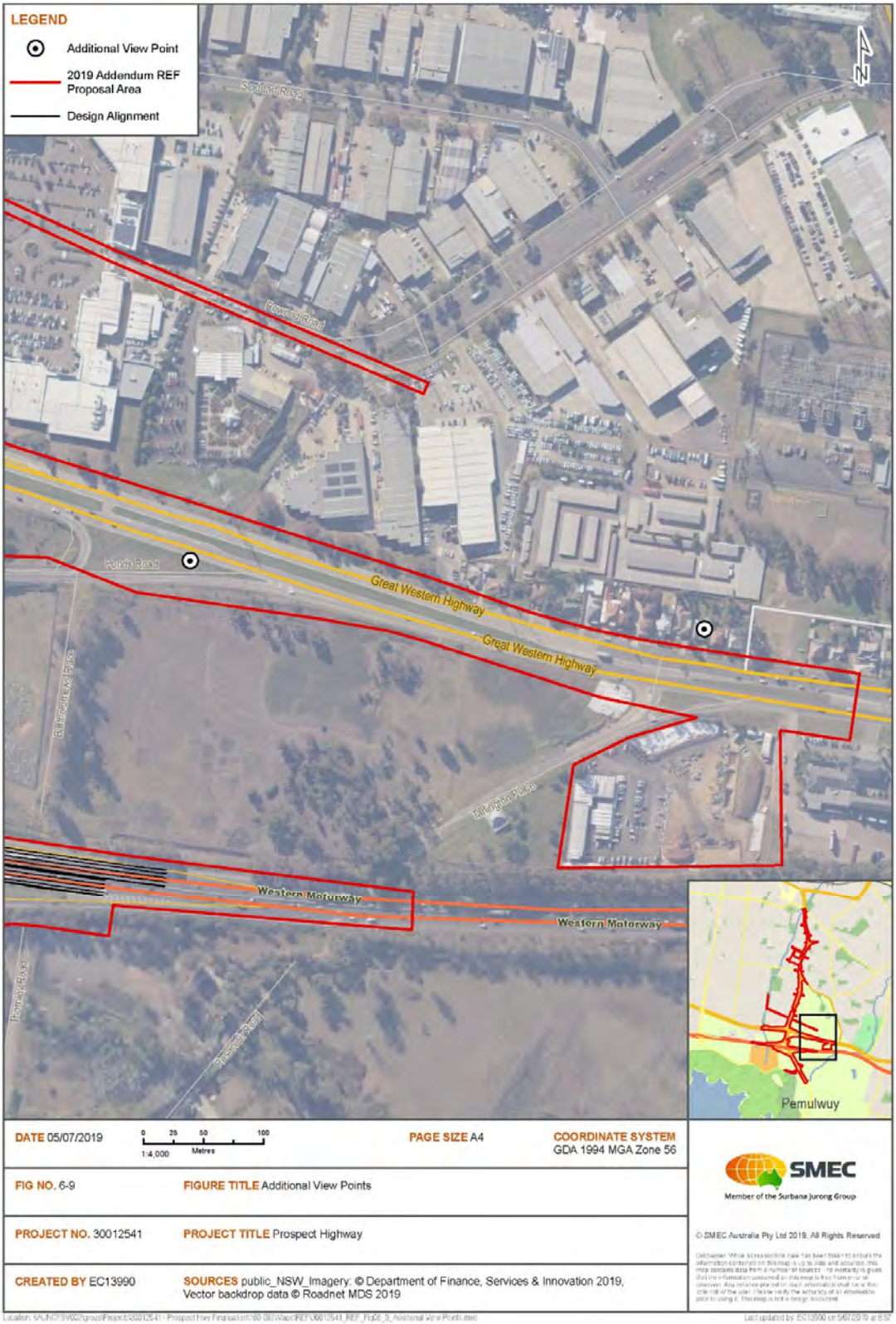


Figure 6-8 Additional Viewpoints for addendum REF (2019)

The interaction between LCZs and Viewpoints with the proposed modifications described in this addendum REF are presented in Table 6-14 below.

Table 6-14 Interactions of proposed modification with LCZs and Viewpoints

Aspect		Relevant LCZ	Relevant Viewpoint
1	Realignment of approved retaining wall RW03 along Prospect Highway to allow for the permanent storage of surplus spoil	LCZ 6	VP 9, VP 10, VP 11, VP 12, VP 13, VP 14, VP 15
2	Property adjustment at some sections along the road corridor within the project boundary	NA - There would be no new visual impact as a result of changes to property alignment	
3	Additional work at the M4 Motorway	LCZ 4	VP 5, VP 11, VP 12
4	Changes to pavement design and construction methodology	NA -There would be no new visual impacts as a result of the refined pavement materials.	
6	Demolition of residential property at 30 Topaz Crescent	LCZ 7	VP 21, VP 23
7	AusConnex/Endeavour Energy Early Works	LCZ 6, LZC 7, LCZ 8, LCZ 9	VP 15-VP 27
8	Shared path realignment at Tudor Avenue and St Martins Crescent	LCZ 8	VP 25
9	Use of new compound south east Great Western Highway	LCZ 4	New VP C1 and VP C2
10	Minor ancillary works – handrails and work at bus shelters	NA -There would be no new visual impacts as a result of minor ancillary works to bus shelters.	

6.7.2 Potential impacts

The potential impacts of the modifications described in this addendum REF on LCZs and viewpoint are described below.

Landscape character

The potential impacts during construction are outlined in Table 6-15.

Table 6-15 Landscape character impacts

Landscape Character Zone	Potential impacts
LCZ 4	The sensitivity of this LCZ would not be altered from the project REF and would remain **Moderate**. There are no additional structures or road designs scheduled to occur in this section of the revised proposal area as part of this addendum REF. The extension of the proposal area along the M4 would be temporary in nature and it is anticipated that the existing LCZ along the M4 would temporarily be altered. The potential impacts include the occurrence of personnel, plant, equipment in the extended proposal area. The proposed site compound at Tarlington Place would be visible in this LCZ. The site currently serves as a Roads and Maritime project compound. There would be no change to the existing land use or assessment in the project REF or addendum 1 REF.
LCZ 6	The landscape character impact of the modifications described in this addendum REF on this LCZ would remain **Low.** The realignment of noise wall NB01 would have no impact the sensitivity rating assessed in the project REF or addendum 1 REF. The impacts of retaining wall RW03 along the two-way link road were assessed in the project REF. The minor adjustments to the alignment of the retaining wall would not have any additional impact on the LCZ. The minor realignment has been strategically designed to allow for the permanent placement of surplus spoil within the project REF boundary. Spoil would be would backfilled behind the retaining wall. Land would be remediated per Roads and Maritime guidelines. There would be no additional visual impact of this permanent placement of surplus spoil. As this LCZ was already assessed at the lowest rating of Low, there would be no change to this LCZ.
LCZ 7	The proposal would not change the sensitivity rating assessed in the project REF and addendum 1 REF, which would remain **Moderate to High.** The AusConnex/Endeavour Energy Early Works would involve the relocation of underground assets to overhear powerlines. The existing LCZ is described in the project REF as 'highly modified arterial road landscape consisting of residential, urban parkland and electricity

Landscape Character Zone	Potential impacts
	transmission uses'. See the SER (Endeavour Energy, 2019) for photographs of the location of the proposed underboring, trenching and pole replacement works. The proposed relocation works would not impact the existing sensitivity of LCZ 7. During construction, the demolition 30 Topaz Crescent would increase the magnitude of change that would occur in this LCZ. The proposed demolition would involve machinery, plant and equipment at the construction stage. The demolished structure would be unsightly for a short time until waste materials are transported from site.
LCZ 8	The modifications described in this addendum REF would not change the sensitivity rating assessed in the project REF or addendum 1 REF, which would remain **Moderate.** This LZC is described in the project REF as sharing similar characteristics to LCZ 7, with highly modified road landscape surrounded primarily by residential properties. The shared path realignment would not affect the sensitivity rating of this LCZ. The magnitude of the impacts may increase during the construction stage only, due to personnel, plant and equipment. Realignment of the shared path would not result in adverse changes to the LCZ once operational. There also is the potential that realignment of the shared path to positively affect the visual amenity of this LCZ as old concrete, guttering and pathway would be refurbished and updated with new materials. The utility early work and adjustments of existing utilities would involve the relocation of underground assets to overhear powerlines. The AusConnex/Endeavour Energy early works would utilise the existing conductor as well as trenching and under boring (Endeavour Energy, 2019). The early works would also involve the following works between Tudor Avenue and Leabons Lane Zone substation: • Removal of five poles • Installation of three new poles The relocation and replacement of existing poles and conductors where assets are within or close to the proposed road alignment. As this LCZ is described in the project REF as sharing similar characterises to LCZ 7, the Early Works would not affect sensitivity of the LCZ. Changes to residential property boundaries would not impact the sensitivity rating assessed in the project REF. The assessed magnitude of the impact at this LCZ would not be increased by this aspect of the proposed modification.

Landscape Character Zone	Potential impacts
LCZ 9	The modifications described in this addendum REF would not change the sensitivity rating assessed in the project REF or addendum 1 REF, which would remain **Negligible.** The LCZ is defined in the project REF as having a large footprint of commercial building with extensive areas of flat car parking facilities. In this LCZ, the AusConnex/Endeavour Energy Early Works would involve: • Modification to one pole There are two existing poles in this LCZ along the Prospect Highway. In this zone, the early works would utilise the existing conductor (Endeavour Energy, 2019). As a result, there would be no impact on the existing, highly modified commercial environment during construction and no impact during operation.

Visual impacts

The predicted visual impacts of the proposed modifications are described in the following section.

Realignment of approved noise barrier NB01

The visual impact of the installation of NB01 was assessed in section 6.5 of the addendum 1 REF. The realignment of NB01 is minor in nature, and no other viewpoints would be impacted due to the proposed realignment. There would be no change to visual impacts described in addendum 1 REF, which would remain Moderate.

Realignment of retaining wall RW03 for the permanent placement of surplus spoil

The impacts of retaining wall RW03 along the two-way link road were assessed in the project REF. The minor adjustments to the alignment of the retaining wall would not have any additional impact on the LCZ. The minor realignment has been strategically designed to allow for the permanent placement of surplus spoil. Spoil would be would backfilled behind the retaining wall. Land would be remediated per Roads and Maritime guidelines. There would be no additional visual impact of this permanent placement of surplus spoil to those outlined in the project REF, which would remain Moderate to High**.**

The AusConnex/Endeavour Energy Early Works

The AusConnex/Endeavour Energy Early Works would occur at viewpoint 17; at Lancelot Street on the east and western sides of the Prospect Highway. At this location, the Early Works would involve underboring. Underboring is a below-ground activity. From viewpoints 16-25, the AusConnex/Endeavour Energy Early Works would require trenching, which is a ground-level activity. The plant, personnel and equipment necessary to carry out these activities would be visible in these viewpoints during construction only. However, the magnitude would not be sufficient to increase the magnitude rating of viewpoints 16-23 of project REF and addendum 1 REF from Moderate**.**

It is proposed that five poles would be removed near St Martins Village. Any poles to be replaced would use like-for-like materials where possible. The AusConnex/Endeavour Energy Early Works would not result in a change to the existing visual amenity at these locations. See the SER (Endeavour Energy, 2019) for the power poles to be replaced, removed or modified.

Demolition of 30 Topaz Crescent

The proposed demolition of 30 Topaz Crescent would be visible from viewpoints 22 and 23. Demolition of the existing structure would increase the sensitivity of the Viewpoints from Moderate to High during the construction stage only. The existing visual amenity would be altered by the removal of the structures on the property at the operational stage of the works. For this reason, the magnitude of change is would increase to High**.**

Site compound at Tarlington Place

The proposed site compound at Tarlington Place is located outside the visual envelope map presented in section 6.4 of the project REF. Two new viewpoints have been added in this addendum REF to assess the impacts of this aspect of the modifications in this REF outside of the project REF visual envelope. The two new viewpoints are C1 and C2. The viewpoint locations, description and visual impact assessment is presented in Table 6-16.

Table 6-16 Visual impact assessment

Viewpoint	Location	Description	Visual Impact Assessment
VP C1	The tie in at Ponds Road and the Great Western Highway facing east	This viewpoint looks east towards to four-way intersection of the Great Western Highway and Blacktown Road/Clunies Ross Street. The south side consists of cleared, vegetation with small areas of remnant mature trees. There is an existing Roads and Maritime compound located at Tarlington Place which is visible from this viewpoint. The north side of the Great Western Highway is a mix of commercial warehouses and low-density residential dwellings.	The proposed use of the property at Tarlington Place, Prospect (Lot 1/DP1192514) as a site compound for the construction stage of works would be consistent with the current use of the site. There would be no change to the existing visual amenity of the area from this viewpoint. Overall, the visual impact rating would be **Negligible to Low**.
VP C2	The residential property at 18 Great Western highway, facing south	The existing Roads and Maritime site compound and Great Western highway is in the immediate view of this location. The viewpoint looks directly onto the Great Western Highway. The viewpoint faces south towards the car parking facilities of the Prospect Hotel. Power poles are also visible.	The proposed use of the existing site compound at the intersection of Tarlington Place and the Great Western Highway, Prospect (Lot 1/DP1192514) as a site compound for the construction stage of works would be consistent with the current use of the site. The residential properties along the Great Western Highway face south onto the six-lane highway. The existing Roads and Maritime site compound highly visible from the residential properties. The compound is partially screen by vegetation and mesh walls along the chain-link fence. The use of this area

Viewpoint	Location	Description	Visual Impact Assessment
			as a site compound for the Roads and Maritime PHU project would not alter the existing visual amenity of the area from this viewpoint. Overall, the visual impact rating would be **Negligible to Low**.

6.7.3 Safeguards and management measures

No additional safeguards and management measures are recommended based on the potential landscape character and visual impact assessed in this addendum REF.

6.8 Air quality

Air quality is discussed in section 6.10 of the project REF. Several key features of the proposed modifications described in this addendum REF have been revisited in the context of potential impacts to air quality.

6.8.1 Existing environment

The air quality of the existing environment and EPA air quality guidelines for the proposed works are described in section 6.10 of the project REF.

6.8.2 Potential impacts

The potential impacts for of the proposed modifications described in this addendum REF are discussed in the following section.

Construction

Demolition of residential property located at 30 Topaz Crescent, Seven Hills NSW

The planned demolition of the vacant residential property at 30 Topaz Crescent, is likely to generate dust, debris and potentially disturb hazardous material such as asbestos. The potential impacts of asbestos on air quality are addressed in section 6.10 of this addendum REF. The health effects associated with asbestos exposure relate to the inhalation of airborne respirable asbestos fibres. In general, asbestos fibres cannot be released or become airborne in significant quantities unless the asbestos-containing material is disrupted, for example in the case of excavating, breaking, cutting and other material disturbing activities.

Early utility works and adjustments of existing utilities

The relocation work is likely to involve about 1,017 metres of trenching and underboring. This is likely to increase the dust levels within the vicinity of the of the works. There is potential for dust to cause nuisance to residents during construction. The air quality impacts associated with this proposed modification would have no effect the air quality assessment in the project REF.

Proposed site compound at the intersection of Tarlington Place and the Great Western Highway, Prospect

The proposed site compound was not assessed in the project REF or addendum 1 REF. The proposed compound is located at intersection of Tarlington Place and the Great Western Highway, about 140 metres directly west of the intersection of the Great Western Highway and Blacktown Road. The area immediately east of the proposed compound is the Prospect Hotel.

The land at the proposed compound at Tarlington Place is currently used as a Roads and Maritime project compound. Heavy vehicles, freight vehicles, and personnel frequent the site. Plant and equipment are also stored on site. There would therefore be no change to the existing conditions if the area were to be used as a site compound during construction of the PHU project. The air quality impacts associated with this proposed modification would not affect the air quality assessment in the project REF.

Minor ancillary works such as the installation of handrails and work at bus shelters

Bus shelters are typically located within the road corridor and accessible by shared paths and pedestrian routes. It is likely that pedestrians and residents would be exposed to dust or fumes generated by the minor ancillary works to bus shelters. There would be no additional excavation or pot holing required to complete the ancillary works. Because of this, it is not likely that this activity would generate dust and wind erosion risks.

Realignment of approved retaining wall RW03 to allow for the permanent storage of surplus spoil

Surplus spoil may be associated with dust and wind erosions from unsealed surfaces and stockpiling. If vegetation is removed, there is also the potential for destabilisation of soils, which increases this risk. These are standard risks associated with construction and the would be no change to the air quality assessed in section 6.10 of the project REF.

6.8.3 Safeguards and management measurements

The air quality safeguards and management measures associated with the key features of the modification outlined in this addendum REF are provided in Table 6-17 below.

Table 6-17 Air quality safeguards and management measures

Impact	Environmental safeguards	Responsibility	Timing	Reference
Air quality	Asbestos control air monitoring should be performed during removal of ACM from the building structures and during demolition	Construction contractor	Pre-demolition	Appendix E

6.9 Resource use and waste management

6.9.1 Policy setting

The NSW Government has released the NSW Waste Avoidance and Resource Recovery Strategy 2007 (WARR Strategy) to minimise waste generated across all government sectors and to improve the efficient use of resources. This reflects the community's view that waste should be treated as a resource. The WARR Strategy identifies the following waste avoidance and resource recovery goals and targets:

- Prevent and avoid waste
- Increase recovery and use of secondary materials
- Reducing toxicity in products and materials
- Reducing litter and illegal dumping.

Roads and Maritime is dedicated to the minimisation of waste and the use of recycled products where possible. Roads and Maritime contractors are required to proposed recycled-content materials where they are cost and performance competitive.

By adopting the principles of the *Waste Avoidance and Resource Recovery Act 2001*, Roads and Maritime seeks to ensure the most efficient use of resources and reduce cost and environmental harm in line with the principles of ecologically sustainable development in section 8.2 of this addendum REF.

6.9.2 Existing environment

The existing road network within the overall project REF boundary currently generates minimal waste. Waste sources are currently limited to roadside litter, some waste material from clearing roadside drainage features, green waste from the maintenance of roadside vegetation and general litter generated in the school grounds.

Two soil classification reports were prepared for the proposed surplus spoil site (SMEC, 2019e and SMEC, 2019f). The objectives of the soil classification reports were to assess whether excavated materials could be classified for removal and/or site reuse. the in-situ FILL soil materials within the site area assessed can be disposed of under the CT1 general solid waste (non-putrescible) classification. As the location of the surplus spoil is within the project REF boundary and are not further assessed in this addendum REF. The recommendations of the reports are outlined in presented in section 6.10.4.

6.9.3 Potential impacts

The materials required for the proposed works are described in section 6.12 of the project REF and section 6.10 of the addendum 1 REF. None of the materials required are currently in short supply and would be sourced locally if possible. It is not anticipated that the proposed described in this addendum REF would substantially increase the demand on these resources.

Permanent storage of surplus spoil

The proposed permanent storage of surplus spoil is within the extended proposal area in this addendum REF. The location of the spoil is presented in Figure 3-1. Where possible, spoil from any of the individual activities would be recycled within the approved project REF boundary.

Demolition of residential property located at 30 Topaz Crescent, Seven Hills NSW

The demolition of 30 Topaz Crescent would involve the handling of hazardous materials. The HBMSR (SMEC, 2019a) outlines the potential risks associated with the demolition of structures at the property. The key waste issues associated with these works include risks around asbestos, PCB, SMF and lead-based paint.

Early utility works and adjustment of existing utilities

These early works and adjustments are likely to generate waste, such as overhead conductors, poles, cross-arms and insulators. There may be some green waste and spoil generated by underboring and trenching activities.

6.9.4 Safeguards and management measures

No additional safeguards and management measures are recommended for the potential resource use and waste management impact assessed in this addendum REF.

6.10 Cumulative impact

6.10.1 Potential impacts

The proposed modification has the potential to have cumulative environmental effects with other existing or likely future proposals such as the M4 Western Motorway work including:

- M4 Median widening
- Traffic Control System layout at M4 Westbound ramps.

Potential cumulative impact outcomes may include:

- Removal of vegetation
- Earthwork
- Increased construction traffic
- Local amenity impacts and/or benefits such as noise and vibration, landscape charter, socio-economic outcomes and air quality.

The potential cumulative impact may affect residents and road users travelling through the proposed modification area during construction. Other roadside development work along the Prospect Highway and/or M4 Western Motorway may potentially exacerbate cumulative impact to the area.

The M4 westbound ramps upgrade previously assessed under the Prospect Highway Upgrade is removed from this modification and assessed and built under the M4 Smart Motorway project.

Given the scale of the proposed modification work compared to the approved design assessed under the project REF and addendum 1, cumulative impact would be minimal due to the limited scope of work for the activities covered in this addendum assessment and the potential impacts on the environment would be minimised with the implementation of the safeguards listed in section 7.2.

7. Environmental management

7.1 Environmental management plans

Several safeguards and management measures have been identified to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposed modification. Should the proposed modification proceed, the management measures proposed in the Project REF and Addendum 1 and detailed below would be addressed if required during detailed design and incorporated into the Contractors Environmental Management Plan (CEMP) and applied during the construction and operation of the proposed modification.

7.2 Summary of safeguards and management measures

Environmental safeguards and management measures for the Prospect Highway Upgrade are summarised in Table 7-1. No additional safeguards and management measures are identified in this addendum. The safeguards and management measures will be incorporated into the detailed design phase of the proposed modification, the CEMP and the PEMP and implemented during construction and operation of the proposed modification, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment.

Table 7-1 Summary of site specific environmental mitigation measures and safeguards

No.	Impact	Environmental safeguards	Responsibility	Timing
1.	General	All environmental safeguards must be incorporated within the following: • Project Environmental Management Plan • Detailed design • Contractor specifications for the proposal • Contractor's Environmental Management Plan.	Project manager	Pre-construction
2.	General	A risk assessment would be carried out on the proposal in accordance with the Roads and Maritime Services Audit Pack and PMS risk assessment procedures to determine an audit and inspection program for the works. The recommendations of the risk assessment are to be implemented. A review of the risk assessment must be undertaken after the initial audit or inspection to evaluate is the level of risk chosen for the project is appropriate. Any works resulting from the proposal and as covered by the REF may be subject to environmental audit(s) and/or inspection(s) at any time during their duration.	Project manager Regional environmental staff	Pre-construction and After first audit
3.	General	The environmental contract specification G36, G38 and G40 must be forwarded to the Roads and Maritime Services Senior Environmental Officer for review at least 10 working days prior to the tender stage. A contractual hold point must be maintained until the CEMP is reviewed by the Roads and Maritime Services Senior Environmental Officer.	Project manager	Pre-construction
4.	General	The Roads and Maritime Services Project Manager must notify the Roads and Maritime Services Environmental Officer Central Region at least 5 days prior to work commencing.	Project manager	Pre-construction
5.	General	All businesses and residences likely to be affected by the proposed works must be notified at least 5 working days prior to the commencement of the proposed activities.	Project manager	Pre-construction
6.	General	Environmental awareness training must be provided, by the contractor, to all field personnel and subcontractors.	Contractor	Pre-construction and Construction as required

No.	Impact	Environmental safeguards	Responsibility	Timing
7.	Consultation	Roads and Maritime would continue to provide updated regarding the progression of the proposal to stakeholders and the community via the Roads and Maritime website, emails and regular mail.	Roads and Maritime	Detailed design, Pre-construction and Construction
8.	Traffic management	A construction traffic management plan would be prepared and implemented in accordance with the *Traffic Control and Worksites*, version 4.0 (Roads and Maritime, June 2010). The construction traffic management plan would enable the safe management of traffic, provide for the safety of construction personnel and minimise impacts on the local community.	Construction contractor	Pre-construction
10.	Emergency services	Consultation with emergency service authorities would be undertaken during development of the detailed design.	Roads and Maritime	Detailed design
11.	Property access	Vehicular property access would be maintained where possible including pre-schools, places of worship and ail commercial premises Consultation with property owners would be undertaken prior to any changes to property accesses.	Roads and Maritime Construction contractor	Construction
11.	Property access	Potential private property adjustment works for fronting properties would be considered during detailed design, where required, to improve vehicle storage and turning capacity This would be subject to a reasonable and feasible assessment with property owners. Affected residents would be kept informed during detailed design.	Roads and Maritime	Detailed design
12.	Shelly Public School	Temporarily relocate maintenance access and garbage collection at Shelley Public School in consultation with the school.	Roads and Maritime Construction contractor	Construction and Operation
13.	Shelly Public School	Roads and Maritime will investigate measures to improve traffic flow and access to Shelley Public School as part of the proposal in consultation with the school and Blacktown City Council Pedestrian fencing and controlled access to Shelley Public School via Hadrian Avenue and Pelleas Streets would be introduced to remove access to Shelley Public School from Prospect Highway.	Roads and Maritime	Detailed design and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
14.	Pedestrians and cyclists	Pedestrian and cyclist access is to be maintained throughout construction. Provision of signposting outlining the pedestrians and cyclists diversion routes would be displayed during construction. There will be advance notification of any construction works that affect pedestrians and cyclists.	Construction contractor	Construction
15.	Bus services	Access to appropriate bus stop locations would be maintained during construction in consultation with bus operators.	Construction contractor	Construction
16.	Bus services	Ongoing updates on locations and access to bus stops would be provided to the community during construction period to ensure that disruption is minimised	Construction contractor	Construction
17.	Operational noise	During the detailed design stage of the proposal, further investigations of ail feasible and reasonable mitigation options for affected receivers would be subject to assessment in line with the Roads and Maritime *Environmental Noise Management Manual* (RTA, 2001) and NSW Road Noise Policy (OEM, 2011). A noise barrier assessment would be undertaken to determine the extent and design of any potential noise barriers. Affected residents would be kept informed during the detailed design process.	Roads and Maritime	Detailed design
18.	Operational noise	Any mitigation measures provided to control operational noise impacts shall be implemented as early as practicable to also provide a benefit during some of the construction phase. Where possible, noise mitigation treatment would be planned to occur as preliminary works of the construction phase.	Roads and Maritime	Construction
19.	Operational noise	A post-construction noise monitoring program (including simultaneous traffic counts) would be undertaken in accordance with the RMS Environmental Noise Management Manual within six to 12 months of opening once traffic flows have stabilised in order to verify the noise assessment. The assessment would be used to identify treatment required for receivers who were not identified during concept design and REF. It would lead to additional treatment for already treated dwellings; Results of this assessment would be available to the community.	Roads and Maritime	Post construction
20.	Construction noise	A Construction Noise and Vibration Management Plan (CNVMP) would be prepared. This plan would include but not be limited to: • A map indicating the locations of sensitive receivers including residential properties • A quantitative noise assessment in accordance with the EPA interim Construction Noise Guidelines (DECCW, 2009)	Construction contractor	Pre-construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Management measures to minimise the potential noise impacts from the quantitative noise assessment and for potential works outside of standard working hours (including implementation of EPA interim Construction Noise Guidelines (DECCW, 2009) • A risk assessment to determine potential risk for activities likely to affect receivers (for activities undertaken during and outside of standard working hours) • Mitigation measures to avoid noise and vibration impacts during construction activities including those associated with truck movements • A process for assessing the performance of the implemented mitigation measures • A process for documenting and resolving issues and complaints • A construction staging program incorporating a program of noise and vibration monitoring for sensitive receivers • A process for updating the plan when activities affecting construction noise and vibration change • Identify in toolbox talks where noise and vibration management is required • Consider construction compound layout so that primary noise sources are at a maximum distance from sensitive receivers (primarily residential receivers) • Locate compressors, generators, pumps and any other fixed plant as far from residences as possible and behind site structures • Vehicle delivery times will be scheduled where feasible to the recommended construction hours to minimise noise impacts from heavy vehicle movements and deliveries The environmental induction program will include specific noise and vibration issues awareness training including, but not limited to, the following: • Avoiding use of radios during work outside normal hours • Avoiding shouting and slamming doors • Where practical, operating machines at low speed or power and switching off when not being used rather than left idling for prolonged periods • Minimising reversing • Avoiding dropping materials from height and avoiding metal to metal contact on material • Any out of hours works would comply with the Roads and Maritime Noise Management Manual – Practice Note VII • All noise complaints will be investigated and appropriate mitigation measures implemented where practicable to minimise further impacts		

No.	Impact	Environmental safeguards	Responsibility	Timing
		• If deemed necessary, attended compliance noise and vibration monitoring would be undertaken upon receipt of a complaint. Monitoring would be reported as soon as possible. In the case that exceedances are detected, the situation would be reviewed in order to identify means to minimise the impacts to residences.		
21.	Vibration management	A vibration assessment is to be prepared and included in the NVMP. The vibration assessment is to include (as a minimum): • Identification of potentially affected properties/receivers • A risk assessment to determine the potential for discrete work activities to affect receivers a map indicating the locations considered likely to be impacted and those requiring building condition surveys outline a monitoring program • A process for assessing the performance of the implemented mitigation measures A process for resolving issues and conflicts • Where construction activities may cause damage through vibration a Building Condition inspection of these items must be undertaken • Select alternative, lower-impact equipment or methods where possible, particularly in the vicinity of dwellings and heritage structures.	Contractor	Pre-Construction and Construction
22.	Vibration management	Sensitivity testing for vibration generated by construction equipment will be undertaken in the vicinity of, but not immediately adjacent to the St Bartholomew's Church The sensitivity testing will identify targets and safe buffer distances for the use of vibration producing equipment around St Bartholomew's church. The results of the sensitivity testing and any targets or buffer distances identified will be documented in a Management Plan for works adjacent to St Bartholomew's Church A program of monitoring vibration will be included in the Management Plan, which will form part of the CEMP.	Construction contractor	Pre-construction
23.	Vibration management	Building condition surveys will be undertaken for any building or structure identified as having the potential to be affected by vibration impacts during construction works A condition survey of the properties along Hampton Crescent that are adjacent to the two way link road construction area will be undertaken along with any other areas likely to be adjacent to construction The condition survey would be provided to each property owner at least two weeks prior to the commencement of construction.	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
24.	Removal or modification of native vegetation	Biodiversity Management Plan (BMP) is to be prepared and included within the CEMP. The BMP is to include (but not be limited to) the following: • A site walk with appropriate site personnel including RMS representatives to confirm clearing boundaries and sensitive location prior to commencement of works • Identification (marking) of the clearing boundary and identification (marking) of habitat features to be protected. e.g. use of flagging tape • A map which clearly shows vegetation clearing • boundaries and sensitive areas/no go zones • Incorporation of management measures identified as a result of the pre-clearing survey.	Construction contractor	Pre-construction
25.	Pre-clearing surveys	Where possible, pre-clearing surveys would be conducted during the optimal season and climatic condition. These surveys would be undertaken by an ecologist prior to vegetation removal.	Construction contractor	Pre-construction
26.	Spread of weeds	A weed management plan would be prepared in accordance with Roads and Maritime *Biodiversity Guidelines* (Guide 6) and incorporated into the BMP and would address: • Identification of the weeds on site (confirm during ecologist pre-clearing inspection) Weed management priorities and objectives: • Sensitive environmental areas within or adjacent to the site • Location of weed infested areas. • Weed control methods • Measures to prevent the spread of weeds, including machinery hygiene procedures and disposal requirements • A monitoring program to measure the success of weed management • Communication with local Council noxious weed representative.	Construction contractor	Pre-construction
27.	Introduction or spread of pests and diseases	If the detailed design risk assessment determines that hygiene procedures are required on site, the BMP is to include hygiene protocols to prevent the introduction and spread of all pathogens as specified in *Biodiversity Guidelines: Protecting and managing biodiversity on Roads and Maritime projects* (RMS, 2011) All pathogens (e.g. Chytrid, Myrtle Rust and Phytophthora) are to be managed in accordance with the Roads and Maritime *Biodiversity Guidelines - Guide 7 (Pathogen Management)* and DECC *Statement of intent 1: infection of native plants by Phytophthora cinnamomi* (for Phytophthora).	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
28.	General impacts on threatened species and ecological communities	If unexpected threatened flora or fauna are discovered, works would stop immediately and the Roads and Maritime Unexpected Threatened Species Finds Procedure in the Roads and Maritime Biodiversity Guideline 2011 implemented.	Construction contractor	Pre-construction
29.	Re-establishment of native vegetation	*As stated in the Approved Project REF, the loss of 0.69 hectares of Cumberland Plain Woodland does not trigger the biodiversity offsetting requirements in accordance with Roads and Maritime's Offset Policy (2011). The additional 0.64 hectares of Cumberland Plain Woodland to be removed as part of the proposal does not result in a significant impact, and similarly, does not require biodiversity offsets to be secured in accordance with Roads and Maritime's Offset Policy (2011).*	Construction contractor	Construction
30.	Removal or modification of native vegetation	An exclusion zone would be established around the Freshwater Wetland adjacent to the proposed compound site on Thornley Road.	Construction contractor	Pre-construction
31.	Removal or modification of native vegetation	Identify known Cumberland Plain Woodland areas and exclusion zones during induction of ail site personnel.	Construction contractor	Pre-construction
32.	Removal or modification of native vegetation outside the construction footprint	The construction footprint would be identified and marked before construction and exclusion zones established in retained areas of habitat particularly in remnant vegetation areas.	Construction contractor	Pre-construction
33.	Accidental removal or modification of native vegetation not within the proposal area	Permanent fencing would be established along the edges of the high condition Cumberland Plain Woodland remnant next to Timbertop Reserve before construction. This would help to avoid impacts to this area during construction and operation.	Construction contractor	Pre-construction
34.	Minimising fauna injury and mortality	In circumstances where the handling of fauna is completely unavoidable, best practice methods would be followed as outlined in the Roads and Maritime Biodiversity Guidelines - Guide 9: Fauna Handling (RTA2011).	Construction contractor	Pre-construction
35.	Landscape character and visual impacts	During detailed design, the landscape design principles and streetscape (planting) would be reviewed to ensure that they are consistent with the following factors: • The outcomes of the biodiversity assessment. • The requirement to maintain the function of the drainage easement corridor • Maintenance requirements in the vicinity of the Blacktown Road intersection • Maintenance requirements for the potential noise barriers	Roads and Maritime Design contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Road safety requirements • Blacktown City Council's visual character and maintenance requirements • This would be done in consultation with Roads and Maritime environment staff and Blacktown City Council.		
36.	Landscape character and visual impacts	During detailed design, the design including landscape plans are to incorporate the design principles outlined in the Landscape Character, Visual impact Assessment and Urban Design Report. These include: • To ensure that the design reinforces the identity and functionality of an arterial road type • To ensure that existing land uses is considered and integrated in to the design of the road alignment • To contribute to the future urban planning of the adjoining development precincts including its transport and access needs • To respond to natural patterns including creek lines and drainage corridors and vegetation communities. This includes the use of local plants consistent with the existing communities either side of the alignment in order to unify the crossing with the existing corridor, and, use of advance stock to escalate the revegetation where appropriate • To provide a unified and consistent approach to the design of bridges along the corridor	Roads and Maritime Design contractor	Detailed design
37.	Landscape character and visual impacts	An urban design contractor from the Roads and Maritime panel would be engaged for the detailed design phase to ensure adequate consideration of urban design principles and objectives, and to ensure appropriate mitigation of identified impacts.	Roads and Maritime Design contractor	Detailed design
38.	Landscape character and visual impacts	The design of vegetative screening would occur in consultation with adjoining land owners.	Roads and Maritime Design contractor	Detailed design
39.	Landscape character and visual impacts	The footprint for construction work would be kept to a minimum to ensure existing stands of vegetation remain intact wherever possible and to screen adjoining sensitive receivers.	Roads and Maritime Design contractor	Detailed design
40.	Landscape character and visual impacts	The design of potential noise barriers will be undertaken during detailed design and will take into consideration the RMS Noise Wall Design Guidelines (RTA 2007). The following principles will be considered during the design of the noise barriers: • Materials, colours and textures will be selected to break up the dominant nature of the noise barrier	Roads and Maritime Design contractor	Detailed design

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Transparent panels will be incorporated into sections of the noise barrier where it has potential to block solar access to adjacent residential properties.		
41.	Landscape character and visual impacts	The visual impact of the retaining wall along the two way link road would be reduced by the establishment of native vegetation screening and the inclusion of urban design principles into the design of the wall façade.	Roads and Maritime Design contractor	Detailed design
42.	Construction related visual impacts	Fencing with material attached (for example, shade cloth) would be provided around the construction compounds and other areas to screen views of the construction compounds from adjoining properties.	Construction contractor	Construction
43.	Flood and drainage design	Final layout and detail of the drainage system including swale design and scour protection will be refined during detailed design in consultation with the RMS Senior Environmental Officer.	Roads and Maritime Design contractor	Detailed design
44.	Flood and drainage design	Further flood modelling including a detailed afflux assessment would be undertaken during detailed design to confirm impacts to surrounding land uses.	Roads and Maritime Design contractor	Detailed design
45.	Water quality management	A Soli and Water Management Plan (SWMP) will be prepared as part of the CEMP in accordance with the requirements of RMS contract specification G38 prior to the commencement of construction. The SWMP will also address the following: • *RMS Technical Guideline: Temporary Stormwater Drainage for Road Construction, 2011* • *RMS Technical Guideline: Environmental Management of Construction Site Dewatering, 011* The SWMP would detail the following as a minimum: identification of catchment and sub-catchment areas, high risk areas and sensitive areas • Sizing of each of the above areas and catchment • The likely volume of run-off from each road sub- catchment • Direction of flow of on-site and off-site water • Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • The locations and sizing of sediment traps such as sump or basin as well as associated drainage	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Dewatering plan which includes process for monitoring, flocculating and dewatering water from site (i.e. sediment basin and sumps) • The staging plans, location, sizing and details of creek alignment and realignment controls for scour protection and bank and bed stabilisation including those used during construction and long term • A mapped plan identifying the above • A process to routinely monitor the BOM weather forecast • Preparation of a wet weather (rain event) plan which includes a process for monitoring potential wet weather and identification of controls to be implemented in the event of wet weather. These controls are to be shown on the ESCPs • Provision of an inspection and maintenance schedule for ongoing maintenance of temporary and permanent erosion and sedimentation controls.		
46.	Spills	Emergency wet and dry spill kits would be kept on site at all times and ail staff would be made aware of the location of the spill kit and trained in its use.	Construction contractor	Construction
47.	Spills	The vehicles refuelling process will include a person attending the refuelling facility / vehicle and a spill kit on the vehicle.	Construction contractor	Construction
48.	Water quality management	Vehicle wash down and/or cement truck washout is to occur in a designated bunded area and least 50 metres away from water bodies and surface water drains.	Construction contractor	Construction
49.	Spills	Any fuel, oils or other liquids stored on site would be stored in an appropriately sized impervious bunded at least 120% larger than the greatest container and in an area least 50 metres away from water bodies.	Construction contractor	Construction
50.	Spills	If a spill or incident occurs, the Roads and Maritime Environmental incident Classification and Management Procedure is to be followed and the Roads and Maritime Contract Manager notified immediately.	Construction contractor	Construction
51.	Potential physical impact on non-Aboriginal heritage items during construction	A Non-Aboriginal Heritage Management plan would be prepared and included in the CEMP. This plan would include but not be limited to the following: • A map identifying locations of items or sites (including curtilages) which are to be protected and those which are to be destroyed/impacted and no- go zones • Identification of potential environmental risks/impacts due to the works/activities • Management measures to minimise the potential risk	Roads and Maritime Construction contractor	Pre-Construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Mitigation measures to avoid risk of harm and the interface with work activities on site • Implementation of mitigation measures to protect identified heritage items or areas • Identify in toolbox talks where management of non- aboriginal heritage is required such as identification of no-go zones and responsibilities under the Heritage Act 1977 and any obtained permits or exemptions • A stop works procedure in the event of actual or suspected potential harm to a heritage feature/place • Requirement to comply with RMS Standard Management Procedure *Unexpected Archaeological Finds, 2012*.		
52.	**Non-Aboriginal heritage**	**A s57 exemption for the project works within the SHR curtilage should be obtained prior to works commencing. Note the following:** • **The exemption is unlikely to allow impact to, or removal of, archaeological remains which have not been previously identified in the archaeological assessment for the project** • **The exemption is unlikely to allow impact to, or removal of, state significant relics** • **Where substantial intact archaeological relics of state or local significance, not identified in the original assessment or during the test excavation program, are unexpectedly discovered during excavation, work must cease within the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the NSW Heritage Act. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area**	**Roads and Maritime**	**Pre-Construction**
~~52.~~ 53.	Potential physical impact on non-Aboriginal heritage items during construction	A condition survey would be undertaken before the start of work by a qualified contractor and a building condition report prepared for heritage structures.	Roads and Maritime Construction contractor	Pre-Construction and Construction
~~53~~ 54.	Potential vibration impacts to St Bartholomew's Church and Cemetery and the house at 29 Old Church Lane, Prospect	Vibration management procedures would be developed and implemented where works resulting in vibration are undertaken within the vicinity of identified heritage items.	Construction contractor	Pre-Construction
~~54.~~ 55.	Unexpected heritage find during construction	If unexpected heritage item/s, archaeological remains or potential relics are uncovered during the works, ail works would cease in the vicinity of the material/find and the RMS Standard Management Procedure *Unexpected Archaeological Finds 2012* would be followed.	Roads and Maritime	Pre-Construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
			Construction contractor	
~~55.~~ 56.	Physical impacts to the Former Great Western Road, Prospect	Direct physical impacts to the Former Great Western Road would be avoided, if possible, and dependent on the status of the heritage listing, an exemption from approval under Section 57(2) of the *Heritage Act 1977* would be requested and/or the Heritage Division would be consulted before work start.	Roads and Maritime	Pre-Construction
~~56.~~ 57.	Unexpected heritage find during construction	If unexpected Aboriginal heritage item/s, archaeological remains or potential relics are uncovered during the works, ail works would cease in the vicinity of the material/find and the RMS Standard Management Procedure *Unexpected Archaeological Finds 2012* would be followed.	Roads and Maritime Construction contractor	Pre-Construction and Construction
~~57.~~ 58.	Property acquisition	Ail land acquisitions would be conducted in line with the Roads and Maritime Land Acquisition Policy and the requirements of the Land Acquisition (Just Terms) Compensation Act 1991.	Roads and Maritime	Pre-Construction
~~58.~~ 59.	Community	Communication Plan would be prepared and included in the Construction Environmental Management Plan (CEMP). The Communication Plan would include: • Requirements to provide details and timing of proposed activities to affected residents and businesses including St Martins Shopping Village/Blacktown Mega Centre, Medlife Medical Centre, Army cadet base (Safe Base Bravo Shelley Pubic School, Blacktown Road Children's Centre, Mitchell High School, St Mark's Coptic Catholic Church, Homebase Prospect, Blacktown City Council and Holroyd City Council • Contact name and number for complaints • Procedure to notify adjacent land users for changed conditions during the construction period such as traffic, pedestrian or driveway access • The communications plan would be prepared in line with G36 requirements and Roads and Maritime *Community Engagement and Communications Manual* (2012) • The communications plan would include a complaint handling procedure and register and • maintained for the duration of the proposal.	Construction contractor	Pre-Construction and Construction
~~59.~~ 60.	Community	Residents would be informed prior to any interruptions to utility services that may be experienced as a result of utilities relocation.	Construction contractor	Pre-Construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~60.~~ 61.	Erosion and sedimentation	During detailed design an Erosion and Sedimentation Management Report is to be prepared. The report is to include (as a minimum): • Identify site catchment and sub-catchments, high risk areas and sensitive areas • Sizing of each of the above areas and catchments • Proposed staging plans for the project to ensure appropriate erosion and sediment controls measures are possible • The likely volume of run-off from each catchment and sub-catchment in accordance with the Managing Urban Stormwater: Soils and Construction, Volume 1 and 2 (Landcom, 2004) • Direction of water flow, both off and on site • Diversion of off-site water around or through the site or details of separation of on-site and off- site water • The direction of runoff and drainage points during each stage of construction • The locations and sizing of sediment basins / sumps as well as associated drainage to direct site water to the basin or sumps • A mapped plan identifying the above at all major construction stages • A review process by a soil conservationist and a process for updating the report to address any recommendations.	Roads and Maritime Design contractor	Detailed design
~~61.~~ 62.	Erosion and sedimentation	The Erosion and Sedimentation Management Report would be provided to Roads and Maritime Environment Manager for review and verification prior to the construction tender.	Roads and Maritime	Detailed design and Pre-construction
~~62.~~ 63.	Erosion and sedimentation	A soli conservationist from the RMS Erosion, Sedimentation and Soli Conservation Consultancy Services Register is to be engaged to review the Erosion and Sedimentation Management Report and conduct routine inspections of the construction works.	Roads and Maritime	Pre-construction
~~63.~~ 64.	Erosion and sedimentation	An Erosion and Sedimentation Control Plan (ESCP) would be prepared prior to construction and is to include as a minimum: • Identify site catchment and sub-catchments, high risk areas and sensitive areas • Sizing of each of the above areas and catchments • The likely run-off from each sub-catchment • Separation of on-site and off-site water • The direction of run-off and drainage points during each stage of construction • Direction of flow of on-site and off-site water	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• The locations and sizing of sediment basins or sumps and associated catch drains and/or bunds • The locations of other erosion and sediment control measures (e.g. rock check dams, swales and sediment fences) • Controls/measures to be implemented on wet weather events • A mapped plan identifying the above • A dewatering procedure for onsite water and basins • A process for reviewing and updating the plan on a fortnightly basis and/or when works alter.		
~~64.~~ 65.	Erosion and sedimentation	Erosion and sediment control measures are to be implemented and maintained to: • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets • Reduce water velocity and capture sediment on site • Minimise the amount of material transported from site to surrounding pavement surfaces • Divert clean water around the site. (In accordance with the *Landcom / Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)).	Construction contractor	Construction
~~65.~~ 66.	Erosion and sedimentation	Ail stockpiles will be designed, established, operated and decommissioned in accordance with the Roads and Maritime *Stockpile Site Management Guideline, 2011*.	Construction contractor	Construction
~~66.~~ 67.	Erosion and sedimentation	A Stabilisation Plan is to be prepared and included in the SWMP. The stabilisation plan is to include but not be limited to the following: • Identification and methodology of techniques for stabilisation of site • Identification of area on site for progressive stabilisation • Stabilisation is to be undertaken of areas, including • Stockpiles and batters, exposed for a duration of 2 weeks or greater. For example covering with geotextile fabric, stabilised mulch, soli binder or spray grass • Identification of areas on site for progressive • Permanent stabilisation such as implementation of landscaping.	Construction contractor	Construction
~~67.~~ 68.	Erosion and sedimentation	Erosion and sedimentation controls are to be checked and maintained on a regular basis and after a rain event of 10mm or greater (including clearing of sediment from behind barriers) and records kept and provided on request.	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~68.~~ 69.	Erosion and sedimentation	Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion.	Construction contractor	Construction
~~69.~~ 70.	Erosion and sedimentation	Controls would be implemented at exit points to minimise the tracking of soli and particulates onto pavement surfaces Any material transported onto pavement surfaces would be swept and removed at the end of each working day and prior to rainfall.	Construction contractor	Construction
~~70.~~ 71.	Erosion and sedimentation	The Soil and Water Management Plan would include a contingency plan for any acid sulfate soils or salinity identified during the construction phase.	Construction contractor	Construction
71.	**Soil and water**	**A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.**	**Construction Contractor**	**Pre-Construction Construction**
72.	**Soil and water**	**A soil conservation consultant is required to work in collaboration with the design team.**	Roads and Maritime	Pre-Construction
73.	**Water discharge**	**Outlet discharge requirements for the proposal will be in accordance with Roads and Maritime *Technical Guideline: Temporary stormwater drainage for road construction 2011***	**Construction Contractor**	**Operation**
~~71.~~ 74.	Contamination management	A Contamination Management Plan (CMP) will be prepared in accordance with the Contaminated Land Act 1997 and relevant EPA Guidelines. This plan will be form part of the CEMP and will include at a minimum: • Contaminated Land Legislation and guidelines including any relevant licences and approvals to be obtained • Identification of locations of known or potential contamination and preparation of a map showing these locations • Identification of rehabilitation requirements, classification, transport and disposal requirements of any contaminated land within the construction footprint • Contamination management measures including waste classification and reuse procedures and unexpected finds procedures • Monitoring and sampling procedure for landfill seepage (leachate) • A procedure for dewatering and disposal of potentially contaminated liquid waste	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• In the event that indications of contamination are encountered (known and unexpected, including odorous or visual indicators), work in the area will immediately cease until a contamination assessment can be prepared to advise on the need for remediation or other action, as deemed appropriate • A process for reviewing and updating the plan. The CMP would be reviewed by Roads and Maritime Senior Environment Officer and Roads and Maritime Land Management Specialist prior to the commencement of works.		
75.	**Hazardous materials**	**A hazardous materials assessment will be carried out before demolishing structures within the proposal area. The assessment will include, but not limited to:** • **Details of hazards and risks associated with the activity** • **Measures to be implemented during construction and disposal to minimise these risks** • **Selecting adequately licensed contractors to undertake demolition work of hazardous material such as asbestos** • **Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials** • **A monitoring program to assess performance in managing the identified risks** • **Contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations.** **The assessment will be prepared in accordance with relevant guidelines and standards, including relevant Commonwealth, state, and/or local council guidelines and legislation, Safe Work Australia Codes of Practice, and EPA or Office of Environment and Heritage publications.**	**Construction contractor**	**Pre-demolition**
76.	**Hazardous materials**	**A Removal Control Plan (Asbestos Management Plan) will be prepared in accordance with Safe Work NSW (2016) for the removal of any asbestos material** **The plan will be made available for inspection under the WHS Act to all workers and other personal on-site during the duration of the licensed asbestos removal work** **Asbestos control air monitoring should be performed during the removal of ACM from structures and during demolition.**	**Contractor**	**Pre- demolition**
77.	**Hazardous materials**	**Fluorescent light fittings should be inspected by an appropriately qualified professional for PCB containing capacitors prior to demolition or refurbishment and, if found, be disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility**	**Contractor**	**Pre-demolition**

No.	Impact	Environmental safeguards	Responsibility	Timing
78.	**Hazardous materials**	**Following demolition of the structures at the site, the soils should be assessed for the presence of lead, asbestos, heavy metals and pesticides**	**Contractor**	**Post-demolition**
~~74.~~ 79.	General air quality management	An Air Quality Management plan (AQMP) would be prepared as part of the CEMP. The plan would include but not be limited to: • A map identifying locations of sensitive receivers • Identification of potential risks/impacts due to the work/activities as dust generation activities • Management measures to minimise risk including a progressive stabilisation plan • A process for monitoring dust on site and weather conditions • A process for altering management measures as required.	Construction contractor	Pre-construction
~~75.~~ 80.	Air quality during construction	The management measures within the AQMP would include but not limited to the following: • Vehicles transporting waste or other materials that have a potential to produce odours or dust are to be covered during transportation • Dust will be suppressed on stockpiles and unsealed or exposed areas using methods such as water trucks, temporary stabilisation methods, soli binders or other appropriate practices • Disturbed areas will be minimised in extent and rehabilitated progressively • Speed limits will be imposed on unsealed surfaces • Stockpiles will be located as far away from residences and other sensitive receivers • Works (including the spraying of paint and other materials) will not be carried out during strong • Winds or in weather conditions where high levels of dust or air borne particulates are likely • Plant, vehicles and equipment will be maintained in good condition and in accordance with manufacturer's specifications • Plant and machinery will be turned off when not in use • No burning of any timbers or other combustible materials will occur on site • Visual monitoring of air quality will be undertaken to verify the effectiveness of controls and enable early intervention • Work activities will be reprogrammed if the management measures are not adequately restricting dust generation.	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
81.	**Air quality**	**Asbestos control air monitoring should be performed during removal of ACM from the building structures and during demolition**	**Construction contractor**	**Pre-demolition**
~~76.~~ 82.	Dust from construction activities	An air quality management plan would be prepared before any construction or clearing activities, and would provide guidance on the use of appropriate dust suppression methods which would include, but not be limited to: • Stabilising of areas with the capacity to cause dust, with water spraying, compaction or progressive revegetation • Covering of stockpile and storage areas • Cessation of dust generating activities in high wind situations where dust cannot be controlled. • In addition, local residents and other sensitive receivers (such as schools, churches and local businesses) would be advised of hours of operation and provided with contact details for queries regarding air quality.	Construction contractor	Pre-construction
~~77.~~ 83.	Impacts on climate change from construction activities	Detailed design would take into consideration the potential effect of climate change on the proposal including drainage requirements.	Roads and Maritime Design contractor	Detailed design
~~78.~~ 84.	Impacts on climate change from construction activities	Establishing operating procedures for site vehicles to increase efficiency of vehicle fuel use. Reducing clearing of vegetation as much as practicable and re-establish vegetation in suitable areas when construction is completed Reducing site wastage by reusing and recycling wasted material as a preference before disposing to landfill.	Construction contractor	Pre-construction
~~79.~~ 85.	Generation of construction waste	A Resource and Waste Management Plan (RWMP) would be prepared, which will include the following (as a minimum): • The type, classification and volume of all materials to be generated and used on site including identification of recyclable and non-recyclable waste in accordance with EPA *Waste Classification Guidelines* • Quantity and classification of excavated material generated as a result of the proposal (Refer RMS *Waste Management Fact sheets 1-6*, 2012) • Interface strategies for cut and fill on site to ensure re-use where possible • Strategies to 'avoid', 'reduce', 'reuse' and 'recycle' materials • Classification and disposal strategies for each type of material • Destinations for each resource/waste type either for on-site reuse or recycling, offsite reuse or recycling, or disposal at a licensed waste facility	Construction contractor	Pre-construction

No.	Impact	Environmental safeguards	Responsibility	Timing
		• Details of how material would be stored and treated on-site • Identification of available recycling facilities on and off site • Identification of suitable methods and routes to transport waste • Procedures and disposal arrangements for unsuitable excavated material or contaminated material • Site clean-up for each construction stage.		
~~80.~~ 86.	Generation of construction waste.	Procurement will endeavour to use materials and products with a recycled content where that material or product is cost and performance effective.	Construction contractor	Pre-construction
~~81.~~ 87.	Generation of construction waste	Cleared weed free vegetation will be chipped and reused onsite as part of the proposed landscaping and to stabilise disturbed soils where possible.	Construction contractor	Construction
~~82.~~ 88.	Generation of construction waste	A dedicated concrete washout facility that is impervious would be provided during construction so that runoff from the washing of concrete machinery, equipment and concrete trucks can be collected and disposed of at an appropriate waste facility.	Construction contractor	Pre-construction
~~83.~~ 89.	Generation of construction waste	All wastes will be managed in accordance with the Protection of the *Environment Operations Act 1997*.	Construction contractor	Pre-construction and Construction
~~84.~~ 90.	Generation of construction waste	Types of waste collected, amounts, date/time and details of disposal are to be recorded in a waste register.	Construction	Construction
~~85.~~ 91.	Generation of construction waste	Works sites would be maintained, kept free of rubbish and cleaned up at the end of each working day.	Construction	Construction
~~86.~~ 92.	Generation of construction waste	Suitable waste disposal locations would be identified and used to dispose of litter and other wastes onsite. Suitable containers would be provided for waste collection.	Construction	Pre-construction and Construction
~~87.~~ 93.	Generation of construction waste	Resource management hierarchy principles would be followed and are: • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, and recycling and energy recovery) • Disposal is undertaken as a last resort (in line with the Waste Avoidance and Resource • Recovery Act 2001).	Detailed design contractor Construction contractor	Detailed design, Pre-construction and Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~88.~~ 94.	Generation of construction waste	A Waste Management Plan would be completed in line with the requirements of the Roads and Maritime's *QA Specification G36 - Environmental Protection (Management System)*.	Construction contractor	Construction
~~89.~~ 95.	Generation of construction waste	Housekeeping at construction sites would be addressed regularly. This would include collection and sorting of recycling, general waste and green waste. Waste would be disposed regularly at a licensed waste facility or recycling where available.	Construction contractor	Construction
~~90.~~ 96.	Cumulative impacts due to concurrent construction of multiple road projects	The contractor's environmental management plan would be revised to consider potential cumulative impacts from surrounding developments as they become known.	Roads and Maritime Construction contractor	Detailed design, Pre-construction and Construction
~~91.~~ 97.	Traffic management - General	The construction traffic management plan (CTMP) would include the proposed refinements, including arrangements for all early works. The CTMP would enable the safe management of traffic and pedestrians, provide for the safety of construction personnel and minimise impacts on the local community.	Construction contractor	Pre-construction
~~92.~~ 98.	Traffic management - construction at Shelley Public School	The CTMP for construction at Shelley Public School would include notification and safety requirements for the school community and be prepared in consultation with school authorities and/or Department of Education. No construction truck movements are to occur during school peak drop off times. These times are as follows: • Morning Peak - 8am to 9:15am, Monday to Friday • Afternoon Peak - 2:30pm to 3:15pm, Monday to Friday	Construction contractor	Construction
~~93.~~ 99.	Traffic management - test excavations	Temporary lane closures at Reservoir Road would be undertaken outside peak hours.	Construction contractor	Construction
~~94.~~ 100.	Construction noise - kiss and ride facility	Where possible, preparation and construction activities would be undertaken during school holidays or out of school hours. Where this is not possible, the timing and operation of construction activities would be coordinated to limit the noise impacts to the school and local residents. Construction and preparation activities would not be undertaken during exam periods.	Construction contractor	Pre-construction and Construction
~~95.~~ 101.	Construction noise - test excavation works	Construction work would not take place on Sundays to limit the disturbance to people attending Saint Marks Coptic Church.	Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~96.~~ 102.	Architectural acoustic treatments	Consultation with eligible properties would be undertaken during the construction period to determine the suitability of properties for treatment and the agreement of the proposed measures.	Roads and Maritime Construction contractor	Construction
~~97.~~ 103.	Tree removal at Shelley Public School	Tree Protection Plan would be prepared by a qualified arborist as part of the CEMP in accordance with *AS4970-2009* to protect all trees within the construction zone which are to be retained Tree numbers 111 (English Oak) and 116 (Aleppo Pine) would be retained and protected. At a minimum, tree protection fencing would be applied to mark and exclusion zone around these trees. All personnel working on the site would be made aware of the location of the Aleppo Pine tree.	Construction contractor	Pre-construction
~~98.~~ 104.	Removal of native vegetation	The construction footprint for all activities would be identified and marked before construction. Trees to be removed/ retained would be clearly identified prior to clearing Tree clearing would be undertaken in accordance with *AS 4373-2007*.	Construction contractor	Pre-construction
~~99.~~ 105.	Impacts on trees at the proposed roundabout location	An arborist would inspect and assess Trees 131-132 at the intersection of Hadrian Avenue and Keyworth Drive to determine which trees can be retained and which would require removal. This would be undertaken once the existing guttering has been removed, so that the roots are visible.	Construction contractor	Construction
~~100.~~ 106.	Removal of vegetation powerline relocation	A landscape plan would be prepared as part of the CEMP in consultation with landowners and Endeavour Energy to inform the appropriate planting of new vegetation in disturbed areas. The landscape plan would: • Establish suitable low height trees and shrubs under electrical powerlines • Provide taller trees where there are no powerlines, taking into consideration clearance zone requirements • A qualified arborist would be consulted regarding the trimming of the Golden Cypress (Cupressus macrocarpa) at 239 Blacktown Road to ensure an appropriate treatment is implemented.	Construction contractor	Construction
~~101.~~ 107.	Potential for graffiti on noise walls	The noise wall panels would have a sand blasted or bead blasted finish to discourage graffiti on both sides of the panels.	Roads and Maritime Construction contractor	Construction

No.	Impact	Environmental safeguards	Responsibility	Timing
~~102.~~ 108.	Visual impact of introduced noise walls	The landscape plan would include a planting strategy to soften the visual impact of the noise walls. The planting strategy would: • Provide frangible shrub and ground cover planting between the road and the wall where possible. If space is limited, climbers are to be considered as an alternative • Plant mature tree stock in groupings at targeted locations.	Construction contractor	Construction
~~103.~~ 109.	Test archaeological excavations in SHR listed former Great Western Road	Test archaeological investigations would be carried out in accordance with the approved Archaeological Management Plan.	Roads and Maritime	Pre-construction
~~104.~~ 110.	Unexpected finds	In the event of an unexpected find, work would cease in the affected area and Roads and Maritime Standard Management Procedure - Unexpected Archaeological Items (2015) would be implemented. Roads and Maritime's Environment Manager would be notified immediately.	Construction contractor	Construction
~~105.~~ 111.	Construction works within Shelley Public School	Construction activities and timing of the kiss and ride facility would be co-ordinated with the relevant school authorities A site specific safety management plan would be prepared for works at the school.	Roads and Maritime Construction contractor	Pre-construction and Construction
~~106.~~ 112.	Installation of noise wall at the back of residential properties			
~~107.~~ 113.	Access to private property to undertake vegetation clearance for powerline relocation	The communications plan for the powerline relocation works would include the requirement to secure access agreements for vegetation clearance works.	Roads and Maritime Endeavour Energy	Pre-construction
~~108.~~ 114.	Access to private property during property access adjustments	Affected properties would be notified and property access consent arrangements would be discussed prior to the commencement of property access adjustments.	Roads and Maritime Construction contractor	Pre-construction

8. Conclusion

This chapter provides the justification for the proposal taking into account its biophysical, social and economic impacts, the suitability of the site and whether or not the proposal is in the public interest. The proposal is also considered in the context of the objectives of the EP&A Act, including the principles of ecologically sustainable development as defined in Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

8.1 Justification

The modified proposal is considered justified as the proposed changes to the design have been implemented to provide better results for the overall Prospect Highway Upgrade.

While there would be some environmental impacts from the proposal they have been avoided or minimised where possible through design and site specific safeguards summarised in Section 7.2.

The benefits of the proposal are considered to outweigh the adverse impacts that may be generated by the proposal, which are mostly temporary and local in nature.

8.2 Objects of the EP&A Act

Object	Comment
1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The proposed modification meets this object. An adverse impact on the environment or the social or the economic welfare of the community is not likely
1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	The proposed modification meets this object, as discussed in sections 8.2.1 to 8.2.4 below.
1.3(c) To promote the orderly and economic use and development of land.	Not relevant to the proposed modification.
1.3(d) To promote the delivery and maintenance of affordable housing.	Not relevant to the proposed modification.
1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The proposed modification meets this object. As discussed in section 6, there would be negligible impacts on threatened and other species of native animals and plants, ecological communities and their habitats.
1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	Not relevant to the proposed modification.
1.3(g) To promote good design and amenity of the built environment.	Not relevant to the proposed modification.

Object	Comment
1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Not relevant to the proposed modification.
1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Not relevant to the proposed modification.
1.3(j) To provide increased opportunity for community participation in environmental planning and assessment.	Consultation with the community has occurred to date and would continue for the duration of the work. Given the minor nature of the proposed modification, consultation with the public has not been carried out.

8.2.1 The precautionary principle

This principle states that 'if there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'.

The assessment of potential environmental impacts in the development of the proposed design changes that comprise this proposal has sought to minimise impacts on the urban and natural amenity of the proposal area while maintaining engineering feasibility and safety for all road users. A number of safeguards have been proposed to minimise potential impacts. These safeguards would be implemented during construction and operation of the proposal.

A CEMP would be prepared prior to commencing construction. This requirement would ensure that the proposed activities achieve a high-level of environmental performance. No mitigation measures or management mechanisms would be postponed as a result of a lack of information.

8.2.2 Intergenerational equity

The principle states that 'the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations'.

The proposal would improve safety for pick-ups and drop-offs at the school. It would also install noise walls and architectural treatments at eligible locations to reduce the long term impacts of traffic noise on residents along Prospect Highway. The proposal would benefit future generations by ensuring that the proposal does not give rise to long term adverse impacts on the environment and potential impacts would be minimised by implementation of appropriate safeguards.

Should the proposal not proceed, the principle of intergenerational equity may be compromised, as future generations would experience elevated traffic noise impacts on an ongoing basis.

8.2.3 Conservation of biological diversity and ecological integrity

This principle states that the 'diversity of genes, species, populations and communities, as well as the ecosystems and habitats to which they belong, must be maintained and improved to ensure their survival'.

An assessment of the proposed vegetation clearing/pruning has been carried out in order to identify and manage any potential impacts of the proposal on local biodiversity. Specific design efforts have been taken to avoid and minimise impacts on biodiversity where possible.

The proposal is not considered to have a significant impact on biological diversity and ecological integrity.

8.2.4 Improved valuation, pricing and incentive mechanisms

This principle requires that 'costs to the environment should be factored into the economic costs of a project'.

This addendum REF has examined the environmental consequences of the proposal and identified management measures and safeguards for areas which have the potential to experience adverse impacts.

Requirements imposed in terms of implementation of these mitigation measures would result in an economic cost to the Roads and Maritime. The implementation of management measures and safeguards would increase both the capital and operating costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

The design for the proposal has been developed with an objective of minimising potential impacts on the surrounding environment. This indicates that the concept design for the proposal has been developed with an environmental objective in mind

8.3 Conclusion

This addendum REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration where relevant, of conservation agreements and plans of management under the NPW Act, biodiversity stewardship sites under the BC Act, wilderness areas, areas of outstanding value, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

A number of potential environmental impacts from the proposed modification have been avoided or reduced during the design development and options assessment. The proposed modification as described in the addendum REF best meets the project objectives, but would still result in some impacts on traffic and transport, contaminated lands and visual amenity. Safeguards and management measures as detailed in this addendum REF would ameliorate or minimise these expected impacts. The proposed modification would also improve safety, improved driving conditions, reduce travel times and allow for the storage of some surplus spoil on site. On balance the proposed modification is considered justified and the following conclusions are made.

Significance of impact under NSW legislation

The proposed modification would not result in a change to the findings of the project REF (Jacobs, 2014a) , Submissions Report (Jacobs, 2014b) or the addendum 1 REF (SMEC, 2016) and would be unlikely to cause a significant impact on the environment. Therefore it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Biodiversity Development Assessment Report or Species Impact Statement is not required. The proposed modification is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

Significance of impact under Australian legislation

The proposed modification would not likely cause a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Government Department of the Environment and Energy is not required.

9. Certification

This addendum review of environmental factors provides a true and fair review of the proposed modification in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed modification.

Greg Tallentire

Principal Environmental Planner - Environment & Waste

SMEC Australia

16 September 2019

I have examined this addendum review of environmental factors and accept it on behalf of Roads and Maritime Services.

Eduardo Forcadilla

Project/Contract Manager

Western Sydney Project Office

Date:

10. References

Endeavour Energy (2019), 33kV Feeder 467 Asset Relocation, Draft Summary Environmental Report (SER), Sydney

Office of Environment & Heritage (2011), Protocols for recycling redundant utility poles and bridge timbers in New South Wales

Jacobs (2014a), The Prospect Highway Upgrade. Reservoir Road, Prospect to St Martins Crescent, Blacktown. Review of Environmental Factors, Sydney.

Jacobs (2014b), The Prospect Highway Upgrade. Reservoir Road, Prospect to St Martins Crescent, Blacktown. Submissions Report, Sydney.

SMEC (2016) The Prospect Highway Upgrade. Reservoir Road, Prospect to St Martins Crescent, Blacktown, Addendum 1 REF, prepared for Roads and Maritime, Sydney

SMEC (2016a), The Prospect Highway Upgrade – Reservoir Road to St Martins Crescent, Roads Details Design Report, prepared for Roads and Maritime

SMEC (2014), The Prospect Highway Upgrade. Reservoir Road, Prospect to St Martins Crescent, Blacktown, Traffic and Transport Assessment, prepared for Roads and Maritime

SMEC (2019e), Prospect Highway Cut Investigation – Soil Waste Analysis and Resource Recovery Classification Report: Site 1, prepared for Roads and Maritime

SMEC (2019f), Prospect Highway Cut Investigation – Soil Waste Analysis and Resource Recovery Classification Report: Site 2, prepared for Roads and Maritime

Terms and acronyms used in this addendum REF

Term / Acronym	Description
30 Topaz Crescent	30 Topaz Crescent, Seven Hills, NSW
ACM	Asbestos-containing material
AMP	Archaeological Management Plan
Asbestos Management Plan	Asbestos Removal Control Plan
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act 2016* (NSW).
BOS	Biodiversity Offset Scheme
CBD	Central Business District
CCIP	Communications and Community Involvement Plan
CEMP	Construction / Contractor's environmental management plan
Council	Blacktown City Council
EIA	Environmental impact assessment
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
EPL	Environment Protection Licence
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased
FM Act	*Fisheries Management Act 1994* (NSW)
HBMSR	Hazardous Building Material Survey Report
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LGA	Local government area

Term / Acronym	Description
MNES	Matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.
M4 Motorway	M4 Western Motorway
NATA	National Association of Testing Authorities
NML	Noise Management Levels
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
OTVNVA	Operational Traffic and Construction Noise and Vibration Assessment
PCB	Polychlorinated Biphenyls
PHU	Prospect Highway Upgrades
Roads and Maritime	NSW Roads and Maritime Services
RUSLE	Revised Universal Soil Loss Equation
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act.
SER	Summary of Environmental Report
SMF	Synthetic Mineral Fibres
TMP	Traffic Management Plan
TSC Act	*Threatened Species Conservation Act 1995*
TTA	Traffic and Transport Assessment
Western Sydney SEPP	State Environmental Planning Policy (Western Sydney Parklands) 2009

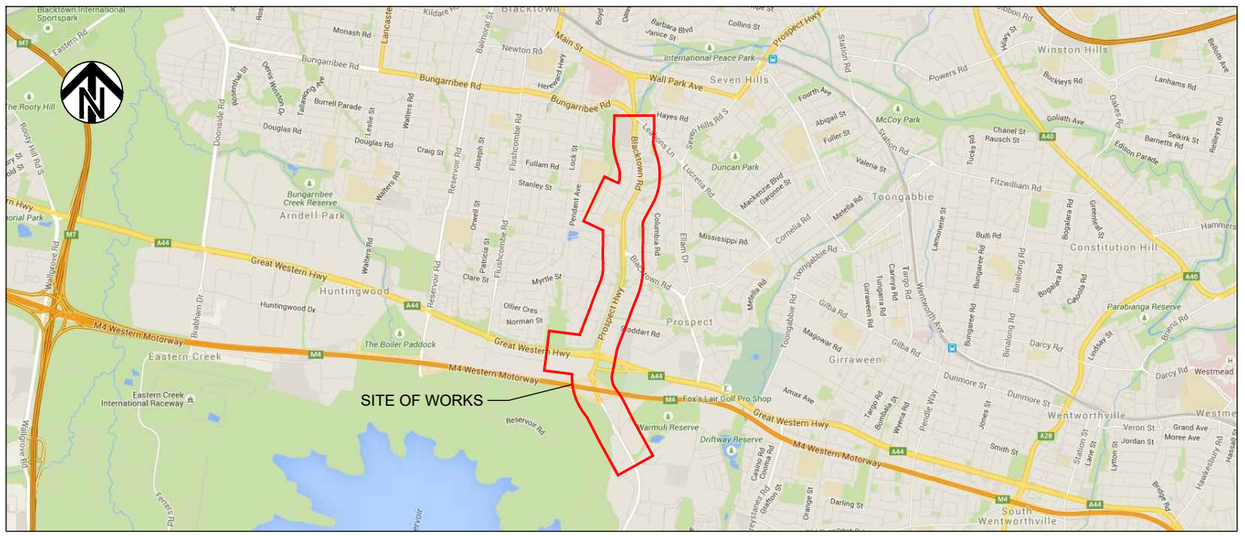
Appendix A

Proposed modification design drawings

CITY OF BLACKTOWN

MR644 - PROSPECT HIGHWAY

PROSPECT HIGHWAY UPGRADE
FROM RESERVOIR ROAD TO
200m NORTH OF ST MARTINS CRESCENT
ISSUE FOR TENDER
ROAD ALIGNMENT AND DETAIL



LOCALITY PLAN

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0001.dwg		LINEAR REFERENCING START: 0000644, 0023, A1, 021 FINISH: 0000644, 0060, A2, 458		PLOT DATE / TIME 08 Aug 2019 13:42:54	PLOT BY KC14065
PREPARED BY SMEC AUSTRALIA PTY LTD © ABN 47 065 475 149 LEVEL 5 20 BERRY STREET NORTH SYDNEY NSW 2060 PH 02 9925-5555 FAX 02 9925-5566	DESIGNED SIGNED NAME TITLE DATE	REVIEWED SIGNED NAME TITLE DATE	VERIFIED SIGNED NAME TITLE DATE	RMS PROJECT MANAGER NAME TITLE VALIDATION AND ACCEPTANCE OF THESE DRAWINGS AND THE DESIGN SHOWN THEREON IS TO BE CARRIED OUT UNDER SEPARATE PROCESS	CLIENT Transport Roads & Maritime Services PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT

A3

RMS PROJECT No.	DESIGN PROJECT No.		
RMS REGISTRATION No. DS2015/000269			PART 1
ISSUE STATUS TENDER	EDMS No. DS2015-000269	SHEET No. RD-0001	ISSUE B

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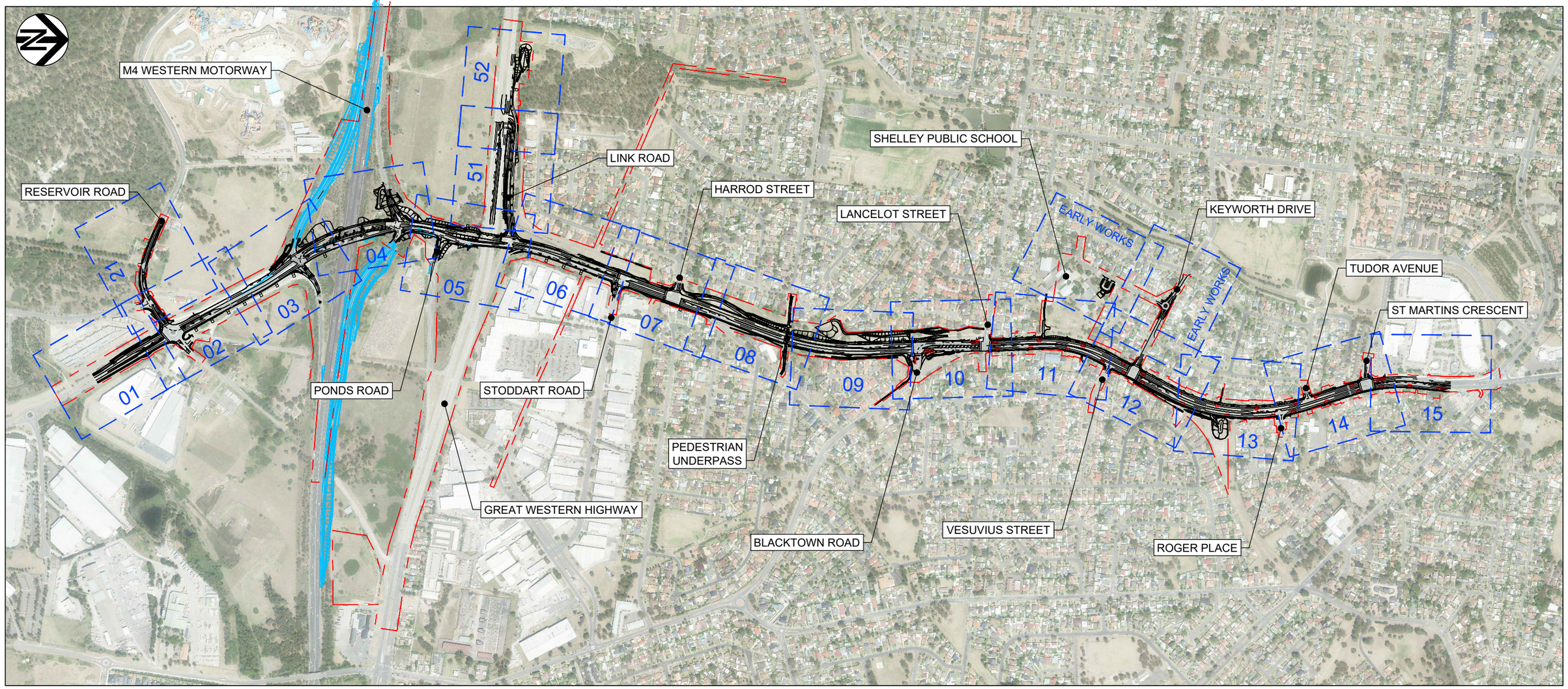

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50mm ON A3 SIZE ORIGINAL

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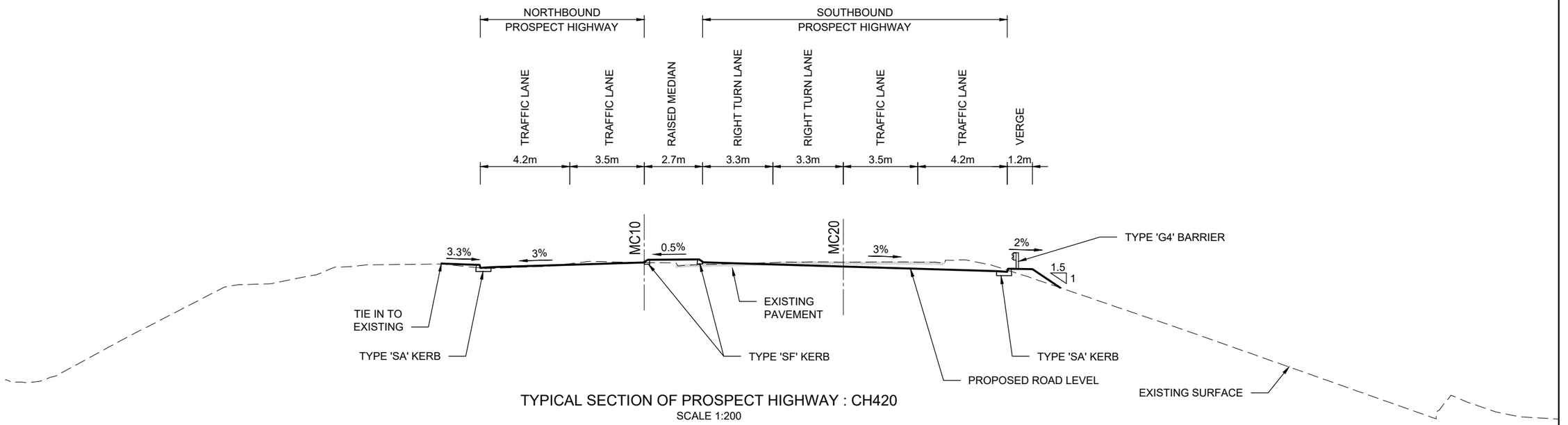
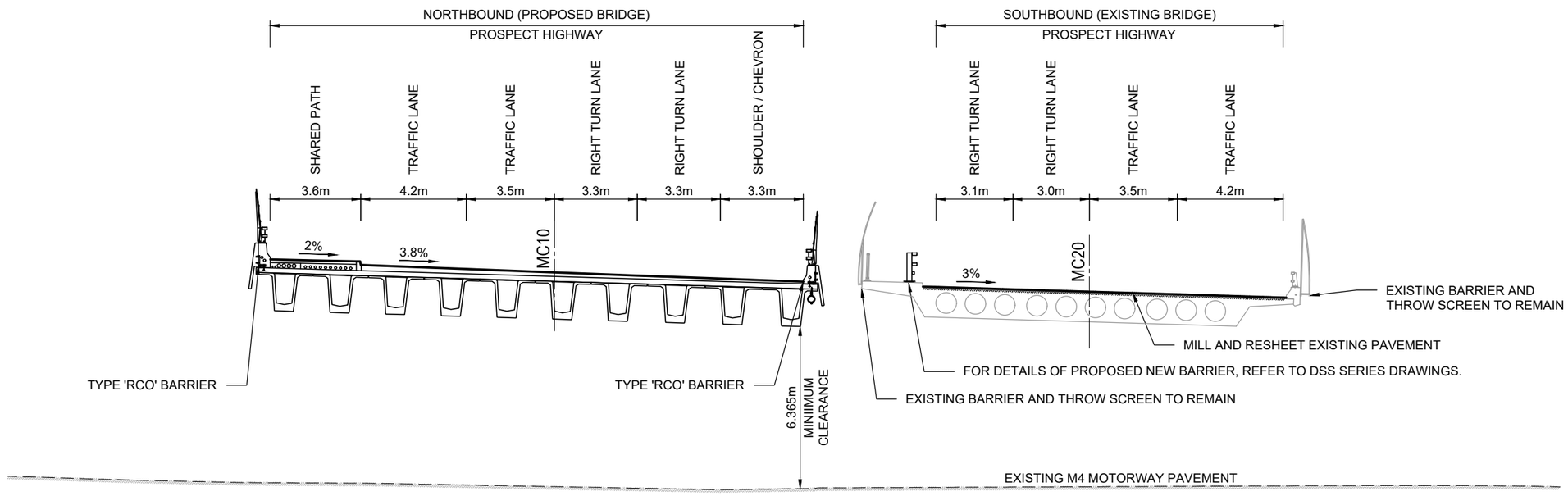
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY	TITLE	NAME	DATE		SHEET 01	SHEET 2 OF 862
X_RMSNSWGV4.2_Ca3 X_BDRY X_DS_MAIN X_AERIAL_FADED	A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS		SMEC AUSTRALIA PTY LTD © ABN 47 065 475 149 LEVEL 5 20 BERRY STREET NORTH SYDNEY NSW 2060 PH 02 9925-5555 FAX 02 9925-5566	DRAWN	C. BRITS	10.02.17			
	B	14.06.2019	ISSUE FOR TENDER	WVR541-011	CS			DRG CHECK	R. STEENKAMP	10.02.17	PREPARED FOR	RMS REGISTRATION No. DS2015/000269	PART 1
	C	08.08.2019	ISSUE FOR TENDER	022	CS			DESIGN	C. DALGLEISH	10.02.17			
								DESIGN CHECK	R. STEENKAMP	10.02.17			
						CO-ORDINATE SYSTEM: MGA ZONE 56	HEIGHT DATUM: AHD	DESIGN MNGR	S. TAYLOR	10.02.17			
								PROJECT MNGR	C. SUTTON	10.02.17		ISSUE STATUS: TENDER / EDMS No.: DS2015-000269 / SHEET No.: GE-0002 / ISSUE: C	



TYPICAL SECTION OF PROSPECT HIGHWAY : CH420

SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH820 (AT M4 BRIDGES)

SCALE 1:200

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

X_RMSNSWGV4.2_Cx3
X_DES_TYPICALS

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0011.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:44:21 PLOT BY: BD14447

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
	A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
	B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:200 (1 0 1 2 3 4 5)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	TITLE	NAME	DATE
DRAWN		C. BRITS	10.02.17
DRG CHECK		R. STEENKAMP	10.02.17
DESIGN		C. DALGLEISH	10.02.17
DESIGN CHECK		R. STEENKAMP	10.02.17
DESIGN MNGR		S. TAYLOR	10.02.17
PROJECT MNGR		C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

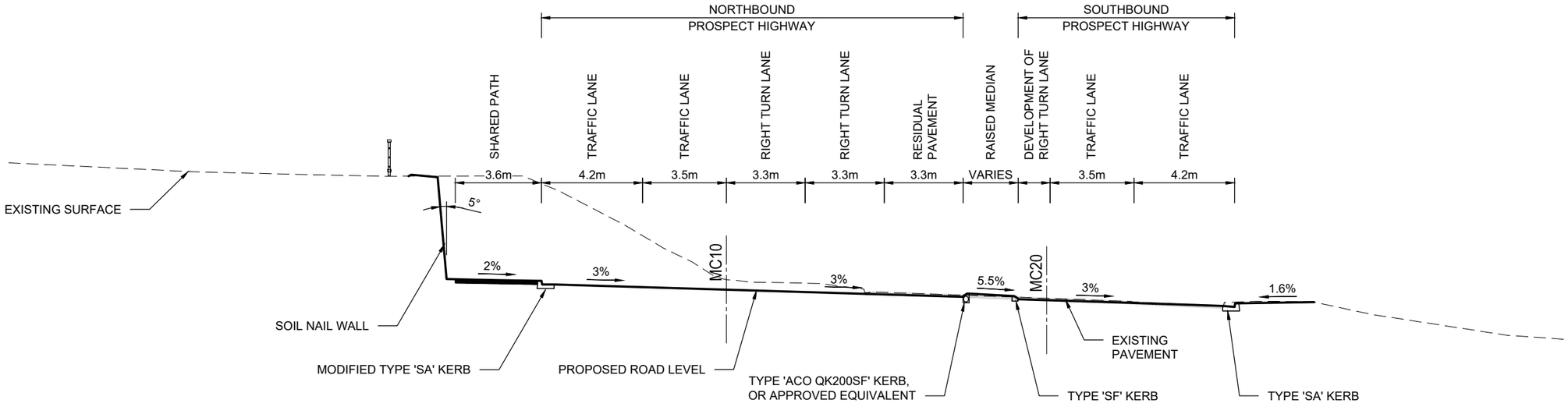
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS

A3

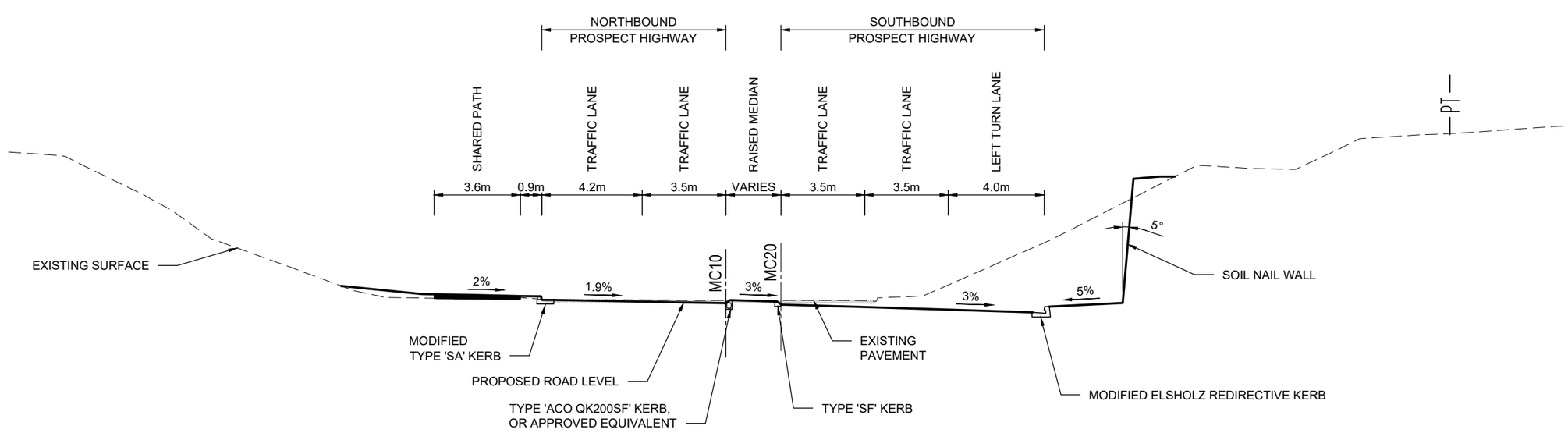
SHEET 01 SHEET 9 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-0011 ISSUE: B



TYPICAL SECTION OF PROSPECT HIGHWAY : CH920 (AT SOIL NAIL WALL RW01)
SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1020 (AT SOIL NAIL WALL RW02)
SCALE 1:200

NOT FOR CONSTRUCTION

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X_RMSNSWGV4.2_Cx3
X_DES_TYPICALS

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt
PLOT DATE / TIME: 08 Aug 2019 13:44:36
PLOT BY: BD14447

EXTERNAL REFERENCE FILES:

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A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:200 (1 0 1 2 3 4 5)
CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

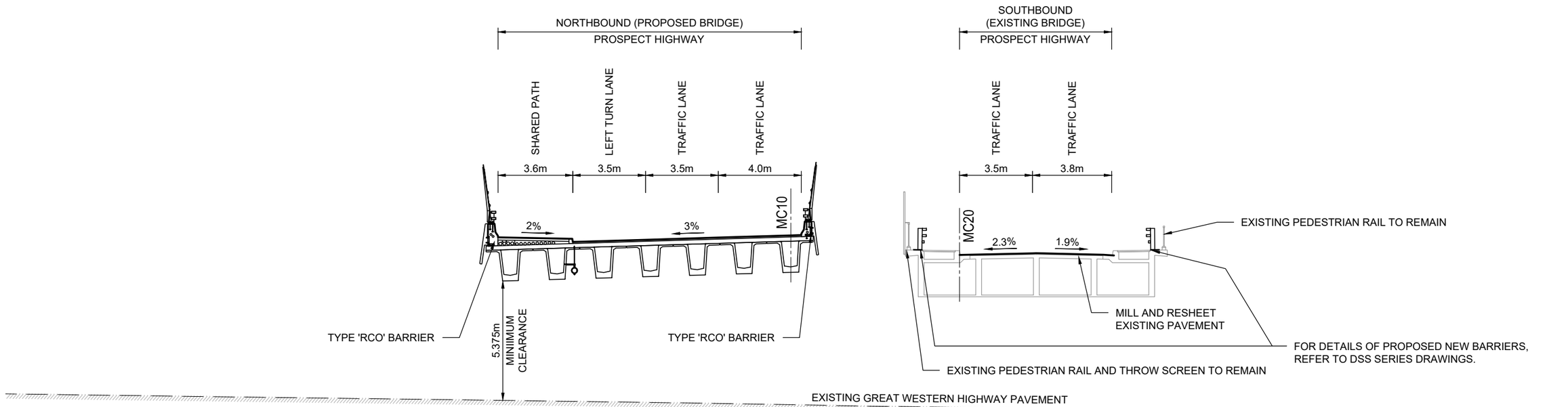
DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services
PREPARED FOR:

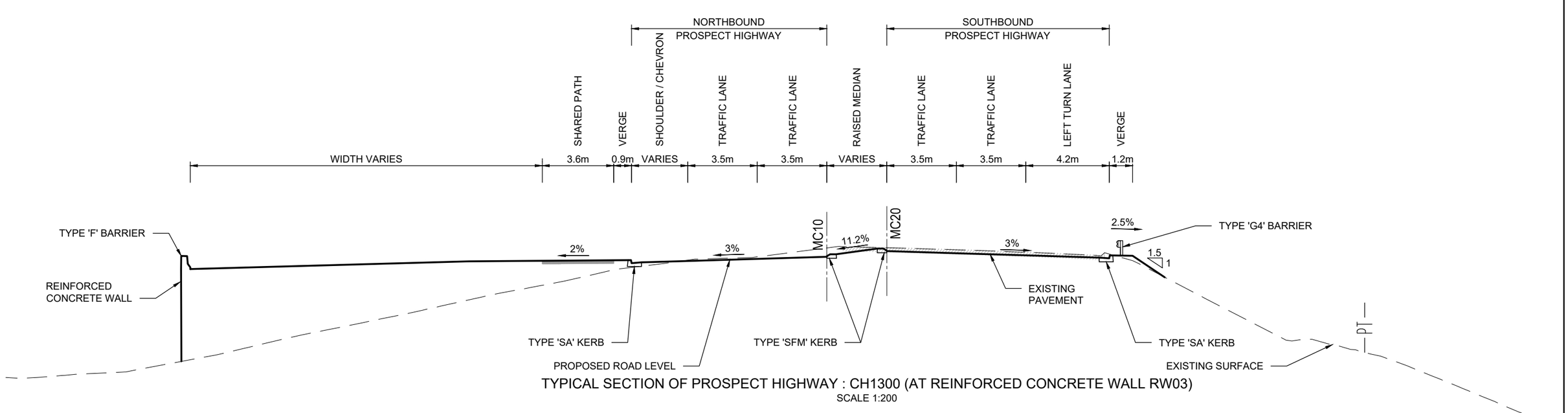
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS
SHEET 02 SHEET 10 OF 862
A3

RMS REGISTRATION No. DS2015/000269 PART 1
ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0012
ISSUE: B



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1200 (AT GWH BRIDGES)

SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1300 (AT REINFORCED CONCRETE WALL RW03)

SCALE 1:200

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150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0013.dwg				DESIGN LOT CODE: RD-01	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt		PLOT DATE / TIME: 08 Aug 2019 13:44:49		PLOT BY: BD14447	CLIENT: Transport Roads & Maritime Services NSW GOVERNMENT	CITY OF BLACKTOWN MR644 PROSPECT HIGHWAY PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT TYPICAL SECTIONS SHEET 03 SHEET 11 OF 862
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY	TITLE	NAME	DATE	PREPARED FOR	RMS REGISTRATION No. DS2015/000269 PART 1
X_RMSNSWGV4.2_Civ3 X_DES_TYPICALS	A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS	SCALE 1:200 1 0 1 2 3 4 5	SMEC AUSTRALIA PTY LTD © ABN 47 065 475 149 LEVEL 5 20 BERRY STREET NORTH SYDNEY NSW 2060 PH 02 9925-5555 FAX 02 9925-5566	DRAWN	C. BRITS	10.02.17		ISSUE STATUS: TENDER; EDMS No.: DS2015-000269; SHEET No.: RD-0013; ISSUE: B
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								DESIGN	C. DALGLEISH	10.02.17		
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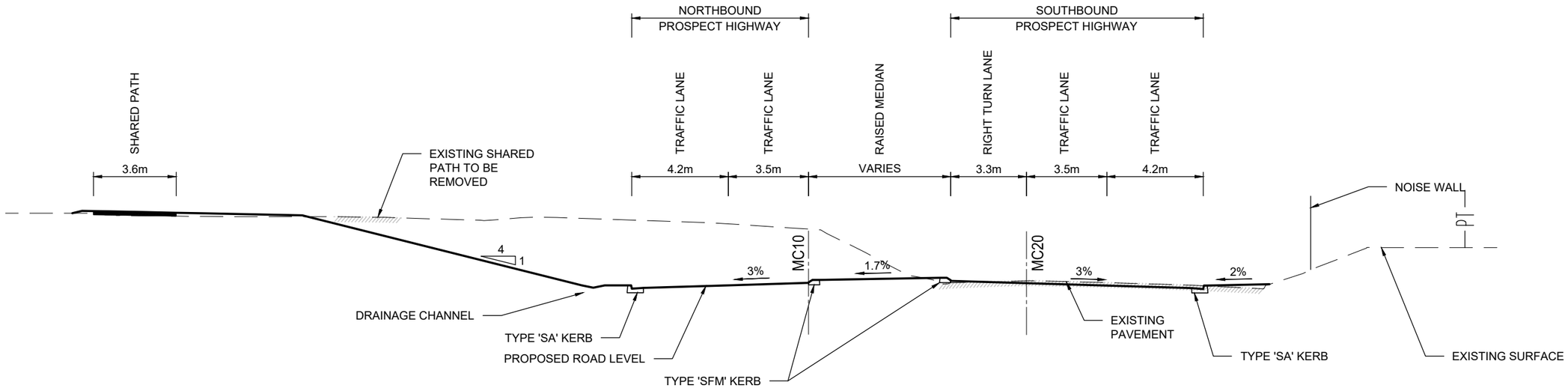
								DESIGN MNGR	S. TAYLOR	10.02.17		
								PROJECT MNGR	C. SUTTON	10.02.17		



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1780

SCALE 1:200

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150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0014.dwg				DESIGN LOT CODE RD-01		DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING DS2015-000269-DESIGN_RD00-06.txt		PLOT DATE / TIME 08 Aug 2019 13:45:03	PLOT BY BD14447		CLIENT NSW GOVERNMENT Transport Roads & Maritime Services	CITY OF BLACKTOWN MR644 PROSPECT HIGHWAY PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT TYPICAL SECTIONS	A3
EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY	TITLE	NAME	DATE			
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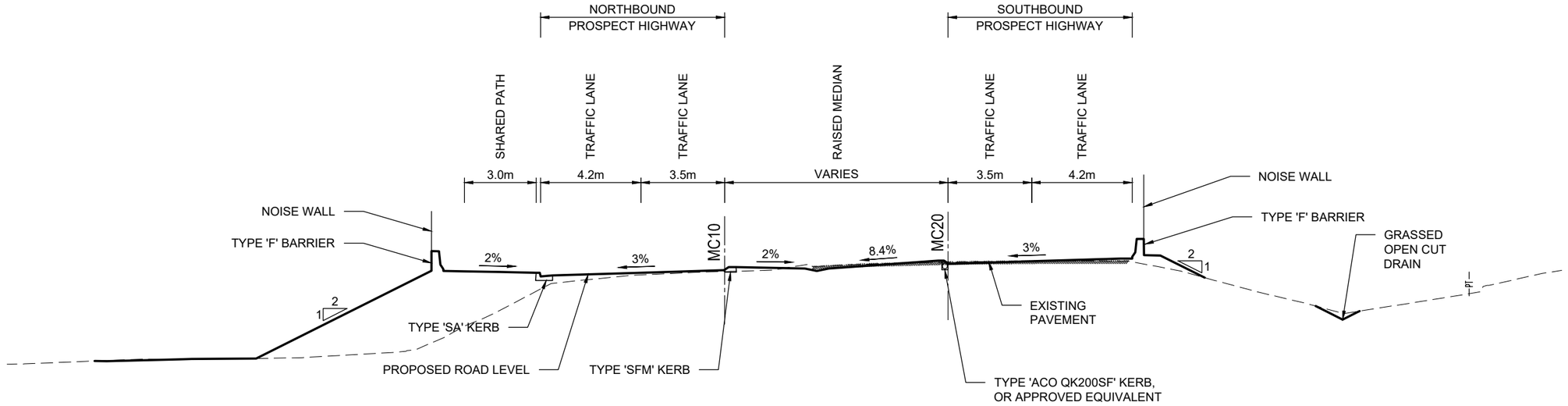
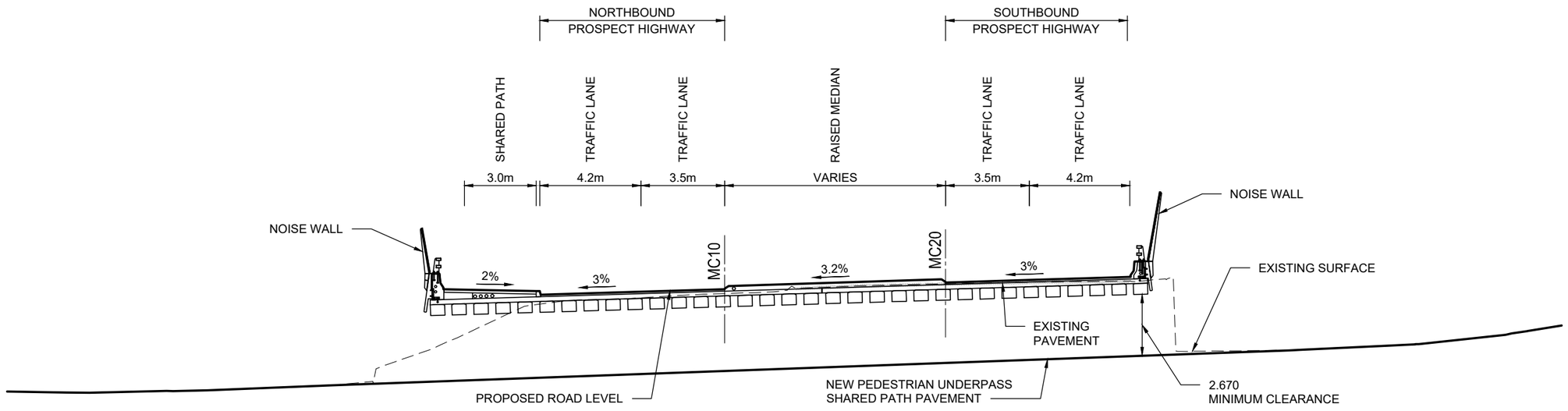
	B	08.08.2019	ISSUE FOR TENDER	022	CS			DRG CHECK	R. STEENKAMP	10.02.17			
								DESIGN	C. DALGLEISH	10.02.17			
								DESIGN CHECK	R. STEENKAMP	10.02.17	PREPARED FOR	RMS REGISTRATION No. DS2015/000269	PART 1
						CO-ORDINATE SYSTEM MGA ZONE 56	HEIGHT DATUM AHD	DESIGN MNGR	S. TAYLOR	10.02.17			
								PROJECT MNGR	C. SUTTON	10.02.17		ISSUE STATUS TENDER / EDMS No. DS2015-000269 / SHEET No. RD-0014	ISSUE B



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1960
SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH1980 (AT PEDESTRIAN UNDERPASS)
SCALE 1:200

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0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

X_RMSNSWGV4.2_Cx3
X_DES_TYPICALS

DRAWING FILE LOCATION / NAME	DESIGN LOT CODE	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	PLOT DATE / TIME	PLOT BY
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EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
	A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
	B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING
SCALE 1:200 1 0 1 2 3 4 5
CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

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© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

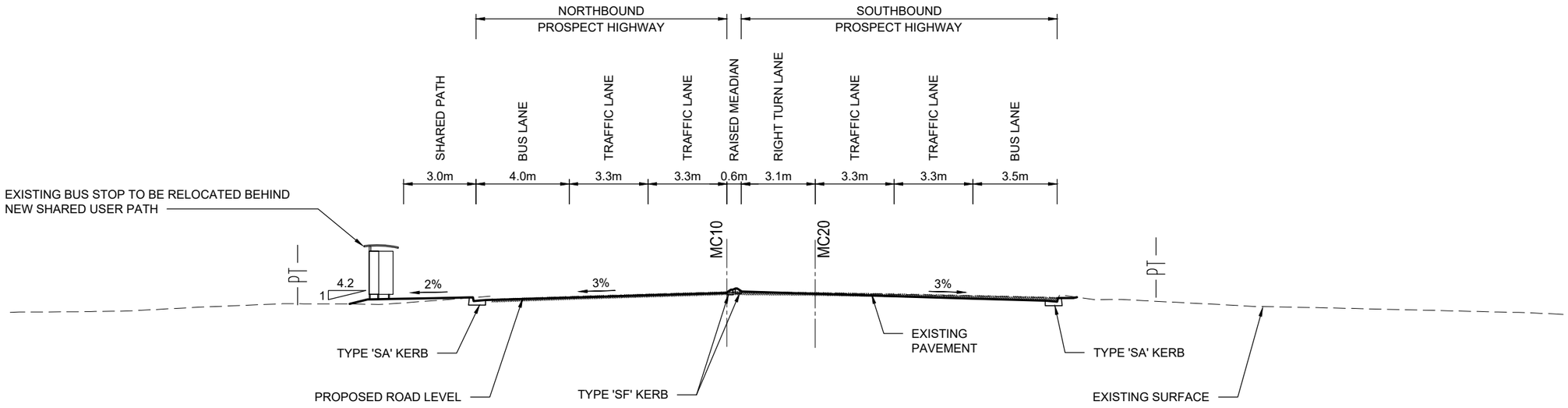
CLIENT: Transport Roads & Maritime Services, NSW GOVERNMENT
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS
SHEET 05 SHEET 13 OF 862

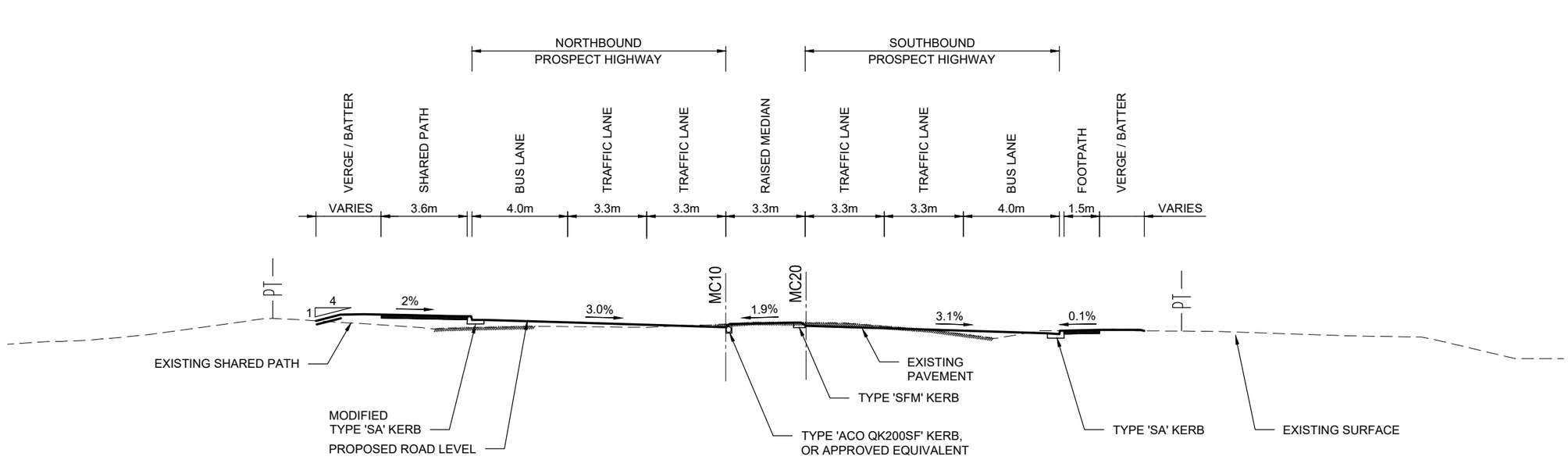
A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
TENDER	DS2015-000269	RD-0015	B



TYPICAL SECTION OF PROSPECT HIGHWAY : CH2500
SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH2740
SCALE 1:200

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150mm ON A3 SIZE ORIGINAL
0 5 10 15 20 25 30 35 40 45

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0016.dwg
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PLOT DATE / TIME: 08 Aug 2019 13:45:30
PLOT BY: KC14065

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Civ3, X_DES_TYPICALS

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:200 (1 0 1 2 3 4 5)
CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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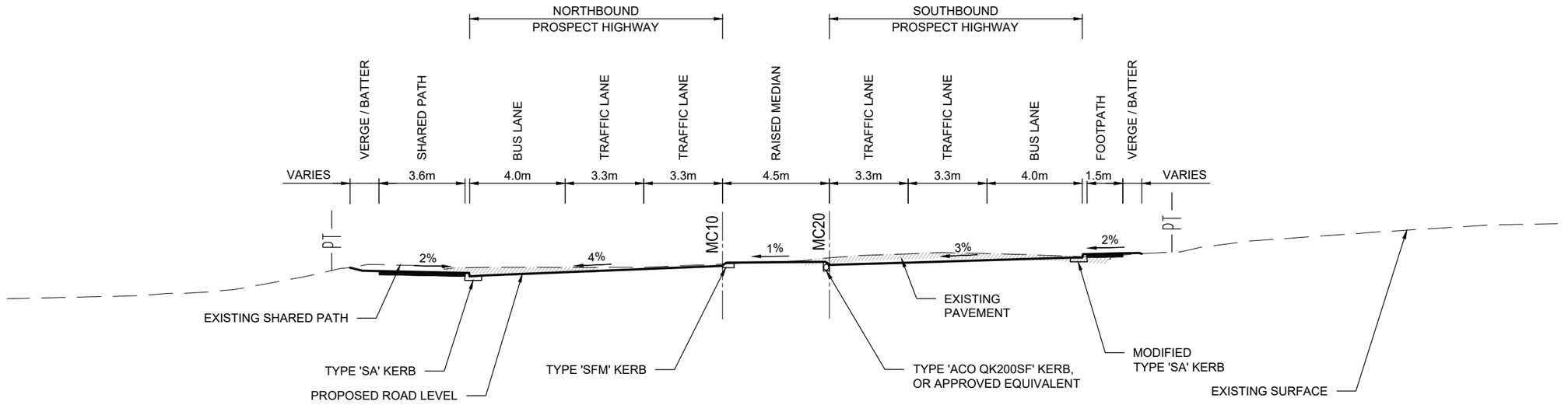
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

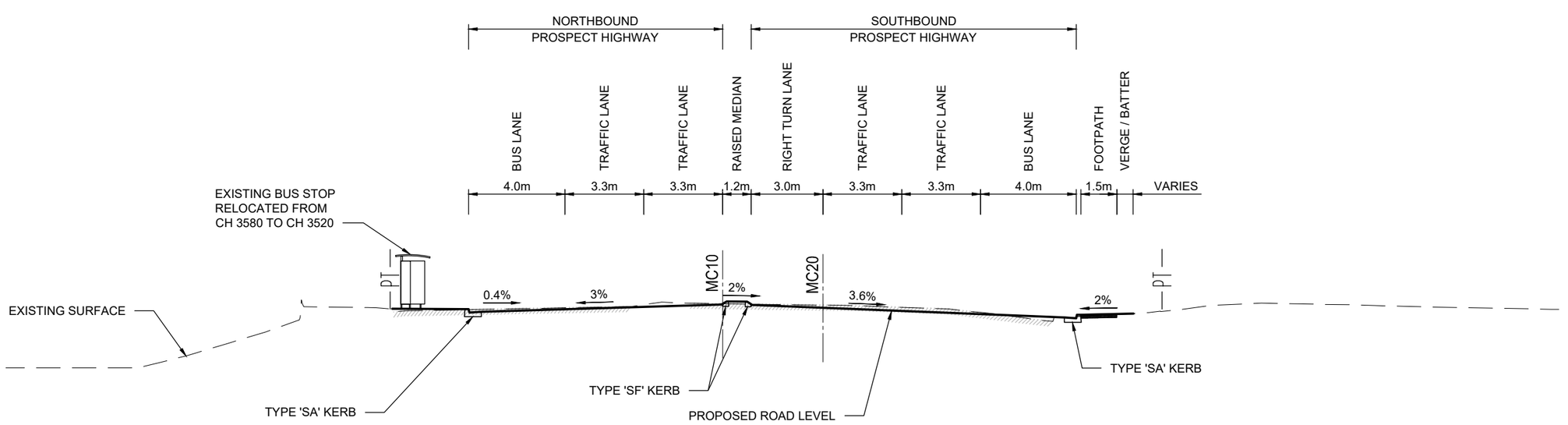
CLIENT: Transport Roads & Maritime Services, NSW GOVERNMENT
PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS
SHEET 06 SHEET 14 OF 862
A3

RMS REGISTRATION No.: DS2015/000269
PART: 1
ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0016
ISSUE: B



TYPICAL SECTION OF PROSPECT HIGHWAY : CH3300
SCALE 1:200



TYPICAL SECTION OF PROSPECT HIGHWAY : CH3520
SCALE 1:200

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150mm ON A3 SIZE ORIGINAL

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PLOT DATE / TIME: 08 Aug 2019 13:45:43
PLOT BY: BD14447

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Civ3, X_DES_TYPICALS

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:200 (1 0 1 2 3 4 5)
CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

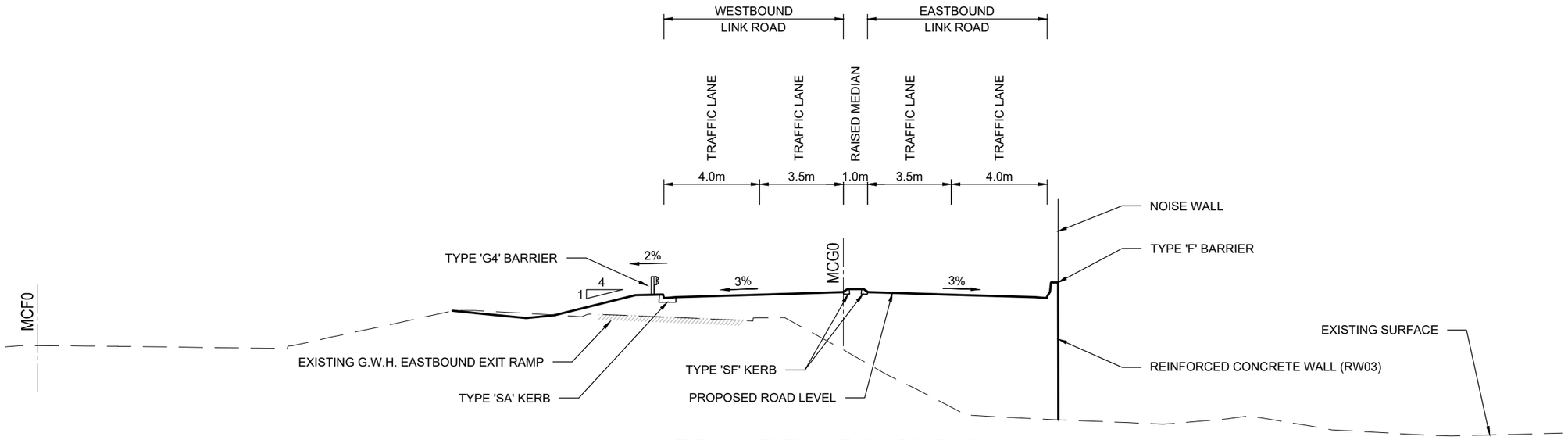
DRAWINGS / DESIGN PREPARED BY
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

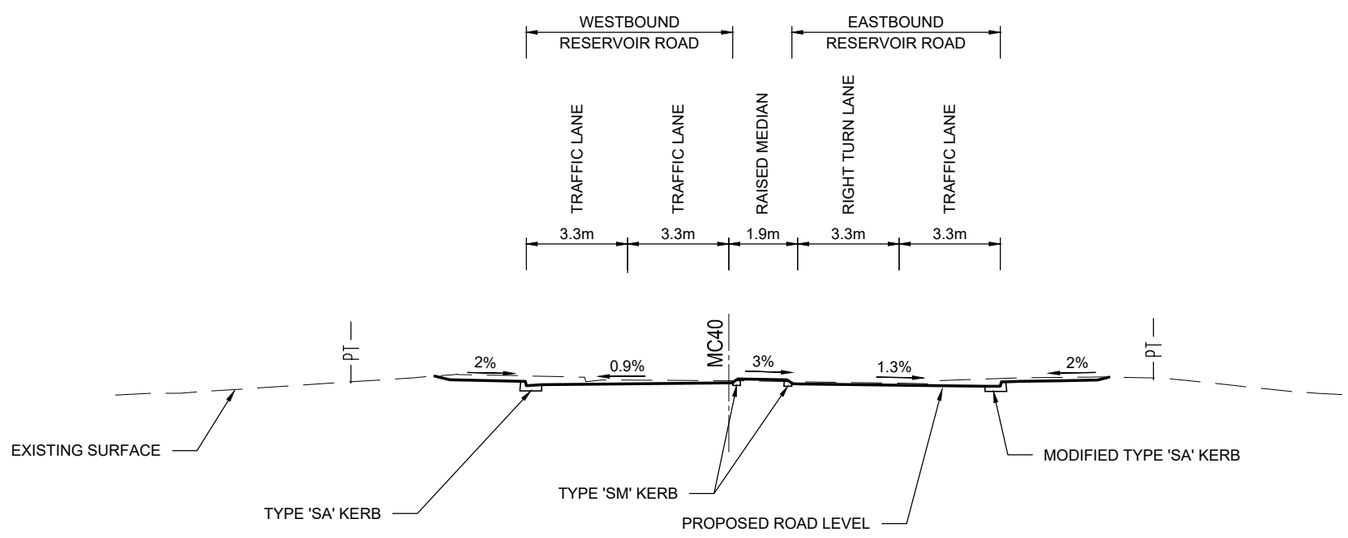
CLIENT: Transport Roads & Maritime Services, NSW GOVERNMENT
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS
SHEET 07 SHEET 15 OF 862
A3

RMS REGISTRATION No.: DS2015/000269
PART: 1
ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0017
ISSUE: B



TYPICAL SECTION OF LINK ROAD : CH100
SCALE 1:200



TYPICAL SECTION OF RESERVOIR ROAD : CH40
SCALE 1:200

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0018.dwg
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PLOT DATE / TIME: 08 Aug 2019 13:45:56 PLOT BY: BD14447

EXTERNAL REFERENCE FILES: X_RMSNSWGV4 2_Civ3, X_DES_TYPICALS

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:200 (1 0 1 2 3 4 5)
CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

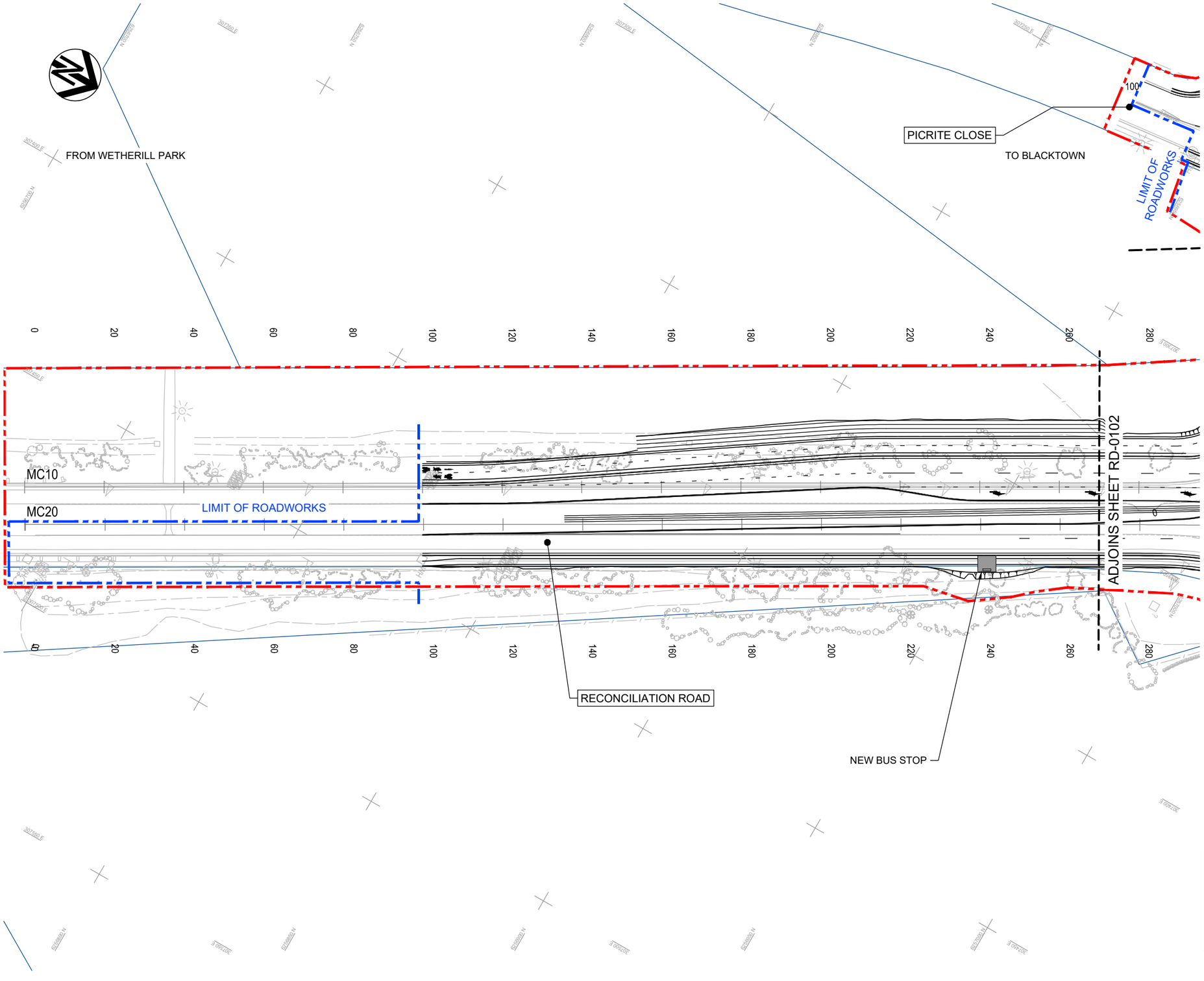
DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services NSW GOVERNMENT
PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
TYPICAL SECTIONS
SHEET 08 SHEET 16 OF 862
A3

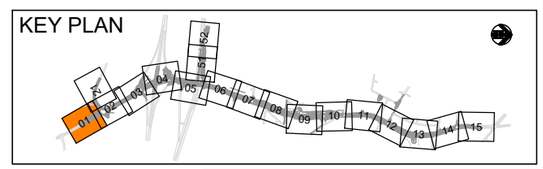
RMS REGISTRATION No.: DS2015/000269 PART 1
ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0018
ISSUE: B



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
- NOISE WALL
- PEDESTRIAN HANDRAIL
- SAFETY BARRIER
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0101.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:46:18 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
X_RMSNSWGV4 2_Ca3
X_BDRY
X_DES_CTRL_1000
X_DES_MAIN_
X_FRAME_1000
X_KEY_1000
X_KEY_RD
X_CADAST
X_STREET_NAMES_1000
X_GRID
X_SURV
X_DES_CTRL_500
X_PW_TAG
X_PROPOSAL_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
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DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN

A3

SHEET 01 SHEET 17 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER | EDMS No.: DS2015-000269 | SHEET No.: RD-0101 | ISSUE: C

PICRITE CLOSE

LIMIT OF ROADWORKS

ADJOINS SHEET RD-0121

FROM WETHERILL PARK

RESERVOIR ROAD

EXISTING PATH

NEW BUS STOP

PROSPECT HIGHWAY

TO BLACKTOWN

ADJOINS SHEET RD-0101

ADJOINS SHEET RD-0103

MC10

MC20

MC40

MC50

MC70

MC80

RESERVOIR ROAD

THORNLEY ROAD

LIMIT OF ROADWORKS

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PROPERTY WORKS DRAWING REFERENCE

PW-0124

KEY PLAN

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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0102.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:46:45 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
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X_CADAST
X_STREET_NAMES_1000
X_KEY_1000
X_LEG_RD
X_GRID
X_SURV
X_DES_CTRL_500
X_PW_TAG
X_PROPOSAL_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
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B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

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CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

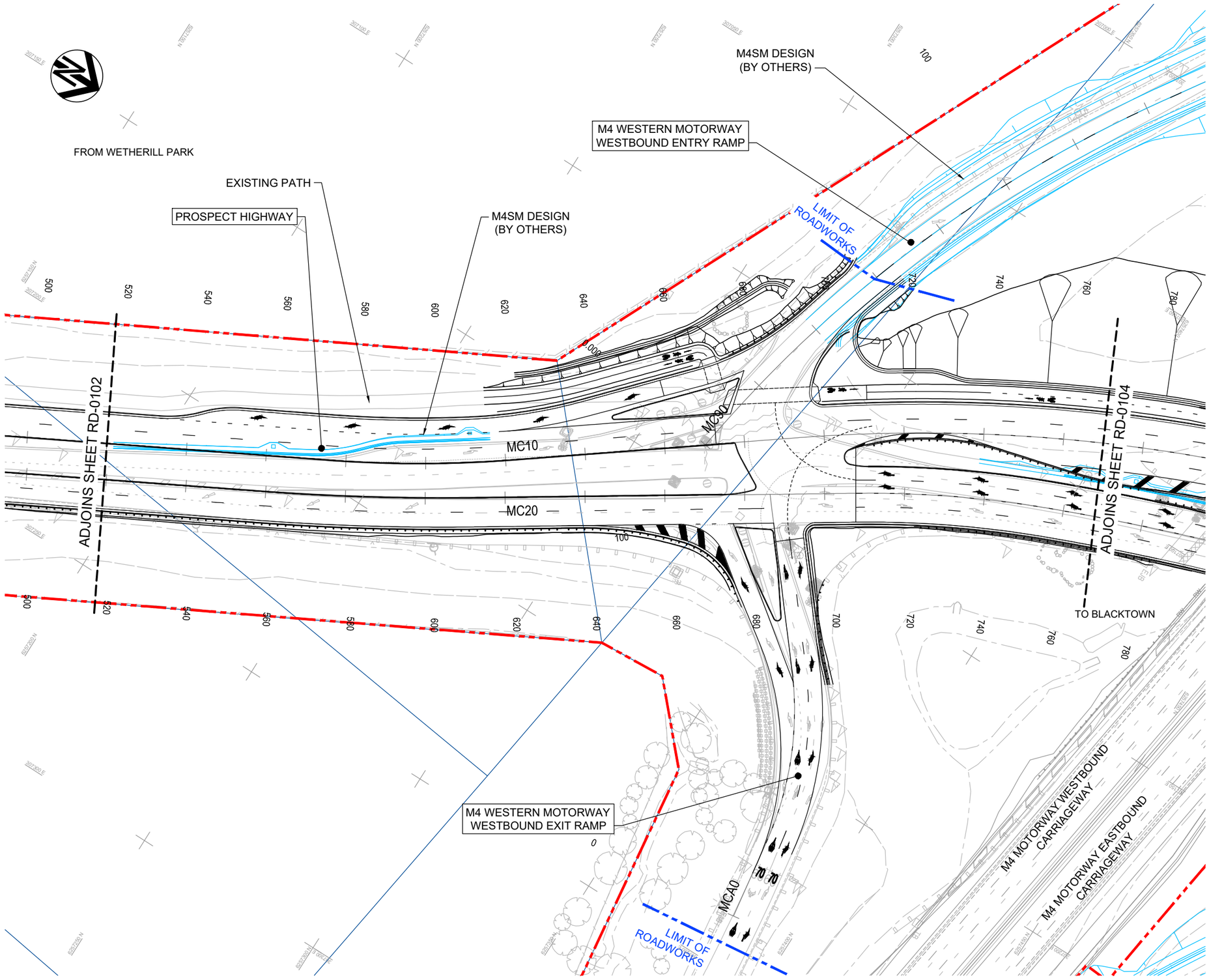
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 02 SHEET 18 OF 862

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0102
ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
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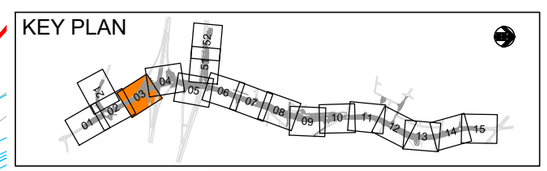
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 — PROPERTY WORKS DRAWING REFERENCE



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DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0103.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:47:11 — PLOT BY: BD14447

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Ca3, X_BDRY, X_DES_CTRL_1000, X_DES_MAIN, X_FRAME_1000, X_CADAST, X_STREET_NAMES_1000, X_KEY_1000, X_LEG_RD, X_GRID, X_SURV, X_DES_CTRL_500, X_PW_TAG, X_RPW_PLAN_OF_RD_WRKS, X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	14.06.2019	ISSUE FOR TENDER	WVR541-011	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

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DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

PREPARED FOR

A3

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT ROAD ALIGNMENT PLAN

SHEET 03 — SHEET 19 OF 862

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
TENDER	DS2015-000269	RD-0103	C

M4 WESTERN MOTORWAY
EASTBOUND EXIT RAMP

M4 WESTERN MOTORWAY
WESTBOUND ENTRY RAMP

M4 MOTORWAY WESTBOUND CARRIAGEWAY

M4 MOTORWAY EASTBOUND CARRIAGEWAY

REFER SEPARATE PACKAGE FOR
PERMANENT M4 MOTORWAY WORKS

PYLON FOR HIGH
VOLTAGE OVERHEAD
ELECTRICAL LINES

6m
NO WORKS AREA

8.5m
NO DRILLING AREA

LIMIT OF
ROADWORKS

TO BLACKTOWN

EXISTING LOG RETAINING
WALL TO BE DEMOLISHED

PROSPECT HIGHWAY

FROM WETHERILL PARK

MC10

MC20

MC30

MC40

ADJOINS SHEET RD-0103

ADJOINS SHEET RD-0105

M4SM DESIGN
(BY OTHERS)

M4 WESTERN MOTORWAY
EASTBOUND ENTRY RAMP

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
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- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PROPERTY WORKS DRAWING REFERENCE (PW-0124)

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0104.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:47:38 PLOT BY: BD14447

EXTERNAL REFERENCE FILES:
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X_ESS_CTRL_1000
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X_BRG_M4
X_BRG_BARRIERS PLAN_M4
X_BRG_PIER_SUB_M4
X_BRG_PIER_1_M4
X_PW_TAG
X_BDRY_LIM_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	14.06.2019	ISSUE FOR TENDER	WVR541-011	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
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PH 02 9925-5555 FAX 02 9925-5566

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DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

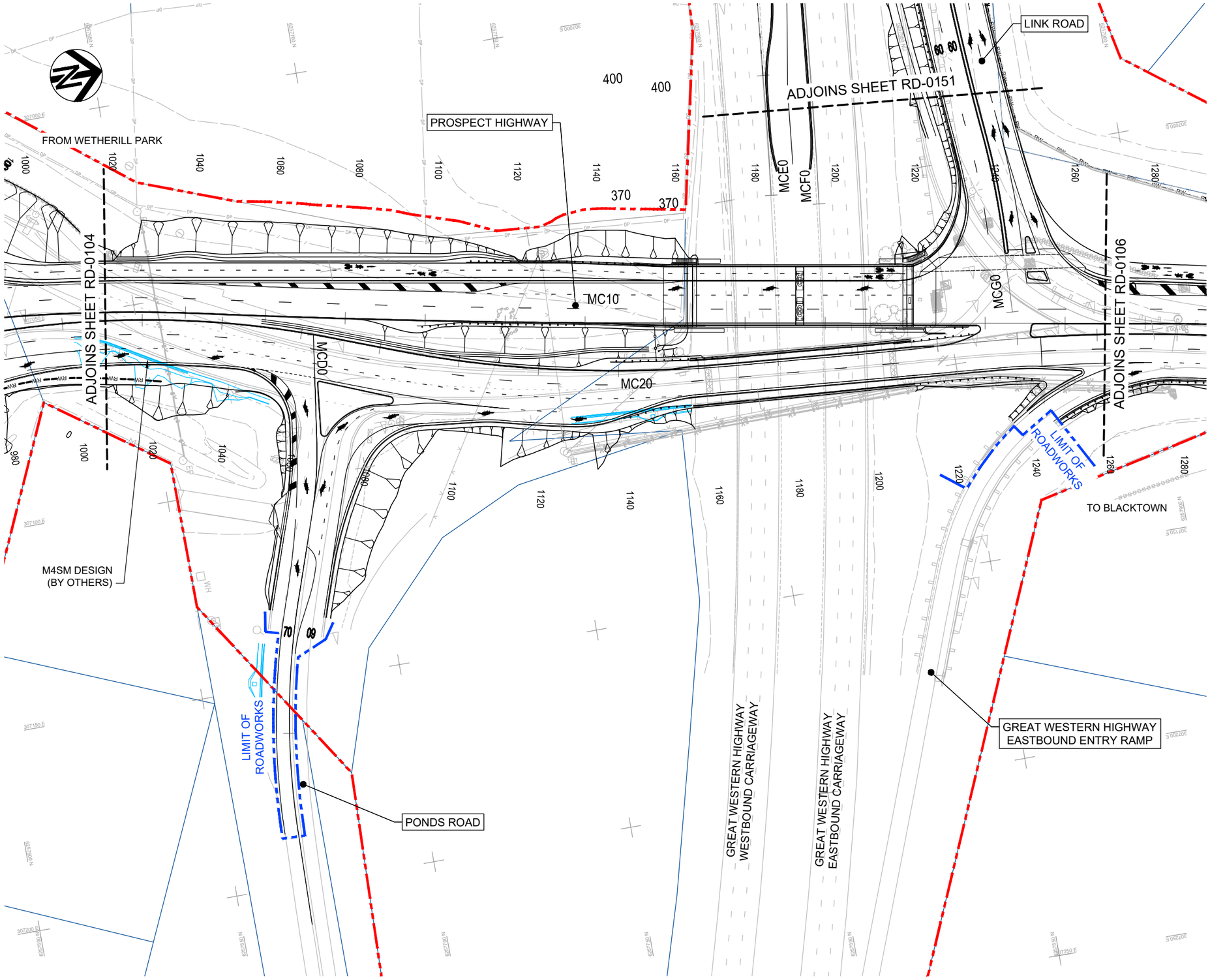
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 04 SHEET 20 OF 862

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-0104 ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
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- SA KERB
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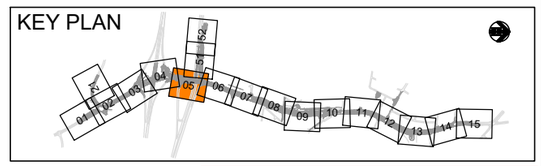
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0105.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:48:03 PLOT BY: BD14447

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Ca3, X_BDRY, X_DES_CTRL_1000, X_DES_MAIN, X_FRAME_1000, X_CADAST, X_SHEET_NAMES_1000, X_KEY_1000, X_LEG_RD, X_GRID, X_SURV, X_DES_CTRL_500, X_BRG_KEYPLAN GA_GWH, X_BRG_KEYPLAN ABUT_GWH, X_BRG_PIER 1_GWH, X_PW_TAG, X_BDRY_LIM_OF_RD_WRKS, X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

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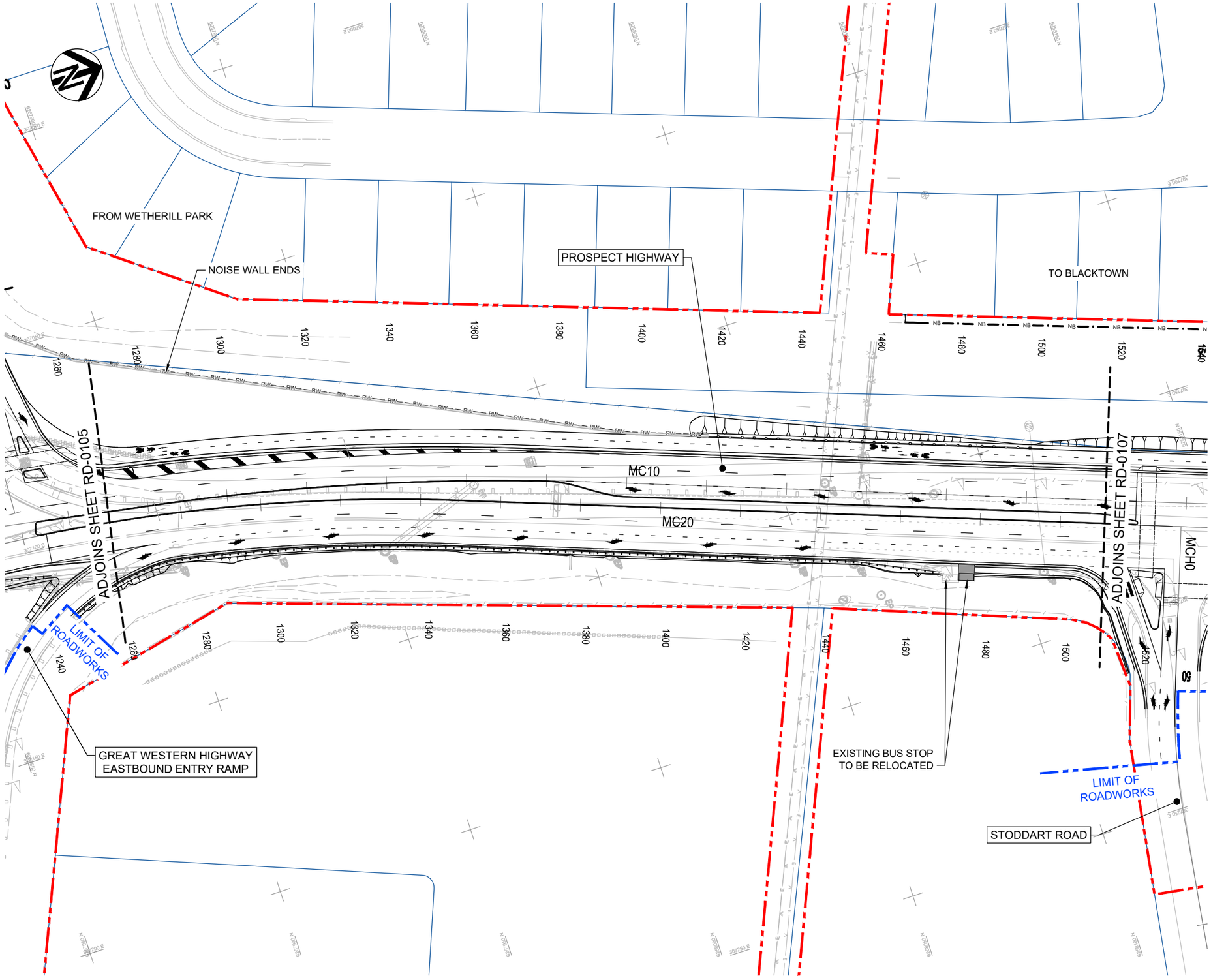
A3

SHEET 05 SHEET 21 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-0105 ISSUE: B



LEGEND

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- EXISTING PROPERTY BOUNDARY
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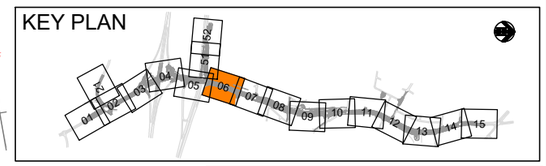
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED 0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	DESIGN LOT CODE	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	PLOT DATE / TIME	PLOT BY
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EXTERNAL REFERENCE FILES
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X_BDRY
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X_DES_MAIN
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X_GRID
X_MAIN_RW
X_DES_CTRL_500
X_PW_TAG
X_BRIDGE_HW_OF_RD_MRKS
X_F_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
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SCALES ON A3 SIZE DRAWING

SCALE 1:1000 5 0 10 20

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

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PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 06 — SHEET 22 OF 862

A3

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0106 — ISSUE: C

HARROD STREET

FROM WETHERILL PARK

EXISTING BUS STOP TO BE RELOCATED TO CH 1730

PROSPECT HIGHWAY

NEW LOCATION OF EXISTING BUS STOP, RELOCATED FROM CH 1555

TO BLACKTOWN

LIMIT OF ROADWORKS

MC10

MC20

MCH0

MCJ0

ADJOINS SHEET RD-0106

ADJOINS SHEET RD-0108

LIMIT OF ROADWORKS

STODDART ROAD

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
- NOISE WALL
- PEDESTRIAN HANDRAIL
- SAFETY BARRIER
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0107.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:48:54 PLOT BY: KC14065

CLIENT: Transport Roads & Maritime Services (NSW Government)

EXTERNAL REFERENCE FILES:
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X_BDRY
X_DES_CTRL_1000
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X_CADAST
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X_SIRV
X_DES_CTRL_500
X_PW_TAG
X_PROP_LAY_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

PREPARED FOR:

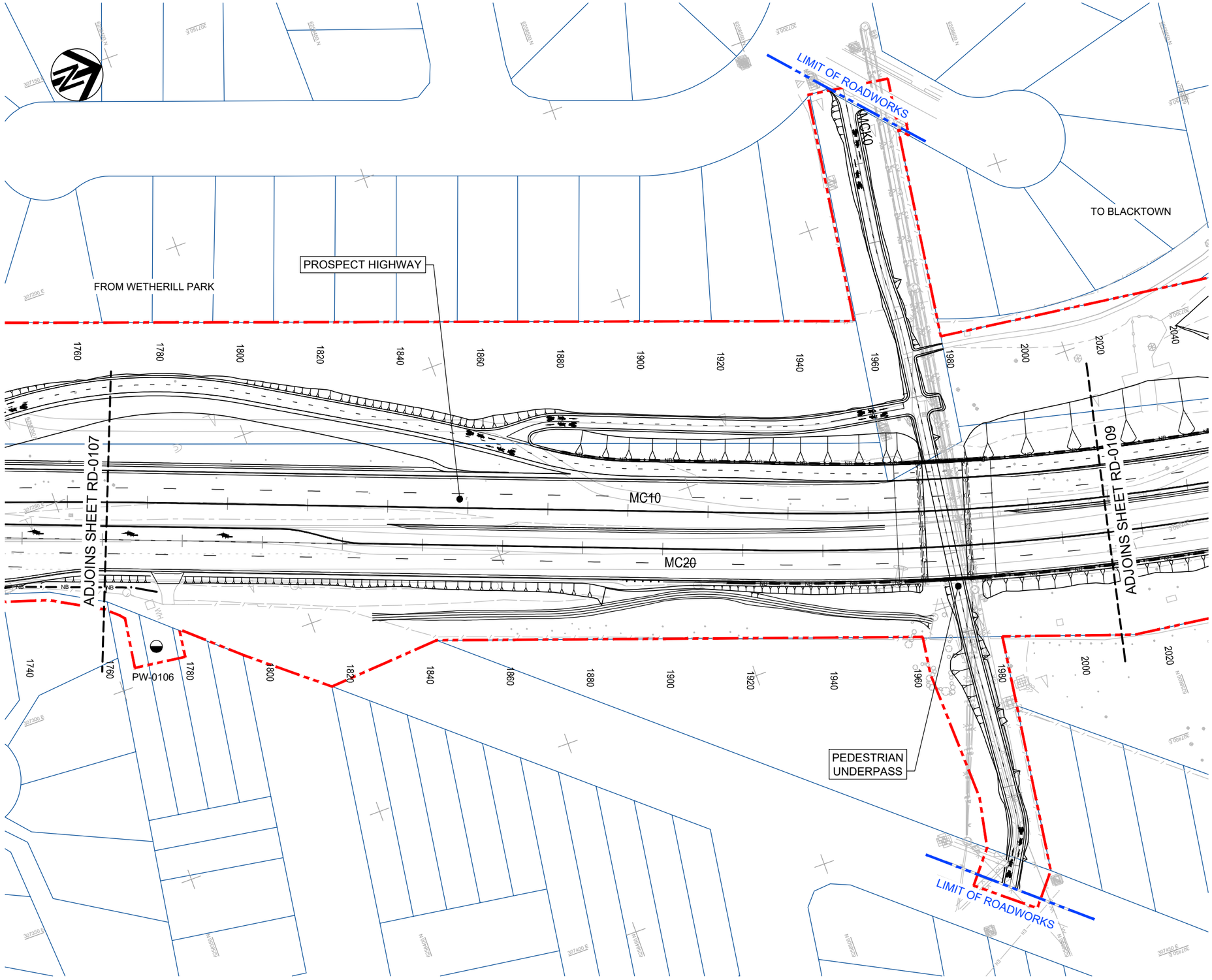
A3

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN

SHEET 07 SHEET 23 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-0107 ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
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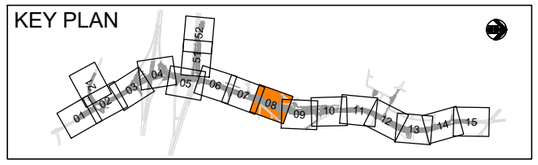
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



NOT FOR CONSTRUCTION

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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0108.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

EXTERNAL REFERENCE FILES:
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X_BDRY
X_BUS_CTRL_1000
X_DES_MAIN
X_FRAME_1000
X_CADAST
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X_KEY_1000
X_LEG_RD
X_GRID
X_SURVEY
X_DES_CTRL_500
X_BRG_BARRIERS_Underpass
X_BRG_ABUTMENTS_Underpass
X_PW_TAG
X_BDRY_LIM_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

PLOT DATE / TIME: 08 Aug 2019 13:49:22 — PLOT BY: BD14447

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 08 — SHEET 24 OF 862

A3

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0108 — ISSUE: B

FROM WETHERILL PARK

EXISTING SHARED PATH TO BE REMOVED

TO BLACKTOWN

ADJOINS SHEET RD-0108

ADJOINS SHEET RD-0110

MC10

MC20

PROSPECT HIGHWAY

LIMIT OF ROADWORKS

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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- SF KERB
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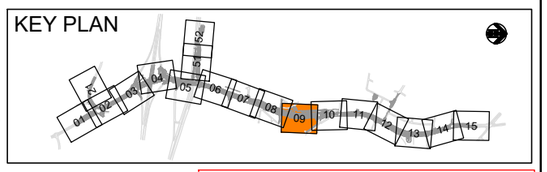
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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DRAWING FILE LOCATION / NAME	V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0109.dwg
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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	DS2015-000269-DESIGN_RD00-06.txt
PLOT DATE / TIME	08 Aug 2019 13:49:51
PLOT BY	KC14065

EXTERNAL REFERENCE FILES: X_RMSNSWGV4 2_Ca3, X_BDRY, X_DES_CTRL_1000, X_DES_MAIN, X_FRAME_1000, X_CADAST, X_KC_LOT_1000, X_LEG_RD, X_GRID, X_SURV, X_DES_CTRL_500, X_PV_TAG, X_BDRY_LIN_OF_RD_WRKS, X_STREET_NAMES_1000, X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
TITLE		
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

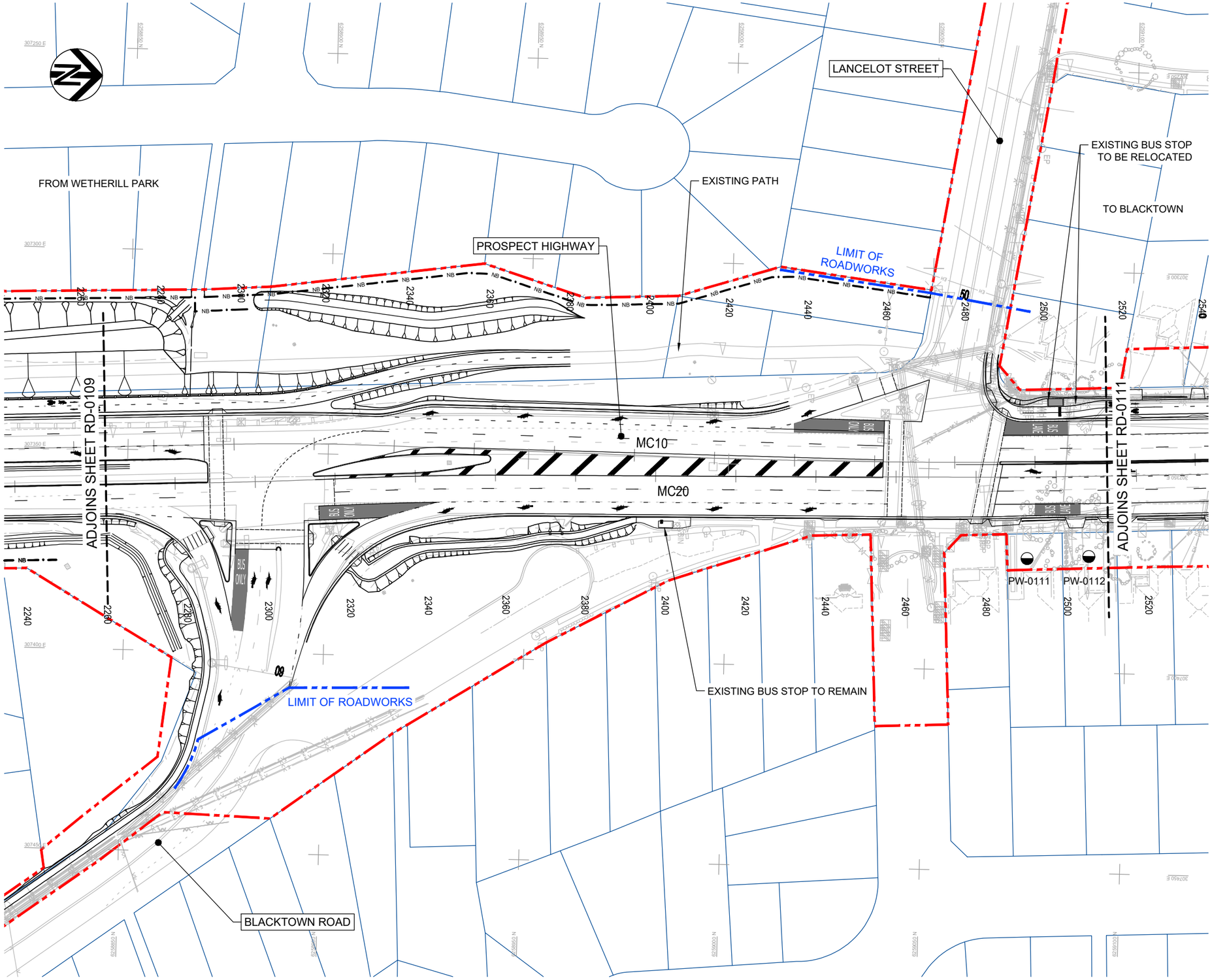
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN

A3

SHEET 09 SHEET 25 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER | EDMS No.: DS2015-000269 | SHEET No.: RD-0109 | ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
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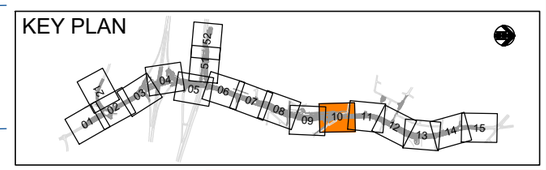
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0110.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:50:17 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
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X_CADAST
X_DES_STREET_NAMES_1000
X_KEY_1000
X_LEG_RD
X_SIRD
X_DES_CTRL_500
X_PW_TAG
X_PROPOSAL_OF_RD_MRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
TITLE		
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

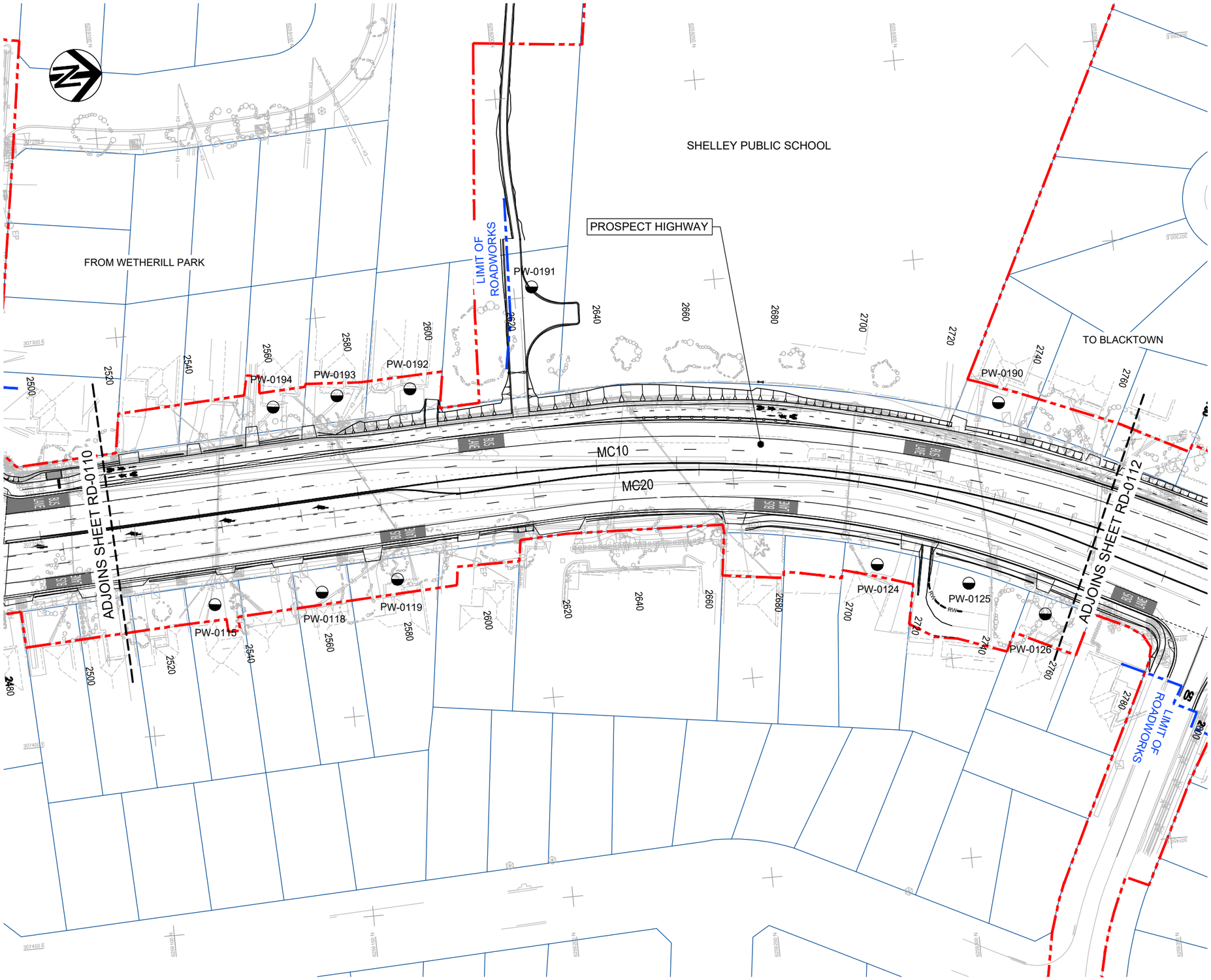
PREPARED FOR

A3

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 10 SHEET 26 OF 862

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0110
ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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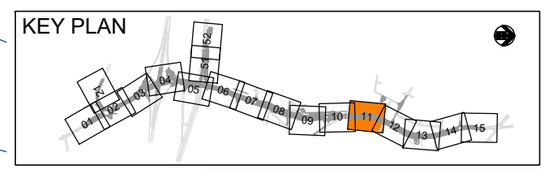
- SAFETY BARRIER
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0111.dwg	DESIGN LOT CODE: RD-01	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt	PLOT DATE / TIME: 08 Aug 2019 13:50:43 — PLOT BY: KC14065

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Ca3, X_BDRY, X_DES_CTRL_1000, X_DES_MAIN, X_FRAME_1000, X_CADAST, X_STREET_NAMES_1000, X_KEY_1000, X_LEG_RD, X_SHRD, X_DES_CTRL_500, X_PW_TAG, X_PROPOSAL_OF_RD_WRKS, X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

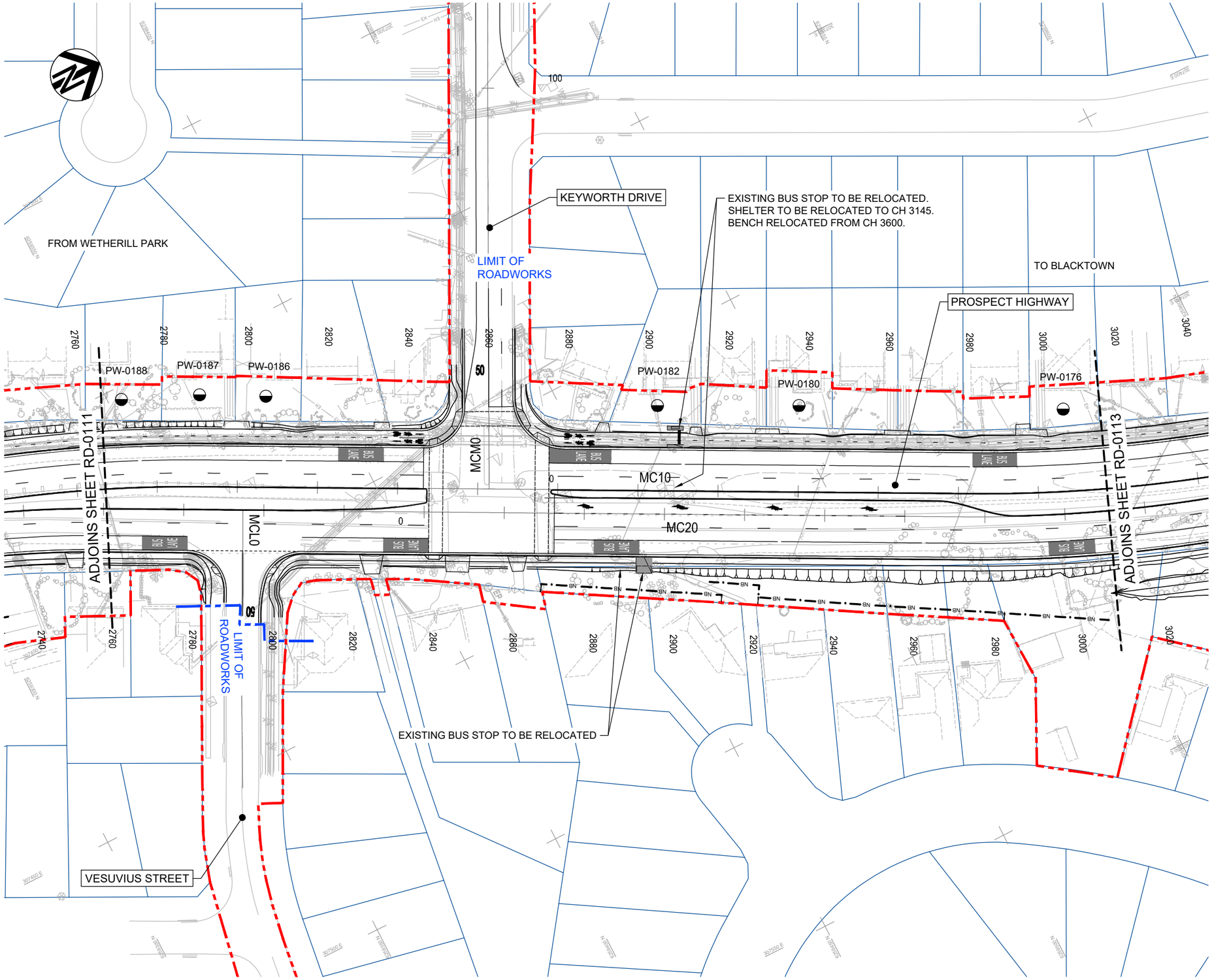
PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 11 — SHEET 27 OF 862

A3

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0111 — ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
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- SAFETY BARRIER
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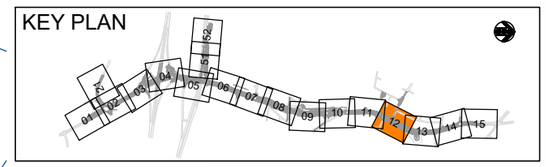
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0112.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:51:09 — PLOT BY: KC14065

EXTERNAL REFERENCE FILES: X_RMSNSWGV4.2_Ca3, X_BDRY, X_DES_CTRL_1000, X_DES_MAN, X_FRAME_1000, X_CADNST, X_SHEET_NAMES_1000, X_KEY_1000, X_LEG_RD, X_GRID, X_SWEPT, X_DES_CTRL_500, X_PW_TAG, X_PROPERTY_NUM_OF_RD_WRKS, X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
TITLE		
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

PREPARED FOR

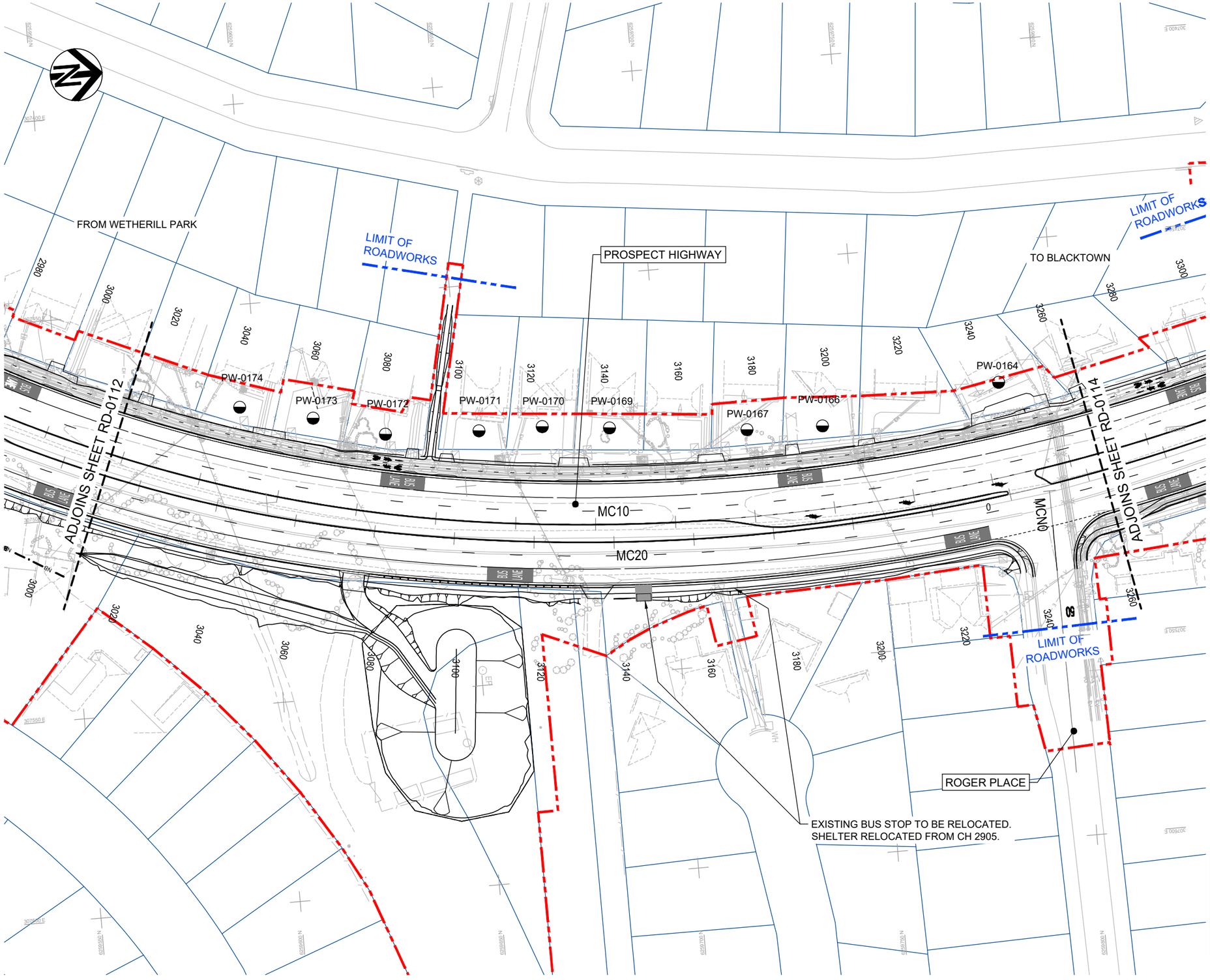
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT ROAD ALIGNMENT PLAN

A3

SHEET 12 — SHEET 28 OF 862

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0112 — ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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- TYPE F SAFETY BARRIER
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- SM KERB
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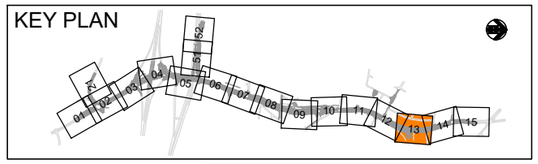
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0113.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

EXTERNAL REFERENCE FILES:
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X_BDRY
X_DES_CTRL_1000
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X_SIRU
X_DES_CTRL_500
X_PW_TAG
X_PROPOSAL_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
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C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

PLOT DATE / TIME: 08 Aug 2019 13:51:36 — PLOT BY: KC14065

	NAME	DATE
TITLE		
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

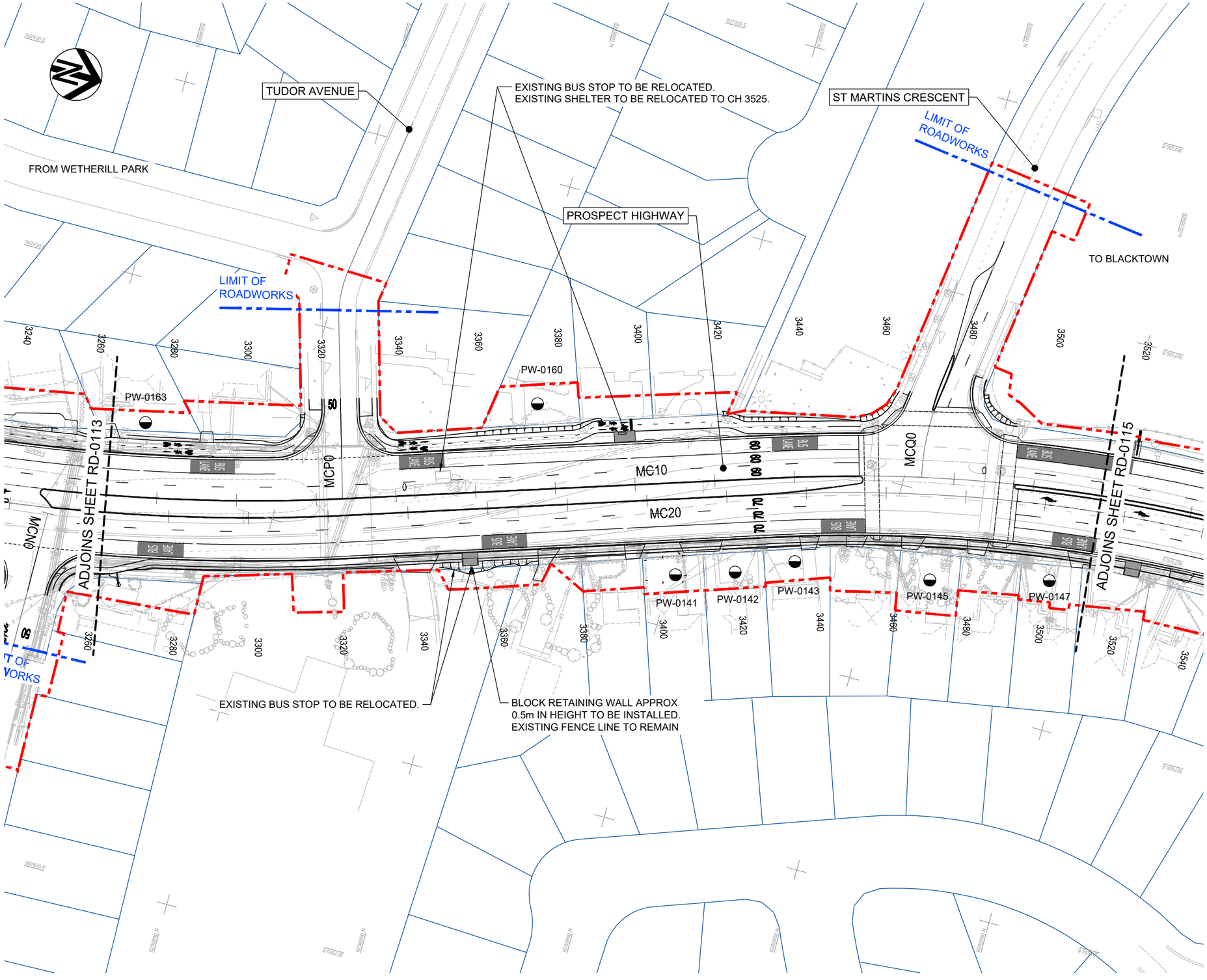
PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 13 — SHEET 29 OF 862

A3

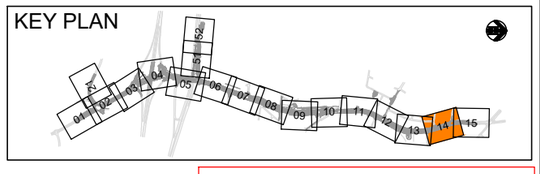
RMS REGISTRATION No.: DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0113 — ISSUE: C



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
- NOISE WALL
- PEDESTRIAN HANDRAIL
- SAFETY BARRIER
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PROPERTY WORKS DRAWING REFERENCE (PW-0124)



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0114.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

EXTERNAL REFERENCE FILES:
X_RMSNSWGV4.2_Ca3
X_BDRY
X_DES_CTRL_1000
X_DES_MAIN
X_FRAME_1000
X_CADAST
X_STREET_NAMES_1000
X_KEY_1000
X_LEG_RD
X_SIRU
X_DES_CTRL_500
X_PW_TAG
X_PROPERTY_M_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
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LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

PLOT DATE / TIME: 08 Aug 2019 13:52:01 — PLOT BY: KC14065

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT ROAD ALIGNMENT PLAN
SHEET 14 — SHEET 30 OF 862

A3

RMS REGISTRATION No.: DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0114 — ISSUE C

FROM WETHERILL PARK

TO BLACKTOWN

PROSPECT HIGHWAY

EXISTING BUS STOP
TO BE RELOCATED.

THE TCS POST AND PEDESTRIAN CROSSING SURVEY INFORMATION AT THE BUNGARRIBEE ROAD INTERSECTION (LEFT TURN SLIP LANE) IS OUT OF DATE AND IS DIFFERENT TO THAT DEPICTED ON THESE DRAWINGS. TCS DETECTOR REPLACEMENT WILL BE REQUIRED AFTER THE INSTALLATION OF THE NEW STORMWATER LINE.

ADJOINS SHEET RD-0114

MC10

MC20

BUS LANE

LIMIT OF ROADWORKS

PW-0148

PW-0152

PW-0154

PW-0155

EXISTING PATH
TO BE REMOVED

EXISTING BUS STOP TO BE RELOCATED.
EXISTING BENCH TO BE RELOCATED TO CH 2910.
SHELTER TO BE RELOCATED FROM CH 3350.

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
- RETAINING WALL
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- PEDESTRIAN HANDRAIL
- SAFETY BARRIER
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 PROPERTY WORKS DRAWING REFERENCE

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME
V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0115.dwg

DESIGN LOT CODE
RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING
DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME
08 Aug 2019 13:52:27

PLOT BY
KC14065

EXTERNAL REFERENCE FILES
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X_GRID
X_SURVEY
X_DES_CTRL_500
X_PW_TAG
X_PROPOSAL_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	21.06.19	ISSUE FOR TENDER	012	CS
C	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING
SCALE 1:1000 5 0 10 20

CO-ORDINATE SYSTEM: MGA ZONE 56
HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT
Transport Roads & Maritime Services
NSW GOVERNMENT

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 15 SHEET 31 OF 862

A3

RMS REGISTRATION No. DS2015/000269
PART 1

ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-0115
ISSUE: C

FROM PROSPECT

PICRITE CLOSE

LIMIT OF ROADWORKS

ADJOINS SHEET RD-0102

MC70

WILLIAM LAWSON DRIVE

LIMIT OF ROADWORKS

MC40

RESERVOIR ROAD

LIMIT OF ROADWORKS

TO EASTERN CREEK

100

200

300

LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
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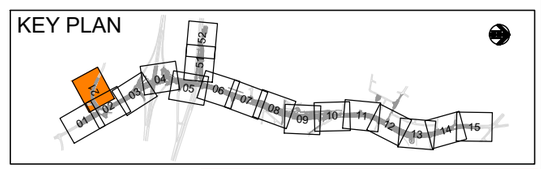
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS
- PROPERTY WORKS DRAWING REFERENCE — PW-0124

KEY PLAN



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0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

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DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:52:53 PLOT BY: BD14447

EXTERNAL REFERENCE FILES:
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REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

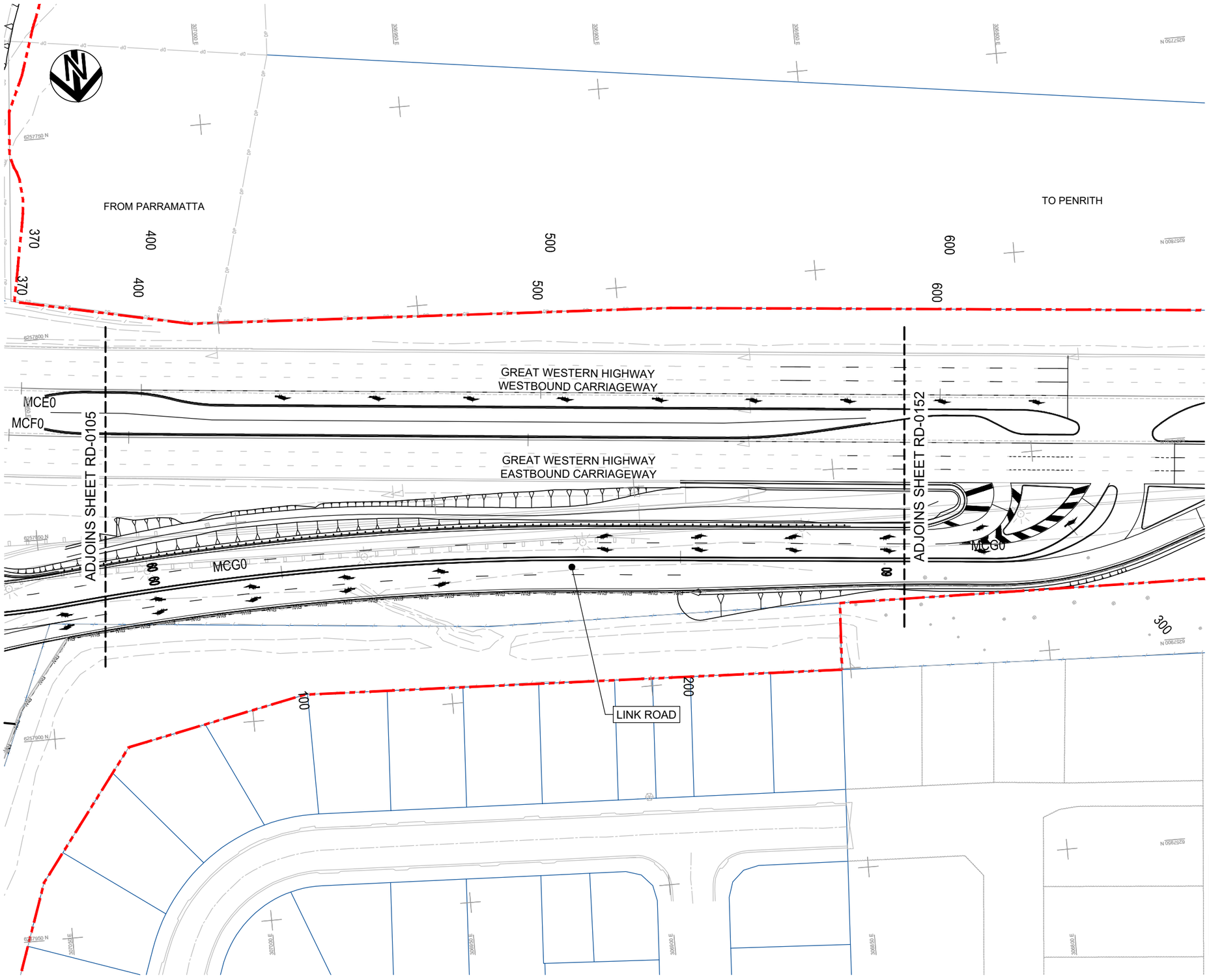
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 16 SHEET 32 OF 862

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER | EDMS No.: DS2015-000269 | SHEET No.: RD-0121 | ISSUE: B



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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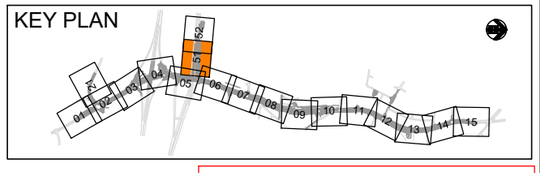
- TYPE F SAFETY BARRIER
- SF KERB
- SFM KERB
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0151.dwg	DESIGN LOT CODE: RD-01	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt	PLOT DATE / TIME: 08 Aug 2019 13:53:18 — PLOT BY: BD14447

EXTERNAL REFERENCE FILES:
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X_KEY_1000
X_LEG_RD
X_GRID
X_MAIN_RD
X_DES_CTRL_500
X_PW_TAG
X_PROP_W_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR:

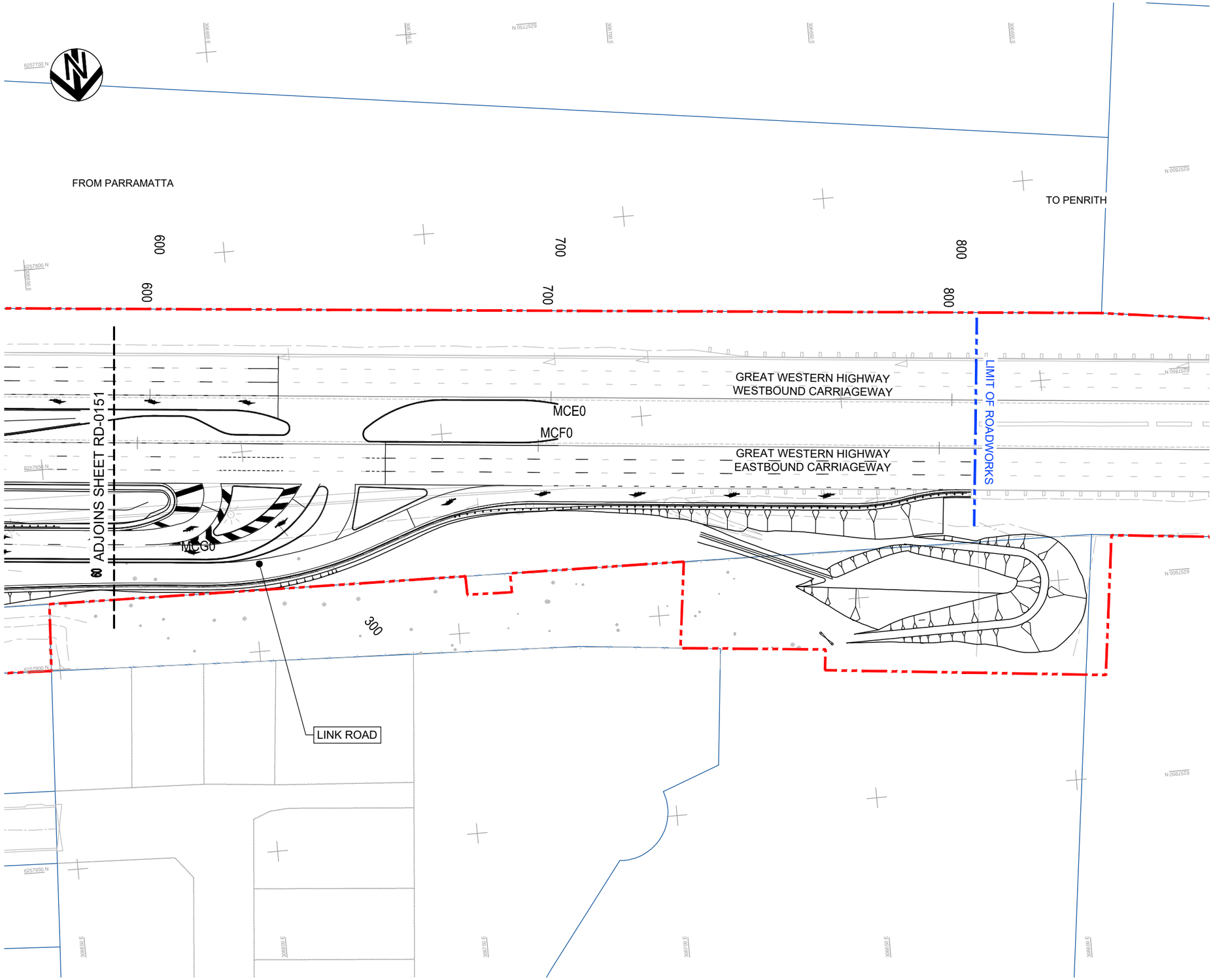
A3

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN

SHEET 17 — SHEET 33 OF 862

RMS REGISTRATION No.: DS2015/000269 — PART: 1

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
TENDER	DS2015-000269	RD-0151	B



LEGEND

- ROAD CONTROL LINE
- REF APPROVED PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING FENCING
- NEW FENCING
- EXISTING PROPERTY BOUNDARY
- EXISTING ROADS AND TRACKS
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- SF KERB
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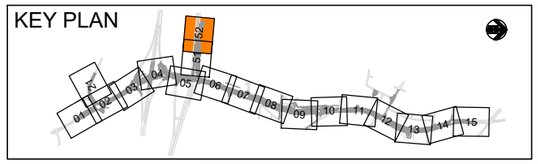
- 'ACO QK200SF' KERB DRAIN
- SM KERB
- SA KERB
- SB KERB
- ELSHOLZ KERB
- M4SM DESIGN BY OTHERS

PW-0124 — PROPERTY WORKS DRAWING REFERENCE

KEY PLAN



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THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\03_RD_Roads\DS2015-000269-DD-RD-0152.dwg

DESIGN LOT CODE: RD-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-06.txt

PLOT DATE / TIME: 08 Aug 2019 13:53:44 — PLOT BY: BD14447

EXTERNAL REFERENCE FILES:
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X_BDRY
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X_DES_MAIN
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X_CADAST
X_STREET_NAMES_1000
X_KEY_1000
X_LEG_RD
X_GRID
X_AUX
X_DES_CTRL_500
X_PW_TAG
X_PROJ_LIM_OF_RD_WRKS
X_FRAME_PW

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	03.05.2019	ISSUE FOR TENDER	WVR 541-05	CS
B	08.08.2019	ISSUE FOR TENDER	022	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C. BRITS	10.02.17
DRG CHECK	R. STEENKAMP	10.02.17
DESIGN	C. DALGLEISH	10.02.17
DESIGN CHECK	R. STEENKAMP	10.02.17
DESIGN MNGR	S. TAYLOR	10.02.17
PROJECT MNGR	C. SUTTON	10.02.17

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
ROAD ALIGNMENT PLAN
SHEET 18 — SHEET 34 OF 862

A3

RMS REGISTRATION No.: DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-0152 — ISSUE: B

CITY OF BLACKTOWN

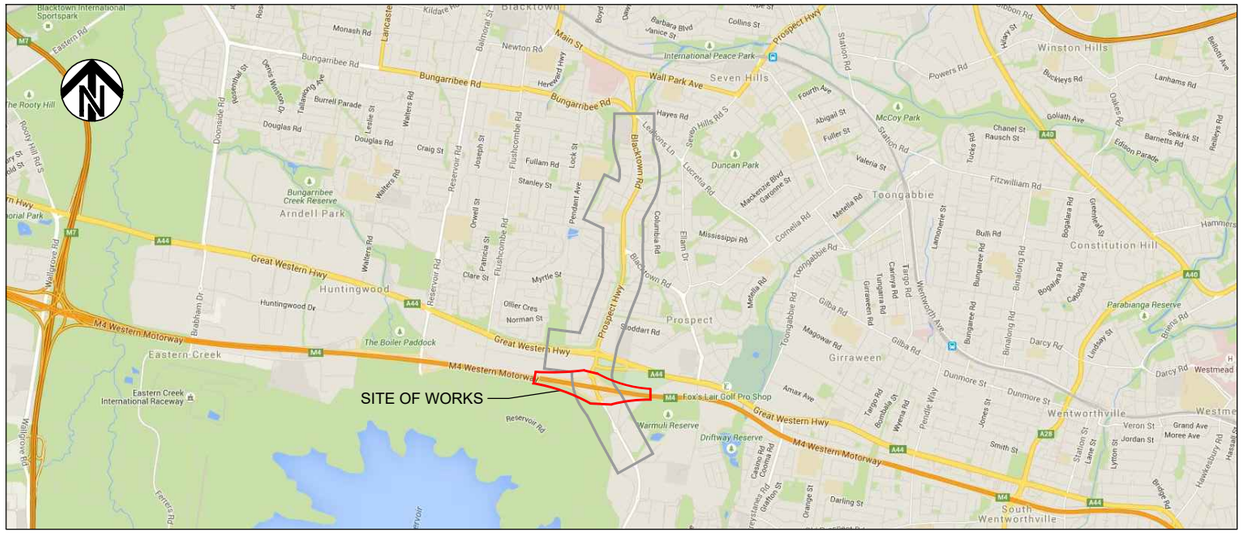
MR644 - PROSPECT HIGHWAY

PROSPECT HIGHWAY UPGRADES

M4 LANE SHIFT

M4 MOTORWAY

ISSUED FOR TENDER



LOCALITY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50mm ON A3 SIZE ORIGINAL

X_RMRNSWG_CA3_COVER

DRAWING FILE LOCATION / NAME
V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-GE-4001.dwg

LINEAR REFERENCING
START: 0000644, 0023, A1, 021 FINISH: 0000644, 0060, A2, 458

PLOT DATE / TIME: 09 Aug 2019 10:34:30 PLOT BY: KC14065

PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

DESIGNED	REVIEWED	VERIFIED	RMS PROJECT MANAGER
SIGNED	SIGNED	SIGNED	NAME
NAME	NAME	NAME	TITLE
TITLE	TITLE	TITLE	
DATE	DATE	DATE	

VALIDATION AND ACCEPTANCE OF THESE DRAWINGS AND THE DESIGN SHOWN THEREON IS TO BE CARRIED OUT UNDER SEPARATE PROCESS

CLIENT: Transport Roads & Maritime Services

PREPARED FOR

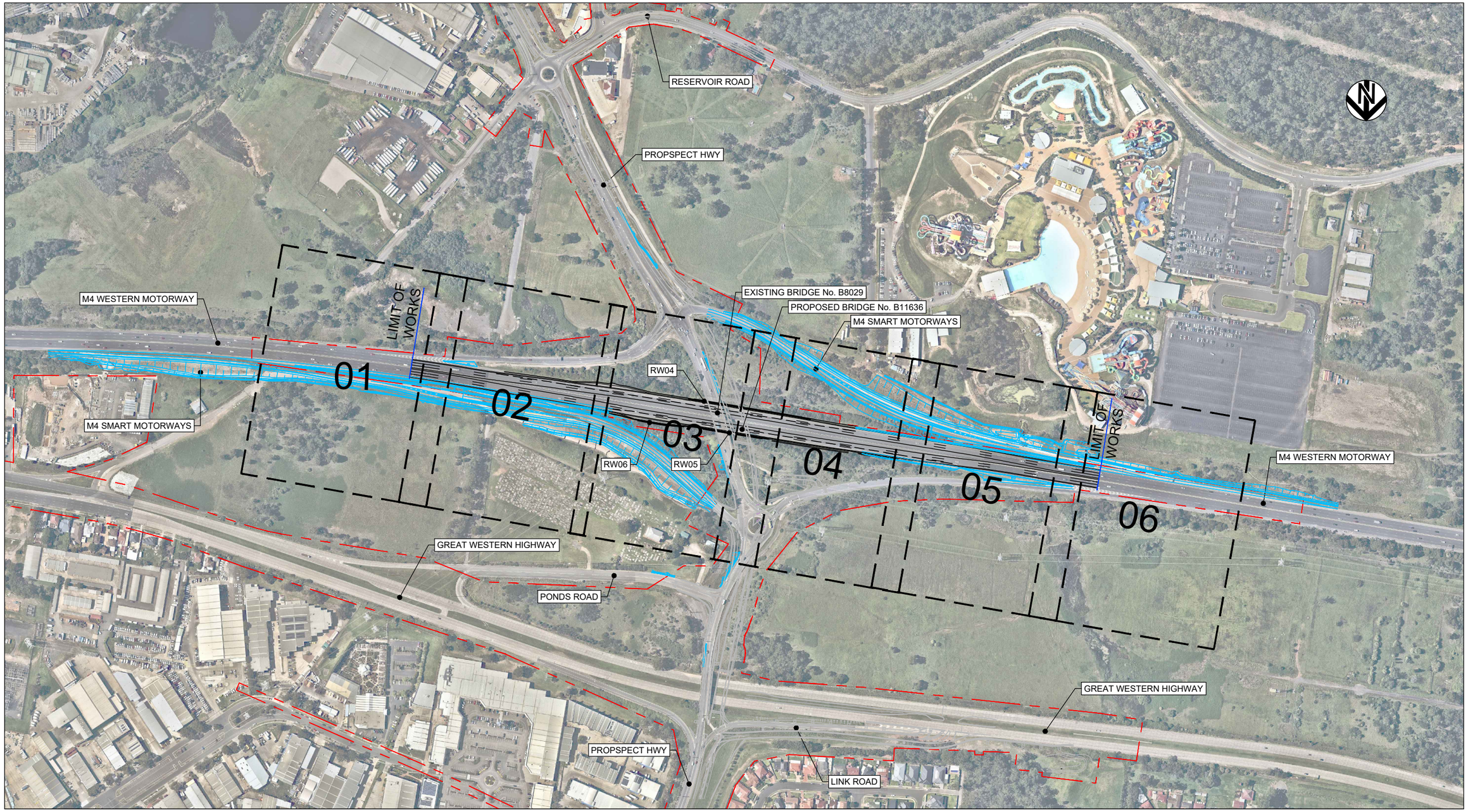
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
COVER SHEET

A3

RMS PROJECT No. | DESIGN PROJECT No.

RMS REGISTRATION No. DS2015/000269 | PART 1

ISSUE STATUS: TENDER | EDMS No.: DS2015-000269 | SHEET No.: GE-4001 | ISSUE: B



NOT FOR CONSTRUCTION

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0 5 10 15 20 25 30 35 40 45 150mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-GE-4005.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:35:17 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
X_RMSNSWGV4-2_Ca3
X_BDRY_M4
X_DES_MAIN_M4
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X_DES_MAIN
X_PAV_MAIN_M4
X_BDRY_LIM_OF_RD_WRKS_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C.MORO	10.04.19
DRG CHECK	R.GOOSEN	10.04.19
DESIGN	M.WATSON	10.04.19
DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

PREPARED FOR

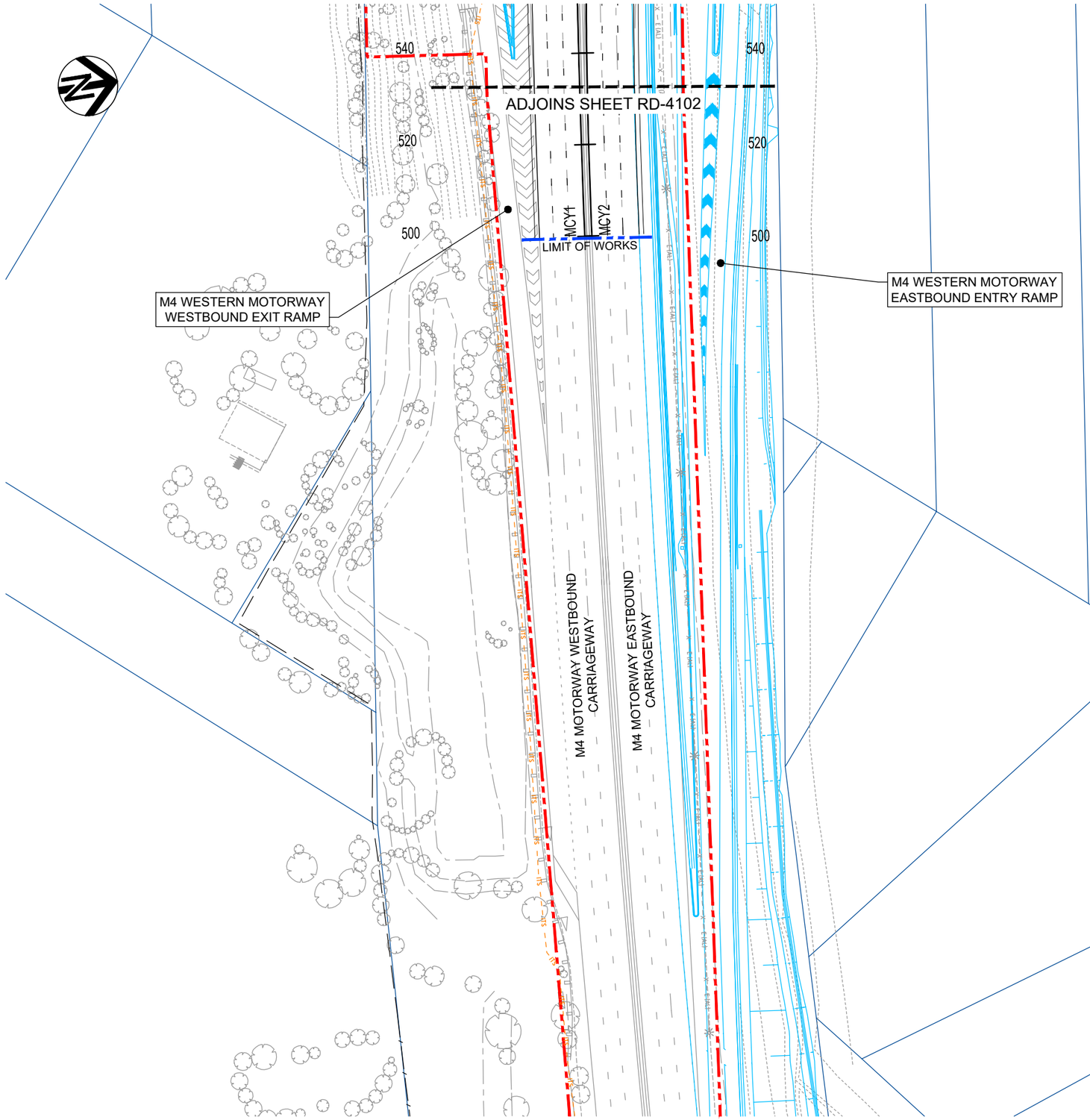
CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
SITE LAYOUT

A3

SHEET 4 OF 63

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: GE-4005 ISSUE: B



LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- S-GR-41 — BARRIER/KERB ID
- L1 — LINEMARKING TAG
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
- RETAINED COMMUNICATIONS PIT
- RETAINED COMMS ITS
- RETAINED COMMS TELSTRA
- RETAINED ELECTRICAL
- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

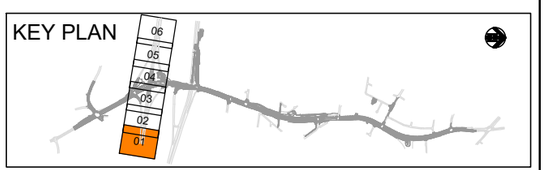
PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- M41 — PAVEMENT TYPE TAG
- X1 — PAVEMENT INTERFACE TAG
- 1 — PAVEMENT EDGE TAG

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME
V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4101.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:38:03 — PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
X_RMSNSWGV42_Ca3
X_SURV_M4
X_STREET_NAMES_1000_M4
X_PAV_TAG_M4
X_PAV_MAIN_M4
X_NOTE_PV_M4
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X_DES_MAIN_M4
X_BDRY_M4
X_DES_CTRL_1000_M4
X_KERB_1000_M4
X_FRAME_1000_M4
X_BDRY_LIN_OF_RD_WRKS_M4
X_OVERLAY_M4
X_LMK_TAG_M4
X_UTIL_M4
X_utilx_m4
X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C.MORO	10.04.19
DRG CHECK	R.GOOSEN	10.04.19
DESIGN	M.WATSON	10.04.19
DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 1 OF 6 — SHEET 7 OF 63

A3

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-4101 — ISSUE: B

RELOCATED GE7-206

ADJOINS SHEET RD-4103

ADJOINS SHEET RD-4101

EXISTING G9-70 (NO STOPPING ON FREEWAY) TO BE RETAINED

RMS TO MANAGE TELSTRA NETWORK FROM THIS POINT WEST

M4 WESTERN MOTORWAY EASTBOUND ENTRY RAMP

M4 WESTERN MOTORWAY WESTBOUND EXIT RAMP

M4 MOTORWAY WESTBOUND CARRIAGEWAY

M4 MOTORWAY EASTBOUND CARRIAGEWAY

LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- BARRIER/KERB ID
- LINEMARKING TAG
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
- RETAINED COMMUNICATIONS PIT
- RETAINED COMMS ITS
- RETAINED COMMS TELSTRA
- RETAINED ELECTRICAL
- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- PAVEMENT TYPE TAG
- PAVEMENT INTERFACE TAG
- PAVEMENT EDGE TAG

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4102.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:38:27 PLOT BY: KC14065

EXTERNAL REFERENCE FILES: X_RMSNSWGV4-2_Ca3, X_SURV_M4, X_STREET_NAMES_1000_M4, X_NOTE_PV_M4, X_LEG_PV_M4, X_DES_MAIN_M4, X_BDRY_LIN_M4, X_DES_CTRL_1000_M4, X_KEY_1000_M4, X_FRAME_1000_M4, X_PAV_MAIN_M4, X_PAV_TAG_M4, X_CADAST_M4, X_MAIN_ROAD_M4, X_BDRY_LIN_OF_RD_WRKS_M4, X_UTIL_M4, X_utilx_m4, X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
DRAWN	C.MORO	10.04.19
DRG CHECK	R.GOOSEN	10.04.19
DESIGN	M.WATSON	10.04.19
DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: Transport Roads & Maritime Services (NSW GOVERNMENT)

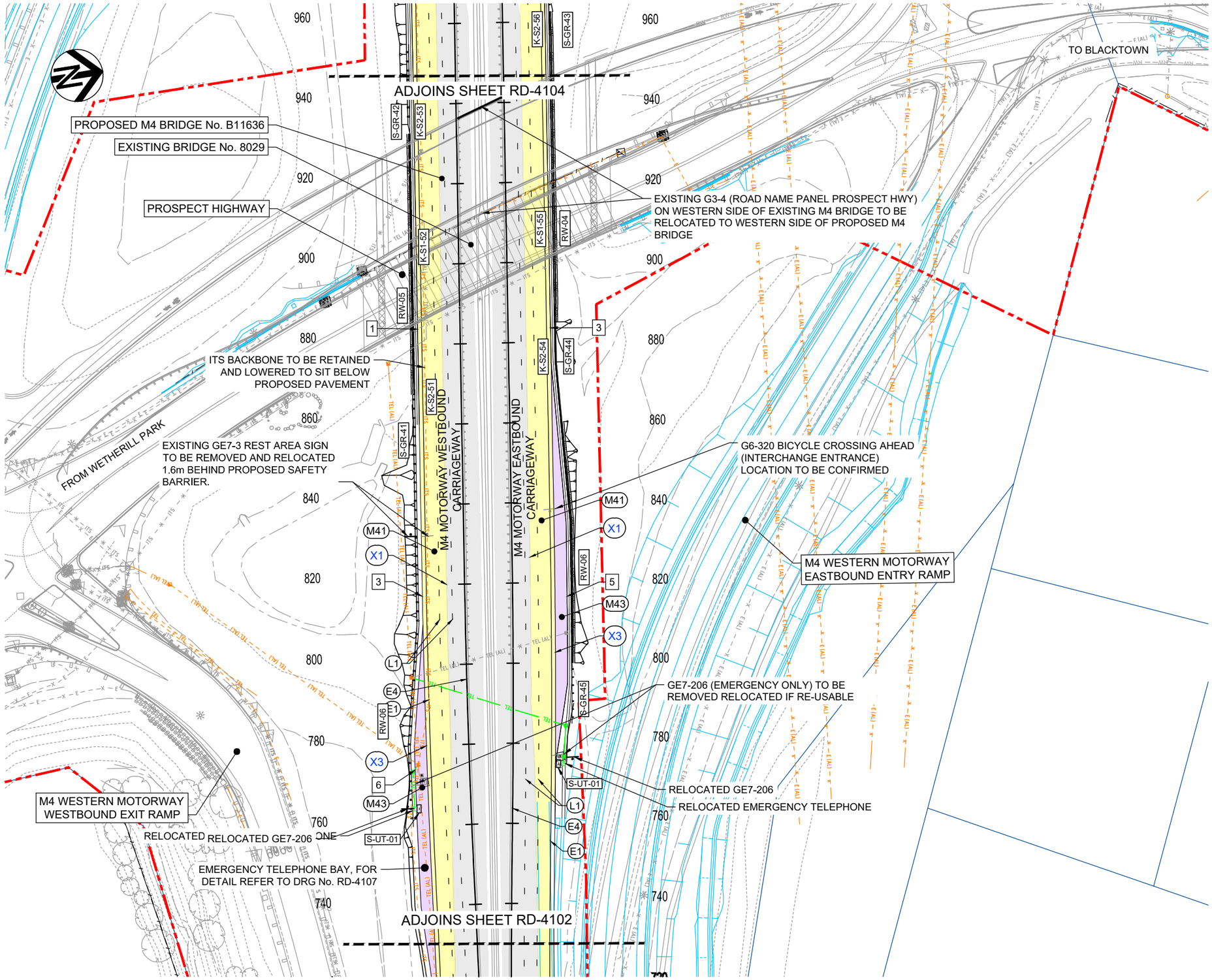
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 2 OF 6 SHEET 8 OF 63

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-4102 ISSUE: B



LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- BARRIER/KERB ID
- LINEMARKING TAG
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
- RETAINED COMMUNICATIONS PIT
- RETAINED COMMS ITS
- RETAINED COMMS TELSTRA
- RETAINED ELECTRICAL
- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- PAVEMENT TYPE TAG
- PAVEMENT INTERFACE TAG
- PAVEMENT EDGE TAG

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4103.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:38:54 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
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X_SURV_M4
X_STREET_NAMES_1000_M4
X_NOTE_PV_M4
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X_DES_MAIN_M4
X_EDGE_M4_M4
X_DES_CTRL_1000_M4
X_KEY_1000_M4
X_FRAME_1000_M4
X_PAV_MAIN_M4
X_PAV_TAG_M4
X_CADAST_M4
X_UTIL_AG_M4
X_UTIL_M4
x_utilx_m4
X_DES_MAIN
X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
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DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 3 OF 6

A3

SHEET 9 OF 63

RMS REGISTRATION No. DS2015/000269

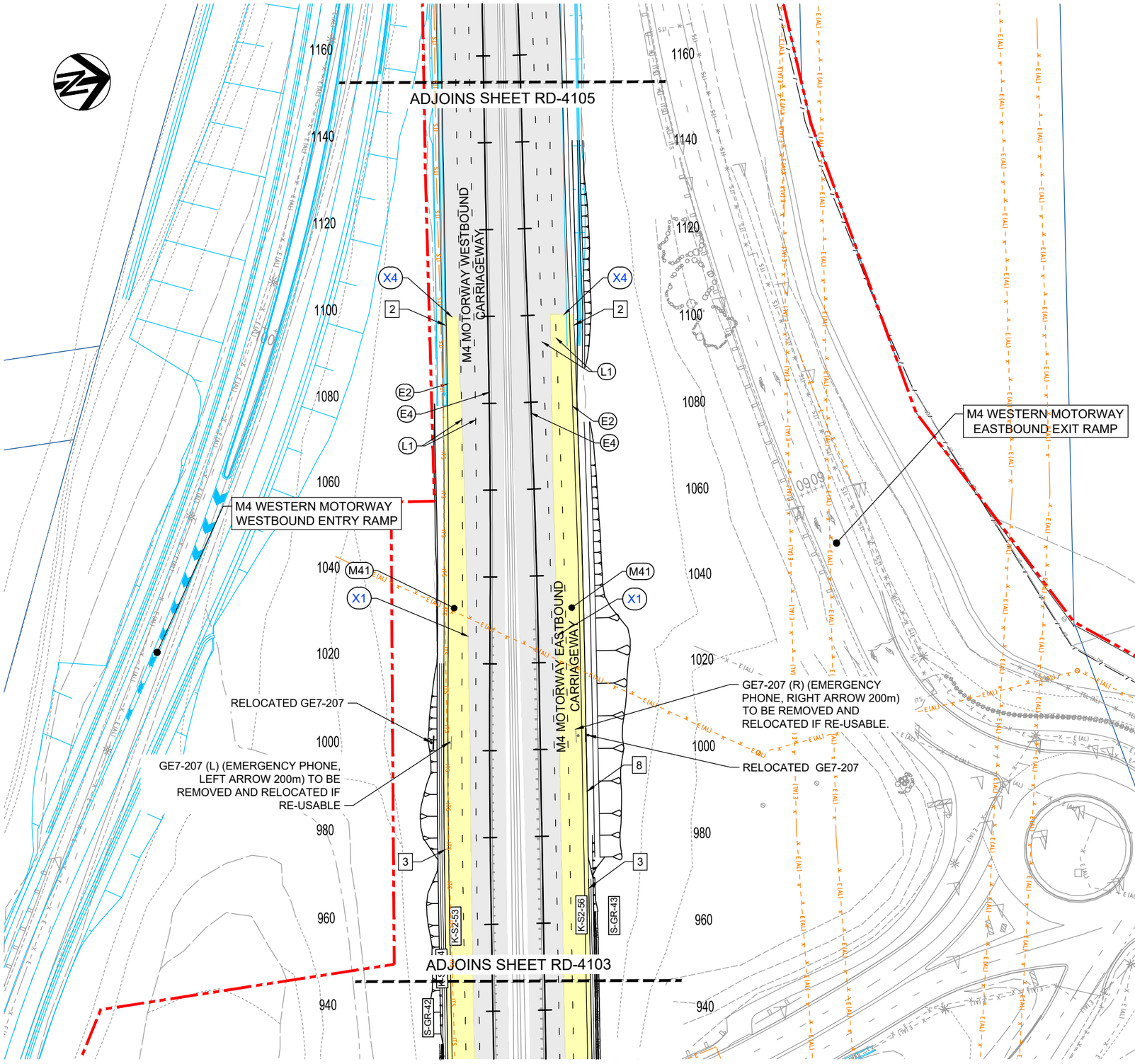
PART 1

ISSUE STATUS: TENDER

EDMS No.: DS2015-000269

SHEET No.: RD-4103

ISSUE: B



LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- BARRIER/KERB ID (S-GR-41)
- LINEMARKING TAG (L1)
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
- RETAINED COMMUNICATIONS PIT
- RETAINED COMMS ITS
- RETAINED COMMS TELSTRA
- RETAINED ELECTRICAL
- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

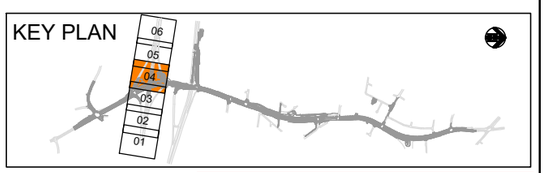
PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- PAVEMENT TYPE TAG (M41)
- PAVEMENT INTERFACE TAG (X1)
- PAVEMENT EDGE TAG (1)

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN



NOT FOR CONSTRUCTION

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DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4104.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:39:20 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
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X_SURV_M4
X_STREET_NAMES_1000_M4
X_NOTE_PV_M4
X_LEG_PV_M4
X_DES_MAIN_M4
X_EDGE_M4_M4
X_DES_CTRL_1000_M4
X_KEY_1000_M4
X_FRAME_1000_M4
X_PAV_MAIN_M4
X_PAV_TAG_M4
X_CADAST_M4
X_LAY_TAG_M4
X_UTIL_M4
x_utlx_m4
X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

SMEC
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

TITLE	NAME	DATE
DRAWN	C.MORO	10.04.19
DRG CHECK	R.GOOSEN	10.04.19
DESIGN	M.WATSON	10.04.19
DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

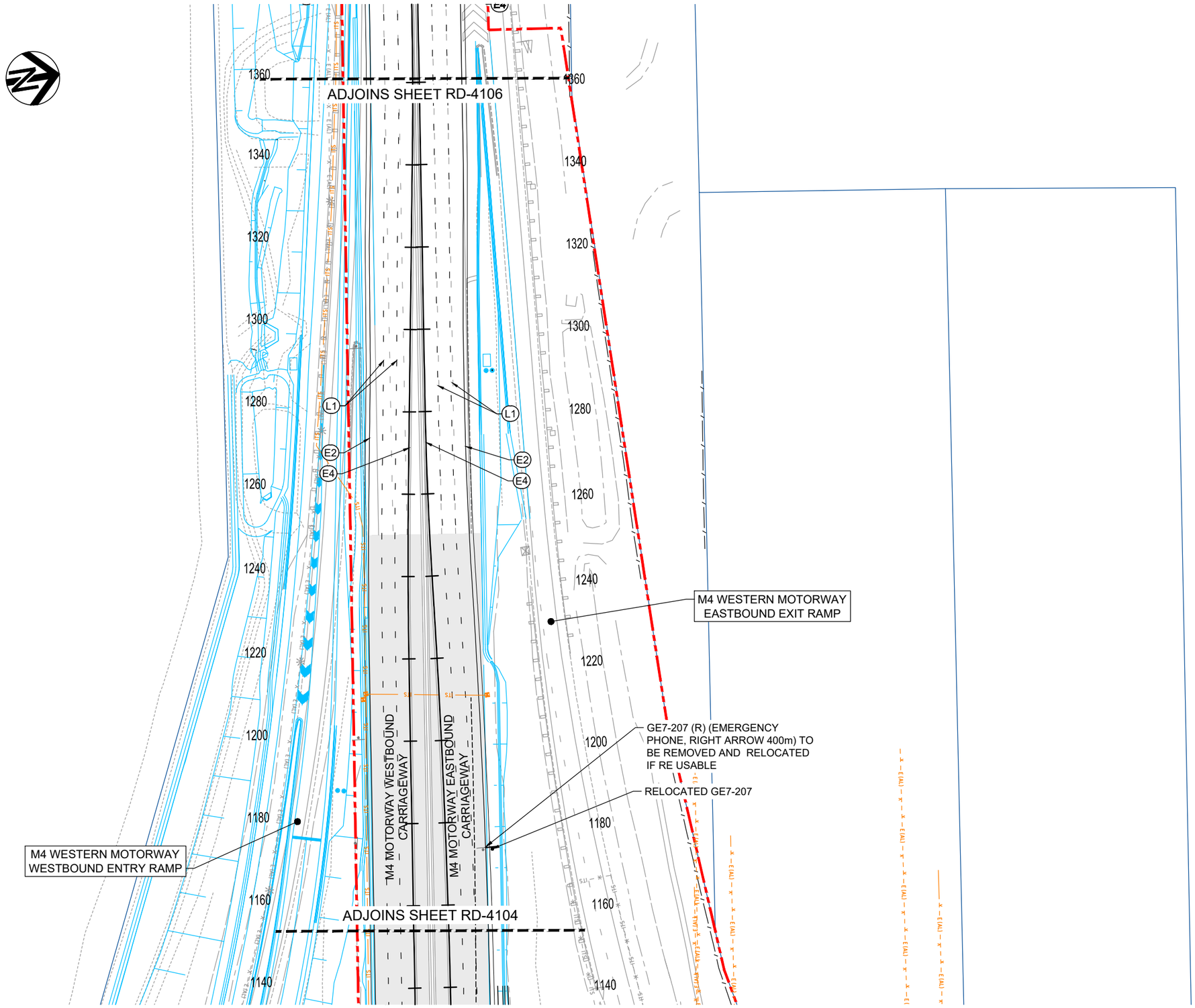
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 4 OF 6 SHEET 10 OF 63

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER EDMS No.: DS2015-000269 SHEET No.: RD-4104 ISSUE: B



LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- S-GR-41 — BARRIER/KERB ID
- L1 — LINEMARKING TAG
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
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- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

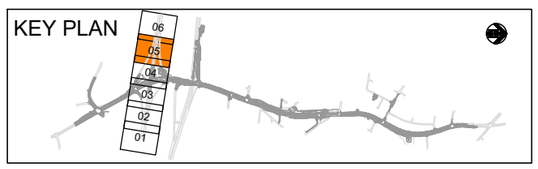
PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- M41 — PAVEMENT TYPE TAG
- X1 — PAVEMENT INTERFACE TAG
- 1 — PAVEMENT EDGE TAG

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN



NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED
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DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4105.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:39:45 — PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
X_RMSNSWGV4.2_Ca3
X_SURF_M4
X_STREET_NAMES_1000_M4
X_PAV_TCS_DETECTORS_M4
X_NOTE_PV_M4
X_EES_PV_M4
X_DES_MAIN_M4
X_BDRY_M4
X_DES_CTRL_1000_M4
X_REF_TCS_1000_M4
X_PAV_MAIN_M4
X_PAV_TAG_M4
X_CONC_M4
X_LMK_TAG_M4
X_UTIL_M4
X_stfx_m4
X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
SMEC AUSTRALIA PTY LTD
© ABN 47 065 475 149
LEVEL 5 20 BERRY STREET
NORTH SYDNEY NSW 2060
PH 02 9925-5555 FAX 02 9925-5566

	NAME	DATE
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DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

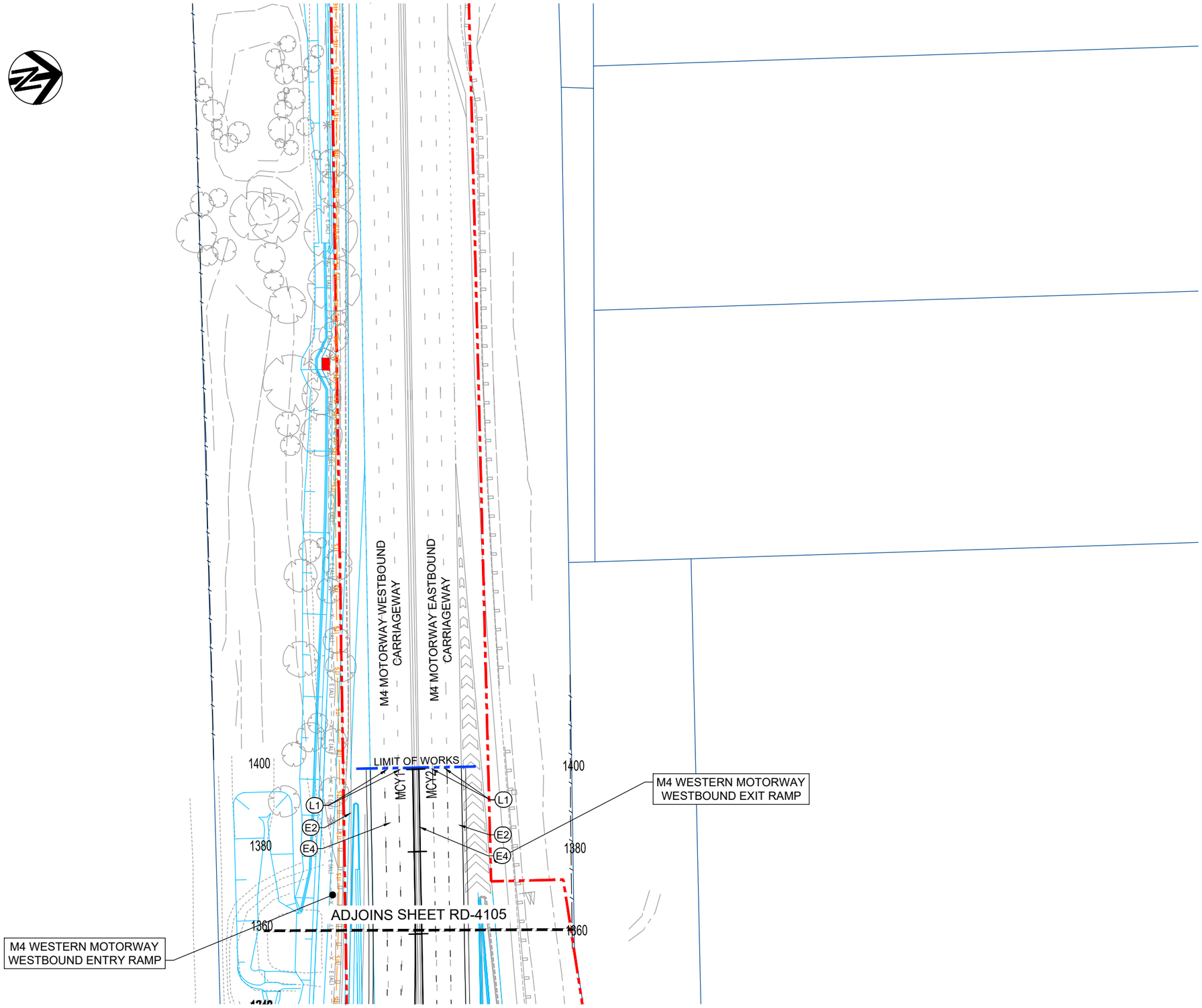
PREPARED FOR:

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 5 OF 6 — SHEET 11 OF 63

A3

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: TENDER — EDMS No.: DS2015-000269 — SHEET No.: RD-4105 — ISSUE: B



LEGEND

- ROAD CONTROL LINE
- PROJECT BOUNDARY
- LIMIT OF ROAD WORKS
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROADS AND LINEMARKING
- SO KERB
- PROPOSED SAFETY BARRIER
- PROPOSED RETAINING WALL
- BARRIER/KERB ID (S-GR-41)
- LINEMARKING TAG (L1)
- M4 SMART MOTORWAYS PROJECT
- VMS GANTRY FOOTING (M4 SMART MOTORWAYS PROJECT)
- EXISTING ROADS AND TRACKS
- EXISTING SAFETY BARRIER
- EXISTING FENCING
- EXISTING SIGN
- RELOCATED SIGN

UTILITIES

- PROPOSED COMMS TELSTRA
- RETAINED EMERGENCY TELEPHONE
- RETAINED ITS PIT
- RETAINED COMMUNICATIONS PIT
- RETAINED COMMS ITS
- RETAINED COMMS TELSTRA
- RETAINED ELECTRICAL
- DECOMMISSIONED ITS PIT
- DECOMMISSIONED COMMUNICATIONS PIT
- DECOMMISIONED COMMS ITS
- DECOMMISIONED COMMS TELSTRA
- DECOMMISIONED ELECTRICAL

PAVEMENT TYPES

- EXISTING PAVEMENT
- PAVEMENT TYPE M41
- PAVEMENT TYPE M43
- PAVEMENT TYPE TAG (M41)
- PAVEMENT INTERFACE TAG (X1)
- PAVEMENT EDGE TAG (1)

NOTES

1. FOR GENERAL NOTES REFER TO DRAWING No. GE-4003
2. FOR PAVEMENT PROFILES AND EDGE DETAILS REFER TO DRAWING No. RD-4111
3. FOR KERB/BARRIER DETAILS AND SCHEDULES REFER DRAWING No. RD-4121
4. FOR M4 RW04/05/06 DETAILS REFER TO M4 RETAINING WALL PACKAGE.
5. FOR SIGNAGE SCHEDULE REFER DRAWING No. RD-4122

KEY PLAN

NOT FOR CONSTRUCTION

THIS DRAWING MAY BE PREPARED IN COLOUR AND MAY BE INCOMPLETE IF COPIED

0 5 10 15 20 25 30 35 40 45 50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\30012378\CAD\DWG\60_M4_Lane_Shift\DS2015-000269-DD-RD-4106.dwg

DESIGN LOT CODE: ES-01

DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING: DS2015-000269-DESIGN_RD00-05.txt

PLOT DATE / TIME: 09 Aug 2019 10:40:09 PLOT BY: KC14065

EXTERNAL REFERENCE FILES:
X_RMSNSWGV42_Ca3
X_SURV_M4
X_STREET_NAMES_1000_M4
X_PAV_TCS_DETECTORS_M4
X_NOTE_PV_M4
X_LES_PV_M4
X_DES_MAIN_M4
X_BDRY_M4
X_DES_CTRL_1000_M4
X_FEAT_1000_M4
X_PAV_MAIN_M4
X_PAV_TAG_M4
X_PROP_LIM_OF_RD_WRKS_M4
X_CADAST_M4
X_LMK_TAG_M4
X_UTIL_M4
X_RW_M4
X_SIGNAGE_M4

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	19.07.2019	ISSUE FOR TENDER	WVR 541_016	CS
B	08.08.2019	ISSUE FOR TENDER	WVR 541_019	CS

SCALES ON A3 SIZE DRAWING: SCALE 1:1000 (5 0 10 20)

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY:
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	NAME	DATE
DRAWN	C.MORO	10.04.19
DRG CHECK	R.GOOSEN	10.04.19
DESIGN	M.WATSON	10.04.19
DESIGN CHECK	S. HOSSAIN	10.04.19
DESIGN MNGR	C. SUTTON	10.04.19
PROJECT MNGR	C. SUTTON	10.04.19

CLIENT: NSW GOVERNMENT Transport Roads & Maritime Services

PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
M4 MOTORWAY LANE SHIFT
ROAD ALIGNMENT AND PAVEMENT PLAN
SHEET 6 OF 6 SHEET 12 OF 63

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS: TENDER
EDMS No.: DS2015-000269
SHEET No.: RD-4106
ISSUE: B

Appendix B

Consideration of clause 228(2) factors and Matters of National Environmental Significance and Commonwealth land

Clause 228(2) Checklist

In addition to the requirements of the *Is an EIS required?* (1995/1996) guideline and the *Roads and Related Facilities EIS Guideline* (DUAP, 1996) as detailed in the addendum REF, the following factors, listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000, have also been considered to assess the likely impacts of the proposed modification on the natural and built environment.

Factor	Impact
a. Any environmental impact on a community? During construction, the proposal would cause minor impacts on the community because of construction noise, potential air quality impacts, and traffic and transport impacts. Affected residence would be contacted prior to the commencement of work The design modifications assessed in this Addendum REF contribute to the overall Approved Project, which would provide the community with a safer and less congested road, one that can accommodate predicted traffic growth. The local and broader community would experience these benefits. Property access arrangements would benefit individual property owners.	Short-term negative Long-term positive
b. Any transformation of a locality? The proposed modification would not transform a locality.	Nil
c. Any environmental impact on the ecosystems of the locality? The proposed modification would have some impact on ecosystems of the locality as discussed above in section 6.4 during construction. Operational of the proposal are not expected to be additional in nature or extent from the assessment carried out in the project REF and addendum 1 REF No new safeguards have been proposed to address the potential impacts associated with the proposed modification.	Short-term minor negative
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The proposed modification is not expected to reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality.	Nil
e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? The proposed modification includes demolition of the residential property and ancillary structures located at 30 Topaz Crescent, Seven Hills. The property is not a listed heritage item.	Nil
f. Any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)?	Nil

Factor	Impact
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The proposed modification would not endanger any species of animal, plant or other form of life.	Nil
h. Any long-term effects on the environment? In the long term, there would be negligible changes to the locality from the current status. The land use of the area would be consistent, and the area of additional vegetation clearance required for construction negligible in the context of the surrounding area.	Nil
i. Any degradation of the quality of the environment? In the short term the proposal has the potential to degrade the environment in the area immediately surrounding the proposed modification site due to construction work activities. Table 7-1 details safeguards and management measures to manage these impacts. With effective implementation of the measures, most impacts would be minor or negligible.	Short-term minor negative Long-term negligible
j. Any risk to the safety of the environment? The proposed modification does not pose a risk to the safety of the environment.	Nil
k. Any reduction in the range of beneficial uses of the environment? The proposed modification would not reduce the range of beneficial uses of the environment.	Nil
l. Any pollution of the environment? In the short term the proposal has the potential to degrade the environment in the area immediately surrounding the proposed modification site, through erosion and runoff, accidental spills and construction noise. Table 7-1 details safeguards and management measures to manage these impacts. With effective implementation of the measures, most impacts would be minor or negligible.	Short-term minor negative Long-term negligible
m. Any environmental problems associated with the disposal of waste? The proposed modification has no identified problems associated with the disposal of waste.	Nil
n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The proposed modification would not place any increased demand on resources, natural or otherwise, that are or are likely to become in short supply.	Nil
o. Any cumulative environmental effect with other existing or likely future activities?	Nil

Factor	Impact
Given the location and scale of the proposed modification, cumulative impacts are not expected.	
p. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? There would be no impact to coastal processes or hazards.	Nil

Matters of National Environmental Significance and Commonwealth land

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposed modification should be referred to the Australian Government Department of the Environment.

Under the EPBC Act strategic assessment approval a referral is not required for proposed road actions that may affect nationally listed threatened species, populations, endangered ecological communities and migratory species. Impacts on these matters are assessed in detail as part of this addendum REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

Factor	Impact
a. Any impact on a World Heritage property?	Nil
b. Any impact on a National Heritage place?	Nil
c. Any impact on a wetland of international importance?	Nil
d. Any impact on a listed threatened species or communities?	Nil
e. Any impacts on listed migratory species?	Nil
f. Any impact on a Commonwealth marine area?	Nil
g. Does the proposed modification involve a nuclear action (including uranium mining)?	Nil
Additionally, any impact (direct or indirect) on Commonwealth land?	Nil

Appendix C

Biodiversity species list and Test of Significance

Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)

The Dusky Woodswallow is a small to medium sized bird, 16 to 20 centimetres long and weighing up to 35 grams. It has a dark-grey or brown body with a black tail and head. The wings are a charcoal colour with a white leading edge (OEH 2017). The Dusky Woodswallow is listed as vulnerable under the *Biodiversity Conservation Act 2016*.

A local population of migratory or nomadic fauna as defined in OEH's *Threatened Species Test of Significance Guidelines* (OEH 2018) is '*those individuals that are likely to occur in the study area from time to time or return year to year*'. No Dusky woodswallow individuals are likely to nest or permanently reside in the study area making them a nomadic or migratory species. The records of this species within 10 km of the study area are most likely of individuals passing though the remnant bushland moving from the west or moving in a north-south direction. The local population has therefore been defined as any Dusky Woodswallow occurring in the study area from time to time or return year to year.

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The Dusky Woodswallow can be a migratory bird, moving north after breeding. Birds that breed in NSW migrate north, sometimes as far as south-east QLD while birds that usually breed in Tasmania migrate north to south-east NSW. Migrants move back south between May and March to breed again. Migration can occur as breeding pairs, as small flocks or as larger flocks that move with other species (OEH 2017).

The Dusky Woodswallow builds an open cup-shaped nest made of twigs, grass and occasionally *Casuarina* needles. These nests are built in the forks of shrubs, small trees or in small tree hollows (Morcombe 2004; OEH 2017).

The Proposal will impact 53.91 hectares that could provide marginal habitat for migrating Dusky Woodswallows. Due to a lack of recorded sightings within the proposal area it is however unlikely that the Dusky Woodswallow frequently moves across this part of Sydney. The local population is more likely to move through the intact native vegetation of the Blue Mountains and Wollemi National Parks. The Proposal is therefore unlikely to impact the lifecycle of the local population of the Dusky Woodswallow such that it places it at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not Applicable.

Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)

The Dusky Woodswallow has a sparsely scattered distribution that stretches from Tasmania to South-East Queensland. It has been recorded across most of NSW except for the north-west. The Dusky Woodswallow has most commonly been sighted along the western slopes of the Great Dividing Range.

Dusky Woodswallow habitat includes dry, open eucalypt forests and woodlands. These forests and woodlands have an open or sparse shrub-layer that usually includes an assemblage of *Acacia* spp. and juvenile eucalypts. Habitat usually includes a complex ground-cover with a diverse assemblage of grasses and sedges along with fallen logs and other woody debris. The Dusky Woodswallow has been recorded in other vegetation types, just far less frequently. These marginal habitat types include shrublands, heathlands, rainforests and in agricultural land that borders large extents of native vegetation (OEH 2017).

(i) The Dusky Woodswallow foraging habitat in the proposal area occurs as dry sclerophyll forest or woodland. This habitat occurs as small remnant stands of Cumberland Plain Woodland along Prospect Highway and the Western Motorway that has been disturbed from its original condition by anthropogenically facilitated impacts (clearing, invasion of locally non-native species etc.). More intact Dusky Woodswallow habitat occurs within 10 kilometres of the study area at Prospect Nature Reserve, Western Sydney Regional Park, the Western Sydney Parklands and Doonside Crescent Nature Reserve. The disturbed land within the proposal area has also been assessed as Dusky Woodswallow habitat. As the Dusky Woodswallow may move through this area as it migrates it has been considered for this assessment.

The Proposal will impact 53.91 hectares of potential Dusky Woodswallow habitat. The impact to this habitat will not place the local population at risk of extinction.

(ii) The potential Dusky Woodswallow foraging habitat within 10 kilometres of the proposal area occurs as fragmented and isolated stands of remnant vegetation. The proposed clearing of this vegetation along Prospect Highway and the Western Motorway will further fragment this habitat. The proposed clearing of native vegetation is not expected to further isolate any of the remaining stands of Dusky Woodswallow habitat.

(iii) The habitat in the proposal area does not meet the description of 'important' provided in the *Threatened Species Test of Significance Guidelines* (OEH 2018) – '*related to the stages of the species' life cycles and how reproductive success may be affected'*. The Dusky Woodswallow forages for insects above the canopy and over water-courses. The remnant native vegetation in the proposal area may provide foraging habitat however more suitable foraging habitat occurs within 10 kilometres of the proposal area. Similarly, the degraded condition of this vegetation makes it unlikely to be used as nesting habitat with the larger extents of vegetation at Prospect Nature Reserve, Western Sydney Regional Park, the Western Sydney Parklands and Doonside Crescent Nature Reserve being more suitable.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)

Declared areas of 'outstanding biodiversity value' ~~(now known as areas of critical habitat) under the *Threatened Species Conservation Act 1995* are now deemed as 'areas of outstanding biodiversity value' (AOBV) under the new BC (S&T) Regulation.~~ These declared areas as of the 1st of July 2019 are;

- Gould's Petrel critical habitat: located on Cabbage Tree Island located 1.4km offshore of Port Stephens.
- Little penguin population in Sydney's North Harbour critical habitat: two areas located around Manly Cove in the north of Sydney Harbour.
- Mitchell's Rainforest snail in Stotts Island Nature Reserve critical habitat: remnant areas of lowland forest and rainforest found between Tweed Heads and Ballina in north east NSW.
- Wollemi Pine critical habitat: contains a single population in the Wollemi National Park within the Greater Blue Mountains World Heritage Area.

Additionally, there are no draft critical habitat recommendations listed under the critical habitat register as of the 1st of July 2019. No area of outstanding biodiversity value is listed in the study area.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

'Threatening process' means a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes are listed under the Threatened Species Conservation Act 1995. At present there are 37 listed key threatening processes under the Threatened Species Conservation Act 1995.

The Project has the potential to contribute to, and increase the impact of the following Key Threatening Process listed under the BC Act:

- Clearing of native vegetation.
- Invasion of native plant communities by exotic perennial grasses.
- Removal of dead wood and trees.

Conclusion

Marginal foraging habitat for the Dusky Woodswallow occurs in the proposal area. The Dusky Woodswallow may also on occasion, move through the other vegetation and disturbed land in the proposal area as it migrates north or south. More suitable habitat occurs within 10 kilometers of the proposal in areas such as Prospect nature Reserve and Western Sydney Regional Park. Impacting the habitat within the proposal area is not expected to cause an extinction of the local population. **A Species Impact Statement is not required**.

Little Bentwing-bat (*Miniopterus australis)*

The Little Bentwing-bat is a smaller sized microchiropteran bat with a head to body length of 4.5 centimeters and a wing-span of 37-41 centimeters. The Little Bentwing-bat has brown fur that is slightly lighter on its underside. The last bone on the third finger of is longer than the other finger bones which gives this species its 'bent-wing' appearance.

A local of migratory or nomadic fauna population as defined in OEH's *Threatened Species Test of Significance Guidelines* (OEH 2018) is '*those individuals that are likely to occur in the study area from time to time or return year to year*'. No maternity roosts or non-maternity roosts were recorded in the proposal area during the SMEC or SKM surveys however non-maternity roosts that are temporarily used each of bats may occur within 10 kilometres of the study area. The Little Bentwing-bats previously recorded in the locality were most likely foraging or just moving through. Churchill 2008 notes that these bats are primarily tropical, moving as far south as Sydney after breeding.

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Populations of Little Bentwing-bats are centred around only a few maternity caves in Queensland. Populations gather at these caves to breed and raise young then disperse (sometimes as far south as Sydney). The Little Bentwing-bat maternity caves/roost at Mt Etna was recorded supporting about 100,000 individuals (Churchill 2008; OEH 2017).

A study of the Little Bentwing-bat on the Richmond Range found that their diets consisted primarily of moths and spiders. Less frequent prey included flies, cockroaches and beetles. The local Little Bentwing-bats population likely has a similar insectivorous diet.

The proposal may impact foraging habitat and foraging behaviour. This impact is not likely to adversely affect the lifecycle of the Little Bentwing-bat such that it leads to an extinction of the local population. As previously mentioned, no maternity roosts or non-maternity roosts were recorded in the proposal area. It is therefore highly unlikely that the proposal will impact on the lifecycle of the Little Bentwing-bat such that it would place the local population at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not Applicable.

Little Bentwing-bat (*Miniopterus australis)*

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The Little Bentwing-bat has been recorded from Cape York to Sydney. It occupies a variety of habitat types including rainforests, vine thickets, wet and dry sclerophyll forest, open woodlands, coastal forests and disturbed vegetation (Churchill 2008; OEH 2017). The Little Bentwing-bat is a cave-roosting bat however it has been recorded in man-made structures such as abandoned mines, tunnels, stormwater drains and culverts. Only a few maternity roosts have been documented, normally occurring within limestone cave systems in Queensland(Churchill 2008; OEH 2017).

(i) The entire extent of the proposal area has been assessed as potential Little Bentwing-bat foraging habitat. The Little Bentwing-bat is understood to be highly manoeuvrable foraging above the canopy and between the lower stratum. The native vegetation (both remnant and planted) and the developed areas likely support an assemblage of flying insects that are Little Bentwing-bat prey.

No maternity roosting or non-maternity roosting habitat (limestone caves, tunnels, culverts or abandoned mine-shafts) was recorded in the proposal area by either SMEC or SKM. One abandoned house will be cleared however it is unlikely that it supports Little Bentwing-bat habitat. Small tree hollows were recorded by SKM during their ecological surveys however they are not known to be optimal Little Bentwing-bat roosting habitat (Churchill 2008; Sinclair Knight Merz 2014). An ecologist should still be present for a pre-clearing inspection.

(ii) The native vegetation (optimal foraging habitat) both within the proposal area and within 10 kilometres of the proposal area occurs as a number of fragmented and isolated stands of remnant and planted vegetation. The proposed impact to this habitat along Prospect Highway and the Western Motorway will further fragment this habitat. The proposed clearing of vegetation is not expected increase the physical distances between any of the remaining stands of Little Bentwing-bat habitat.

(iii) The habitat in the proposal area does not meet the description of 'important' provided in the *Threatened Species Test of Significance Guidelines* (OEH 2018) – '*related to the stages of the species' life cycles and how reproductive success may be affected'*. The Little Bentwing-bat forages for insects above the canopy and throughout the lower stratum of vegetation communities. The remnant and planted native vegetation, the disturbed and exotic vegetation and the developed areas within the proposal area may provide foraging habitat however more suitable foraging habitat occurs within 10 kilometres of the proposal area. No non-maternity roosting habitat was recorded within the proposal area. Maternity roosts/caves – important habitat to the Little Bentwing-bat, was not recorded either.

Little Bentwing-bat (*Miniopterus australis)*

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

Declared areas of 'outstanding biodiversity value as of the 1st of July 2019 are:

- Gould's Petrel critical habitat: located on Cabbage Tree Island located 1.4km offshore of Port Stephens.
- Little penguin population in Sydney's North Harbour critical habitat: two areas located around Manly Cove in the north of Sydney Harbour.
- Mitchell's Rainforest snail in Stotts Island Nature Reserve critical habitat: remnant areas of lowland forest and rainforest found between Tweed Heads and Ballina in north east NSW.
- Wollemi Pine critical habitat: contains a single population in the Wollemi National Park within the Greater Blue Mountains World Heritage Area.

Additionally, there are no draft critical habitat recommendations listed under the critical habitat register as of the 1st of July 2019. No area of outstanding biodiversity value is listed in the study area.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

'Threatening process' means a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. Key threatening processes are listed under the Threatened Species Conservation Act 1995. At present there are 37 listed key threatening processes under the Threatened Species Conservation Act 1995.

The Project has the potential to contribute to, and increase the impact of the following Key Threatening Process listed under the BC Act:

- Clearing of native vegetation

Conclusion

The Little Bentwing-bat can forage in a wide range of habitat types including the degraded and disturbed habitat occurring in the proposal area. However, larger and more suitable foraging habitat occurs within 10 kilometers of the study area such as Prospect nature Reserve and Western Sydney Regional Park. No maternity roosts/caves or non-maternity roosting habitat was recorded in the proposal area. The Little Bentwing-bats recorded within 10 kilometers of the study area were either foraging or simply moving through the area. The proposal is not expected to significantly impact the local population of Little Bentwing-bat. **A Species Impact Statement is not required**.

References

Churchill, S. (2008). *Australian Bats. Second Edition*. Allen and Urwin Publishing, Crows Nest Australia.

Morcombe, M. (2004). Field Guide to Australian Birds. Steve Parish Publishing, Archerfield Australia.

OEH (2017a). *Threatened Species Profile. Little Bentwing-bat*. Obtained from https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10533on the 02/07/2019.

OEH (2017b). *Threatened Species Profile. Dusky Woodswallow*. Obtained from https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20303 on the 01/07/2019.

Flora Species in Vegetation Patch A surveyed 12th June 2019

Scientific name	Exotic * = exotic	Generalised abundance C=common O=occasional U=uncommon
Olea europea subsp. *cuspidata*		O
Cenchrus clandestinus	*	C
Bursaria spinosa		C
Eragrostis curvula	*	C
Eucalyptus tereticornis		C
Eucalyptus moluccana		O
Lantana camara	*	O
Daviesia ulicifolia		C
Entolasia stricta		C
Glycine clandestina		O
Asparagus asparagoides	*	O
Lomandra filiformis		U
Paspalum dilatatum	*	O
Microlaena stipoides		C
Chloris gayana	*	O
Bothriochloa macra		U
Dichondra repens		O
Pavonia hastata	*	U
Hardenbergia violacea		U
Eragrostis curvula	*	O

Appendix D

AHIMS search result

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 1

Client Service ID : 429237

Kristen Bigland

5/20 Berry Street
North Sydney New South Wales 2060

Attention: Kristen Bigland

Email: kristen.bigland@smec.com

Date: 20 June 2019

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP1192514 with a Buffer of 200 meters, conducted by Kristen Bigland on 20 June 2019.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

Appendix E

Hazardous Building Materials Survey Report

SMEC
Member of the Surbana Jurong Group

Prospect Highway Upgrade

Reservoir Road to St Martins Crescent
Hazardous Building Material Survey Report

PHU-EN-08-REP-01

Prepared for: Roads and Maritime Services
Date: 6 May, 2019

Member of the Surbana Jurong Group

Document/Report Control Form

Document:	Hazardous Building Material Survey Report
File Location:	I:\projects\30012541 - Prospect Hwy FM\140 xx- other\ESS\HAZMAT Report
Project Name:	30 Topaz Crescent, Seven Hills, NSW
Project Number:	30012541
Revision Number:	FINAL

Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED FOR ISSUE BY
DRAFT	3/05/2019	M. Laidlaw	G. Ohmsen	D. Saunders
FINAL	6/5/2019	M. Laidlaw	G. Ohmsen	D. Saunders

Issue Register

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SMEC Company Details

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EXECUTIVE SUMMARY

SMEC Australia Pty Ltd (SMEC) was engaged by the RMS to undertake a hazardous building material (herein referred to as HBM) survey of the residential property located at 30 Topaz Crescent, Seven Hills, NSW (the Site). The Site is located immediately east of Blacktown Road. The works are being carried out because RMS intends on demolishing the building at the Site due to the impending widening of Blacktown Road. The demolition could disturb hazardous building materials, potentially creating a human health risk.

The objective of the Hazardous Building Materials (HBM) audit was to:

- Identify the presence of hazardous building materials, asbestos containing materials (ACM), lead based paint, synthetic mineral fibres, polychlorinated biphenyls (PCB) within accessible areas of the Site, and provide an updated HBM register to inform the future activity associated with demolition at the Site.

The findings of the limited HBM survey are summarised as follows:

- The fluorescent light fittings in Garage #1 and Garage #2 and above the exterior door on the east side of the residence are presumed to include PCB containing capacitors at this stage until proven otherwise.
- Non-friable asbestos containing material (ACM) was detected in:
    - the fascia on the east and west sides of garage #1
    - the exterior walls (large portion) and the bathroom walls (portions are behind particle board) in the residence
- Non-friable ACM is presumed to be present in:
    - the bathroom ceiling, the western wall of the kitchen (beneath the particle board in a portion of the wall) and the backing boards beneath the fuse boxes located on the wall on the western porch (exterior) the Telstra pit (located north of the eastern porch) at the residence
    - the Telstra pit beside the wall on the north side of Garage # 1
    - the fuse box backing board, the gables, the roofing materials (super six) and an asbestos fabric attached to the rafters in Garage # 2
- Lead is presumed to be present within the cames of the stained-glass windows in rooms 6 and 7 of the residence.
- Lead-based paint is present on:
    - the exterior and interior walls, doors and ceilings, and some of the window frames at the residence
    - the fascia, gutters, doors and door trim in Garage #1
    - the fascia, gutters, doors, window frames and fuse box in Garage #2.
- There was a burlap cloth bundle in the rafters of Garage # 2, which could not be accessed due to working at heights (>3m) restrictions. Therefore, this material should be inspected and cleared of HBM (if present) during demolition.
- Synthetic mineral fibres (SMF) were observed within the linoleum floor in kitchen and the pink insulation material on the attic floor.

- A dust sample could not be collected from the roof cavity due to access restrictions. Given the proximity of the residence to Blacktown Road, and the historical usage of lead in petrol, it should be assumed that the dust concentrations in the roof cavity contains elevated concentrations of lead.
- Non-friable ACM fragments were observed in the soil adjacent to the southeast side of the residence.

A list of hazardous materials identified at the site are presented in an HBM register which is attached in an appendix D.

In summary SMEC recommend that:

- Fluorescent light fittings should be inspected by an appropriately qualified professional for PCB containing capacitors prior to demolition and, if found, be disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility
- Asbestos control air monitoring should be performed during removal of ACM from the building structures and during demolition
- Following demolition of the structures at the site, the soils should be assessed for the presence of lead, asbestos and pesticides
- All works associated with HBM should be conducted in accordance with the respective Commonwealth, NSW, and Council guidelines and legislation
- The works should be conducted in accordance with Safe Work Australia (2018), "How to Safely Remove Asbestos Code of Practice" and Safe Work NSW (2016), "Code of Practice: How to Safely Remove Asbestos"
- Management requirements as part of the demolition works include, but are not limited to:
    - Selecting adequately licensed contractors to undertake the demolition
    - Preparation of appropriate management plans and safe work procedures
    - Engagement of occupational hygienists (or competent professionals) in the planning, monitoring, and verification components of the demolition
    - Notification of relevant authorities, Blacktown City Council, and the public of the works details
    - Disposing of wastes in accordance with the respective Commonwealth, NSW, and Council guidelines and legislation to adequately licensed disposal/processing facilities.

This executive summary should not be considered without knowledge of the full content of this report.

1 INTRODUCTION

1.1 General

SMEC Australia Pty Ltd (SMEC) was engaged by the RMS to undertake a hazardous building material (herein referred to as HBM) survey for the property known as 30 Topaz Crescent in Seven Hills, NSW (referred to as the Site).

The HBM survey is required to determine the status of HBM contained within the building structures that may be encountered during building refurbishment or demolition and potential risks associated with such materials.

SMEC surveyed the interior and exterior of the amenities building for hazardous materials including asbestos and asbestos based products, lead based paint, Polychlorinated Biphenyls (PCB) and Synthetic Mineral Fibres (SMF).

1.2 Objectives

SMEC understands the objectives of the detailed Hazardous Building Materials (HBM) audit are to:

- Identify the presence of hazardous building materials, within accessible areas of the site, and provide an updated Hazardous Building Materials register to inform the future demolition process
- Provide the client with a report detailing the HBM identified in accessible areas of the Site to inform the appropriate demolition contractors of the hazards.

1.3 Scope of Works

The Scope of Works included:

- An inspection of the accessible building materials at the Site to identify the presence of asbestos, lead paint, SMF and PCB containing materials. The assessment was limited to accessible portions of the building at the time of field work
- Intrusive sampling/testing of representative samples where considered necessary. Potential HBM was sampled if the nature or type of the material was not clear (e.g. asbestos containing materials, SMF or potential lead paint)
- Selected representative lead paint samples were dispatched for laboratory analysis at a NATA accredited laboratory (EnviroLab)
- Field assessment of lead base paints using swab test (3M Lead Check)
- Field review of lighting containing PCB capacitors (where accessible)
- Preparation of a Hazardous Building Materials Survey Report including HAZMAT Register, describing the type and location of accessible hazardous materials in the building structures and the potential health hazards associated with these materials.

1.4 Published Guidelines and Framework

The assessment was undertaken in accordance with all applicable legislation and guidelines including:

- ANZECC “Identification of PCB-containing capacitors” database (1997)
- ANZECC Polychlorinated Biphenyls Management Plan (Revised Edition 2003)
- Australian Standard AS4361.1 – 1995 Guide to Lead Paint Management Part 1: Industrial Applications
- Australian Standard AS4361.2 Guide to Lead Paint Management: Part 2 Residential and Commercial Buildings 1998

- National Occupational Health and Safety Commission National Code of Practice for the Safe Use of Inorganic Lead at Work [NOHSC: 2015 (1994)]
- National Occupational Health and Safety Commission National Model Regulations for the Control of Workplace Hazardous Substances [NONSC:1005(1994)]
- National Electrical and Communication Association Code of Practice for the Safe Handling of Equipment Containing Polychlorinated Biphenyl (PCB)
- National Occupational Health and Safety Commission [(NOHSC): 1004(1990)], Synthetic Mineral Fibres: National Standard and National Code of Practice.
- NOHSC: 1015 (2001) National Standard for the Storage and Handling of Workplace Dangerous Goods
- Safe Work Australia, How to Manage and Control Asbestos in the Workplace Code of Practice (October 2018) Safe Work Australia, How to Manage and Control Asbestos in the Workplace Code of Practice October
- Safe Work Australia, How to Safely Remove Asbestos Code of Practice (2018)
- Safe Work Australia, How to Manage and Control Asbestos in the Workplace Code of Practice (2016)
- Safe Work NSW, Code of Practice: How to Safely Remove Asbestos (2016)

2 Site Description

2.1 Site Overview

The site is a vacant residential property located at 30 Topaz Crescent (Lot 177 DP557378), Seven Hills, NSW.

It is understood that the site is being considered for demolition.

2.1.1 Building Overview

The Site is composed of a residence and two garages that are situated on an approximately 1,050 m^2 lot. The residence is an older "fibro" house and garage that appears to have been constructed prior to at least 1950.

The residence consists of the following interior rooms: kitchen, dining room, living room, 2 bedrooms, study and a bathroom. The exterior is cladded with asbestos cement sheeting, wood and brick, while the roof is composed of corrugated iron. Exterior covered porches are located on the east and west sides. Most of the interior walls and ceilings of the residence are composed of gyprock, however the walls and ceiling in the bathroom (Room 3) and the western wall of the kitchen are composed of fibre cement sheeting which are partially covered by particle board. The floors throughout the house are composed of wood. The floors in rooms 6 and 7 (bedrooms) are covered with grey carpet, while the floor in the kitchen is covered with linoleum.

To the south of the house is a three-car garage primarily constructed with brick walls, asbestos cement sheeting (fascia on north and south sides) and a corrugated iron roof. To the east there is a one car garage constructed with concrete block, asbestos cement sheeting (gables) and corrugated asbestos cement fibre roofing material.

One Telstra pit is located north of the eastern porch and another is located adjacent to the brick wall on the northeast side of Garage # 1.

RMS has not provided an asbestos register for the site.

Site plans are presented in **Appendix A.**

2.2 Overview from Current Investigation (methodology)

A Site survey was undertaken by SMEC staff on 18 April 2019. The exterior and interior of the building (s) at the Site were accessed and inspected in general accordance with SafeWork NSW and RMS requirements.

The survey involved a visual inspection of the interior and exterior of the buildings, from floor to ceiling. Where features were deemed to be the same or similar, representative samples were collected for laboratory analysis. A photographic log is presented in **Appendix B**.

2.2.1 Asbestos

The asbestos assessment was carried out in general accordance with the SWA (2011) How to Safely Remove Asbestos Code of Practice. Representative samples were collected and submitted for laboratory analysis. The samples were analysed by Envirolab, a National Association of Testing Authorities (NATA) accreditation number 2901, in accordance with Australian Standard 4964 (2004) "Method for the Qualitative identification of Asbestos in bulk samples".

2.2.2 Lead

The lead paint assessment was undertaken in general accordance with the Australian Standard 4361.2 (1998) "Guide to lead paint management - Part 2: Residential and commercial buildings" with representative paint samples being collected from three sub-sampling locations.

Field screening (swab) tests (3M Lead Check) were also conducted to determine the presence of lead paint.

2.2.3 Synthetic Mineral Fibre (SMF)

The assessment for SMF was conducted with reference to the WorkSafe ACT, Synthetic Mineral Fibre National Standard & National Code of Practice, May 1990. The identification of material containing SMF was by the collection of representative materials which were confirmed by laboratory analysis at Envirolab.

2.2.4 Polychlorinated Biphenyls (PCBs)

The fluorescent light fittings at the Site were inspected, however no description was visible which would permit identification that could be cross-checked against the ANZECC "Identification of PCB-containing capacitors" database (1997).

2.2.5 Inaccessible Areas/Sampling

The survey was limited to those areas which were accessible at the time of inspection. Therefore, similar materials and equipment in non-accessed areas at the site should be assumed to contain HBM until proven otherwise. Only the areas accessible to the surveyor at the time of the inspection are included in this report.

Samples were not taken where the act of sampling would endanger the surveyor or affect the structural integrity of the item concerned.

3 RESULTS AND FINDINGS

3.1 Building

3.1.1 Asbestos

Non-friable asbestos containing material (ACM) was identified or presumed in: external walls, bathroom walls and ceiling and kitchen wall (west), fuse box backing and the Telstra pit at the residence; fascia (east and west) and Telstra pit associated with Garage #1; and gables, roofing materials, fabric (attached to rafters) and fuse box backing in Garage # 2. ACM fragments were observed in the soil adjacent to the southeast side of the residence.

A summary of the laboratory analysed asbestos sample results is presented in Table 3-1.

Table 3-1: Asbestos Sample Summary

REFERENCE	OBSERVATION LOCATION	MATERIAL TYPE	COMPOSITION
Asbestos 1	Exterior wall (southeast side)	Fibre cement sheeting	Asbestos detected
Asbestos 2	Exterior wall (northeast side)	Fibre cement sheeting	Asbestos detected
Asbestos 3	Soffit beneath eaves (south side)	Particle board	Asbestos not detected
Asbestos 4	Attic – pink insulation	Insulation fibre	Asbestos not detected
Asbestos 5	Bathroom (south wall – lower)	Particle board	Asbestos not detected
Asbestos 6	Bathroom (south wall – upper portion of wall and behind particle board)	Fibre cement sheeting	Asbestos detected
Asbestos 7	Kitchen floor – linoleum covering	linoleum	Asbestos not detected
Asbestos 8	Garage # 1 – Fascia (north side)	Fibre cement sheeting	Asbestos detected

The asbestos laboratory results are presented in **Appendix C** and the hazardous material register is presented in **Appendix D**.

3.1.2 Lead Based Paint

Paint swab tests were conducted at the Site which targeted a range of paint systems including external and interior walls, ceilings, doors and trim. Lead is presumed or confirmed to be present within the cames of the stained-glass windows in rooms 6 and 7 of the residence; the exterior and interior walls, doors and ceilings, and some of the window frames at the residence; the fascia, gutters, doors and door trim in Garage #1; and the fascia, gutters, doors, window frames and fuse box in Garage #2.

The white painted vertical and horizontal wood trim in the interior of the residence tested negative for lead-based paint using laboratory analysis.

A summary of the laboratory analysed SMF sample results is presented in Table 3-2.

Table 3-1: Lead Paint Sample Summary

SAMPLE REFERENCE	SAMPLE LOCATION	SAMPLE TYPE/COLOUR	LEAD IN PAINT (% W/W)
Paint 1	Hallway vertical trim #1	White	0.059
Paint 2	Hallway vertical trim #2	White	<0.005

Lead Paint (> 1.0% Pb) a paint film or component coat of a paint system containing lead or lead compounds, in which the lead content (calculated as lead metal) is in excess of 1.0% by weight of the dry film as determined by laboratory testing.

First Schedule Paint (> 0.25% Pb) a paint containing the specified proportions of any substance listed in the First Schedule in the Uniform Paint Standard contained in the Standard for uniform scheduling of drugs and poisons.

Lead-free Paint (≤ 0.25% Pb) a paint which is not classed as a First Schedule Paint with respect to lead content.

The lead-based paint laboratory results are presented in **Appendix C** and the Hazmat Register is provided in **Appendix D** with lead painted items listed.

3.1.3 Synthetic Mineral Fibre (SMF)

Potential SMF samples were identified and sampled at the Site. SMF was detected in the pink insulation in the attic and the linoleum on the kitchen floor. SMF material may also be present within the hot water heater located on the east side of the residence. A summary of the laboratory analysed SMF sample results is presented in Table 3-3.

Table 3-3: SMF Sample Summary

REFERENCE	OBSERVATION LOCATION	MATERIAL TYPE	COMPOSITION
Asbestos 4	Attic – pink insulation	Insulation fibre	SMF detected
Asbestos 7	Kitchen floor – linoleum covering	linoleum	SMF detected

The SMF laboratory results are presented in **Appendix C** and the Hazmat Register is provided in **Appendix D** with SMF items listed.

3.1.4 Polychlorinated Biphenyls (PCBs)

Fluorescent light fittings were observed above the door on the east side of the residence and the rafters in Garage #1 and Garage # 2. A text description identifying the fixtures was not visible. Therefore, the light fixtures could not be cross-checked against the ANZECC "Identification of PCB-containing capacitors" database (1997). Therefore, all fluorescent light fittings are presumed to include PCB containing capacitors until proven otherwise.

3.1.5 Other

Although not included in the scope of this study, fire detectors and typically contain radioactive material which should be considered during demolition or refurbishment.

3.2 Hazardous Building Material Summary

HBM materials were confirmed by visual inspection, screening and/or laboratory analysis.

The following conclusions have been made regarding HBM materials at the site:

- The fluorescent light fittings in Garage #1 and Garage #2 and above the exterior door on the east side of the residence are presumed to include PCB containing capacitors at this stage until proven otherwise
- Asbestos containing material (ACM) was detected in:

- the exterior walls (large portion) and the bathroom walls (portions are behind particle board) in the residence
- the fascia on the east and west sides of garage #1

- ACM is presumed to be present in:
  - the bathroom ceiling, the western wall of the kitchen (beneath the particle board in a portion of the wall) and the backing boards beneath the fuse boxes located on the wall on the western porch (exterior), the Telstra pits located beside the residence and beside Garage # 1.
  - the fuse box backing board, the gables, the roofing materials (super six) and an asbestos fabric attached to the rafters in Garage # 2
- Lead is presumed to be present within the cames of the stained-glass windows in rooms 6 and 7 of the residence.
- Lead-based paint is present on:
  - the exterior and interior walls, doors and ceilings, and some of the window frames at the residence.
  - the fascia, gutters, doors and door trim in Garage #1.
  - the fascia, gutters, doors, window frames and fuse box in Garage #2.
- The survey undertaken was limited to those areas available for access at the time of inspection. There was a burlap cloth bundle located in the rafters of Garage # 2, which could not be accessed due to working at heights (>3m) restrictions. Therefore, this material should be inspected and cleared of HBM (if present) during demolition
- A dust sample could not be collected from the roof cavity due to access restrictions. Given the proximity of the residence to Blacktown Road, and the historical usage of lead in petrol, it should be assumed that the dust in the attic contain elevated concentrations of lead
- The survey undertaken was limited to those areas available for access at the time of inspection. Therefore, materials and equipment in non-accessed areas at the site, such as the roof and wall cavities, should be assumed to contain HBM until proven otherwise.

3.2.1 General Requirements

As per Safe Work Australia (SWA) Work Health and Safety Act (2011) and Regulations, the employer, main contractor, a self-employed person or the person having control of the workplace, is responsible for identifying and assessing risks from hazards in relation to asbestos in accordance with the SWA (2011) How to Safely Remove Asbestos Code of Practice.

Part 2 Section 19 of the WHS Act identifies under duty of care for employers to provide a safe workplace and ensure any asbestos at a workplace does not present a hazard to employees (as far as practicable). This section also requires an employer to engage with employees on safety and health matters, including asbestos management. This ensures hazardous materials do not pose health and environmental risk to site workers, the surrounding environment and the public, and to ensure hazardous materials are disposed of appropriately.

In addition to the WHS Act and Regulations and SWA (2011), the following regulatory requirements should be followed:

- WorkCover NSW requirements including responsibilities under the National Strategic Plan and the Compliance Codes
- The Dangerous Goods Act 1985 and Regulations
- Occupational Health and Safety Act 2004 and Regulations 2007.

4 Management of Hazardous Materials

All hazardous materials within the site must be managed so that personnel, including staff and guests are not exposed to hazards that may adversely impact on their health. Disturbance of, or the deterioration of, hazardous materials can lead to exposure via several pathways such as inhalation of airborne fibres or dusts, dermal contact or accidental ingestion of materials.

4.1.1 Training and Awareness Risk Management

Personnel that are likely to encounter hazardous substances should be trained in how to deal with the hazardous materials. The training should include:

- the purpose of the training
- health risks associated with the hazardous material
- the location of the hazardous substances
- the location and format of the asbestos register
- the location and format of material safety data sheets
- the correct use and maintenance of control measures
- processes and safe work procedures to prevent exposures.

Site inductions should also include familiarisation with hazardous substances that may be encountered during site works.

4.1.2 Risk Management

To eliminate risk of exposure, or if this is not reasonably practicable, minimising them so far as is reasonably practicable, a risk management process should be followed that involves identifying whether hazardous substances are within a site and including them in the register, assessing the risk of exposure and then implementing appropriate control measures.

When choosing the most appropriate control measure, the following hierarchy of controls must be considered:

- eliminating the risk (for example, removing the asbestos)
- substituting for the risk, isolating the risk or applying engineering controls (for example, enclosing, encapsulation, sealing or using certain tools)
- using administrative controls (for example, safe work practices)
- using PPE.

A combination of these controls may be required to adequately manage and control hazardous substances.

Where demolition work is to be carried out the hazardous materials register should be consulted to determine if the works will disturb any hazardous materials. If the works will impact on the hazardous materials then control measures must be introduced to ensure personnel, and the environment, are not exposed to any harmful hazardous materials.

If there is any uncertainty as to whether a hazardous material is present, then work that may impact upon the material must cease and the material must be treated as a hazardous material until sampling and analysis can determine if the material is a hazardous substance.

Prior to removal of the hazardous materials, an appropriate removal control plan needs to be developed by the hazardous materials removalist. The hazardous materials removal must be carried out in accordance with the relevant legislation and codes of practice and removalists must have the appropriate licenses and accreditations.

4.1.3 Personal Protective Equipment

Personal protective equipment is to be selected for working with hazardous materials following a risk assessment and the formulation of a safe work method. Australian Standards AS 1715 and AS 1716 should be consulted, along with the relevant Code of Practice and Australian Standard for the hazardous material encountered.

Some relevant documents are listed below:

- Australian Standard AS4361.2 – 1998 Guide to Lead Paint Management, Part 2: Residential and Commercial Buildings
- Safe Work Australia (2016) How to Manage and Control Asbestos in the Workplace Code of Practice
- Safe Work Australia (2018) How to Safely Remove Asbestos Code of Practice
- NOHSC: 2007 (1994) National Code of Practice - Control of Workplace Hazardous Substances
- NOHSC: 2006 (1990) National Code of Practice for the Safe Use of Synthetic Mineral Fibres
- National Electrical and Communication Association- Code of Practice for the Safe Handling of Equipment Containing Polychlorinated Biphenyl (PCB).
- Policy Procedure PN 066P25 for Policy PN 066 Asbestos Related Work (RMS, 2013)

4.1.4 Roles and Responsibilities

Table 4-1: Roles and Responsibilities

DUTY HOLDER	RESPONSIBILITIES
Person Conducting a Business or Undertaking (PCBU)	Must ensure, so far as reasonably practicable, the exposure of a person at the workplace to airborne asbestos fibres, or other hazardous materials, is eliminated. Exposure must be minimised if elimination is not reasonably practicable.
	Must ensure the exposure standard for the hazardous material is not exceeded
	Must, if you reasonably believe airborne asbestos fibres, or other hazardous materials, have been released or asbestos has been disturbed (other than during removal work) at the workplace: • determine the persons who were in the affected area at the time and warn them about the possible exposure • determine whether the exposure standard was likely to have been exceeded • ensure information about exposure to airborne asbestos fibres, or other hazardous materials, including results of whether the exposure standard was exceeded, is accessible to those persons who were in the affected area.
	Must ensure health surveillance is provided to a worker who is carrying out licensed removal work or is carrying out maintenance work on asbestos, or other hazardous materials, and is determined to have been in an area of the workplace in which the exposure standard was likely to have been exceeded.
	Must pay all expenses for health surveillance, obtain results and keep records of all health surveillance.
	Must, if engaging workers who will be carrying out removal work or maintenance work on asbestos, or other hazardous materials, ensure those workers are trained in the identification and safe handling of, and appropriate controls for the hazardous material.
	Must not use, or direct or allow a worker to use, certain equipment on asbestos that causes the release of airborne asbestos fibres, other than some types of equipment which may be used in controlled circumstances.

DUTY HOLDER	RESPONSIBILITIES
	Must ensure that any asbestos-related work is carried out in accordance with the relevant regulations, codes and standards.
Person with management or Control	Must ensure all asbestos and other hazardous material at the workplace is identified by a competent person or presume its presence.
	Must ensure site inductions are carried out for all persons working on the premises.
	May identify asbestos, or other hazardous materials, by arranging a sample to be analysed.
	Must ensure the presence and location of the asbestos at the workplace is clearly indicated (by a label if reasonably practicable).
	Must ensure an asbestos register for the workplace is maintained and reviewed at certain times and ensure it is readily available to workers who carry out, or intend to carry out work at the workplace, their health and safety representatives and other persons.
	Must ensure when management or control of the workplace is relinquished by a PCBU, a copy of the hazardous materials register is given to the person taking over management or control.
	Must ensure a risk assessment is undertaken and reviewed by a competent person before the work is carried out.
	Prior to demolition and refurbishment work, must review the hazardous materials register and ensure all hazardous materials that are likely to be disturbed are identified and removed as far as is reasonably practicable. A copy of the hazardous materials register must be given to the person carrying out demolition or refurbishment work.
	Must, if an emergency occurs and a building, structure or plant is to be demolished, ensure that before the demolition occurs, there is a procedure to eliminate or minimise the exposure to hazardous materials to below the exposure standard and notify the regulator about the emergency.
Persons Carrying Out Demolition or Refurbishment Work	Obtain a copy of the hazardous materials register for the workplace.
	If a hazardous materials register is not available, ensure the building, structure or plant to be demolished or refurbished has been inspected by a competent person to determine if any hazardous materials are fixed or installed.
	Produce a hazardous materials removal control plan.

4.2 Asbestos

4.2.1 Hazard Description

Asbestos is the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals. The most significant types include chrysotile, crocidolite and amosite (white, blue and brown or grey, respectively). As a naturally occurring rock fibre, asbestos was mined, and then broken down from mineral clumps into groups of loose fibres.

During the 1950s, 1960s and early 1970s it was common to use asbestos as fire insulation on structural members and as fire rating of penetration core holes. The thermal energy conservation properties of asbestos were used to insulate hot and cold-water pipes and ducting. Asbestos was also used later in products to increase their compressive and tensile strength. These products include asbestos/cement sheeting, bituminous mastic and membrane, vinyl tiles, Bakelite and Zelemite boards and many other products.

The health effects associated with asbestos exposure relate to the inhalation of airborne respirable asbestos fibres. In general, asbestos fibres cannot be released or become airborne in significant quantities unless the asbestos-containing material is disrupted, for example in the case of excavating, breaking, cutting and other material disturbing activities. The classification of asbestos containing material (ACM) is defined into two categories, bonded and friable and is listed below.

Table 4-2: Asbestos Classifications

Bonded ACM	Bonded ACM is any material that contains asbestos bound into a stable matrix. It may consist of cement or various resins/binders and cannot be reduced to a dust by hand pressure. As such it does not present an exposure hazard unless cut, abraded, sanded or otherwise disturbed. Therefore, the exposure risk from bonded ACM is negligible during normal building occupation. **Note:** it is important to note that if bonded ACM is damaged or otherwise deteriorated, the risk assessment must be reviewed to reflect a higher potential for exposure to asbestos fibres. An asbestos assessor or equivalent should perform the risk assessment.
Friable ACM	Friable ACM can be crumbled or reduced to a dust by hand pressure when dry and can represent a significant exposure hazard. Examples of friable asbestos are hot water pipe lagging, severely damaged asbestos cement sheet, limpet spray to structural beams and electrical duct heater millboard.

A range of control measures are available for the removal of asbestos hazards. The SWA (2011) "How to Safely Remove Asbestos Code of Practice" and Safework NSW (2016) "Code of Practice: How to Safely Remove Asbestos" provides useful guidance to safe work practice for asbestos removal operations.

4.2.2 Legislative Framework

The management of asbestos hazards should be performed in accordance with the following:

- Safe Work Australia, How to Manage and Control Asbestos in the Workplace Code of Practice (October 2018)
- Safe Work Australia, How to Safely Remove Asbestos Code of Practice (December 2018)
- Safe Work NSW, Code of Practice: How to Safely Remove Asbestos (September 2016)

4.2.3 Control for Implementation

A suitably licensed asbestos removal contractor should be engaged to perform the removal of all actual or suspected ACM material in accordance with Safe Work NSW (2016) and WorkCover NSW requirements.

4.2.3.1 Pre-Removal

Prior to the commencement of any asbestos removal works, reference should be made to the Hazardous Materials Register. The main emphasis on all work procedures is to minimise the release of dust and fibres. A checklist of safety precautions when working with asbestos cement products should include (but not limited to) the following:

- Never use high pressure hoses / waterblast or use compressed air on asbestos cement products
- Use only approved respiratory protection and overalls, where appropriate;
- Do not use abrasive cutters and sanders on asbestos cement products; the use of non-powered hand tools generates much less dust
- Wet down material to reduce the release of dust
- Work in well ventilated areas where possible
- Use drop sheets to collect breakages
- Wet clean or only use approved vacuum cleaning equipment. Never use household vacuum cleaners
- Dispose of asbestos pieces and collected dust in plastic bags which are clearly labelled 'asbestos waste'
- Asbestos cement products must not be reused

- All waste containing asbestos should be disposed of in a suitable legal manner and at a site approved by the appropriate disposal authority.

Any asbestos removal works should comply with the requirements of Safe Work Australia's (2018) code of practice for the safe removal of asbestos.

The asbestos removal control plan developed by the licensed removalist must include details of:

- how the asbestos removal will be carried out, including the method, tools, equipment and PPE to be used
- the asbestos to be removed, including the location, type and condition of the asbestos.

Specifications or drawings that are relevant to the asbestos removal can also be attached to the asbestos removal control plan to provide additional information about the asbestos. A list of Safe Work NSW's (2016) asbestos removal control plan requirements is presented in **Appendix E**.

4.2.3.2 During Removal/Encapsulation

Removal and demolitions work is to be conducted in accordance with the approved Asbestos control plan. Ensure occupational hygiene services and asbestos assessors utilised for air monitoring are independent of the removal contractor. Independent verification works must be performed in accordance with the SWA (2011) Code of Practice for the safe removal of asbestos.

Safe Work NSW (2016) indicates that the following controls should be followed during removal or encapsulation of the ACM at the site:

- For the removal of more than 10 m^2 of non-friable ACM in a public location, air monitoring is not required but should be carried out by an independent licensed asbestos assessor or competent person to ensure compliance with the duty to eliminate or minimise exposure to airborne asbestos and to ensure the exposure standard is not exceeded.
- Warning signs must be placed so they inform all people nearby that asbestos removal work is taking place in the area
- Barricades should be used assists with traffic control and prevents access to the asbestos removal site and removal work area.
- An asbestos removalist must use techniques to eliminate or minimise the generation of asbestos fibres so far as is reasonably practicable. They must choose the method of asbestos removal that is most effective at minimising fibre release at the source. The removal methods are listed in preferred order:
    - Wet spray method – asbestos fibres are significantly suppressed; however, they are not entirely eliminated so the use of RPE is as essential.
    - Saturation and water injection method – used during friable removal.
    - Dry method – can only be used if the wet spray method is not suitable, for example if there are live electrical conductors or if equipment could be permanently damaged or made dangerous by contact with water.
- Tools and equipment that can be used during asbestos removal work include asbestos vacuum cleaners, manually operated hand tools and equipment must be designed to capture or suppress respirable dust or are used in a way that is designed to capture or suppress respirable dust.
- Tools and equipment that generate dust must not be used on asbestos. These include:
    - high-speed abrasive power and pneumatic tools, for example angle grinders, sanders, saws and high-speed drills
    - brooms and brushes (unless brushes are used for sealing)
    - high-pressure water spray, jets, power or similar tools and instruments on asbestos in the workplace

compressed air.

- The use of tools and equipment that cause the release of asbestos, including power tools and brooms, may be used on asbestos if the equipment is enclosed and/or designed to capture or suppress asbestos fibres and/or the equipment is used in a way that is designed to capture or suppress asbestos fibres safely, for example:
    - enclosing the tool or instrument
    - engineering controls such as extraction ventilation
    - using the tools and instruments within an enclosed removal area (for example, full enclosure or small enclosure).
- After the asbestos removal work is completed, tools must be decontaminated
- Asbestos vacuum cleaners should comply with the Class H requirements in Australian Standard AS/NZS 60335.2.69 *Industrial vacuum cleaners* or its equivalent. Asbestos vacuum cleaners should not be used on wet materials or surfaces. Attachments with brushes should not be used as they are difficult to decontaminate.
- Asbestos vacuum cleaners can only be used for collecting small pieces of asbestos dust and debris. Larger pieces should be picked up and placed in suitable waste containers and should never be broken into smaller sizes for vacuuming.
- A constant low-pressure water supply is required for wetting down asbestos and related items to suppress airborne asbestos fibres.
- An asbestos removalist must provide all workers with PPE that is suitable for asbestos removal work. Workers must also use the PPE given to them by the asbestos removalists. PPE must be worn at all times during the work in the asbestos removal area. PPE includes clothing, for example coveralls, gloves and safety footwear, as well as RPE. The appropriate PPE can be determined by conducting a risk assessment.
- All tools used during asbestos removal work should be fully dismantled (where appropriate), cleaned under controlled conditions and decontaminated using either the wet or dry decontamination procedures described above before they are removed from the removal work area.
- Personal decontamination must be undertaken each time a worker leaves the asbestos removal work area and at the completion of the asbestos maintenance or service work. Personal decontamination should be done within the asbestos removal work area to avoid recontamination.
- Contaminated items, tools, equipment and clothing must not be removed from the removal work area unless they have been decontaminated or contained. If an item is not able to be decontaminated, or is not suitable for decontamination, it should be placed in a sealed container and disposed of in accordance with the WHS Regulations. The sealed container must be decontaminated before it is removed from the asbestos removal work area.
- An asbestos removalist should design the route for removal of the asbestos waste bags or containers through the asbestos removal work area prior to commencement of the asbestos removal work.
- When developing a waste disposal program, the following should be taken into account:
    - the containment of waste to eliminate the release of airborne asbestos fibres
    - details of any asbestos or ACM to be left in-situ
    - the types of fittings and supports and whether removal and disposal of these items is part of the work specifications
    - the location and security of waste storage on site
    - the transport of waste within the site and off site
    - the location of the waste disposal site
    - ensure that the proposed location for the storage and asbestos removal work area and the surrounding area will be unoccupied for the duration of the removal
    - approvals needed from the relevant local disposal authority

    - any local disposal authority requirements that may apply to the amount and dimensions of asbestos waste.
- The waste disposal program should be included in the asbestos removal control plan and specify the method of transport and routes to be used for removing waste from the asbestos removal area before the commencement of each removal.
- The asbestos waste must be disposed of at a licensed asbestos waste disposal site. The disposal process must be in a manner that eliminates the release of airborne asbestos fibres. The asbestos waste must be disposed of as soon as reasonably practicable.
- All asbestos waste, friable asbestos and small pieces of non-friable asbestos must be contained to prevent exposure to airborne asbestos fibres. Containment is to be in new heavy-duty 200 µm (minimum thickness) polythene bags that are no more than 1200 mm long and 900 mm wide to prevent manual task injuries.
- Asbestos sheeting and redundant asbestos-lagged pipes and equipment should be contained in heavy-duty 200 µm (minimum thickness) polythene sheeting.
- Once the waste has been removed from the asbestos removal work area, it should either be:
    - placed in a solid waste drum, bin or skip for secure storage and eventual disposal
    - immediately removed from the site by the relevant EPA approved/licensed carrier for disposal.
- All containers containing a hazardous chemical such as asbestos must comply with to the labelling elements presented in Safe Work NSW (2016)

The RMS document titled “Asbestos Related Work” makes the following recommendations to ensure work place health and safety risks to workers and others are minimised in relation to asbestos related work by:

- Creating an Asbestos Register for any remaining structures or areas outside of clearance activities:
    - Ensure an asbestos register is prepared, maintained, reviewed and kept at the workplace. It must be readily available to workers, their health and safety representatives and other persons.
    - Ensure, when management or control of the workplace is relinquished, a copy of the asbestos register is given to the person assuming management or control.
- If remaining structures contain ACM then a site-specific Asbestos Management Plan must be developed
- Consulting with workers and others impacted before work commences such as the public or a person conducting a business or undertaking (PCBU).
- Ensuring that asbestos removal work is carried out only by a licensed asbestos removalist who is appropriately licensed to carry out the work
- Providing advice, information and education to workers about asbestos at workplaces or public areas where workers are engaged in RMS-related work activities.
- Undertaking risk assessments and managing asbestos-related work, if it occurs at RMS workplaces.
- Complying with safe systems for asbestos-related work.
- Ensuring signs, barricades and if required containment are erected and delineate the asbestos work area.
- Designing and implementing an asbestos removal plan, though not mandatory.
- Ensuring decontamination facilities are available, where practicable.

4.2.3.3 Post Removal

It is understood that the site will be refurbished. The Hazardous Materials Register should be kept and maintained for asbestos for as long as the hazard exists.

4.3 Lead Base Paint

4.3.1 Hazard Description

Lead carbonate (white lead) was once the principal white pigment in paints for houses and public buildings. Paint with lead pigment was manufactured up until the late 1960s, and in 1969 the National Health and Medical Research Council's Uniform Paint Standard was amended to restrict the lead content in domestic paint.

Many older Australian buildings still contain lead-based paint, even though it may be covered with layers of more recent paint. Lead-based paint was used mainly on exterior surfaces, and to a lesser degree on interior doors, and door/ window architraves, especially in undercoats and primers, where concentrations of up to 20% lead were used. Interior walls were not commonly painted with paint containing white lead pigment, although some colours including red, orange and yellow contained lead pigments.

Lead in any form is toxic to humans when ingested or inhaled and lead poisoning can result from accumulation after repeated exposure. Lead paint removal poses two potential routes of exposure. Firstly, by inhalation or ingestion by workers and public near the works, and secondly by the deposition of particles on nearby footpaths, streets or soil where they may be resuspended, tracked into houses or buildings where it can be inhaled or ingested.

The use of lead in paint was phased out in Australia by the early 1980s. The Australian Standard (AS 4361.2 – 1998 Guide to lead paint management Part 2: Residential and Commercial Buildings) defines lead paint as those paint products that contain lead greater than 1.0% by weight of the dry film as determined by laboratory testing.

From a management perspective, paints with a lead concentration of 0.25% and higher have been demonstrated to produce exposure levels that exceed those that defined as a "lead task" in the National Code of Practice for the Safe Use of Inorganic Lead at Work [NOHSC: 2015 (1994)]. As such, paints with a lead concentration greater than 0.25% (if they are to be removed) must be treated as a lead paint (in accordance with NOHSC 2015).

Visual observation of painted surface on the exterior of the buildings indicated that in general painted surfaces were observed to be in poor condition.

4.3.2 Legislative Framework

In addition to the overarching requirements detailed above, the management of actual or suspected lead paint hazards should be performed in accordance with the following:

- Australian Standard AS4361.1 – 1995 Guide to Lead Paint Management Part 1: Industrial Applications
- Australian Standard AS4361.2 Guide to Lead Paint Management: Part 2 Residential and Commercial Buildings 1998
- NOHSC National Code of Practice for the Safe Use of Inorganic Lead at Work [NOHSC: 2015 (1994)].

4.3.3 Site Specific Recommendations

It is recommended within the AS 4361.2 – 1998 that owners of residential or commercial buildings that may contain lead should manage the property in such a manner to effectively control any health risk to occupants, contractors or others and to ensure occupants are sufficiently informed about and protected from the hazards associated with lead paint. In addition, if management work is to be undertaken, immediate neighbours should be informed about the nature of the work.

The Hazardous Materials Register should be kept and maintained for all lead containing hazardous substances (including paints) for as long as the hazard exists. The register should be accessible to all employees and contractors with potential for exposure to lead and should be accompanied by Material Safety Data Sheets (MSDS).

4.3.4 Removal of lead painted surfaces

General controls for implementation should include, (but not limited to):

- Remediation works should be performed in accordance with Australian Standard 4361.2 Guide to Lead Paint Management Preventing Lead Poisoning in Australia. Attention should be given to minimising dust creation or creating fumes (by applying heat to painted surfaces) during demolition works
- Appropriate dust management measures should be employed for the demolition works and fume management measures (as a result of heat application to painted surfaces) and during the removal, where applicable
- The area should be demarcated, and plastic sheeting placed on the ground to collect dust and debris
- The painted surface area should be wetted down to minimise dust generation
- All PPE, plastic sheet, rags etc. should be placed in a plastic bag and sealed with a label indicating that it is 'Lead waste' prior to appropriate disposal
- Removal works should be undertaken by suitably qualified persons (see http://lead.org.au/fs/fst38.html).

4.4 Synthetic Mineral Fibres

4.4.1 Hazard Description

Synthetic Mineral Fibres (SMF) are a group of amorphous substances, including Glasswool, Rockwool and Ceramic fibre that have been created by mechanical means, such as spinning or blowing during manufacturing. SMFs are commonly found in false ceiling panels and insulation and are typically identified by visual observation or by optical microscope techniques.

The International Agency for Research on Cancer (IARC, 2002) evaluated certain SMF materials as being possibly carcinogenic to humans. The similarity in application and appearance to asbestos has resulted in some community concern regarding the health effects associated with exposure to SMF and as such the National Occupational Health and Safety Commission investigated typical levels of exposure associated with various manufacturing and user processes, possible health effects and, based upon collected information, recommend exposure standards and appropriate safe working practices.

An outcome of the investigation and subsequent studies was the establishment of exposure levels (based on time weighted average) of 0.5 respirable fibres per millilitre (f/ml) of air for all types of synthetic mineral fibres and 2 mg/m^3 of inspirable dust where almost all the airborne SMF material is fibrous, to reduce the possibility of skin, eye and upper respiratory tract irritation.

Caution is required when handling SMF or even suspected SMF products, to minimise disturbance of the materials and subsequent airborne SMF fibre levels. Where SMF or suspected materials are to be removed, then suitable controls and appropriate personal protection are to be used.

4.4.2 Legislative Framework

The management of SMF hazards should be performed in accordance with the following:

- National Occupational Health and Safety Commission [(NOHSC): 1004(1990)], Synthetic Mineral Fibres: National Standard and National Code of Practice.

4.4.3 Site Specific Recommendations

It is recommended that all the confirmed or suspected SMF material (see Hazardous Materials Register) and potential SMF products are managed as containing SMF. It is recommended that the Safe Work Australia endorsed, NOHSC Synthetic Mineral Fibre National Standard & National Code of Practice (May 1990), be closely adhered to for appropriate procedures when handling SMF materials. It is stated within this document

that “Provided this code of practice is applied, and the specified work practices nominated are implemented, employees should not be exposed to unsafe conditions nor face any measurable level of risk to health”.

4.4.4 Removal of SMF

Controls for implementation should include, (but not limited to):

- SMF material identified on-site should be encapsulated as soon as practicable
- Due to the similarity with asbestos removal control measures, the same licensed asbestos removal contractors could be used to remove the SMF. Note that the material identified is not required to be disposed of to a hazardous waste landfill however should be disposed of in accordance WorkCover NSW requirements (double wrapped)
- The Hazardous Materials Register (refer to **Appendix D**) should be updated to reflect the removal of SMF Material the Site.

4.5 Polychlorinated Biphenyls

4.5.1 Hazard Description

Polychlorinated Biphenyls (PCB) are a group of synthetic organic compounds, which have historically been an important ingredient in many industrial products. PCB are stable chemicals that resist change over the passage of time, from a wide temperature variance and from the influence of acids and alkalis. PCB have commonly been used as an insulating fluid inside transformers and capacitors. Capacitors and ballast resistors containing PCB were installed in various types of equipment including fluorescent light fittings from the 1950s – 1970s.

PCB are usually identified as a colourless to darker coloured oily liquid and are carcinogens. They can be absorbed through the skin, inhaled as a vapour or ingested; therefore, contact with them should be prevented. PCB are often found in old transformers and metallised capacitors of fluorescent light fittings.

Capacitors are generally confirmed as containing PCB by referencing the ANZECC Identification of PCB Containing Capacitors database (1997). If the capacitors are identified in the ANZECC publication, the capacitors are classified as a Scheduled PCB waste, as defined by the ANZECC Polychlorinated Biphenyls Management Plan (Revised Edition 2003). Given the age of the buildings and fluorescent light fittings, the capacitors would have the potential to contain PCB.

Small equipment items and capacitors found in households and commercial buildings containing scheduled PCB (i.e. at or exceeding 50 mg/kg) are to be disposed of as scheduled PCB waste. Where the aggregate weight of the items or capacitors exceeds 10 kg, the relevant Commonwealth, State or Territory Government agency must be notified prior to disposal.

4.5.2 Legislative Framework

The management of PCB hazards should be performed in accordance with the following:

- ANZECC Identification of PCB Containing Capacitors database (1997)
- National Electrical and Communication Association Code of Practice for the Safe Handling of Equipment Containing Polychlorinated Biphenyl (PCB)
- ANZECC Polychlorinated Biphenyls Management Plan (Revised Edition 2003).

4.5.3 Site Specific Recommendations

Fluorescent light fittings should be inspected by an appropriately qualified professional for PCB containing capacitors prior to demolition and, if found, be disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility.

4.5.4 Controls for Implementation

4.5.4.1 Removal of PCB

The controls for implementation for PCB containing capacitors include (but are not limited to):

- Storage of capacitors confirmed as PCB-containing or those waiting confirmation testing should be placed in leak proof containers.
- Any removal works associated with the fluorescent light-fittings that have been confirmed as PCB-containing should be managed in accordance with ANZECC Polychlorinated Biphenyls Management Plan (Revised Edition 2003)
- All capacitors of similar appearance (i.e. metal encased) should be assumed as containing PCB and disposed in accordance with WorkCover NSW and NSW EPA requirements
- Appropriate handling precautions and personal protective equipment (e.g. Level D PPE – appropriate oil and chemical resistant gloves, long cotton sleeved-shirt and trousers or disposable coveralls and a face shield) may be required, especially if there is evidence of substances leaking within a fitting (e.g. brown staining on cover)
- For PCB capacitors in good condition, once removed they should be stored in a sealed metal container prior to disposal. The metal containers should be labelled, transported and disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility.

Two options are provided for the management fluorescent light fittings:

- Option A – Assume the capacitors in all buildings contain PCB and treat and dispose accordingly (as detailed above)
- Option B – Conduct further detailed inspections and analysis (via laboratory analysis or reference to the ANZECC 1997 database) of the above capacitors to confirm presence or absence of PCB.

5 Survey Limitations

This report only assessed HBM on accessible areas in the interior and exterior of the Site. Therefore, an HBM survey should be conducted prior to any demolition in interior and exterior areas that have not been assessed in this HBM survey.

6 Conclusions

The fluorescent light fittings in Garage #1 and Garage #2 and above the exterior door on the east side of the residence are presumed to include PCB containing capacitors at this stage until proven otherwise.

Non-friable ACM was detected in the exterior walls (large portion) and the bathroom walls (portions are behind particle board) in the residence and the fascia on the east and west sides of garage #1 ACM is presumed to be present in: the bathroom ceiling, the western wall of the kitchen (beneath the particle board in a portion of the wall) and the backing boards beneath the fuse boxes located on the wall on the western porch (exterior), the Telstra pits located beside the residence and beside Garage # 1; and the fuse box backing board, the gables, the roofing materials (super six) and an asbestos fabric attached to the rafters in Garage # 2. ACM fragments were also observed in the soil adjacent to the southeast side of the residence.

Lead-based paint is present on: the exterior and interior walls, doors and ceilings, and some of the window frames at the residence; the fascia, gutters, doors and door trim in Garage #1; and the fascia, gutters, doors, window frames and fuse box in Garage #2. Lead is presumed to be present within the cames of the stained-glass windows in rooms 6 and 7 of the residence.

Synthetic mineral fibres (SMF) were observed within the linoleum floor in kitchen and the pink insulation material on the attic floor.

The rafters in Garage # 2 could not be accessed due to working at heights restrictions (> 3m). The burlap cloth bundle in the rafters of Garage # 2 should be inspected and cleared of HBM (if present) during demolition.

Personnel that are likely to encounter hazardous substances at the site should be given awareness training regarding how to properly deal with the hazardous materials. Appropriate control measures should be adopted when removing HBM's from the site.

7 Recommendations

In summary, SMEC recommend that:

- Asbestos control air monitoring should be performed during removal of ACM from the building structures and during demolition
- Following demolition of the structures at the site, the soils should be assessed for the presence of lead, asbestos, heavy metals and pesticides
- Fluorescent light fittings should be inspected by an appropriately qualified professional for PCB containing capacitors prior to demolition or refurbishment and, if found, be disposed in accordance with NSW EPA guidelines to an approved hazardous waste facility
- All works associated with HBM should be conducted in accordance with the respective Commonwealth, NSW, and Council guidelines and legislation
- This report only assessed HBM on accessible areas of the Site. The rafters in Garage # 2 could not be accessed due to working at heights restrictions (> 3m). The burlap cloth bundle in the rafters of Garage # 2 should be inspected and cleared of HBM (if present) during demolition.
- An unexpected finds protocol should be adopted for locations that were not accessible during this HBM survey
- Management requirements as part of the demolition works include, but are not limited to:
    - Preparation of an Asbestos Removal Control Plan (Asbestos Management Plan) in accordance with Safe Work NSW (2016)
    - Selecting adequately licensed contractors to undertake the demolition
    - Prepare appropriate management plans and safe work procedures
    - Engagement of occupational hygienists (or competent professionals) in the planning, monitoring, and verification components of the demolition
    - Notification of relevant authorities, Council, and the public of the works details
    - Disposing of wastes in accordance with the respective Commonwealth, NSW, and Council guidelines and legislation to adequately licensed disposal/processing facilities.
    - Once the asbestos removal control plan is prepared, a copy must be:
        - given to the person who commissioned the licensed asbestos removal work
        - readily accessible on-site for the duration of the licensed asbestos removal work to:
        - a person conducting a business or undertaking at the workplace
        - workers and their health and safety representatives
        - the occupants of the premises (if domestic premises)
        - The asbestos removal control plan must also be made available for inspection under the WHS Act.

8 REFERENCES

ANZECC “Identification of PCB-containing capacitors” database (1997)

ANZECC Polychlorinated Biphenyls Management Plan (Revised Edition 2003)

Australian and New Zealand Environment and Conservation Council, 1997 (Revised 2005) - *An information booklet for electricians and electrical contractors*

Australian Standard AS4361.1 – 1995 *Guide to Lead Paint Management Part 1: Industrial Applications*

Australian Standard AS4361.2 *Guide to Lead Paint Management: Part 2 Residential and Commercial Buildings 1998*

International Agency for Research on Cancer (2002) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 81: Man-made Vitreous Fibres

National Occupational Health and Safety Commission *National Code of Practice for the Safe Use of Inorganic Lead at Work* [NOHSC: 2015 (1994)]

National Occupational Health and Safety Commission *National Model Regulations for the Control of Workplace Hazardous Substances [NOHSC:1005(1994)]*

NOHSC *National Code of Practice for the Safe Use of Inorganic Lead at Work [NOHSC: 2015 (1994)]*

National Electrical and *Communication Association Code of Practice for the Safe Handling of Equipment Containing Polychlorinated Biphenyl* (PCB)

NOHSC: 1015 (2001) *National Standard for the Storage and Handling of Workplace Dangerous Goods*

RMS, Asbestos Related Work (2013)

Safe Work Australia, *How to Manage and Control Asbestos in the Workplace Code of Practice* (December 2011)

Safe Work Australia, *How to Safely Remove Asbestos Code of Practice* (December 2018)

Safe Work NSW, *Code of Practice: How to Safely Remove Asbestos* (September 2016)

National Occupational Health and Safety Commission [(NOHSC): 1004(1990)], *Synthetic Mineral Fibres: National Standard and National Code of Practice*

Australian *Work Healthy and Safety Act 2011* and Regulations (2011)

NOHSC:1004 (1990) and NOHSC:2006(1990)], *Synthetic Mineral Fibre National Standard & National Code of Practice, May 1990*

Appendix A SITE PLAN

FIG NO. 1	**FIGURE TITLE** Site Location - 30 Topaz Crescent, Seven Hills, NSW	**DATE** 30/04/2019	**PAGE SIZE** A4	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56
PROJECT NO. 30012541	**PROJECT TITLE** Prospect Highway FM	**CREATED BY** FA13847	**SOURCES** Roadnet MDS 2018, public_NSW_Imagery: © Department of Finance, Services and Innovation 2018	

0 10 20 40 60 80
1:2,000 Metres

SMEC
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Location: \\AUSYFSV003\Group\projects\30012541 - Prospect Hwy FM\170 GIS\Maps\Seven Hills\30012541_Fig01_30CresSite.mxd

Last updated by: FA13847 on 30/04/2019 at 10:21

LEGEND

Site Location

N

FIG NO. 2 **FIGURE TITLE** Site Map - Main Building - 30 Topaz Crescent, Seven Hills, NSW

DATE 30/04/2019 NOT TO SCALE **PAGE SIZE** A4 **COORDINATE SYSTEM** GDA 1994 MGA Zone 56

PROJECT NO. 30012541 **PROJECT TITLE** Prospect Highway FM

CREATED BY FA13847 **SOURCES** Roadnet MDS 2018, public_NSW_Imagery: © Department of Finance, Services and Innovation 2018

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Location: I:\projects\30012541 - Prospect Hwy FM\170 GIS\Maps\Seven Hills\30012541_Fig02_30CresSite.mxd

Last updated by: FA13847 on 30/04/2019 at 9:55

LEGEND

Site Location

N

FIG NO. 2A **FIGURE TITLE** Site Map - Garage 1 - 30 Topaz Crescent, Seven Hills, NSW	**DATE** 30/04/2019 NOT TO SCALE	**PAGE SIZE** A4	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56
PROJECT NO. 30012541 **PROJECT TITLE** Prospect Highway FM	**CREATED BY** FA13847	**SOURCES** Roadnet MDS 2018, public_NSW_Imagery: © Department of Finance, Services and Innovation 2018	

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LEGEND

Site Location

N

Sliding Door

Garage
2

FIG NO. 2B **FIGURE TITLE** Site Map - Garage 2 - 30 Topaz Crescent, Seven Hills, NSW	**DATE** 30/04/2019 NOT TO SCALE	**PAGE SIZE** A4	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56
PROJECT NO. 30012541 **PROJECT TITLE** Prospect Highway FM	**CREATED BY** FA13847	**SOURCES** Roadnet MDS 2018, public_NSW_Imagery: © Department of Finance, Services and Innovation 2018	

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Last updated by: FA13847 on 30/04/2019 at 10:24

Appendix B PHOTOGRAPHIC LOG

Photo 1 - View to the west showing the residence at the Site.

Photo 2 - View to the north showing non-friable asbestos cement sheet cladding covered with flaking lead-based paint. Sheeting with missing sections can be observed in the lower left-hand corner.

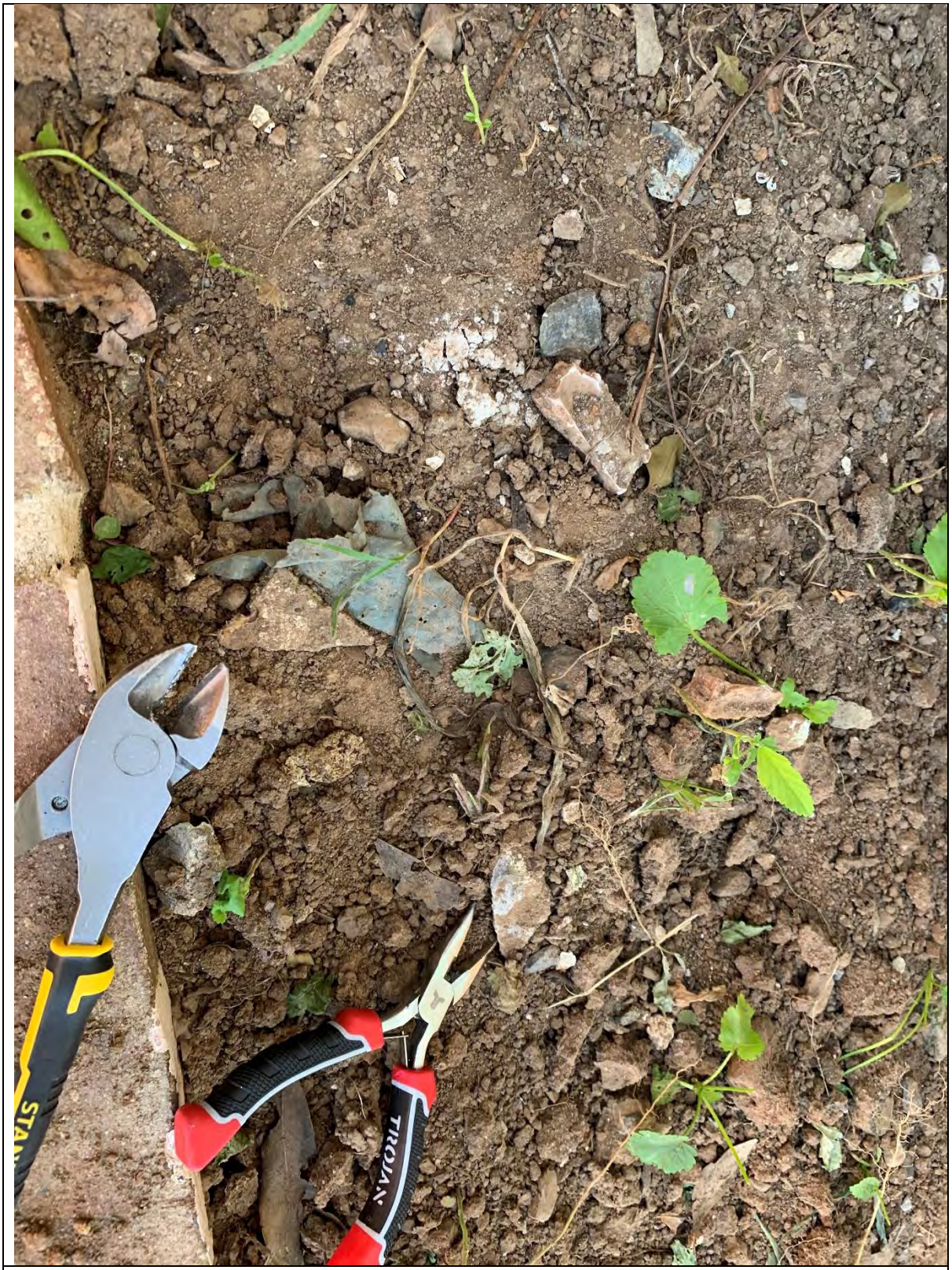


Photo 3 - View of the soil beside the northeast side of the site. Non-friable ACM fragments are present on the surface of the soil. These fragments likely originated from the fractured sheeting shown in the previous picture.

Photo 4 - View to the west showing wood cladding covered with white flaking lead-based paint on the lower portion of the wall. The upper portion of the wall consists of non-friable asbestos cement sheeting covered with white and aqua coloured lead-based paint.

Photo 5 - View of the soffit underlying the eaves on the east (south) portion of the residence. Also shown is the non-friable asbestos cement sheet cladding covered with white and aqua lead-based paint.

Photo 6 -View to the north showing the western face of the residence. The windows are stained glass and the cames (parts holding glass together) are presumably composed of lead.

Photo 7 - View to the east showing the patio on the west side of the house. A stained-glass window is shown. The cames in the window (parts holding glass together) are presumably composed of lead.

Photo 8 - View of electrical fuse box near porch on western side of the residence. Due to the age of the board ACM is presumed to be present

Photo 9 - View to the south showing the patio, the wood cladding covered with lead-based paint and the non-friable asbestos cement sheeting covered with lead-based paint.

Photo 10 - View towards the south showing the north side of the residence. Wood cladding covered with lead-based paint is present on the lower portion of the wall and non-friable asbestos cement sheet cladding covered with lead-based paint is present on the upper portion of the wall.

Photo 11 - View to the south showing the northeast corner of the residence. The wall in the immediate foreground is composed of non-friable asbestos cement sheet cladding. The wall further to the west is composed of wood cladding covered with lead-based paint on the lower portion of the wall and asbestos cement sheet cladding covered with lead-based paint on the upper portion of the wall.

Photo 12 - View to the south showing the porch on the northern portion of the residence. The wall on the front of the house is covered with asbestos cement sheet cladding covered with lead-based paint.

Photo 13 - View of a Telstra communication pit located west of the porch located on the northern side of the residence. The pit is presumed to contain ACM.

Photo 14 - View of a fluorescent light located above the door on the eastern side of the residence. The wood trim is presumed to be covered with lead-based paint.

Photo 15 - View to the north showing the kitchen (Room 2). The western wall (exposed and beneath particle board) in this room is presumed to be composed of non-friable ACM sheeting. The other walls are covered with ceramic tile and wood particle board painted with lead-based paint.

Photo 16 - View to the south showing the living room (Room 1). The walls and ceiling are covered with lead-based paint. The floor is composed of wood. The walls and ceiling are composed of gyprock.

Photo 17 - View to the west showing the hallway. The walls and ceiling are covered with lead-based paint. The floor is composed of wood. The walls and ceiling are composed of gyprock.

Photo 18 - View toward the south showing the bathroom (Room 3). The ceiling and the wall (partially covered by particle board) is composed of non-friable asbestos cement sheeting covered with lead-based paint.

Photo 19 - View to the west showing the bathroom. The ceiling and the wall (partially covered by particle board) is composed of non-friable asbestos cement sheeting covered with lead-based paint.

Photo 20 - View of the attic space from the bathroom (Room 3). The attic contains insulation composed of synthetic mineral fibre.

Photo 21 - View toward the west in the dining room (Room 4). The walls and ceiling are covered with lead-based paint. The walls and ceiling are composed of gyprock. The floor is composed of wood.

Photo 22- View towards the west showing the wall and closet in Room 5. The walls and ceiling are composed of gyprock and are covered with lead-based paint. The floor is composed of wood.

Photo 23 - View towards the west showing a stained-glass window in Room # 6. The cames (material holding glass together) are presumably composed of lead.

Photo 24 - View towards the southwest showing the carpet in the bedroom (Room # 6).

Photo 25 - View towards the west showing a stained-glass window in Room # 7. The cames (material holding glass together) are presumably composed of lead.

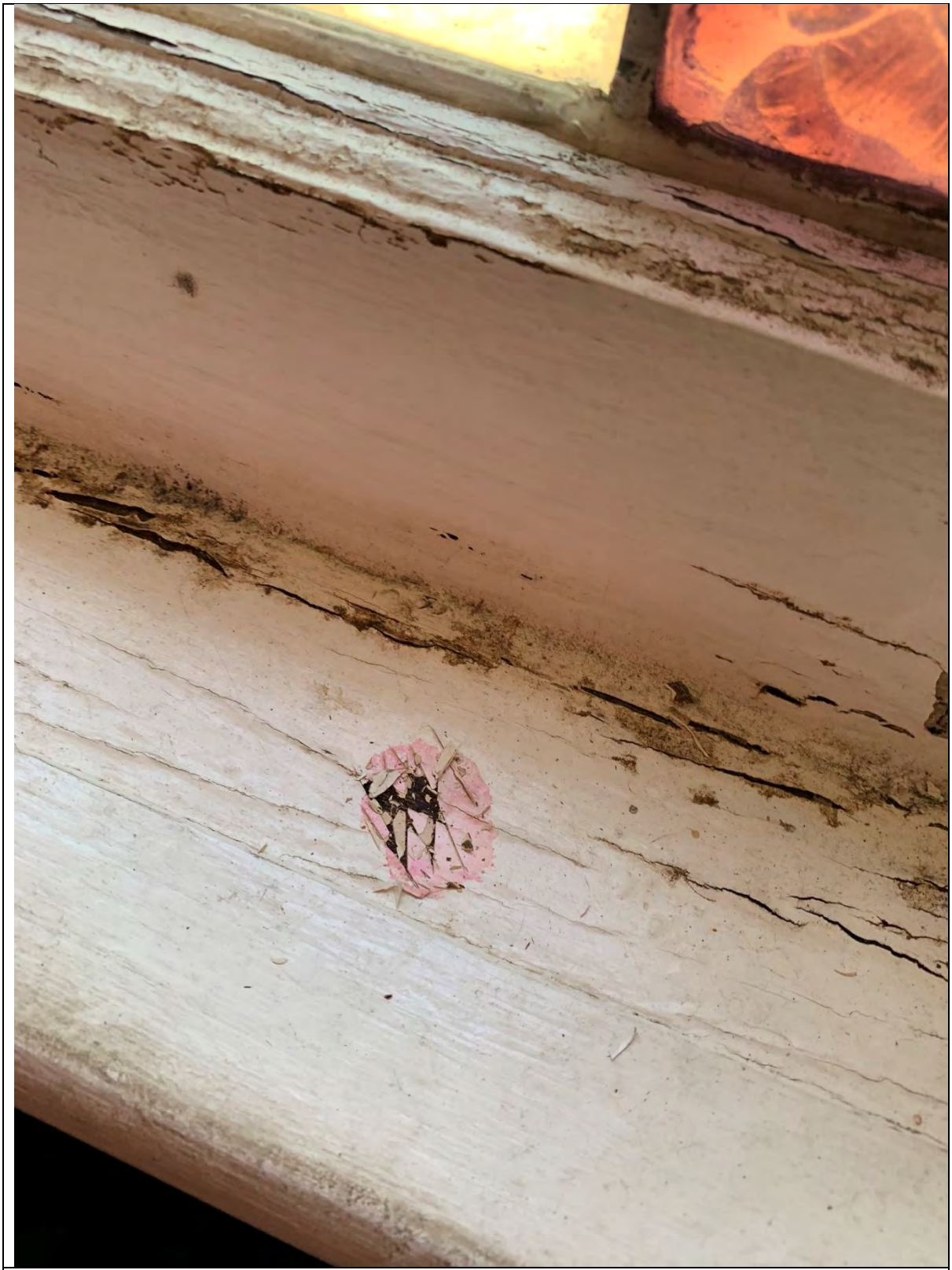


Photo 26 - View of the window frame surrounding the stained-glass window in Room 7. The wood window frame is covered with white lead-based paint.

Photo 27 - View towards the west showing the door located on the southern side of the site. The door, walls and ceiling are covered with lead-based paint.

Photo 28 - View toward the west showing Garage #1.

Photo 29 - View toward the southwest showing garage # 1.

Photo 30 - View to the southwest showing Garage #1. The fascia trim at the top of the northern wall is composed of non-friable asbestos cement sheet cladding. Identical non-friable asbestos cement sheeting is located on the east side of the garage.

Photo 31 - View to the south showing Garage # 1. The fascia trim contains wood covered with white lead-based paint

Photo 32 - View to the north showing the southern side of garage #1. The fascia wood trim is covered with brown lead-based paint.

Photo 33 - View to the north showing the interior of Garage #1.

Photo 34 - View of the ceiling of Garage # 1 showing a fluorescent light.

Photo 35 - View of the bathroom door in Garage # 1. The door is covered with lead-based paint.

Photo 36 - View looking to the east showing Garage #2. The roof is covered with non-friable asbestos cement corrugated roofing material. The gable is cladded with asbestos cement sheet cladding.

Photo 37 -View toward the south showing Garage #2. The roof is covered with non-friable asbestos cement corrugated roofing material. The gutter is presumed to be covered with red-coloured lead-based paint.

Photo 38 -View toward the east showing the east side of garage # 2. The gutter is presumed to be covered with red coloured lead-based paint.

Photo 39 - View toward the west showing Garage #2. The roof is covered with non-friable asbestos cement corrugated roofing material. The gable is cladded with asbestos cement sheet cladding. The wood door and window frame are covered with lead-based paint.

Photo 40 -View of the east side of the Garage # 2. A fluorescent light is shown on the ceiling. The wood door and window frame are covered with lead-based paint. A burlap bundle is present in the northeast corner in the rafters.

Photo 41 - View of the rafters and ceiling in Garage #2. A cloth presumed to be composed of asbestos material is present wrapped around the rafters. Corrugated asbestos cement roofing material is present on the ceiling.

Photo 42 – View of the fuse box in Garage #2.

Photo 43 – View of the water heater located on the south side of the residence. The water heater could contain SMF.

Photo 44 – View of the Telstra pit located adjacent to the wall on the north side of Garage #1. The pit may be composed of ACM.

Appendix C LABORATORY ANALYTICAL RESULTS

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 216038

Client Details

Client	SMEC Australia
Attention	Sazzad Hossein, Mark Laidlaw
Address	Level 5, 20 Berry St, North Sydney, NSW, 2060

Sample Details

Your Reference	**30012541, Prospect Highway FM**
Number of Samples	8 Material, 2 Paint
Date samples received	18/04/2019
Date completed instructions received	18/04/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	30/04/2019
Date of Issue	29/04/2019

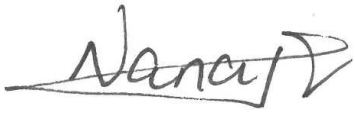
NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Identifier: Wonnie Condos
Authorised by Asbestos Approved Signatory: Matt Tang

Results Approved By
Giovanni Agosti, Group Technical Manager
Matthew Tang, Asbsestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Asbestos ID - materials						
Our Reference		216038-1	216038-2	216038-3	216038-4	216038-5
Your Reference	UNITS	Asbestos 1	Asbestos 2	Asbestos 3	Asbestos 4	Asbestos 5
Type of sample		Material	Material	Material	Material	Material
Date analysed	-	23/04/2019	23/04/2019	23/04/2019	23/04/2019	23/04/2019
Mass / Dimension of Sample	-	60x40x5mm	120x60x5mm	25x20x4mm	50x50x2mm	30x5x2mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	White fibre cement material	Beige fibrous insulation material	Beige fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected	Chrysotile asbestos detected Amosite asbestos detected	No asbestos detected Organic fibres detected	No asbestos detected Synthetic mineral fibres detected	No asbestos detected Organic fibres detected

Asbestos ID - materials				
Our Reference		216038-6	216038-7	216038-8
Your Reference	UNITS	Asbestos 6	Asbestos 7	Asbestos 8
Type of sample		Material	Material	Material
Date analysed	-	23/04/2019	23/04/2019	23/04/2019
Mass / Dimension of Sample	-	25x5x2mm	35x30x4mm	35x35x5mm
Sample Description	-	White fibre cement material	White and black vinyl tile	Pink fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Organic fibres detected	No asbestos detected Synthetic mineral fibres detected Organic fibres detected	Chrysotile asbestos detected Organic fibres detected

Lead in Paint			
Our Reference		216038-9	216038-10
Your Reference	UNITS	Paint 1	Paint 2
Type of sample		Paint	Paint
Date prepared	-	23/04/2019	23/04/2019
Date analysed	-	24/04/2019	24/04/2019
Lead in paint	%w/w	0.059	<0.005

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Metals-004	Digestion of Paint chips/scrapings/liquids for Metals determination by ICP-AES/MS and or CV/AAS.

QUALITY CONTROL: Lead in Paint					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			23/04/2019	[NT]	[NT]	[NT]	[NT]	23/04/2019	[NT]
Date analysed	-			24/04/2019	[NT]	[NT]	[NT]	[NT]	24/04/2019	[NT]
Lead in paint	%w/w	0.005	Metals-004	<0.005	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

SMEC

CHAIN OF CUSTODY FORM

SMEC OFFICE: North Sydney

PROJECT: Prospect Highway FM

PROJECT NUMBER: 30012541

PROJECT MANAGER: Sazzad Hossein

TURNAROUND REQUIREMENTS: Standard - 5 day TAT

Non Standard TAT (List due date):

LAB QUOTE NO.:

CONTACT PH: 0414303572

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

LAB: Envirolab, Chatswood

ATTENTION:

DISPATCH TO (ADDRESS & PHONE NO.):

DATE SAMPLED: 18 April 2019

Email Reports to (will default to PM if blank): mark.laidlaw@smec.com

Email Invoice to (will default to PM if blank): Sazzad.Hossain@smec.com

RELINQUISHED BY: Mark Laidlaw

DATE/TIME: 2:30 p.m.

RECEIVED BY: T. Nguyen

DATE/TIME: 18/4/19 14:17

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

Special Laboratory Instructions:

LAB ID	SAMPLE ID	DATE / TIME	SAMPLE MATRIX	CONTAINER TYPE & PRESERVATIVE	TOTAL NO. CONTAINERS	ANALYSIS REQUIRED: Asbestos	Asbestos/SMF	SMF	Lead
1	Asbestos 1	18/4/19	Solid	2 : plock Bag		✓			
2	Asbestos 2		↓	↓		✓			
3	Asbestos 3					✓			
4	Asbestos 4		Fibre				✓		
5	Asbestos 5		Solid			✓			
6	Asbestos 6					✓			
7	Asbestos 7						✓		
8	Asbestos 8					✓			
9	Paint 1								✓
10	Paint 2	↓	↓	↓					✓
				TOTAL					

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 211088

Date Received: 18/4/19.

Time Received: 14:17

Received by: TN

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Notes: Low reporting limits required for groundwater as specified by SMEC Australia Pty Ltd.

Copies: WHITE: send to lab, YELLOW: to be placed in project file, PINK: to be retained in CoC book

Appendix D HAZARDOUS BUILDING MATERIALS REGISTER

Hazardous Building Material Register
30 Topaz Crescent, Seven Hills, NSW

Date	Room ID	Location in Room	Component	Material Description	Sample ID	Comments	Lab Type of Sample	Lead in Paint (%w/w)	Asbestos ID in Materials	SMF Result	Area (m^2)	Photo ID
Residence												
19/04/2019	exterior	wall (lower portion in some areas along north and south sides of house)	wood cladding and white paint system	lead-based paint	lead swab	lead swab tested positive for lead-based paint						4, 10
19/04/2019	exterior	wall	fibre cement sheeting and white/aqua paint system	asbestos containing material (ACM) and lead-based paint	lead swab, asbestos 1; asbestos 2	lead swab tested positive for lead-based paint; wall samples tested positive for asbestos.G51			chrysotile/amosite		90	2, 4, 5, 6, 7, 9, 10, 11
19/04/2019	exterior	soffit/wall patch (square shaped)	particle board	particle board	asbestos 3	sample tested negative for asbestos			not detected			
19/04/2019	exterior	above east door	fluorescent light fixture	potential PCBs								14
19/04/2019	exterior	roof	corrugated iron	corrugated iron								
19/04/2019	exterior	windows (west side of house)	stained glass window cames	leaded cames		cames presumed to be composed of lead						23, 25
19/04/2019	exterior	west porch	fuse box	ACM backing board		unable to access due to risk of electrical shock; ACM backing board could be present behind fuse box.					0.5	8
19/04/2019	exterior	wall - west porch	brick	brick								
19/04/2019	exterior	ground surface	underground pit - Telstra	potential ACM in pit frame		pit presumed to be composed of ACM.						12
19/04/2019	exterior	exterior	water heater	potential SMF within heater								43
19/04/2019	interior	wall edges - vertical trim	wood with white paint system	white paint	paint 1, paint 2	samples tested negative for lead in laboratory analysis	lead	0.059; <0.005				
19/04/2019	interior	walls (base) - horizontal floor trim	wood with white paint system	white paint								
19/04/2019	room 1 (living room)	floor	wood									
19/04/2019	room 1 (living room)	walls	gyprock with tan paint system	lead-based paint	lead swab	lead swab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						16
19/04/2019	room 1 (living room)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	room 1 (living room)	window and floor trim	wood with white paint system									
19/04/2019	room 2 (kitchen)	floor	linoleum	synthetic mineral fibre (SMF)	asbestos 7	laboratory test tested positive for SMF				positive		
19/04/2019	room 2 (kitchen)	floor	wood									
19/04/2019	room 2 (kitchen)	wall - western	fibre cement sheeting	ACM		acm presumed (unable to collect sample)					4	
19/04/2019	room 2 (kitchen)	wall	particle board with white paint system/ceramic tile	lead - based paint system		visual assessment of particle board						
19/04/2019	room 2 (kitchen)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	room 3 (bathroom)	floor	brown ceramic tile									
19/04/2019	room 3 (bathroom)	wall	fibre cement sheeting with white paint system	ACM and lead-based paint	asbestos 6	sample tested positive for asbestos			chrysotile		20	18, 19
19/04/2019	room 3 (bathroom)	wall	particle board with white paint system	white paint	asbestos 5	sample tested negative for lead						
19/04/2019	room 3 (bathroom)	ceiling	fibre cement sheeting with white paint system	ACM and lead-based paint		unable to collect sample; visual identification					12	18, 19
19/04/2019	room 4 (dining room)	floor	wood									
19/04/2019	room 4 (dining room)	walls	gyprock with tan paint system	lead-based paint		intrusive visual assessment of gypsum wall board; lead swab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						21
19/04/2019	room 4 (dining room)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	room 5 (study)	floor	wood									
19/04/2019	room 5 (study)	walls	gyprock with tan paint system	lead-based paint		intrusive visual assessment of gypsum wall board; lead swab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						22
19/04/2019	room 5 (study)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	room 6 (bedroom)	floor	grey carpet									
19/04/2019	room 6 (bedroom)	floor	wood									
19/04/2019	room 6 (bedroom)	walls	gyprock with tan paint system	lead-based paint		intrusive visual assessment of gypsum wall board; leadswab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						
19/04/2019	room 6 (bedroom)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	room 6 (bedroom)	windows	stained glass window cames	leaded cames		visual assessment						23
19/04/2019	room 6 (bedroom)	window trim	wood with white paint system	lead-based paint	swab	swab tested negative for lead, however window trim in room 6 tested positive for lead. Possible false negative. Should assume it contains lead-based paint						
19/04/2019	room 7 (bedroom)	floor	grey carpet									
19/04/2019	room 7 (bedroom)	floor	wood									
19/04/2019	room 7 (bedroom)	walls	gyprock with tan paint system	lead-based paint		intrusive visual assessment of gypsum wall board; leadswab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						
19/04/2019	room 7 (bedroom)	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						

Hazardous Building Material Register
30 Topaz Crescent, Seven Hills, NSW

Date	Room ID	Location in Room	Component	Material Description	Sample ID	Comments	Lab Type of Sample	Lead in Paint (%w/w)	Asbestos ID in Materials	SMF Result	Area (m^2)	Photo ID
19/04/2019	room 7 (bedroom)	windows	stained glass window cames	leaded cames		visual assessment						25
19/04/2019	room 7 (bedroom)	window trim	wood with white paint system	lead-based paint	swab	tested positive for lead-based paint						26
19/04/2019	hallway	floor	wood									
19/04/2019	hallway	walls	gyprock with tan paint system	lead-based paint		intrusive visual assessment of gypsum wall board; lead swab tested positive, however reaction (colour change) not as strong as exterior lead-based paint						17
19/04/2019	hallway	ceiling	gyprock with white paint system	lead-based paint		intrusive visual assessment of gypsum wall board						
19/04/2019	hallway	wall - vertical trim	wood with white paint system	white paint								
19/04/2019	attic	attic floor	pink insulation	synthetic mineral fibre	asbestos 4	sample tested positive for SMF			not detected	positive		20
Garage #1												
19/04/2019	exterior/interior	wall	brick									
19/04/2019	exterior	roof	corrugated iron									
19/04/2019	exterior	fascia (north and south)	fibre cement sheeting	ACM	asbestos 8	sample tested positive for asbestos			chrysotile		2.5	30
19/04/2019	exterior	fascia (east)	wood with white paint system	lead-based paint		unable to sample due to heights; presumed to contain lead-based paint						31
19/04/2019	exterior	fascia (west)	wood with reddish brown paint system	lead-based paint		unable to sample due to heights; presumed to contain lead-based paint						
19/04/2019	exterior	gutter (west)	steel with reddish-brown paint system	lead-based paint		unable to sample due to heights; presumed to contain lead-based paint						32
19/04/2019	interior	rafters	fluorescent light fixture	potential PCB's								34
19/04/2019	interior	floor	concrete									
19/04/2019	bathroom	door and frame	wood	lead-based paint	swab	swab test tested positive for lead-based paints						35
19/04/2019	exterior	ground surface	underground pit - Telstra	potential ACM in pit frame								44
Garage # 2												
19/04/2019	exterior	wall	concrete block									
19/04/2019	exterior	sliding door (west)	steel									
19/04/2019	exterior	gables (east/west)	fibre cement sheeting	ACM		unable to sample due to heights					8	36, 39
19/04/2019	exterior	fascia	wood (east); steel (west); white paint system	lead-based paint		unable to access due to heights; presumed to contain lead-based paint						
19/04/2019	exterior	roof	corrugated asbestos cement roofing material	ACM ("super six")		unable to sample due to heights					50	37, 41
19/04/2019	exterior	door/window frames	wood with white paint system	lead-based paint	swab	tested positive for lead-based paint						37, 39, 40
19/04/2019	exterior	gutters	steel with red-paint system	lead-based paint		unable to sample or test due to heights						37, 38
19/04/2019	interior	floors	concrete									
19/04/2019	interior	rafters	fluorescent light fixture	potential PCB's								40
19/04/2019	interior	rafters	fabric wrapped around rafters	ACM		visual identification; unable to sample due to heights					0.75	41
19/04/2019	interior	rafters	burlap - contents unknown	potential hazardous materials		unable to access due to heights						40
19/04/2019	interior	wall (north)	fuse box with green paint system	lead-based paint		lead-based paint presumed given age						42
19/04/2019	interior	wall (north)	fuse box	potential ACM backing board		unable to sample due to electrical shock risk					0.25	42

Appendix E Asbestos Removal Control Plan Requirements

Appendix A – Asbestos removal control plan contents

	Building & structures		Plant & equipment	
	Friable	Non-Friable	Friable	Non-Friable
Notification				
Notification requirements have been met and required documentation will be on site (eg removal licence, control plan, training records)	Yes	Yes	Yes	Yes
Identification				
Details of asbestos to be removed (eg the locations, whether asbestos is friable/non-friable, its type, condition and quantity being removed)	Yes	Yes	Yes	Yes
Preparation				
Consult with relevant parties (health and safety representative; workers; person who commissioned the removal work, licensed asbestos assessors)	Yes	Yes	Yes	Yes
Assigned responsibilities for the removal	Yes	Yes	Yes	Yes
Program commencement and completion dates	Yes	Yes	Yes	Yes
Emergency plans	Yes	Yes	Yes	Yes
Asbestos removal boundaries, including the type and extent of isolation required and the location of any signs and barriers	Yes	Yes	Yes	Yes
Control of other hazards including electrical and lighting installations	Yes	Yes	Yes	Yes
PPE to be used including RPE	Yes	Yes	Yes	Yes
Removal				
Details of air-monitoring program Control and clearance	Yes	No	Yes	No
Waste storage and disposal program	Yes	Yes	Yes	Yes
Method for removing the asbestos (wet and dry methods)	Yes	Yes	Yes	Yes
Asbestos removal equipment (eg spray equipment, asbestos vacuum cleaners, cutting tools)	Yes	Yes	Yes	Yes
Details of required enclosures, including their size, shape, structure etc, smoke testing enclosures and the location of negative pressure exhaust units	Yes	No	Yes	No
Details on temporary buildings required by the asbestos removalist (eg decontamination units) including details on water, lighting and power requirements, negative pressure exhaust units and the locations of decontamination units	Yes	May be required depending on the job	Yes	May be required depending on the job
Other risk control measures to prevent the release of airborne asbestos fibres from the area where asbestos removal is undertaken	Yes	Yes	Yes	Yes
Decontamination				
Detailed procedures for workplace decontamination, the decontamination of tools and equipment, personal decontamination and the decontamination of non-disposable PPE and RPE	Yes	Yes	Yes	Yes
Waste Disposal				
Method of disposing of asbestos waste, including details on:	Yes	Yes	Yes	Yes
• the disposal of protective clothing	Yes	Yes	No	Yes
• the structures used to enclose the asbestos removal area				
Clearance and air monitoring				
Name of the independent licensed asbestos assessor or competent person engaged to conduct air monitoring (if any)	Yes	No	Yes	No
Consultation				
Consult with any people who may be affected by the removal work, including neighbours	Yes	Yes	Yes	Yes

local people
global experience

SMEC is recognised for providing technical excellence and consultancy expertise in urban, infrastructure and management advisory. From concept to completion, our core service offering covers the life-cycle of a project and maximises value to our clients and communities. We align global expertise with local knowledge and state-of-the-art processes and systems to deliver innovative solutions to a range of industry sectors.

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Appendix F

Preliminary Erosion and Sediment Control Plan

1. TECHNICAL NOTE: 30012541 – ESCP – TN - 01

Technical Note No.:	3001254 – ESCP – TN - 01	**Date:**	5/04/2019
Title:	Prospect Highway Upgrade – Erosion and Sediment Controls addendum		
Project Ref.:	30012541-01	**Rev.:**	01
Originator:	Daniel Saunders	**Reviewer:**	Sazzad Hossain
Discipline:	Environment		

1.1. Scope of Technical Note

The proposed revised design package for PHU have changed the Preliminary Erosion and Sediment Control Plan (PESCP) sub catchments based on design works in finalised 2015. This technical note forms an addendum to Primary Erosion and Sediment Control Plan (PHU-DR-03-REP-01) and provides changes to inputs in of controls and measures based on sub catchment data where design changes are relevant.

1.2. Project description

Roads and Maritime Services (Roads and Maritime) has commissioned SMEC Australia Pty Ltd (SMEC) to prepare the detailed design, investigation and construction documentation for the upgrade of the Prospect Highway between Reservoir Road at Prospect and 200 metres north of St Martins Crescent at Blacktown, a length of 3.6 kilometres. This included the detailed design of a new concrete overbridge.

1.3. Soil and Water Management

This Principle Erosion and Sediment Control Plan (PESCP) addendum has been developed to address the requirements of the Detail Design process provided by Roads and Maritime and as required by the Review of Environmental Factors for the PHU. Then PESCP serves as an information document to provide guidance to the PHU construction contractor on how to best manage erosion and sediment control may be implemented during construction.

The following best practice management guidance is provided to assist in planning and implementation of appropriate controls to minimise soil erosion and control sedimentation.

In order to construct the proposed project water quality control and measures, and changes to design drawing have been generated and the following changes have triggered revision to sub catchment. Catchment sizing is provided in Appendix A of this memo.

1.4. Design change impact – sub catchments

Each revised catchment assessment has been assessed in accordance with Appendix A of the Blue Book and using the Revised Universal Soil Loss Equation (RUSLE) to determine the need for sediment basins and assessment parameters have been adopted from the PESCP (SMEC, 2015) as these have not changed.

As detailed in Section 6.3.2 (d) of the Blue Book 'the building of a sediment retention basin can be considered unnecessary' if the computed soil loss of from a catchment is less than 150 m^3 per year. For all catchments which exceed this requirement, a sediment basin is required.

Table 1.1 summarises the RUSLE assessment finding for each construction catchment within the PHU. Calculations are contained in Appendix B. No requirement for a sediment requirement based on the soil loss or risk class is required.

Table 1-1. Sub catchment soil loss changes.

Chainage and Catchment ID	Catchment size (ha)	Soil loss (m^3/ha/yr)	Sediment basin required? (N/Y)	Sediment traps / sump volume m3
CH2,600 - S2C78	0.13	34	N	-
CH3,100 - S2C77	0.39	36	N	1

Where the construction contractor chooses to vary the size of a construction catchment (e.g. through a change in construction staging), further assessment of the soil loss from the catchment should be undertaken to confirm if a sediment basin will be required in accordance with the Blue Book.

1.5. Implementation of PESCP and control elements

Chainage 2,600 (West) S2C78

New sub catchment S2C78 has resulted at CH2,600 western side of alignment. This catchment is generated by additional service access footpath and driveway pavements as required for the Shelly Public School waste bins area. This new area may be managed as a standalone catchment for the purposes of soil the PESCP. This area has an approximate upgradient clean water catchment of 0.13 Ha and a disturbed soil exposure area of 0.006Ha.

No additional non-standard controls required for this location and no specific discharge point is required if best practise is applied during construction. No further controls required once vegetation is re-established.

Chainage 3,100 (East) S2C77

Standard and non standard erosion and sediment controls and measures are required for managing the construction of the operational water quality basin at CH3,100. Additional consideration to erosion and sediment controls maybe required if the upgradient areas to the east are to be used as ancillary site purposes during constructions phase.

This operational water quality basin has a construction footprint of 0.24Ha and is proposed to be connected to existing under road stormwater drainage network that connects to Beaufort Road which is outside of the project boundary. Connection design to Blacktown Creek drainage infrastructure is not known, however it is assumed that the existing Beaufort Road stormwater network is upgradient of Blacktown Creek at approximately 350m to the west of the project corridor. Controls and measures applied to the construction phase of the operational basin in this vicinity must be aware that this is where construction impacted stormwater may be released if not controlled in accordance with best practise. The REF has

not identified Blacktown Creek as a sensitive receiver going to be impacted the proposed works.

In addition to the standard Blue Book controls as detailed in Table 2 of the PESCP, controls may need to be varied to better suit site specific conditions and managing the potential for this location to receive clean water and requirement for passage of clean water to enter the existing stormwater network. The following variations to standard controls come from Technical Guideline Temporary stormwater drainage for road construction (RMS, 2011) should be considered where standard controls may not be suitable.

Additional Planning, design and construction consideration must be implanted throughout construction to separate on site and offsite water on the basin berms and cross drainage interfaces.

Additional non standard controls may include the following:

- Offsite water drains must be lined, stabilised and cleaned of any sediments
- Ensure that sufficient land is made available to accommodate temporary drains where required.
- If it is not feasible to drain 'offsite' water out of complex cuts via gravity, pumps may be required, however all associated problems if pumps were to fail must be considered and addressed. Pumps should only be used as a last resort.
- Temporary pipes can be flexible if desired and moved around, providing constant fall is achieved along the pipe.
- Outlet discharge must be onto a stable dissipater. If possible, outlet temporary and sacrificial pipes onto the same dissipater that will be used for permanent drainage outlet structures. This minimises in-stream works
- Until the batter areas above berm drains are topsoiled, stabilised and rehabilitated, berm drains must remain disconnected from the cut-off drains.
- Temporary drains should be used when rain is imminent to ensure 'onsite' water is directed to sediment retention structures and to reduce the slope length on long, exposed formation slopes.
- Install a perimeter clean water diversion bund (0.5m wrapped lined in geofabric) to divert upslope flows around the works and into the existing stormwater pit. During excavation, this clean water diversion may not be able to be constructed in some locations therefore, disturbance is to be minimised during this stage and upslope flows are to be either piped or pumped across the works
- Basin floor and existing stormwater inlet must be raised above the expose soil floor. Outlet is to be protected with appropriate sand bagging (gravel filled) and or filter fabric to prevent ingress of sediment or sediment impacted water were possible.

In the event that construction impacted stormwater is collected in excavation and or drainage features then Onsite' water should not be discharged from site untreated. Any active discharge of water from the project is to achieve water quality of:

- 50mg/L or less TSS,
- pH 6.5 to 8.5 and
- <10mg/L oil and grease and visible trace.

1.6. Recommendations

In accordance with Section 4.4.2 of the Blue Book, areas which pose a 'high' erosion hazard are those which have a Soil Loss Class (SLC) of 5 or greater. This equates to a calculated soil loss of greater than 501 (tonnes / hectare / year). The highest calculated soil loss from this construction catchment assessed in this addendum within the PHU is approximately 80 (tonnes / hectare / year) which equates to a SLC of 1 and a 'low' erosion hazard.

It is recommended that the contractor takes particular note of the above recommendations in addition to the following management measures:

- Nomination of an environmental representative on site to complete self-audits and monitor Soil and Water Management Plans.
- Implementation of this plan and responsibility for nomination of an environmental representative to ensure on going monitoring, maintenance and prevention of pollution is the responsibility of the contractor.
- A progressive erosion and sediment control plan is to be prepared for the works should be developed progressively through the construction phase by a Roads and Maritime registered soil conservationist. PESCP's should be in accordance with the requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004) and Managing Urban Stormwater-Volume 2D Main Road Construction (DECC, 2008)
- In accordance with the Preliminary Erosion and Sedimentation Assessment, the proposal is considered high risk and identifies that a soil conservation consultant is required to work in collaboration with the design team. The role of the soil conservation consultant is to ensure preliminary designs for major erosion and sedimentation controls are appropriate and manage the risks to installation and operation of designed controls.
- Sizing of detailed construction sub catchments may need to be further defined once construction staging planning is underway to make provision for potentially larger up gradient stormwater catchments that may need to be considered during higher erosion risk activities, such as redirecting live stormwater assists, changes to pavement drainage, or when bridge deck surface water is connected site water.

APPENDIX B – TECHNICAL DRAWINGS

FROM WETHERILL PARK

ADJOINS SHEET ES-0205

LANCELOT STREET

PROSPECT HIGHWAY

TO BLACKTOWN

ADJOINS SHEET ES-0207

S2C68 S2C69 S2C70 S2C71 S2C72 S2C73 S2C74 S2C78

CONSTRUCT DIVERSION BANK TO DIVERT RUNOFF FROM FORMATION INTO OPEN DRAIN.

MAINTAIN EXISTING DRAINAGE. PROVIDE SANDBAG SEDIMENT TRAP FOR DRAINAGE PITS UNTIL FORMATION HAS BEEN SEALED.

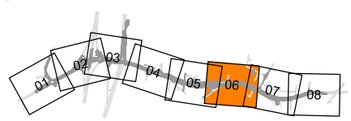
UTILISE OPEN DRAIN AS SEDIMENT CONTROL DURING WORKS. CONSTRUCT ROCK CHECK DAMS WITHIN DRAIN.

1. CONSTRUCT PIT & PIPE DRAINAGE EARLY IN WORKS TO CONTROL RUNOFF FROM CATCHMENTS.
2. PROVIDE SANDBAG SEDIMENT TRAP FOR DRAINAGE PITS UNTIL FORMATION HAS BEEN SEALED.
3. PROVIDE CROSS BANKS AT INTERVALS ALONG CATCHMENT LENGTH TO REDUCE FLOW VELOCITY & DIVERT RUNOFF TO DRAINAGE PITS.

LEGEND

- CATCHMENT BOUNDARY
- S2C64 CATCHMENT NUMBER
- STABILISED OFFSITE WATER DRAN
- ONSITE WATER DRAIN
- SEDIMENT FENCE
- DIVERSION BANK
- BATTER CHUTE
- SEDIMENT TRAP
- ROCK CHECK DAM
- SANDBAG CHECK DAM
- ROAD CONTROL LINE
- PROJECT BOUNDARY
- CONSTRUCTION ZONES
- CONSTRUCTED WORKS
- PROPOSED STORMWATER PIT
- PROPOSED CULVERT & HEADWALLS
- EXISTING DRAINAGE

KEY PLAN



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50mm ON A3 SIZE ORIGINAL

DRAWING FILE LOCATION / NAME	DESIGN LOT CODE	DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING	PLOT DATE / TIME	PLOT BY
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EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
X_RMSNSWOV4 2_Ca3 X_RMSE_2000 X_STREET_NAMES_CS X_BDRY X_DES_MAIN X_BDRY X_CADAST X_KEY_2000 X_DES_CTRL_2000 X_ES_LEG_2C X_LEG_ES X_CONT_COMBINED X_DRL X_INDEX X_ES_CONTROLS_STAGE_2 X_ES_CATCHMENTS_STAGE_2 X_ES_CSHATCH_STAGE_2	0	18.12.15	FOR INFORMATION ONLY ISSUE	0	CS
	1	21.12.15	DETAILED DESIGN ISSUE FOR WORKSHOW	0067	CS
	2	8.11.16	FINAL DESIGN	0120	CS

REVISION IN PROGRESS

SCALES ON A3 SIZE DRAWING

SCALE 1:2000 10 0 10 20 30 40 50

CO-ORDINATE SYSTEM: MGA ZONE 56 HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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DESIGN	O. CLARK	8.11.15
DESIGN CHECK	A. PETTIG	8.11.15
DESIGN MNGR	S. TAYLOR	8.11.15
PROJECT MNGR	C. SUTTON	8.11.15

CHECK PRINT PRELIM ☐ FINAL ☐

	INITIAL	DATE
DISCIPLINE		
DISCIPLINE		
DISCIPLINE		
BACKDRAFTED/CORRECTED		
CONFIRMED		

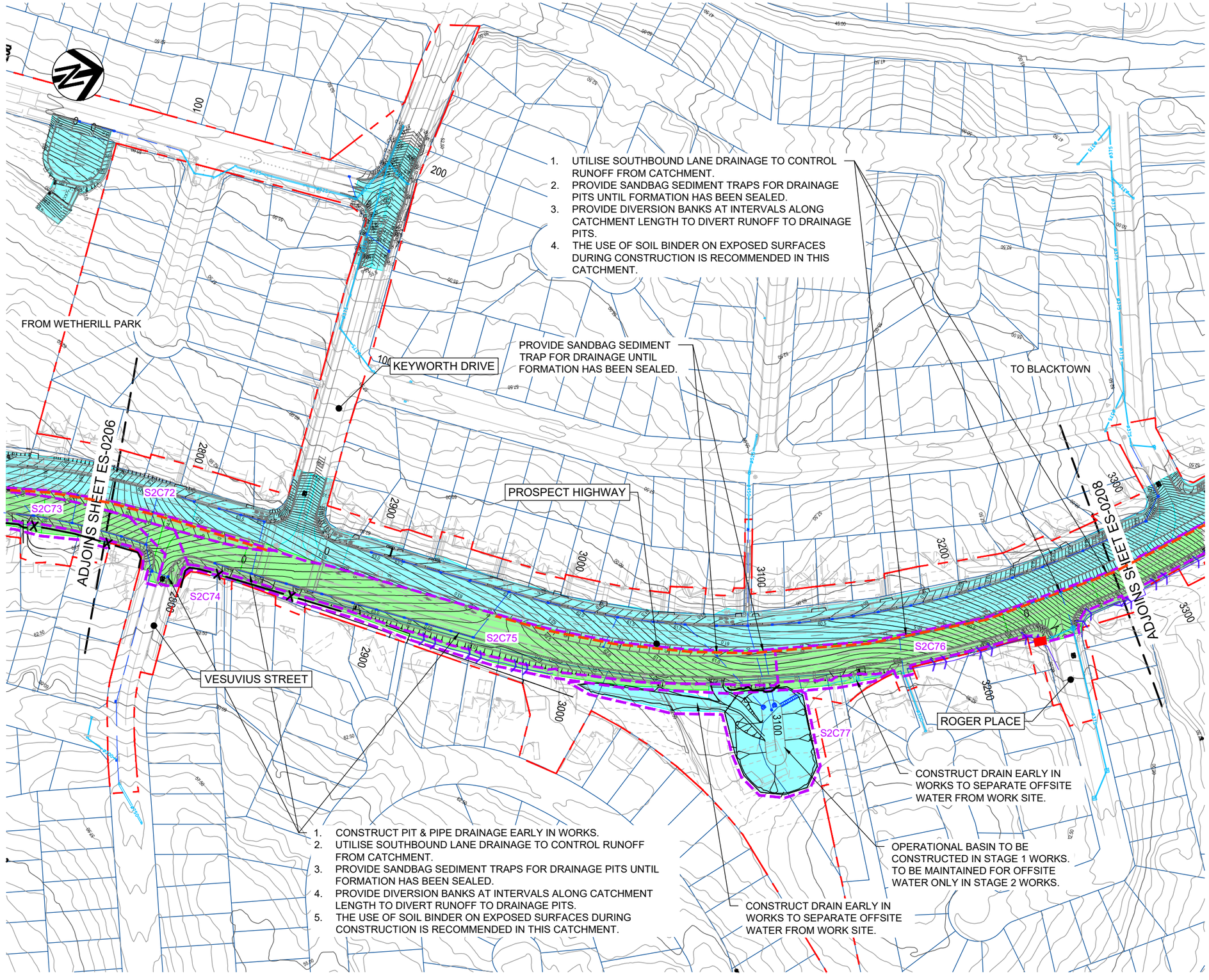
PREPARED FOR

CITY OF BLACKTOWN
MR644 PROSPECT HIGHWAY
PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT
EROSION & SEDIMENT CONTROL PLAN - STAGE 2
SHEET 6 SHEET 16 OF 20

A3

RMS REGISTRATION No. DS2015/000269 PART 1

ISSUE STATUS	EDMS No.	SHEET No.	ISSUE
FINAL DESIGN	DS2015-000269	ES-0206	#



LEGEND

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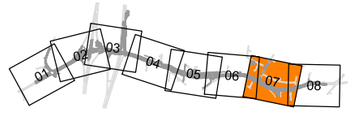

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REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
0	18.12.15	FOR INFORMATION ONLY ISSUE	0	CS
1	21.12.15	DETAILED DESIGN ISSUE FOR CONSTRUCTION REVIEW	0067	CS
2	8.11.16	FINAL DESIGN	0120	CS

REVISION IN PROGRESS

SCALES ON A3 SIZE DRAWING: SCALE 1:2000 (10 0 10 20 30 40 50)

CO-ORDINATE SYSTEM: MGA ZONE 56 — HEIGHT DATUM: AHD

DRAWINGS / DESIGN PREPARED BY

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CHECK PRINT — PRELIM INITIAL / FINAL DATE

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PREPARED FOR

CITY OF BLACKTOWN — A3

MR644 PROSPECT HIGHWAY

PROSPECT HWY UPGRADE FROM RESERVOIR ROAD TO 200m NORTH OF ST MARTINS CRESCENT EROSION & SEDIMENT CONTROL PLAN - STAGE 2

SHEET 7 — SHEET 17 OF 20

RMS REGISTRATION No. DS2015/000269 — PART 1

ISSUE STATUS: FINAL DESIGN — EDMS No.: DS2015-000269 — SHEET No.: ES-0207 — ISSUE #

APPENDIX B – RULSE CALCULATIONS

1. Erosion Hazard and Sediment Basins

Site Name: Prospect Highway

Site Location: Reservoir Rd to 200m north of St Martins Crescent, Blacktown

Precinct/Stage: Stage 2

Other Details: Catchments S2C77-S2C78

Site area	Sub-catchment or Name of Structure						Notes
	S2C77	S2C78					
Total catchment area (ha)	0.13	0.39					
Disturbed catchment area (ha)	0.036	0.24					

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	D	D	D	D	D	D	From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	D	D	D	D	D	D	Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5					See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	80	80					
x-day, y-percentile rainfall event (mm)	24.6	24.6					
Rainfall R-factor (if known)	2500	2500					Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)							

RUSLE Factors

Rainfall erosivity (*R*-factor)	2500	2500					Auto-filled from above
Soil erodibility (*K*-factor)	0.038	0.038					
Slope length (m)	80	20					
Slope gradient (%)	3	5					RUSLE LS factor calculated for a high rill/interrill ratio.
Length/gradient (*LS*-factor)	0.65	0.54					
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2					Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.35	0.35					See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	80	66					
Soil Loss Class	1	1					See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	62	51					Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)		2					See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	11	34					See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)		36					

Appendix G

Statutory consultation checklists

Infrastructure SEPP

Certain development types

Development type	Description	Yes / No	If 'yes' consult with	ISEPP clause
Car Park	Does the project include a car park intended for the use by commuters using regular bus services?	No		ISEPP cl. 95A
Bus Depots	Does the project propose a bus depot?	No		ISEPP cl. 95A
Permanent road maintenance depot and associated infrastructure	Does the project propose a permanent road maintenance depot or associated infrastructure such as garages, sheds, tool houses, storage yards, training facilities and workers' amenities?	No		ISEPP cl. 95A

Development within the Coastal Zone

Issue	Description	Yes / No / NA	If 'yes' consult with	ISEPP clause
Development with impacts on certain land within the coastal zone	Is the proposal within a coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?	NA		ISEPP cl. 15A

Council related infrastructure or services

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s).	ISEPP clause
Stormwater	Are the works likely to have a *substantial* impact on the stormwater management services which are provided by council?	No		ISEPP cl.13(1)(a)
Traffic	Are the works likely to generate traffic to an extent that will *strain* the capacity of the existing road system in a local government area?	No		ISEPP cl.13(1)(b)
Sewerage system	Will the works involve connection to a council owned sewerage system? If so, will this connection have a *substantial*	No		ISEPP cl.13(1)(c)

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s).	ISEPP clause
	impact on the capacity of any part of the system?			
Water usage	Will the works involve connection to a council owned water supply system? If so, will this require the use of a *substantial* volume of water?	No		ISEPP cl.13(1)(d)
Temporary structures	Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a *minor* or *inconsequential* disruption to pedestrian or vehicular flow?	No		ISEPP cl.13(1)(e)
Road & footpath excavation	Will the works involve more than *minor* or *inconsequential* excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?	No		ISEPP cl.13(1)(f)

Local heritage items

Issue	Potential impact	Yes / No	If 'yes' consult with the relevant local council(s)	ISEPP clause
Local heritage	Is there is a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than *minor* or *inconsequential*?	No		ISEPP cl.14

Flood liable land

Issue	Potential impact	Yes / No	If 'yes' consult with	ISEPP clause
Flood liable land	Are the works located on flood liable land? If so, will the works change flood patterns to more than a *minor* extent?	No	Local Council	ISEPP cl.15

Issue	Potential impact	Yes / No	If 'yes' consult with	ISEPP clause
Flood liable land	Are the works located on flood liable land? (to any extent). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance	No	State Emergency Service	ISEPP cl.15AA

Public authorities other than councils

Issue	Potential impact	Yes / No	If 'yes' consult with	ISEPP clause
National parks and reserves	Are the works adjacent to a national park or nature reserve, or other area reserved under the *National Parks and Wildlife Act 1974*, or on land acquired under that Act?	No	Office of Environment and Heritage	ISEPP cl.16(2)(a)
National parks and reserves	Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	No	Office of Environment and Heritage	ISEPP cl. 16(2)(b)
Aquatic reserves and marine parks	Are the works adjacent to an aquatic reserve or a marine park declared under the *Marine Estate Management Act 2014*?	No	Department of Industry	ISEPP cl.16(2)(c)
Sydney Harbour foreshore	Are the works in the Sydney Harbour Foreshore Area as defined by the *Sydney Harbour Foreshore Authority Act 1998*?	No	Sydney Harbour Foreshore Authority	ISEPP cl.16(2)(d)
Bush fire prone land	Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land?	No	Rural Fire Service	ISEPP cl.16(2)(f)
Artificial light	Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)	No	Director of the Siding Spring Observatory	ISEPP cl. 16(2)(g)

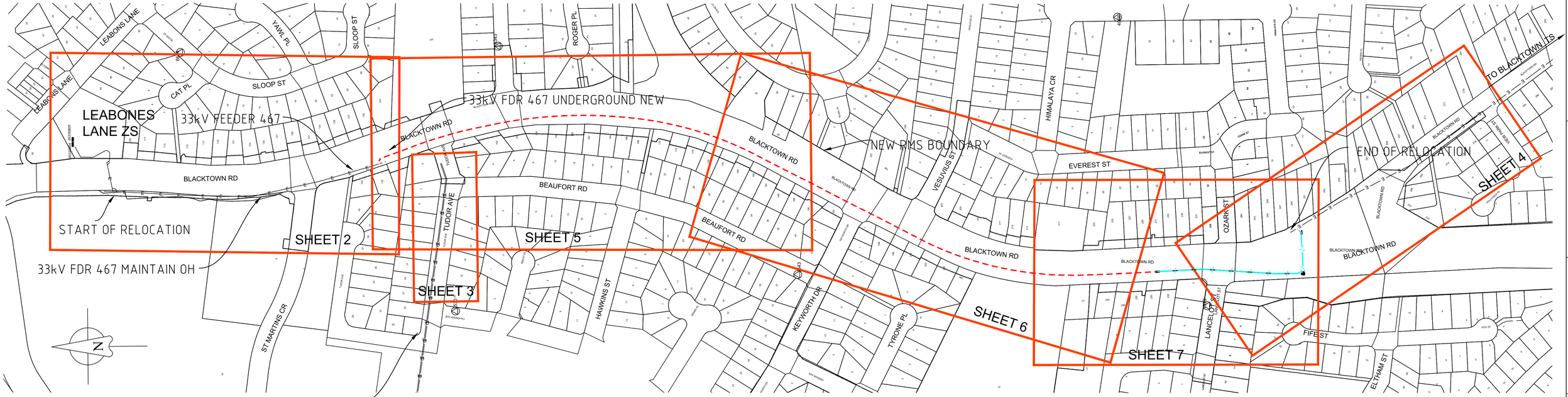
Issue	Potential impact	Yes / No	If 'yes' consult with	ISEPP clause
Defence communications buffer land	Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).	No	Secretary of the Commonwealth Department of Defence	ISEPP cl. 16(2)(h)
Mine subsidence land	Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	No	Mine Subsidence Board	ISEPP cl. 16(2)(i)

Growth Centres SEPP

Issue	Potential impact	Yes / No	If 'yes' consult with	SEPP clause
Clearing native vegetation	Do the works involve clearing native vegetation (as defined in the *Local Land Services Act 2013)* on land that is not ***subject land*** (as defined in cl 17 of schedule 7 of the *Threatened Species Conservation Act 1995*)?	No	Department of Planning and Environment	SEPP 18A

Appendix H

AusConnex design drawings



ROUTE PLAN
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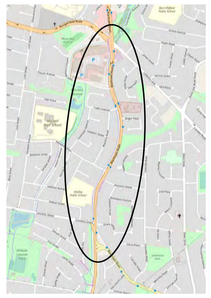


LOCALITY MAP
(OPEN SOURCE: STREET MAP)

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH
   1.1. THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY .
   1.2. ENDEAVOUR ENERGY'S PROJECT DEFINITION APR 3266, SHOULD BE READ IN CONJUNCTION WITH APR 4126, .
   1.3. MCI0006 - UNDERGROUND CONSTRUCTION STANDARDS
   1.4. MCI0005 - OVERHEAD CONSTRUCTION STANDARDS

2. REIMBURSEMENTS WILL BE PAID TO THE NOMINATED PARTY ON THE LETTER OF INTENT AFTER THE WORKS HAVE BEEN COMPETED AND THE LETTER OF ACCEPTANCE HAS BEEN ISSUED. THE REIMBURSED AMOUNT IS SHOWN IN THE FUNDING ARRANGEMENTS FOR SCOPE OF WORK. ANY DISAGREEMENT WITH THE AMOUNT SHOULD BE RESOLVED WITH ENDEAVOUR ENERGY PRIOR TO THE COMMENCEMENT OF WORKS.

3. RMS IS UNDERTAKING ROAD WIDENING WORK AT PROSPECT HWY/BLACKTOWN ROAD. THE ASSET IMPACTED WILL BE RELOCATED WITH 4 STAGE DESIGN. STAGE 1 AND 2, IS TRANSMISSION AND CARRIED OUT UNDER THIS DESIGN - ARP 3266, WHILST STAGE 3 AND 4 IS DISTRIBUTION - ARP 4126 & ARP 4108. TO OVERCOME TIMING ISSUE, DESIGN MAKES THE FOLLOWING ASSUMPTIONS.

   THE SCOPE OF WORKS IS TO RELOCATE THE 33kV TRANSMISSION FEEDER 467 FROM LEABONS LANE TO PROSPECT HIGHWAY/BLACKTOWN ROAD.

   3.1. STAGE 1 – TRANSMISSION OVERHEAD.
   FROM LEABONS LANE SUBSTATION TO PROPOSED TUDOR AVENUE. THE OVERHEAD TRANSMISSION WILL BE MODIFIED. THE JOINT USE CIRCUITS IN THIS SECTION WILL BE MODIFIED UNDER STAGE 3 AND 4. DESIGN WILL ASSUME DISTRIBUTION WORK WILL BE UNDERTAKEN PRIOR TO TRANSMISSION.

   IT IS PROPOSED THE 33kV REDUNDANT LINE OS/28 WILL BE RE-TERMINATED NEAR POLE PL520008 (2709).

   IT IS PROPOSED THE UG/OH STRUCTURE FOR STAGE 2, IS STOOD IN STAGE 1, AND COORDINATED WORK IS COORDINATED WITH ARP 4126 AND ARP 4108.

   3.2 STAGE 2.
   FROM THE UG/OH STRUCTURE 31A, TO UG/OH STRUCTURE 14A. THE OVERHEAD LINE BE UNDERGROUNDED. ROUTE LENGTH APPROX 1066m. IT IS EXPECTED THE EFFECTED POLES BE REMOVED IN STAGE 3 & 4 UNDER DISTRIBUTION WORK.

4. ENDEAVOUR ENERGY CONTACT PHONE: 131 081.

5. DESIGN CERTIFICATION SHALL LAPSE WHERE:-
   (i. NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION;
   OR
   (ii) WORKS COMPLETED CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX (6) MONTHS.

   WHERE DESIGN CERTIFICATION HAS LAPSED THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.

5. ATTENTION
   PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE MARKS ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF ANY WORKS.

6. ATTENTION
   ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.

7. WARNING
   LIVE ENDEAVOUR ENERGY CABLES AND OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TELEPHONE: 1100 FOR SEARCH TWO (2) DAYS PRIOR TO EXCAVATION

8. ATTENTION
   SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPARTMENT DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE: 131 081.

9. OPERATIONAL LIMITS
   UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED

   - MOBILE GENERATOR AND SUBSTATIONS;
   - LIVE LINE WORK;
   - DESIGN ALTERNATIVES'
   - LOW VOLTAGE PARALLELS;
   - WORK PRACTICE/STANDARDS.

   THE COST TO BE FUNDED BY THE CUSTOMER/DEVELOPER.

13. THIS IS A CUSTOMER FUNDED RELOCATION PROJECT BY RMS. WORK SHALL NOT COMMENCE UNLESS FUNDING IS AGREED IN WRITING. ANY DISAGREEMENT WITH THE AMOUNT SHOULD BE RESOLVED WITH ENDEAVOUR ENERGY.

14. HAVE ALL THE EXISTING ASSETS BEEN FIELD CHECKED AND ARE ACCURATE AT THE TIME OF DESIGN? YES / NO

15. FOR ENVIRONMENTAL IMPACT ASSESSMENT PLEASE REFER TO SER -"33Kv Feeder 467 Asset Relocation SER"

16. THIS DESIGN IS BASED ON DRAWINGS AND SURVEY INFORMATION PROVIDED BY SMEC/RMS;

17. OUTAGE REQUIREMENT SHALL COMPLY THE PD, AND CONFIRMED WITH NETWORK CONNECTIONS, IN CONJUNCTION WITH LEVEL 1 APPOINTMENT.

LEGEND	
○	NEW POLE
⊗	DELETED POLE
●	EXISTING POLE
●	MODIFY POLE TOP
←	NEW STAY
	FDR 467 - PROPOSED UG - TRENCH (33kV,800mm² Cu XLPE)
	FDR 467 - PROPOSED UG -UNDERBORE
//	FDR 467 - NEW UG CABLE - 33kV 800mm² Cu, XLPE
V	FDR 467 - NEW UG FIBRE 144C
Z	FDR 467 - NEW ECC 240mm² Cu
E	EXISTING 467 CONDUCTOR NEPTUNE (J74) 2 X 19/3.25
P	EXISTING OPGW 48C
T	EXISTING 144C ADSS
X X	REMOVE CONDUCTOR

Communications	81961088
Electricity	81961084
Gas & Petroleum	81961086
Communications	81961089
Communications	81961082
Communications	81961083
Electricity	81961081
Water	81961087
Communications	81961085

KEY DOCUMENTS TABLE
THE CERTIFICATION OF THIS PROJECT IS SUPPORTED BY THE FOLLOWING KEY DOCUMENTS

DOCUMENT NAME	NOTATION DATE
ENVIRONMENTAL IMPACT ASSESSMENT (EIA) - FAT0038 part of EMS0003	25/06/2019
AGREEMENT FOR ENTRY, GRANT and CREATION OF EASEMENT - FPJ5013	N/A
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4252	
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4253	
TELECOMMUNICATION ASSET AGREEMENT -FPJ4184	
PROJECT DEFINITION	9/04/2019
LIST ANY KEY DOCUMENTS SUPPORTING THE CERTIFICATION:	
1) SAFETY BY DESIGN	
2) EARTHING DESIGN	17/06/2019
3) UNDERBORE STUDY	24/06/2019

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

GT&C: General Terms and Conditions
EMS: Environmental Management Standard
MCI: Mains Construction Instruction
MDI: Mains Design Instruction
PDI: Protection Design Instruction
SDI: Substation Design Instruction
SAD 0001: Design Drawing Standard
MMI: Mains Maintenance Instruction
SMI: Substation Maintenance Instruction
LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by SAI Global Ltd and other relevant Australian Standards

AUSCONNEX (ASP LEVEL 3) indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____

Name:

Service Provider Number: 1149 Date: 25/06/2019

APPROVAL BY ENDEAVOUR ENERGY TRANSMISSION ENGINEER

Reviewers Name: _____
Date Approved: _____
Reviewers Signature: _____

This approval is issued subject to Endeavour Energy's Standard Certification Terms and is specifically for Drawing No. 515253 Amendment A.

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____
Date Approved: _____
Examiner's Signature: _____
Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

FUNDNG ARRANGEMENTS FOR SCOPE OF WORKS

ASP LEVEL 1 ELECTRICAL WORKS		CUSTOMER
ENDEAVOUR ENERGY SUPPLIED MATERIALS	CUSTOMER FUNDED NON-CONTESTABLE WORKS	CUSTOMER FUNDED
- NIL	- PROTECTION SETTINGS - INSPECTION AND ACCESS AUTHORITY - SYSTEM SWITCHING - TESTING (EARTHING, LINE IMPENDENCE, VT) - COMMISSIONING - CURRENT INJECTION - AT LEAST 3 MONTHS NOTIFICATION IS REQUIRED FOR COORDINATION & PLANNING OF TESTING AND COMMISSION OF THESE WORKS AND THE COST WILL BE DETERMINED BY THE LEVEL ONE ASP1 ONCE APPOINTED. - AT LEAST 6 WEEKS NOTIFICATION IS REQUIRED PRIOR TO ORGANIZING FOR OUTAGE. ALL COST WILL BE DETERMINED BY LEVEL 1 ASP ONCE APPOINTMENT - AER NON CONTESTABLE WORK $36,522.24	Includes but not limited to: - Pegging of easements, property boundaries & infrastructure locations - Registering of easements - Providing site access - Own service & service connection - Confirm finished ground levels - Clearing of Vegetation.
ENDEAVOUR ENERGY FUNDED & CONSTRUCTED		EXISTING DUCT USAGE CHARGES (exc GST)
Works Required Prior to Completion of Customer Contestable Project: List the scope as part of the Endeavour Energy Project and the Project Number (ie Q Project) - NIL	Works Required in Association of Customer Contestable Project: Endeavour Energy Project Number (ie Q Project) - NIL	XXXm @ $ XXX/m = $ XX,XXX
		CO-ORDINATION SUPPLY REQUIRED DATE (TO BE CONFIRMED BY THE CUSTOMER) 01/08/2019
ENDEAVOUR ENERGY FUNDED & ASP L1 CONSTRUCTED – REIMBURESMENT (exc GST)	CUSTOMER FUNDED CONTESTABLE WORKS	ASSET TO BE RETURNED TO NEAREST ENDEAVOUR ENERGY DEPOT BY L1 ASP
-NIL	All other works and materials including but not limited to: - Overhead installation & Removal -Underground installation and work. - Fibre Jointing	- Removed pole - Bare mains (Assets to be returned to Endeavour Energy complete with "Equipment to be returned to Endeavour Energy" forms FPJ4252 and FPJ4253)

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____
WORKS COMPLETED: _____
SIGNATURE: _____ DATE: _____
INSPECTED BY: _____
SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____
OF: _____
CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____
DATE: _____

AUTHORISATION OF ESTIMATE VALUE OF ENDEAVOUR ENERGY FUNDED ASSETS

Signed: _____
Print Name: _____
Service Number: _____
Funding Amount: $ _____
Date: ___ . ___ . ___

AMENDMENTS: A ORIGINAL ISSUE DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

REFERENCE DRAWING'S		WORK ORDERS			
515628	ARP 4126	GENERAL		CAP / SAMP No.	ARP3266
515695	APR 4108	OVERHEAD		AM PROJ. No.	ANRP0003
		UNDERGROUND		HV SWITCHING	LEABONS LANE
		SUBSTATIONS		UBD/PENGUIN REF	UBD 189 B5
				GIS MAP No	U916074
				HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	
DESIGN	H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

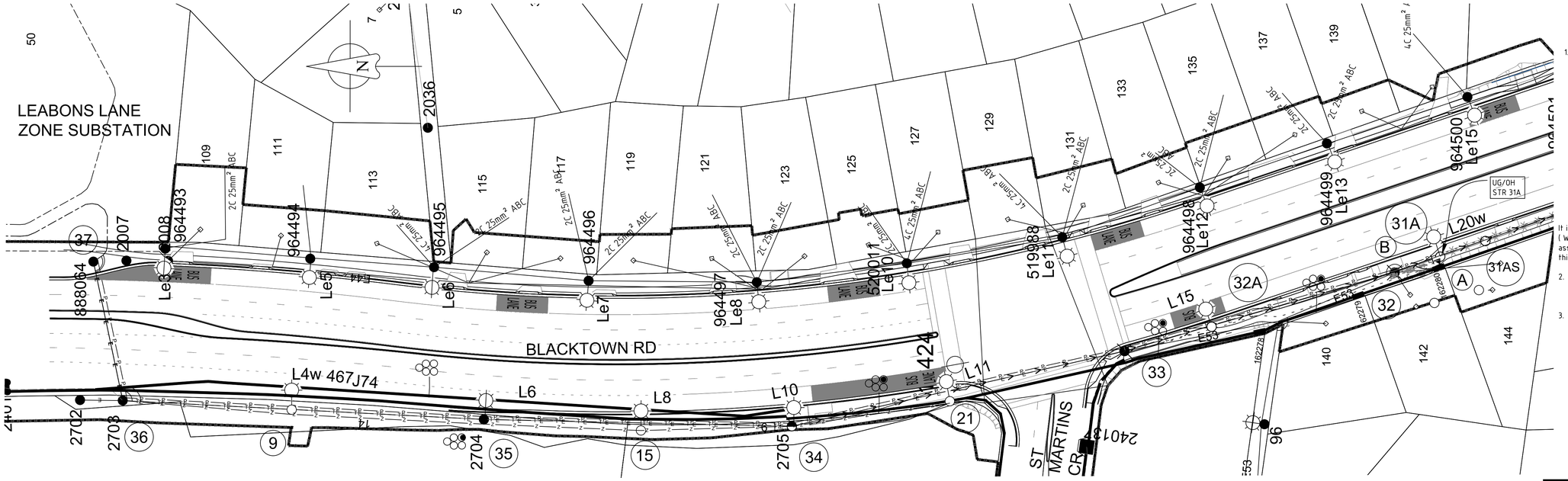
PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1) AND UG (STAGE 2)
OVERVIEW

Endeavour Energy

A1 | 515253 | A

SHEET No 1 OF 20 SHEETS

68426



NOTES

1. Distribution asset design HV/LV/SV/SL will be under ARP 4108 & 4126, from pole 32 to 36.
   Under this design it is assumed:
   - Distribution will be completed prior to transmission.
   - HV will be undergrounded from pole 34 to PM Sub 8954 (St Martians CR).
   - HV on pole 33 undergrounded to 11B (Tudor Rd), refer to ARP 4126.
   - The ADSS (OP0018) undergrounded from pole 34 to pole 11B Tudor Road ARP 4108.
   - SL augmented, undergrounded from pole 21, ARP 4108.
   - Pole 32 HV/LV/SV/ADSS undergrounded. SV (Lot 140/Lot 142 & Lot 144) customer connection via underground to private pole under ARP 4126.

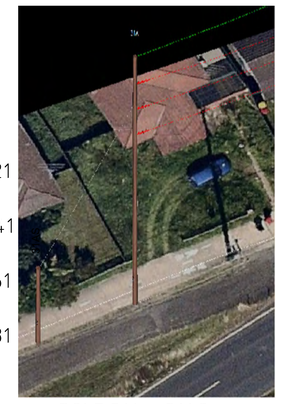
It is expected this work is undertaken prior to transmission (Work Sequence (WS001)) This means all the distribution assets from 32 to 36 are removed and relocated, before this section of transmission work.

2. For Clarity Purpose only HV/LV/SL/SV is shown on the plan, refer to ARP 4126 & ARP 4108 for details.

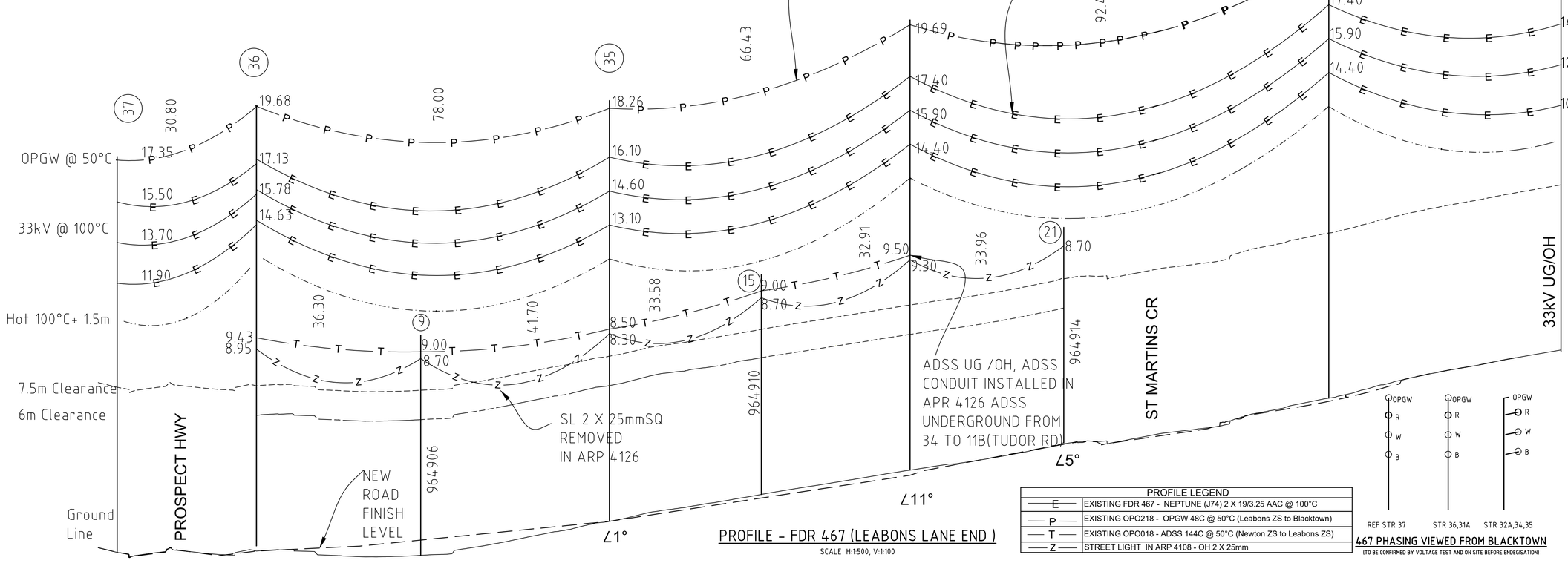
3. Telstra/NBN connection to Lots 142 & 144 will be removed & relocated off pole 32. It is expected the comm's to be undergrounded from pole 32 to 11A (Telstra / NBN have been informed)

ROUTE PLAN FDR 467 (LEABONS LANE END)

SCALE 1:500



POLE 31A + 31AS



PROFILE - FDR 467 (LEABONS LANE END)

SCALE H:1:500, V:1:100

PROFILE LEGEND	
E	EXISTING FDR 467 - NEPTUNE (J74) 2 X 19/3.25 AAC @ 100°C
P	EXISTING OPO218 - OPGW 48C @ 50°C (Leabons ZS to Blacktown)
T	EXISTING OPO018 - ADSS 144C @ 50°C (Newton ZS to Leabons ZS)
Z	STREET LIGHT IN ARP 4108 - OH 2 X 25mm

467 PHASING VIEWED FROM BLACKTOWN

(TO BE CONFIRMED BY VOLTAGE TEST AND ON SITE BEFORE ENDEGISATION)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:
Date Approved:
Examiner's Signature:
Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING

I:
OF:
CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:
DATE:

Cadastre: © Land and Property Information 2016

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	
DESIGN	H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1)
OVERHEAD

Endeavour Energy

A1 | 515253 | A

SHEET No 2 OF 20 SHEETS

68426

NOTES

1. Distribution asset design HV/LV/SV/SL will be under ARP 4126, from pole 30 to 11B.
   Under this design it is assumed:
   - HV/LV will be undergrounded, i.e. pole 11B to 31A.
   - The ADSS (OPO018) undergrounded from pole 34 to pole 11B
   - SL undergrounded.

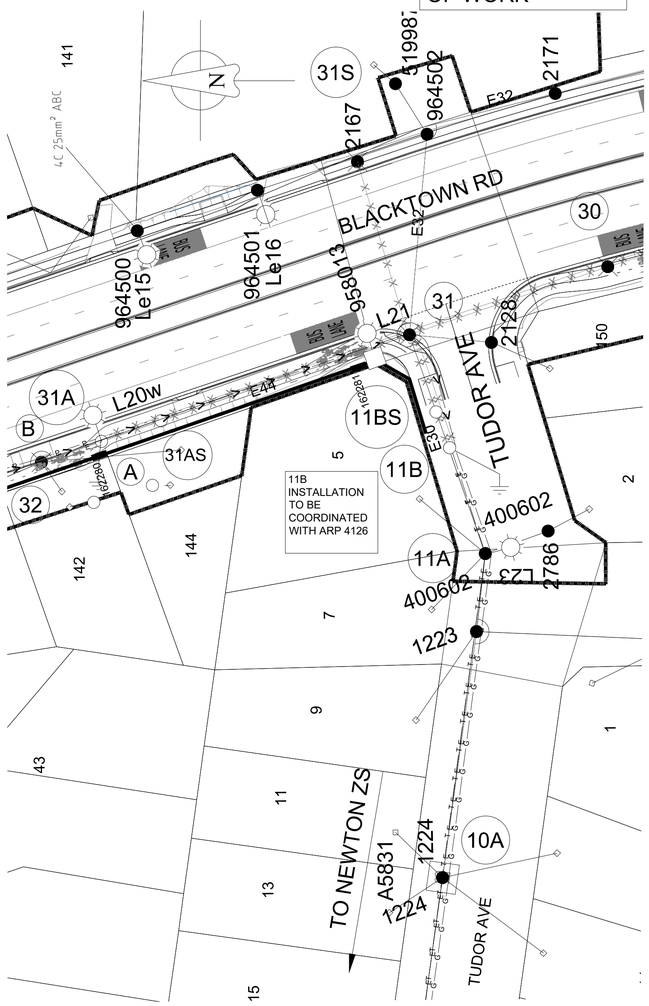
It is expected this work is undertaken prior to transmission (Work Sequence (WS002)).

2. Pole 31 is removed after removal off all distribution asset and erecting of 31A & 11B.(Temporary Strain on pole 30 is expected).

3. Pole 30 to pole (14) sheet 4, is to be removed after transmission underground & relocation of distribution assets under ARP 4126.

4. Telstra/NBN connection to Lots 142 & 144 will be removed & relocated off pole 32 and expected to be undergrounded from pole 32 to 11A. (Telstra / NBN have been informed).

REFER TO ARP 4126 & 4108 FOR COORDINATION OF WORK

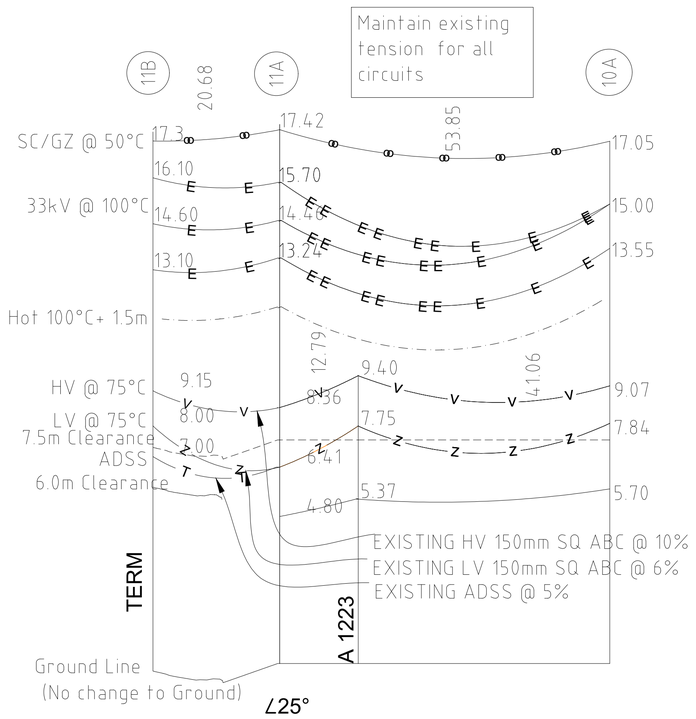


ROUTE PLAN FDR OS/28 (TUDOR AVE)

SCALE 1:500

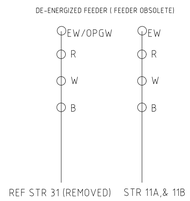
PROFILE LEGEND	
E	EXISTING FDR 467 - NEPTUNE (J74) 2 X 19/3.25 AAC @ 100°C
	EXISTING EARTH SC/GZ 7/2.27 @ 50°C
T	OPO018 - ADSS 144C @ 50°C (Newton ZS to Leabons ZS)
V	EXISITNG HV
Z	EXISTING LV

Maintain existing tension for all circuits

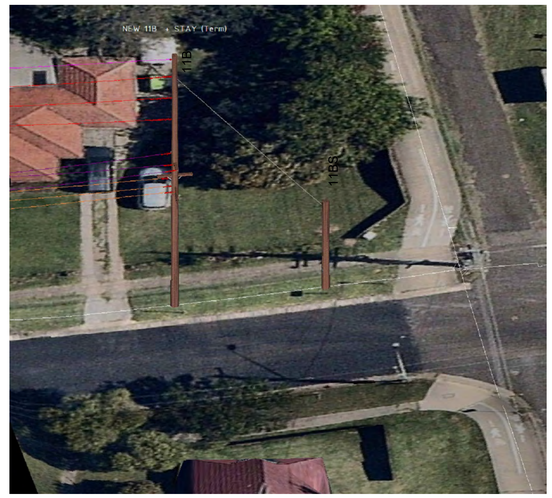


PROFILE - FDR OS/28 (TUDOR AVE)

SCALE H:1:500, V:1:100



OS/28 PHASING



POLE 11B + 11BS

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

AMENDMENTS: ORIGINAL ISSUE — DRAFT No. 01 — A

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	
DESIGN	H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

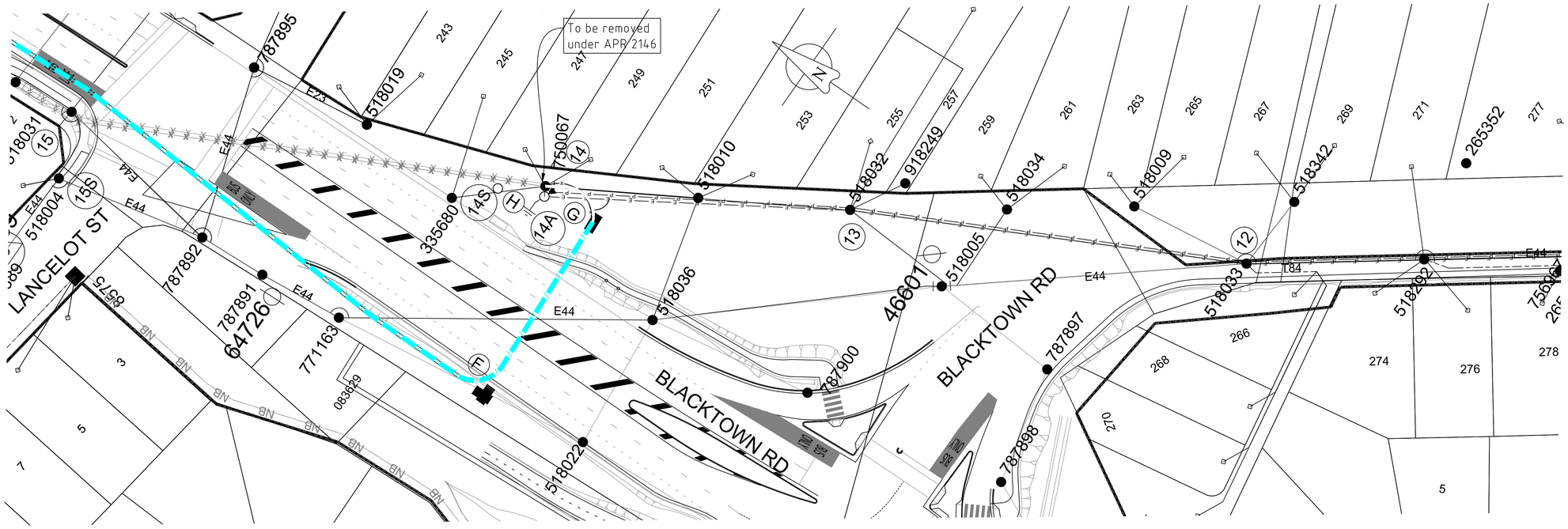
PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1)
OVERHEAD

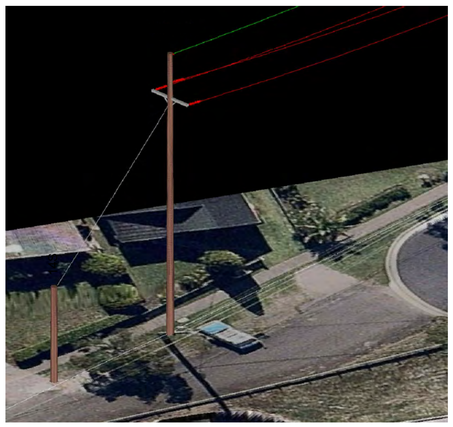
Endeavour Energy

A1 | 515253 | A

SHEET No 3 OF 20 SHEETS

68426





POLE 14A + 14S

NOTES

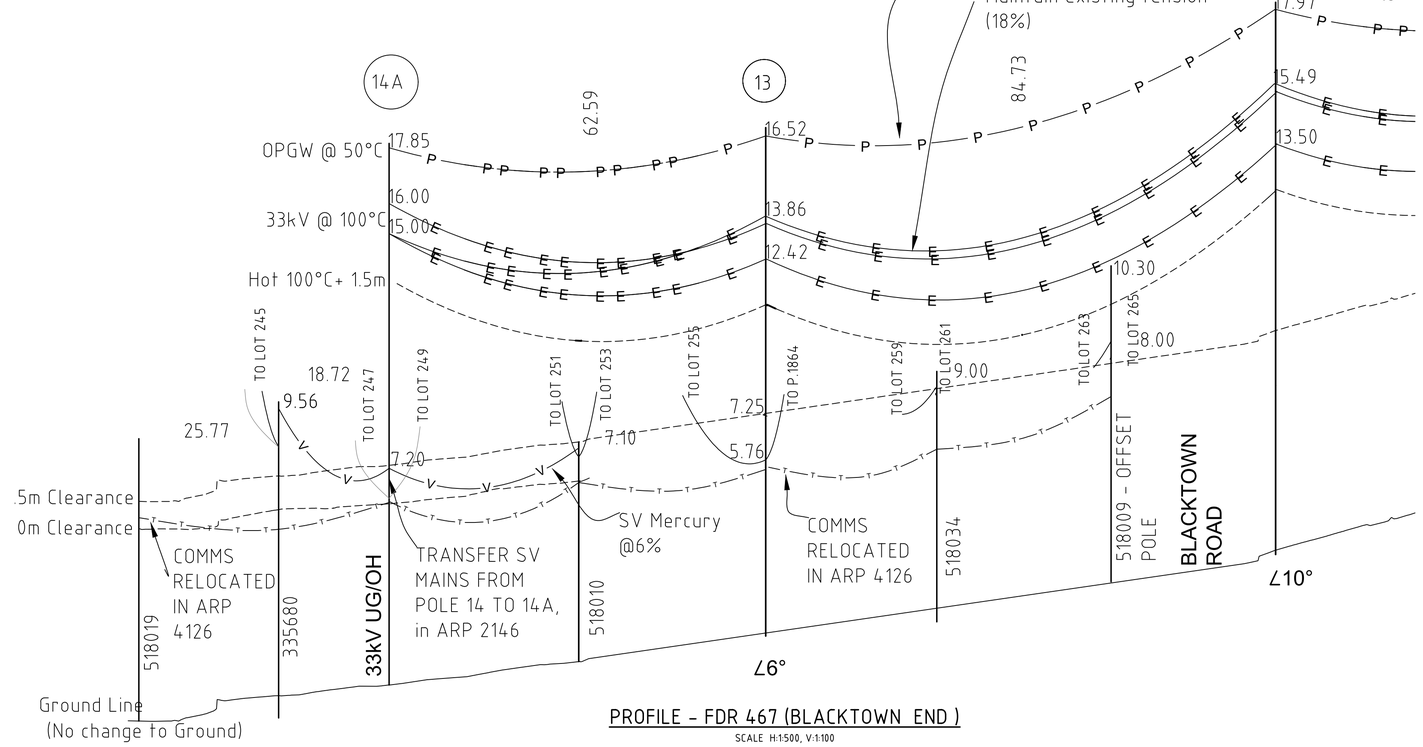
1. Distribution asset design HV/LV/SV/SL will be under ARP 4126, at the intersection of Blacktown and Prospect Hwy .
   Under this design it is assumed:
   - Transmission will be carried out prior to Distribution.
   - Pole 14 is to remain till distribution work is complete. This mean under this design the SV mains will be transferred to 14A, and Comms will be relocated under ARP4126.
2. Pole 15 will remain and cut and capped, it will remain as part of distribution network
3. Telstra/NBN connection from pole 14 will be dealt in ARP126.This is expected to be relocated prior transmission work on pole 14.

5. (Work Sequence (WS003)) erection of pole 14A.

PROFILE LEGEND	
E	FDR 467 - NEPTUNE (J74) 2 X 19/3.25 AAC @ 100°C
P	OPO218 - OPGW 48C @ 50°C (Leabons ZS to Blacktown)
V	EXISTING SERVICE MAINS
T	EXISTING COMMS

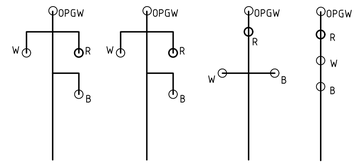
ROUTE PLAN FDR 467 (BLACKTOWN END)

SCALE 1:500



PROFILE - FDR 467 (BLACKTOWN END)

SCALE H:1:500, V:1:100



467 PHASING VIEWE TOWARDS BLACKTOWN

(TO BE CONFIRMED BY VOLTAGE TEST AND ON SITE BEFORE ENDEGISATION)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

AMENDMENTS: A ORIGINAL ISSUE DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
		GENERAL		AM PROJ. No.	ANRP0003
		OVERHEAD		HV SWITCHING	LEABONS LANE
		UNDERGROUND		UBD/PENGUIN REF	UBD 189 B5
		SUBSTATIONS		GIS MAP No	U916074
				HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN H.SINGAM

DATE 26/06/2019

CH'D

DO NOT SCALE DIMENSIONS IN METRES

DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1)
OVERHEAD

Endeavour Energy

A1 | 515253 | A

SHEET No 4 OF 20 SHEETS

68426

POLE SCHEDULE - FDR 467 (LEABONS LANE END)

FIELD POLE		COORDINATES		LANTERNS					CONSTRUCTION									HOLE			POLE									
NEW	EXISTING	EASTING	NORTHING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	OPGW	TR	HV	LV	SV	ADSS	SL	STAY	DIA (mm)	DEPTH (m)	EVALUATION (Z)	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER	COMMENTS
	888064										EX	EX																X		37	
	2703							EX	31	74	EX	EX				EX	EX											X		36	
	2702																	EX					X							36S	
	PL964906					EX										EX	EX											X		9	STREET LIGHT & ADSS IN CONJUNCTION WITH ARP 4126
	2704								78	1	EX	MOD 62T				EX	EX											X		35	STREET LIGHT & ADSS IN CONJUNCTION WITH ARP 4126
	PL 964910					EX										EX	EX											X		15	
PL964839	2705								66	11	TY1	62T				EX	EX		750	2.7	46.76	21.5/12		C		X				34	HV & ADSS , SL HV UG REFER TO ARP 4126.
	PL 96914					EX											EX											X		21	POLE ERECTED IN ARP 4126, SL-> UG/OH STRUCTURE
	2707																												X	33	REMOVE IN CONJUNCTION WITH ARP 4126
PL964840		307444.024	6259968.4						92	8	TY1	62T					EX		750	2.7	50.1	21.5/12		C			X			32A	Refer to ARP 4126, SL ERECTED IN CONJUNCTION
	2878																												X	32	EXISTING HV/LV/SV/SL REMOVED UNDER 4126
PL964841		307459.31	6259919.46						51		TY 4	50V (63T)						4/0	750	3.5	52.05	20/12		C			X			31A	Refer to ARP 4126 for Distribuiton
PL964842		307462.513	6259909.987															4/0	750	2.5	52.05	8/30	X	C						31AS	

POLE SCHEDULE - FDR OS/28 (TUDOR AVE)

FIELD POLE		COORDINATES		LANTERNS					CONSTRUCTION									HOLE			POLE									
NEW	EXISTING	EASTING	NORTHING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	OPGW	TR	HV	LV	SV	ADSS	SL	STAY	DIA (mm)	DEPTH (m)	EVALUATION (Z)	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER	COMMENTS
PL964841		307459.31	6259919.46						51		TY 4	50V (63T)						4/0	750	3.5	52.05	20/12		C			X			31A	Refer to ARP 4126 for Distribuiton
PL964842		307462.513	6259909.987															4/0	750	2.5	52.05	8/30	X	C						31AS	
																													X	31	
																													X	31S	
	2182																EX											X		2182	POLE REMOVED UNDER ARP 4126
																													X	30	REMOVED IN STAGE 2 OF UG & IN CONJUCTION WITH ARP 4126
PL964843		307459.33	6259862.99							0		63T				EX		4/0	750	2.5	52.54	20/12					X			11B	ADSS UG in ARP 4126.
PL964844		307467.932	6259865.636															4/0	750	2.5	53.48	8/30					X			11BS	
									21	25		EX	EX	EX	EX	EX	EX	EX										X			11A	
									13																			X			1223	
									53																			X			10A	

POLE SCHEDULE - FDR 467 (BLACKTOWN END)

FIELD POLE		COORDINATES		LANTERNS					CONSTRUCTION									HOLE			POLE									
NEW	EXISTING	EASTING	NORTHING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	OPGW	TR	HV	LV	SV	ADSS	SL	STAY	DIA (mm)	DEPTH (m)	EVALUATION (Z)	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER	COMMENTS
	518033								84.73	10	EX	EX		EX		EX	EX											X		12	
	518342														EX		EX											X		518009	EXISITNG OFFEST SL POLE
	518034														EX													X		518034	EXISITNG OFFEST SL POLE
	518032								63.81	6	EX	EX			EX	EX												X		13	
	518010														EX	EX												X		518010	
	750067										EX	EX			EX	EX												X		14	MAINTAIN POLE AND SERVICES TILL ARP 4126, CUT POLE 300mm ABOVE SV AND CAP. TRANSFER MAINS IN ARP 4126.
PL964845		307378.47	6258980.231								TY 4	50C						4/0	750	3.5		21.5/12					X			14A	
PL964846		307373.759	6258989.051															4/0	750	2.5		8/30					X			14S	
	355580														EX		EX											X		355580	
	518019																											X		518019	
	518031												EX	EX														X		15	MAINTAIN POLE FOR ARP 4126 CUT AND CAP ABOVE HV MAIN
	518004																											X		15S	MAINTAIN POLE FOR ARP 4126

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK
CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING
I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S

WORK ORDERS	
GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D
DESIGN H.SINGAM

DO NOT SCALE DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1)
OVERHEAD

Endeavour Energy

A1 | 515253 | A

SHEET No 5 OF 20 SHEETS

68426

NOTES

1) CONDUCTOR STANDING:
   a. NEPTUNE - 19/3.25
   b. OPGW 48C -
   c. SC/GZ- 6/4.75+7/1.60

2) CREEP DOES NOT APPLY - EXISTING CABLE USED.

FROM	TO	CONDUCTOR DETAILS CONDUCTOR/ VOLTAGE / WIRES	SECTION LENGTH (m)	DESIGN TENSION (%UL) at 5°C	Horizontal tension (N)	RULING SPAN (m)
FDR 467 (LEABONS LANE END)						
OPGW 48C (MAINTAIN EXISTING TENSION)						
31A	36	OPGW 48C / 0kV / 1	288	7.0	5642	78
FDR 467 CONDUCTOR (MAINTAIN EXISTING TENSION)						
31A	36	NEPTUNE / 33kV / 3	3 X 288	18.0	4450	78
FDR ADSS (MAINTAIN EXISTING TENSION)						
34	36	ADSS 144C / 0kV /1	144	7.0	1906	73
ADSS Manufactures recommended every day tension is 5619 N						
FDR STREET LIGHT						
34	36	MAINTAIN EXISTING TENSION				

FDR OS/28 (TUDOR AVE)						
SC/GZ (MAINTAIN EXISTING TENSION)						
11B	4A (Tress St)	SC/GZ / 0kV / 1	520	7.0	3650	47
FDR OS/28 CONDUCTOR (MAINTAIN EXISTING TENSION)						
11B	2A (Tress St)	NEPTUNE / 33kV / 3	3 X 631	18.0	4450	47
11kV (MAINTAIN EXISTING TENSION)						
11B	11A	150mm SQ ABC/ 11kV/ 1	20	10.0	4170	20
LV (MAINTAIN EXISTING TENSION)						
11B	11A	150mm SQ / 415V /4	20	6.0	2485	20
FDR ADSS (MAINTAIN EXISTING TENSION)						
11B	11A	ADSS 144C / 0kV /1	20	3.0	840	20
NBN OPTIC (MAINTAIN EXISTING TENSION)						
11A	1223	NBN OPTIC (ADSS Assumed)	144	7.4	3000	36

FDR 467 (BLACKTOWN END)						
OPGW 48C (MAINTAIN EXISTING TENSION)						
14	8 (B518200)	OPGW 48C / 0kV / 1	395	7.0	5642	78
FDR 467 CONDUCTOR (MAINTAIN EXISTING TENSION)						
14	8 (B518200)	NEPTUNE / 33kV / 3	3 X 395	12.2	3000	78
All OTHER FEEDER						
14	11	MAINTAIN EXISTING TENSION				

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ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S

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OVERHEAD
UNDERGROUND
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CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D
DESIGN H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION OH (STAGE 1)
OVERHEAD

Endeavour Energy

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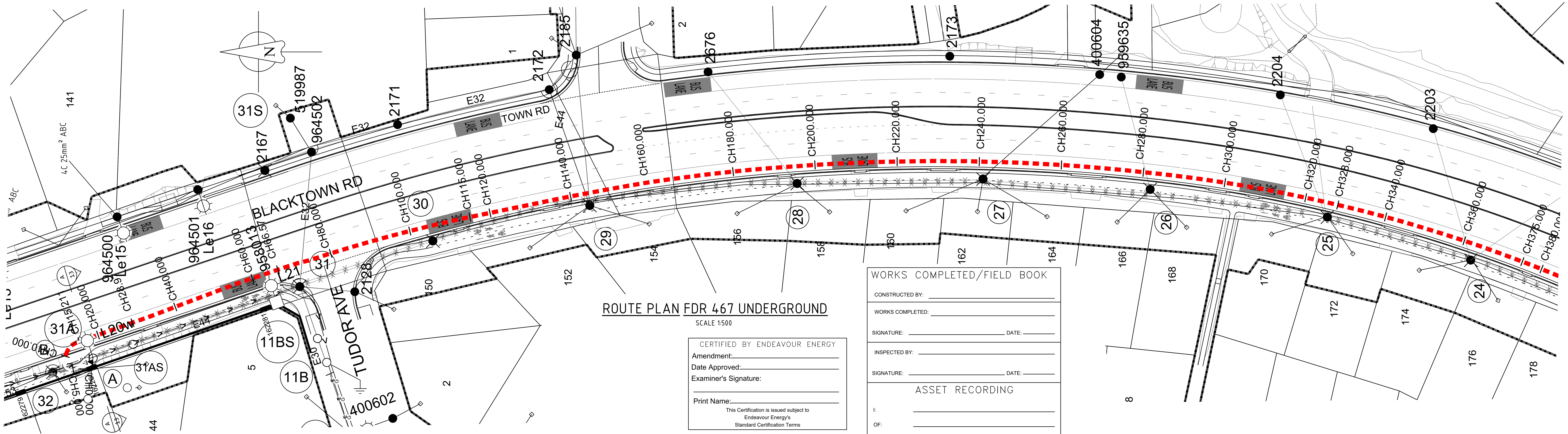
SHEET No 6 OF 20 SHEETS

68426



ROUTE PLAN FDR 467 UNDERGROUND

SCALE 1:500

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
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SIGNATURE:	DATE:
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ASSET RECORDING
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CONTACT No.:
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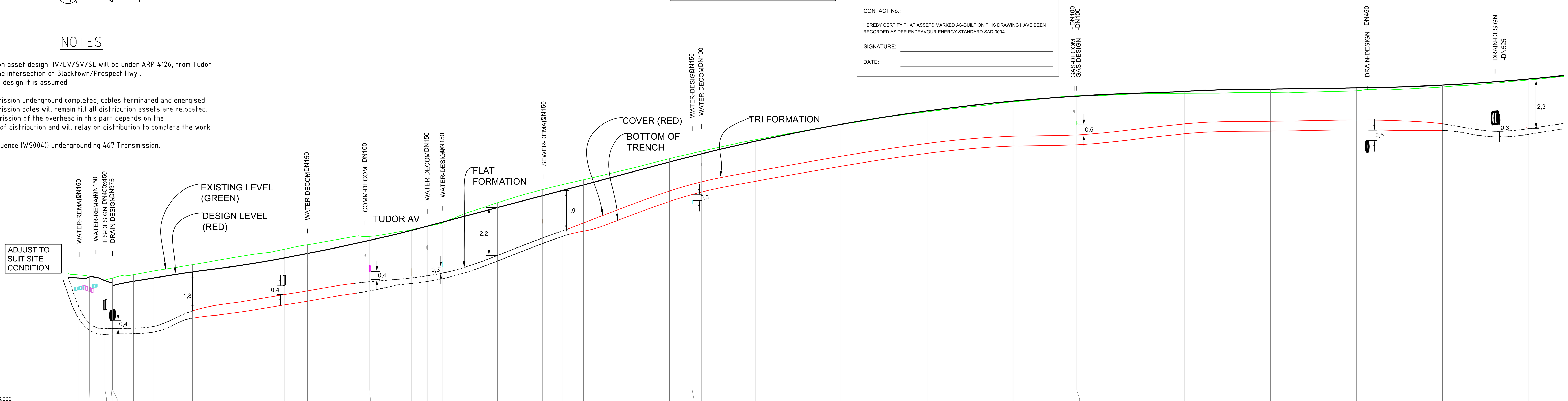
DATE:

NOTES

1. Distribution asset design HV/LV/SV/SL will be under ARP 4126, from Tudor Road to the intersection of Blacktown/Prospect Hwy .
   Under this design it is assumed:
   - Transmission underground completed, cables terminated and energised.
   - Transmission poles will remain till all distribution assets are relocated. Decommission of the overhead in this part depends on the timing of distribution and will relay on distribution to complete the work.
2. (Work Sequence (WS004)) undergrounding 467 Transmission.



DATUM R.L. 46.000

CHAINAGE	CUT UTILITY LEVELS (O = OBV RL , I = INV RL)	UTILITY OBVERT LEVELS - (TOC)	DESIGN LEVELS	UTILITY OBVERT (TOC) COVER TO DESIGN	EXISTING LEVELS	UTILITY OBVERT (TOC) COVER TO EXISTING
0.000		51.854	51.856	0.002	52.025	0.171
2.560	O =51.96	50.527	51.822	1.294	51.964	1.437
5.000		49.758	51.883	2.124	51.901	2.143
6.441	O = 51.53	49.531	51.850	2.318	51.846	2.315
8.589	O =50.79	49.465	51.697	2.232	51.728	2.263
10.000		49.455	51.602	2.146	51.803	2.348
10.326	I = 49.91	49.453	51.450	1.997	51.821	2.368
15.211		49.469	51.669	2.2	51.974	2.505
20.000		49.846	51.824	1.978	52.154	2.308
28.970		50.3	52.10	1.8	52.44	2.2
40.000		50.704	52.404	1.7	52.822	2.119
50.332	O =51.94	51.055	52.755	1.7	53.159	2.104
55.715	O = 52.62	51.262	52.962	1.699	53.371	2.108
60.000		51.433	53.133	1.7	53.518	2.085
66.57		50.3	53.415	1.8	53.752	2.2
69.153	O =52.92	51.638	53.529	1.891	53.752	2.114
70.241	O = 52.37	51.657	53.580	1.923	53.763	2.107
80.000		51.824	54.045	2.222	54.072	2.249
83.608		51.9	54.235	2.349	54.222	2.337
87.237	O = 52.53	52.028	54.428	2.4	54.389	2.361
100.000		52.87	55.104	2.5	55.330	2.2
110.430	O = 54.38	53.671	55.655	1.984	55.938	2.266
115.000		54.01	55.895	1.9	56.166	2.2
120.000		54.358	56.158	1.8	56.395	2.037
140.000		55.926	57.226	1.3	57.381	1.455
145.331	O = 55.42	56.198	57.498	1.301	57.630	1.432
147.440	O = 57.17	56.302	57.603	1.301	57.726	1.424
160.000		56.691	58.191	1.5	58.258	1.567
180.000		57.482	58.982	1.5	58.976	1.494
200.000		58.104	59.604	1.5	59.563	1.458
220.000		58.426	60.061	1.6	60.027	1.5
234.257	O = 59.62	58.486	60.286	1.8	60.310	1.824
234.835	O = 59.08	58.493	60.294	1.8	60.317	1.824
240.000		58.553	60.353	1.8	60.329	1.776
260.000		59.014	60.514	1.5	60.426	1.412
280.000		59.122	60.622	1.5	60.458	1.336
300.000		59.181	60.681	1.5	60.546	1.365
302.486	I = 57.72	59.189	60.688	1.499	60.600	1.411
320.000		59.004	60.806	1.8	60.722	1.7
328.000		58.734	60.901	2.2	60.831	2.1
332.273	I = 59.01	58.654	60.963	2.299	60.899	2.2
340.000		58.77	61.092	2.3	61.047	2.3

TOC - TOP OF CONDUIT

LONG SECTION FDR 467 UNDERGROUND

SCALE 1:500H, 1:100V

AMENDMENTS | ORIGINAL ISSUE | A | DRAFT No. 01

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TEMPLATE VERSION No. 4.3

PREPARED BY: AUSCONNEX — ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

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BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

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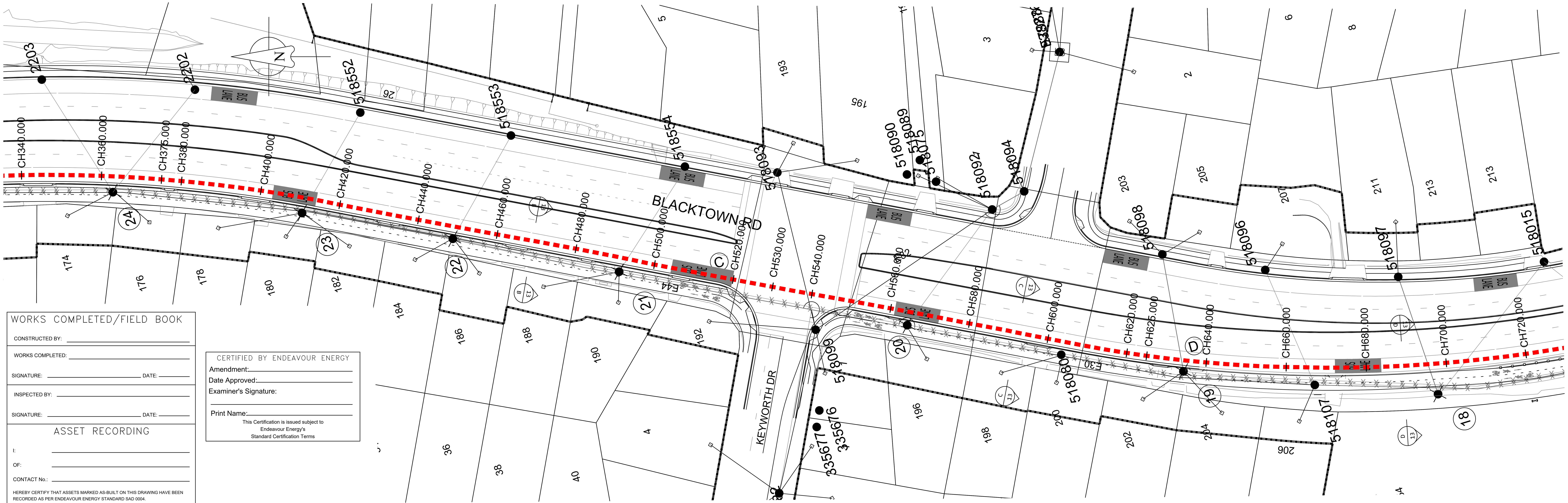
SHEET No 7 OF 20 SHEETS

68426



WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: ____________

WORKS COMPLETED: ____________

SIGNATURE: ____________ DATE: ______

INSPECTED BY: ____________

SIGNATURE: ____________ DATE: ______

ASSET RECORDING

I: ____________

OF: ____________

CONTACT No.: ____________

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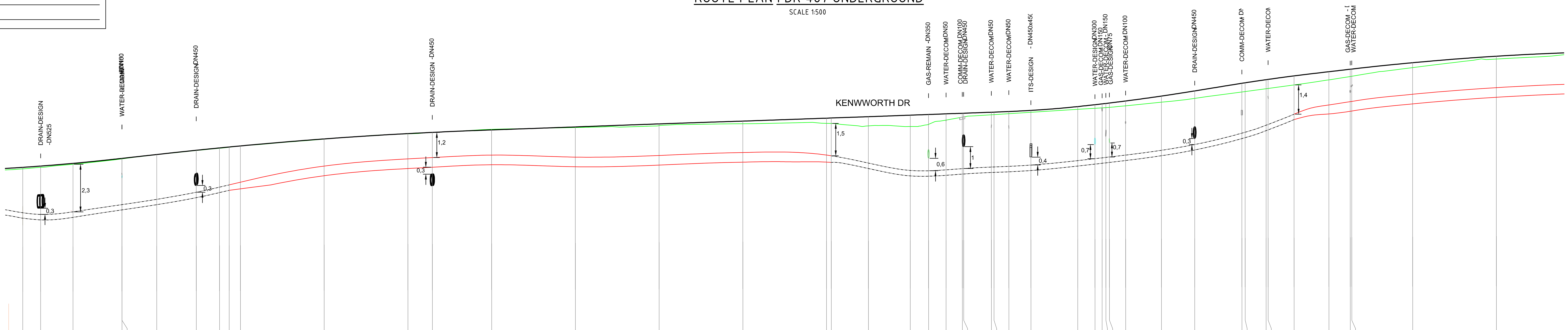
ROUTE PLAN FDR 467 UNDERGROUND

SCALE 1:500



DATUM R.L. 55.000

CHAINAGE	CUT UTILITY LEVELS O = OBV RL , I = INV RL	UTILITY OBVERT LEVELS - (TOC)	DESIGN LEVELS	UTILITY OBVERT (TOC) COVER TO DESIGN	EXISTING LEVELS	UTILITY OBVERT (TOC) COVER TO EXISTING
328.000		58.734	60.901	2.2	60.831	2.1
332.273	I = 59.01	58.654	60.963	2.299	60.899	2.2
340.000		58.77	61.092	2.3	61.047	2.3
351.692	O = 60.61	59.121	61.329	2.2	61.305	2.2
351.711	O = 60.51	59.330	61.330	2.2	61.306	2.2
360.000		59.372	61.514	2.1	61.506	2.1
369.450	I = 60.11	59.718	61.718	2	61.704	1.987
375.000		59.952	61.829	1.9	61.811	1.982
377.34		59.952	61.873	1.8	61.859	1.8
380.000		60.19	61.925	1.7	61.923	1.7
400.000		60.961	62.259	1.3	62.247	1.3
420.000		61.312	62.512	1.2	62.500	1.187
425.838	I = 60.08	61.371	62.571	1.2	62.571	1.2
440.000		61.486	62.689	1.2	62.717	1.2
460.000		61.331	62.831	1.5	62.804	1.473
480.000		61.476	62.976	1.5	62.892	1.416
500.000		61.609	63.109	1.5	62.985	1.375
520.000		61.530	63.250	1.719	63.003	1.473
521.125		61.454	63.257	1.8	62.99	1.5
530.000		61.161	63.320	2.159	62.881	1.719
540.000		60.793	63.393	2.6	62.851	2.058
544.365	O = 61.72	60.825	63.425	2.6	62.953	2.129
548.551	O = 63.16	60.855	63.455	2.6	63.157	2.302
552.430	O =63.29	60.883	63.483	2.6	63.298	2.415
552.744	I = 61.95	60.885	63.485	2.6	63.310	2.424
559.376	O = 62.89	60.933	63.533	2.6	63.412	2.479
560.000		60.937	63.537	2.6	63.420	2.483
563.547	O = 62.85	60.972	63.566	2.595	63.465	2.493
568.821	O =61.94	61.022	63.620	2.598	63.532	2.509
580.000		61.202	63.802	2.6	63.671	2.469
584.117	O = 62.30	61.297	63.892	2.595	63.721	2.424
585.825	O = 63.74	61.336	63.931	2.595	63.740	2.404
586.727	O = 62.61	61.357	63.953	2.596	63.753	2.396
587.566	O = 62.21	61.376	63.973	2.597	63.767	2.391
591.441	O = 63.1	61.469	64.069	2.6	63.840	2.371
600.000		61.704	64.304	2.6	64.012	2.308
607.940	I = 62.34	61.951	64.550	2.599	64.194	2.243
619.207	O =63.63	62.480	64.914	2.434	64.498	2.018
620.000		62.537	64.938	2.401	64.519	1.982
625.000	O = 64.27	62.895	65.087	2.192	64.653	1.759
625.471		62.928	65.101	2.172	64.666	1.738
630.9		63.439	65.268	1.8	64.836	1.4
640.000		63.88	65.467	1.5	65.076	1.109
645.101	O = 64.578	64.038	65.586	1.5	65.239	1.153
645.463	O = 64.821	64.094	65.594	1.5	65.251	1.157
660.000		64.397	65.897	1.5	65.662	1.265
680.000		64.707	66.207	1.5	66.073	1.366

TOC - TOP OF CONDUIT

LONG SECTION FDR 467 UNDERGROUND

SCALE 1:500H, 1:100V

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PREPARED BY: AUSCONNEX — ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

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DRAWN	H.SINGAM
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CH'D	

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN | H.SINGAM

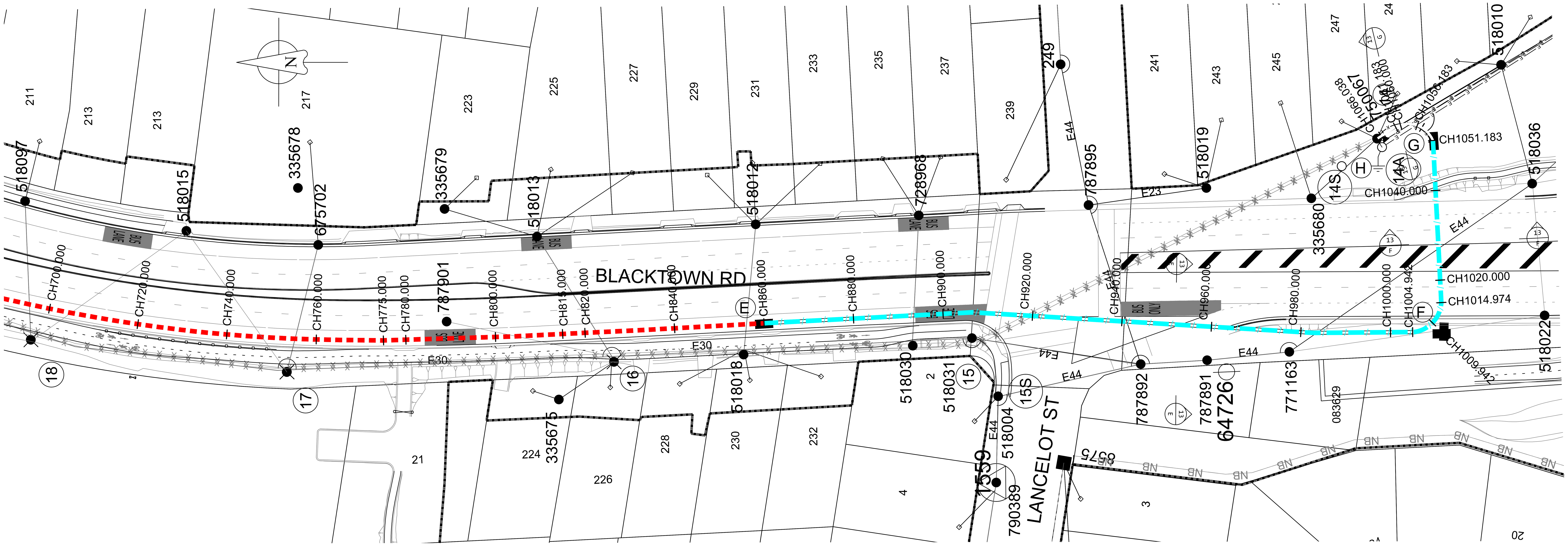
PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

A1 | 515253 | A

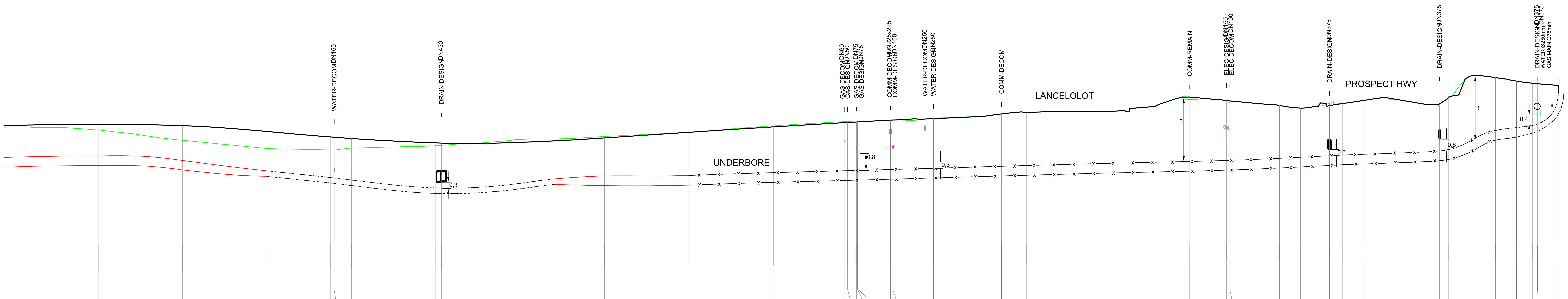
SHEET No 8 OF 20 SHEETS

68426



ROUTE PLAN FDR 467 UNDERGROUND

SCALE 1:500



DATUM R.L. 60.000

CHAINAGE	CUT UTILITY LEVELS O = OBV RL , I = INV RL	UTILITY OBVERT LEVELS - (TOC)	DESIGN LEVELS	UTILITY OBVERT (TOC) COVER TO DESIGN	EXISTING LEVELS	UTILITY OBVERT (TOC) COVER TO EXISTING
700.000		64.892	66.392	1.5	66.316	1.424
720.000		64.950	66.450	1.5	66.176	1.225
740.000		64.702	66.382	1.68	65.688	0.987
760.000		64.306	66.106	1.8	65.302	0.996
775.000		63.849	65.849	2	65.234	1.386
775.924	O = 64.36	63.835	65.834	1.999	65.232	1.397
780.000		63.775	65.775	2	65.314	1.539
800.000	I = 63.76	63.395	65.565	2.17	65.434	2.039
801.331		63.389	65.557	2.168	65.453	2.064
815.000		63.582	65.559	1.977	65.636	2.055
820.000		63.647	65.591	1.9	65.730	2.1
827.975		63.857	65.659	1.8	65.748	1.9
840.000		64.001	65.801	1.8	65.869	1.868
860.000		63.968	66.068	2.1	66.075	2.108
880.000		64.094	66.324	2.229	66.370	2.276
896.943	O = 65.68	64.202	66.526	2.324	66.575	2.373
897.622	O = 65.13	64.206	66.533	2.327	66.582	2.376
899.687	O = 65.34	64.219	66.557	2.338	66.597	2.378
900.000		64.221	66.561	2.339	66.599	2.377
900.307	O = 65.16	64.223	66.564	2.341	66.599	2.375
907.798	O =66.21	64.271	66.644	2.373	66.616	2.345
908.347	O = 65.43	64.274	66.648	2.374	66.611	2.337
915.998	O = 66.39	64.323	66.696	2.373	66.694	2.371
917.985	O = 64.92	64.336	66.714	2.378	66.727	2.392
920.000		64.348	66.732	2.384	66.756	2.407
934.122	O =66.78	64.438	66.939	2.501	66.939	2.501
940.000		64.475	67.006	2.531	67.006	2.531
960.000		64.602	67.067	2.464	67.067	2.464
978.697	O = 67.62	64.721	67.739	3.019	67.739	3.019
980.000		64.729	67.714	2.985	67.714	2.985
987.393	O = 66.37	64.776	67.574	2.798	67.574	2.798
988.211	O = 67.55	64.781	67.554	2.773	67.554	2.773
1000.0		64.856	67.337	2.481	67.337	2.481
1004.94		64.887	67.217	2.33	67.217	2.33
1011.86	I = 65.30	64.931	67.338	2.406	67.447	2.516
1014.97		64.951	67.431	2.48	67.443	2.492
1020.0		64.983	67.581	2.598	67.576	2.593
1037.95	I = 65.76	65.097	67.419	2.322	67.310	2.213
1040.0		65.245	67.711	2.5	67.681	2.4
1051.18		66.154	68.666	2.5	68.666	2.5
1056.18		66.289	68.493	2.2	68.493	2.2
1060.0		66.396	68.392	2.0	68.392	2.0
1061.8		66.463	68.368	1.9	68.368	1.9
1066.04		68.292				

TOC - TOP OF CONDUIT

LONG SECTION FDR 467 UNDERGROUND

SCALE 1:500H, 1:100V

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TEMPLATE VERSION No. 4.3

PREPARED BY: AUSCONNEX — ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

REFERENCE DRAWING'S	WORK ORDERS	
	GENERAL	
	OVERHEAD	
	UNDERGROUND	
	SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D

DO NOT SCALE
DIMENSIONS IN METRES
DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

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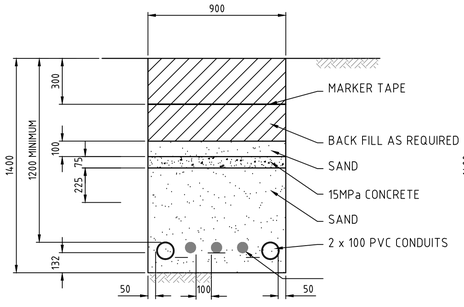
SHEET No 9 OF 20 SHEETS

DUCT BREAKDOWN TABLE

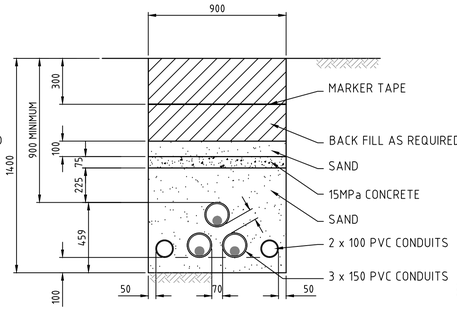
Route	Chain	Configuration		Route length (m)	NEW DUCT LENGTH		NEW PIPE LENGTH		Reimbursement (m) x ($)	Existing Duct Usage Charge (m) x ($)
		SECTION	TYPE		2 X 100mm²	3 X 150mm²	2 X 140mm²	3 X 225mm²		
A to B	0 to 10	SECTION A	A	10	20					
B to C	10 to 29	SECTION B	D	19	38	57				
C to D	29 to 67	SECTION C	C	38	76	114				
D to E	67 to 117	SECTION D	D	50	100	150				
E to F	117 to 320	SECTION E	C	203	406	609				
F to G	320 to 377	SECTION F	D	57	114	171				
G to H	377 to 521	SECTION G	C	144	288	432				
H to I	521 to 631	SECTION H	D	110	220	330				
I to J	631 to 760	SECTION I	C	129	258	387				
J to K	760 to 830	SECTION J	D	70	140	210				
K TO L	830 to 860	SECTION K	C	30	60	90				
L to M	860 to 1005	SECTION L	E	145			290	435		
M to N	1005 to 1015	SECTION M	L	10			20	30		
N to O	1015 to 1050	SECTION N	E	35			70	105		
O to P	1050 to 1066	SECTION O	A	16	32					
TOTAL				1066	1752	2818	380	570		

LEGEND

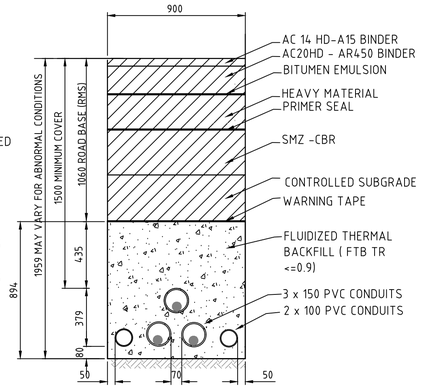
- DUCT WITH NEW CABLE
- DUCTS WITH EXISTING CABLE
- DIRECT BURIED CABLE
- SPARE DUCT



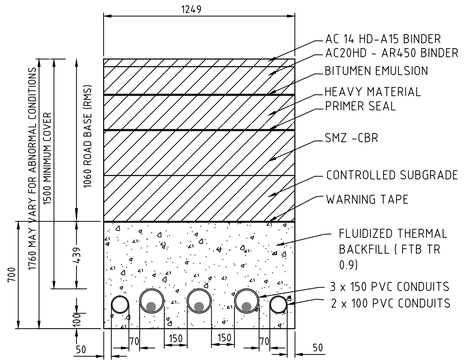
TYPE A
TYPICAL TRENCH
DIRECT BURIED
SCALE 1:20



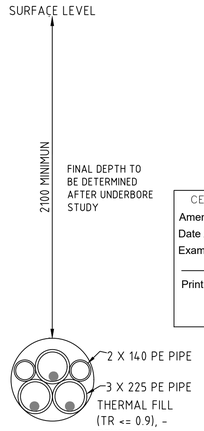
TYPE B
TYPICAL TRENCH
RESIDENTIAL ROADS
SCALE 1:20



TYPE C
TYPICAL RMS ROAD
PAVEMENT TRENCH
SCALE 1:20



TYPE D
FLAT FORMATION
TYPICAL RMS ROAD
PAVEMENT TRENCH
SCALE 1:20



TYPE E
UNDER BORE TYPICAL
SCALE 1:20

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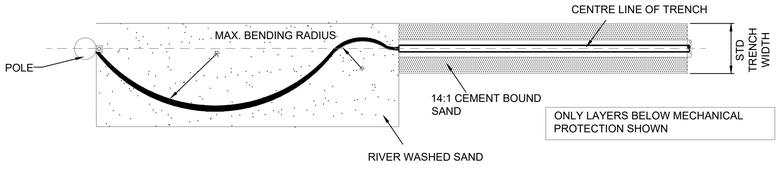
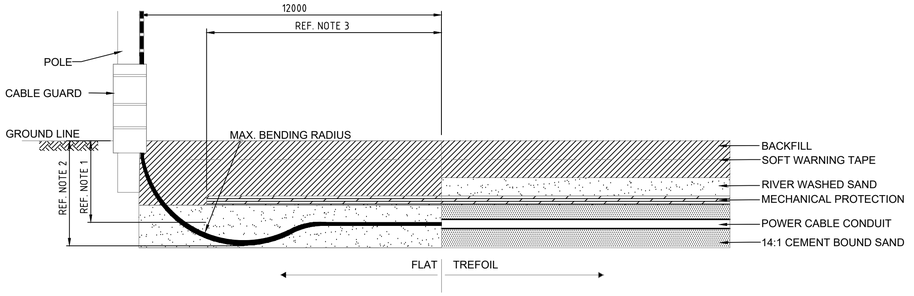
GENERAL UGOH POLE TERMINATION CABLE TRENCH NOTES

1. GENERAL REQUIREMENTS FOR THE TRENCH FOR AN APPROACH OF A UG/OH TERMINATION IS DETAILED IN MDI 0051.
2. DEPTH OF TRENCH WILL DEPEND UPON SITE CONDITIONS. THE MINIMUM DEPTH IS SPECIFIED IN MDI 0051.
3. THE DEPTH OF THE CABLE WILL DEPEND UPON THE MAXIMUM BENDING RADIUS OF THE CABLE, AS SPECIFIED IN MDI 0051.
4. THE MECHANICAL PROTECTION SHALL EXTEND AS CLOSE TO THE POLE STRUCTURE AS POSSIBLE. THIS IS TO MINIMISE THE POSSIBLY OF DAMAGE.
5. MECHANICAL PROTECTION MAY BE EITHER CONCRETE OF 2 LAYERS OF PVC MARKER TAPE.
6. IF POSSIBLE, THERE SHALL BE A HORIZONTAL LOOP INSTALLED IN THE CABLE ALSO. THIS IS TO ENSURE THAT IF THERE IS FUTURE DAMAGE TO THE CABLE, OR THE NEED FOR POLE RELOCATION, THERE IS SOME SLACK TO ALLOW FOR THIS. THE LOOP MAY BE INSTALLED IN EITHER DIRECTION.
7. THE GENERAL TRENCH PROFILE FOR A TRANSMISSION CABLE CIRCUIT IS SHOWN IN DRAWING 290689.

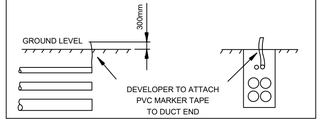


UNDERGROUND TO OVERHEAD TERMINATION TYPICAL TRENCH PROGILE
PLAN VIEW
SCALE 1:50



UNDERGROUND TO OVERHEAD TERMINATION TYPICAL TRENCH PROGILE
TRENCH SECTION
SCALE 1:50

DUCT END LOCATION DETAIL



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PREPARED BY:
AUSCONNEX
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TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D
DESIGN H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY. & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

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SHEET No 10 OF 20 SHEETS

68426

CH	X	Y		CH	X	Y
POLE 31A	307458.66	6259919.13		CONTINUOUS FROM BELOW		
CH 0	307458.61	6259920.09		CH 580	307386.11	6259388.68
CH 5	307455.86	6259924.02		CH 600	307376.78	6259370.99
CH 10	307459.20	6259925.91		CH 620	307367.66	6259353.19
CH 15.2	307462.73	6259922.44		CH 625	307365.53	6259348.67
CH 20	307464.30	6259917.92		CH 640	307359.62	6259334.89
CH 28.97	307467.21	6259909.51		CH 660	307352.73	6259316.11
CH 40	307470.96	6259899.06		CH 680	307346.89	6259296.99
CH 60	307477.73	6259880.24		CH 700	307342.14	6259277.56
CH 66.57	307479.78	6259874.00		CH 720	307338.52	6259257.90
CH 80	307483.64	6259861.14		CH 740	307336.05	6259238.05
CH 100	307488.91	6259841.85		CH 760	307334.75	6259218.10
CH 115	307492.18	6259827.21		CH 775	307334.41	6259203.10
CH 120	307493.14	6259822.31		CH 780	307334.52	6259198.10
CH 140	307496.99	6259802.68		CH 800	307334.95	6259178.11
CH 160	307500.40	6259782.70		CH 815	307335.50	6259163.12
CH 180	307502.67	6259763.10		CH 820	307335.71	6259158.12
CH 200	307504.12	6259743.16		CH 840	307336.54	6259138.14
CH 220	307504.76	6259723.17		CH 860	307337.73	6259118.18
CH 240	307504.58	6259703.17		CH 880	307338.36	6259098.18
CH 260	307503.58	6259683.20		CH 900	307339.23	6259078.20
CH 280	307501.66	6259663.29		CH 920	307338.60	6259058.24
CH 300	307498.94	6259643.48		CH 940	307337.22	6259038.29
CH 320	307495.10	6259623.86		CH 960	307335.84	6259018.34
CH 328	307493.28	6259616.07		CH 980	307334.46	6258998.38
CH 340	307490.25	6259604.46		CH 1000	307334.25	6258978.39
CH 360	307484.28	6259585.37		CH 1004	307334.25	6258973.45
CH 375	307479.10	6259571.30		CH 1010	307336.27	6258969.00
CH 380	307477.25	6259566.65		CH 1014	307340.77	6258966.99
CH 400	307469.20	6259548.34		CH 1020	307345.79	6258967.21
CH 420	307460.13	6259530.52		CH 1040	307365.77	6258968.06
CH 440	307450.81	6259512.83		CH 1051	307376.94	6258968.54
CH 460	307441.60	6259495.07		CH 1056	307380.33	6258972.02
CH 480	307432.48	6259477.27		CH 1060	307380.47	6258975.77
CH 500	307423.00	6259459.67		CH 1061	307380.03	6258976.87
CH 520	307413.73	6259441.94		CH 1066	307377.46	6258980.99
CH 530	307409.12	6259433.07		POLE 14A	307375.57	6258979.94
CH 540	307404.55	6259424.17				
CH 560	307395.41	6259406.39				

UNDERGROUND COORDINATES

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PREPARED BY:
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ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN H.SINGAM

DATE 26/06/2019

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DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

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SHEET No 11 OF 20 SHEETS

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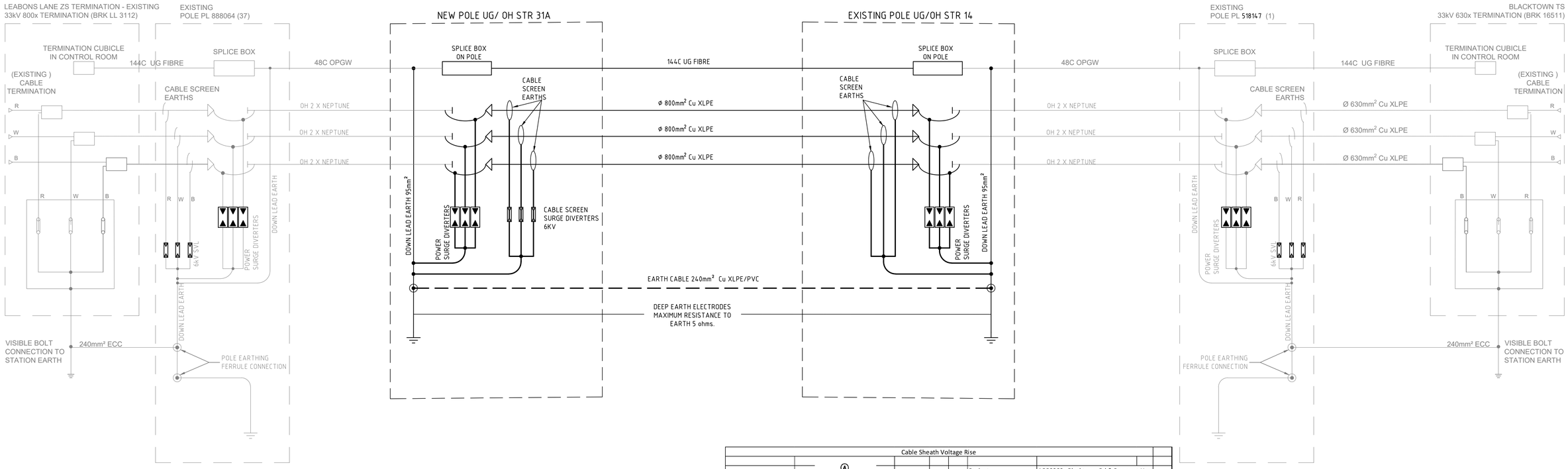
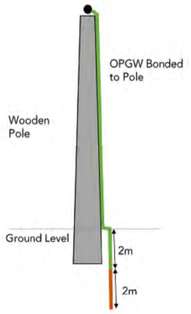


TR EARTHING DETAILS POLES 11B,31A,14A

Soil Resistivity (ohms.m)	Layer 1	100	Depth (m)	0..5
	Layer 2	10		15
Designed earth resistance limit (ohms)				5
Measured earth resistance (ohms)				X
Number of electrodes				2
Insulated depth (m)				2
Length of bare electrode (m)				2
Connector type (CAD or CRIMP)				CRIMP
Location Category: F-frequented, R-remote, S-special				F
What design tool used ?				CDEGS
Fault level (kA)				15.33

HV EARTH MINIMUM SEPARATION (m)

	Design	Actual		Design	Actual
TDMEN	NA		TELECOM	1	
TDB	NA		PIPES	NA	
TDU	NA		HV-LV	NA	



EARTHING NOTES

1. Refer to earthing report SC19-404-006, "Feeder 467 Undergounding" by Safeearth, for earthing compliance.
2. As per the report, after the installing the earthing system, it is recommended commissioning tests occur prior to re-energisation of the transmission line, to achieve the designed earth resistance.

Earthing data to be capture to GIS	
POLES 11B TUDOR ROAD	
Installation Type	Underground
Earthing System Type	Separate
Soil Resistivity Layer 1/2 in Ohms	5 ohm metres
TR Separate Earthing Grid Resistance (Separate Earthing Only)	5 ohm
Size / No. of TR Electrodes (Separate Earthing Only)	None
Bonding Conductor Size in mm2 (Insulated / Bare)	Insulated 95mm²
Connection Type (CAD or Crimp)	Crimp
Ambient Temperature / Weather Condition	20 deg C
Date of Soil Test	17/5/2019
Insulated depth from Ground Level (in Metres)	2m
Total length of Earth Electrode System Cable (incl. Insulated & Bare in Metres)	None
Measured Earth Resistance in Ohms (to be measured by L1 ASP on commissioning)	Ohm

Earthing data to be capture to GIS	
POLES 31A TUDOR RD / BLACKTOWN RD	
Installation Type	Underground
Earthing System Type	Separate
Soil Resistivity Layer 1/2 in Ohms	5 ohm metres
TR Separate Earthing Grid Resistance (Separate Earthing Only)	5 ohm
Size / No. of TR Electrodes (Separate Earthing Only)	None
Bonding Conductor Size in mm2 (Insulated / Bare)	Insulated 95mm²
Connection Type (CAD or Crimp)	Crimp
Ambient Temperature / Weather Condition	20 deg C
Date of Soil Test	17/5/2019
Insulated depth from Ground Level (in Metres)	2m
Total length of Earth Electrode System Cable (incl. Insulated & Bare in Metres)	None
Measured Earth Resistance in Ohms (to be measured by L1 ASP on commissioning)	Ohm

Earthing data to be capture to GIS	
POLES 14A BLACKTOWN ROAD	
Installation Type	Underground
Earthing System Type	Separate
Soil Resistivity Layer 1/2 in Ohms	5 ohm metres
TR Separate Earthing Grid Resistance (Separate Earthing Only)	5 ohm
Size / No. of TR Electrodes (Separate Earthing Only)	None
Bonding Conductor Size in mm2 (Insulated / Bare)	Insulated 95mm²
Connection Type (CAD or Crimp)	Crimp
Ambient Temperature / Weather Condition	20 deg C
Date of Soil Test	17/5/2019
Insulated depth from Ground Level (in Metres)	2m
Total length of Earth Electrode System Cable (incl. Insulated & Bare in Metres)	None
Measured Earth Resistance in Ohms (to be measured by L1 ASP on commissioning)	Ohm

Cable Sheath Voltage Rise

				Project	ARP3266 - Blacktown Rd & Prospect Hwy	
				Feeder	33kV FEEDER 467	
				Cable Arrangement	Equilateral	
Manufacturer	Taihan					
Voltage		33	kV			
Conductor Area		800	mm2			
frequency		50	Hz			
Required Current	Minimum winter	869	A	Maximum Sheath Voltage at open end (Normal Condition)		
	Fault	15530		VA	Standing voltage - Cable R	74 V
Length of Cable Route	Worst Case	1057	m	VB	Standing voltage - Cable W	74 V
				VC	Standing voltage - Cable B	74 V
S	spacing between centre of cables	220	mm			
		8.66	in	Maximum Sheath Voltage at open end (Fault t = 0.13sec)		
d	diameter over sheath or screen	61.07	mm	VA - FAULT	Standing voltage - Cable R	1321 V
		2.40	in	VB - FAULT	Standing voltage - Cable W	1321 V
		2.44	in	VC - FAULT	Standing voltage - Cable B	1321 V

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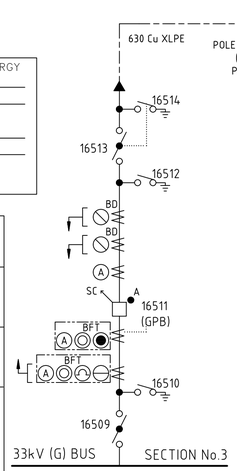
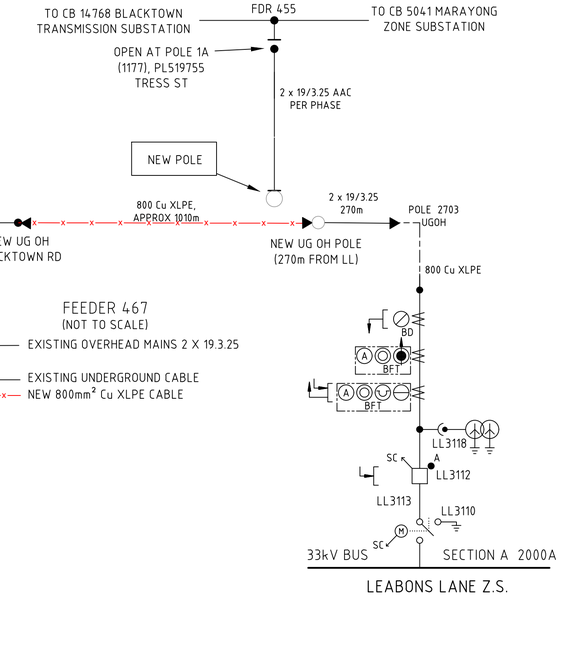


BLACKTOWN T.S.



LEABONS LANE Z.S.

33kV SINGLE LINE DIAGRAM PROPOSAL

CABLE SCHEDULE

SECTION	No DRUMS	CABLE LENGTH PER DRUM (m)	DRUM WEIGHT kg	SCHEDULE	DRUM DELIVERY LOCATION	REMARKS
3	3	1100			TBA	FDR 467 800mmSQ CU CABLE TO EE STANDARD
3	1	1100				ECC 240mm FOR FEEDER 467, SECTION 3
3	1	1200				144C FIBRE FOR FEEDER 467, SECTION 3

MATERIAL SCHEDULE

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SHEET No 12 OF 20 SHEETS

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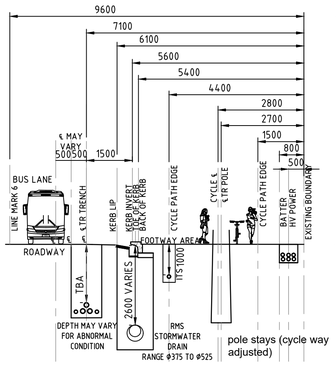
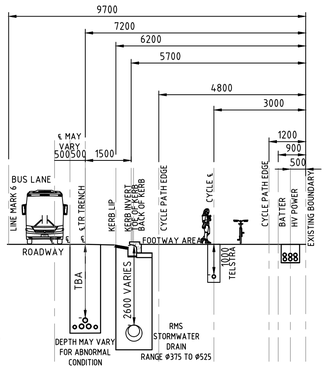


SECTION A-A

RMS BLACKTOWN TO PROSPECT - CH 0.0

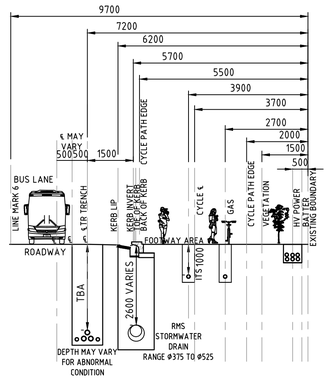
SCALE 1:100



SECTION B-B

RMS BLACKTOWN TO PROSPECT - CH 470

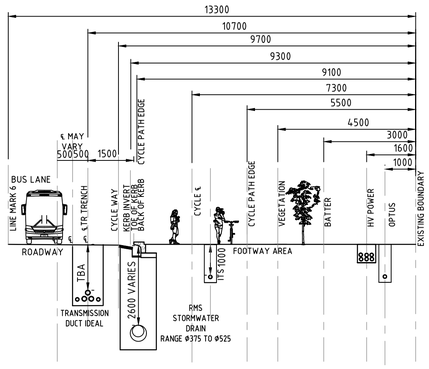
SCALE 1:100



SECTION C-C

RMS BLACKTOWN TO PROSPECT - CH 590

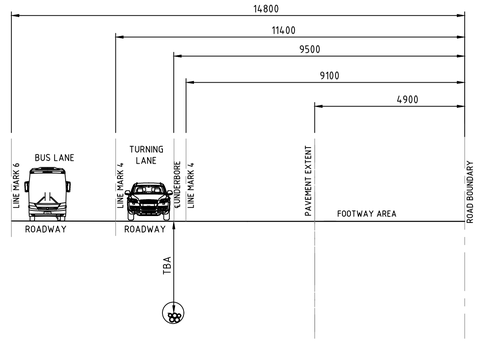
SCALE 1:100



SECTION D-D

RMS BLACKTOWN TO PROSPECT - CH 690

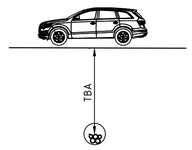
SCALE 1:100



SECTION E-E

RMS BLACKTOWN TO PROSPECT -CH 952

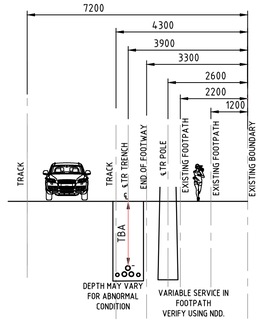
SCALE 1:100



SECTION F-F

RMS BLACKTOWN TO PROSPECT -CH 1030

SCALE 1:100



SECTION G-G

RMS BLACKTOWN TO PROSPECT -CH 1060

SCALE 1:100

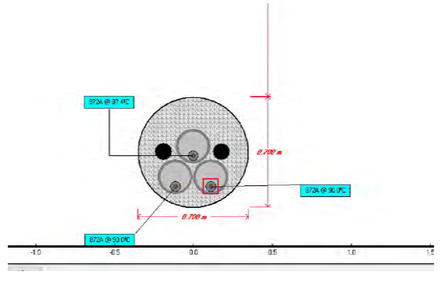
SECTION DETAIL

NOTES

1. Minimum cover required for road works by RMS is 1.5m, with expection in certain areas with 1.2m.
2. Average depth of cover 1.8m.
3. The route is generally 1.5m away from the Invert, in the road pavement, adjusted to suit abnormal condition.
4. Required current rating 869A.
5. Rating - refer to below
6. To archive rating TR of 0.9 is required.

ARP 3266 BLACKTOWN TO PROSPECT RATING CALCULATION																
	Chain	Air	TRENCHING													Air
		-20 to 0	CH 0 to 10	CH 10 to 46	CH 46 to 67	CH 67 to 117	CH 117 to 320	CH 320 to 377	CH 377 to 521	CH 521 to 631	CH 631 to 760	CH760 to 830	CH 830 to 860	CH 1005 to 1015	CH 1050 to 1066	1066 to 1086
		Shaded	Flat	Flat	Trefoil	Flat	Trefoil	Flat	Trefoil	Flat	Trefoil	Flat	Trefoil	Trefoil	Flat	Shaded
	CSA (mm2)	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
	Voltage (kV)	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
	Cover (Final Surface to top of conduit)	Air	2.3	2.4	1.8	2.4	1.8	2.3	1.5	2.7	1.8	2.2	1.8	2.3	2.2	Air
5.5.1	Standard Rating	1196	862.8	859.4	881.8	859.4	881.8	862.8	896	850.4	881.8	864.5	881.8	862.8	853.2	1196
5.6	**Derating Factor**															
5.6.1	Proximity to other Circuits 6m 1. [Banks 6 duct /Circuits]	1	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	1	0.95	1
5.6.3	Duct Separation - Standard		1	1	1	1	1	1	1	1	1	1	1	1	1	
5.6.4	Duct Arrangement		1.04	1.04	1	1.04	1	1.04	1	1.04	1	1.04	1	1	1.04	
5.6.6	Soil Thermal Resistivity (TR at 1.2)		1	1	1	1	1	1	1	1	1	1	1	1	1	
5.6.7	Backfill Thermal Resistivity (**FTB TR at 0.9**)		1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
	Calculated Rating	1196	887	883	871	883	871	887	885	874	871	888	871	897	877	1196
	TARGET RATING 896A	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

ARP 3266 BLACKTOWN TO PROSPECT RATING CALCULATION			
UNDERBORE			
	Chain	CH 860 to 1005	CH 1015 to 1050
		Underbore	Underbore
	CSA (mm2)	800	800
	Voltage (kV)	33	33
	Cover	3	3
5.5.1	Standard Rating	842	842
5.6	Rating Factor		
5.6.1	Proximity to other Circuits 1. [Banks 6 duct /Circuits]	1	1
5.6.3	Duct Separation 1.0 Ducts Touching **(Bigger duct with fill with bentonite)**	1	1
5.6.4	Duct Arrangement (Trefoil)	1	1
5.6.6	Soil Thermal Resistivity (Clu 5.2.1 @ 1.2)	1	1
5.6.7	Backfill Thermal Resistivity (TR 0.9 Bentonite)	1.04	1.04
	Calculated Rating	876	876
	TARGET RATING 896A	PASS	PASS



NOTES

1. CABLE COVER @3.0m verified with CYMCAP rating - 872A

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

RATING CALCULATION

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:

AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN H.SINGAM

DATE 26/06/2019

CH'D

DESIGN H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

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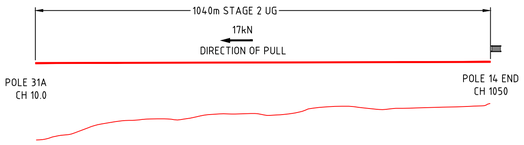
SHEET No 13 OF 20 SHEETS

68426



Pull File Name: Blacktown to Prospect-AMD A_26_(Polywater® J with Jacket: PVC (THWN) and Conduit: PVC
Pull Description: Blacktown to Prospect.

Conduit ID: 143 (mm) Conduit Fill: 24%
Total of 1 cable(s) of 1 different type(s) being pulled.
Total cable weight: 11.6 (kg/m)
Calculated weight correction factor: 1
Configuration: Single Cable
Jam/Clearance Analysis: Jamming Not Possible
Incoming Tension: 0
COF: 0.16

Pull Detail Summary

Total (Cumulative) Bend: 172.5 degrees
Total Length Including Bends: 1048 meters
Conduit Fill 24 %
Total Cable Weight: 11.6 kgs per meter
Conduit Condition: Good
Recommended Quantity 185 Liters

Lubricant Notes

* Additional lubricant in recommended quantity based on long pull length.

Lubricant

Cables

Cable Type	Cable Outer Diameter	Number of Cables	Cable Weight
1	70.00	1	11.60

Segments

Seg #	Straight Section Slope (°)	Slope Direction	Straight Section Length (m)	Slope Direction	Tension (kN)	Bend Type	Bend Direction	Bend Radius (m)	Bend Angle (°)	Bend Length (m)	Bend COF	Tension (kN)	Sidewall Pressure (kN/m)
1	0		0.0	0.160	0	Vertical Down	Down	319.0	4.5	25.1	0.160	0	0
2	0	--	40.0	0.160	1	None	--	0.0	0.0	0.0	0.160	1	0
3	0		0.0	0.160	1	Horizontal	--	6.0	90.0	9.4	0.160	1	0
4	0	--	90.0	0.160	3	None	--	0.0	0.0	0.0	0.160	3	0
5	0		0.0	0.160	3	Horizontal	--	60.0	7.0	7.3	0.160	3	0
6	0	--	70.0	0.160	4	None		0.0	0.0	0.0	0.160	4	0
7	0		0.0	0.160	4	Vertical Down		300.0	7.0	36.7	0.160	4	0
8	0		0.0	0.160	4	Vertical Up	Up	830.0	10.0	144.9	0.160	9	0
9	0		0.0	0.160	9	Vertical Down		840.0	8.0	117.3	0.160	9	0
10	0		0.0	0.160	9	Vertical Down		203.0	10.0	35.4	0.160	9	0
11	0	--	100.0	0.160	11	None	--	0.0	0.0	0.0	0.160	11	0
12	0		0.0	0.160	11	Vertical Down	Down	800.0	6.0	83.8	0.160	12	0
13	0		0.0	0.160	12	Vertical Up	Up	500.0	10.0	87.3	0.160	15	0
14	0		0.0	0.160	15	Vertical Down	Down	950.0	5.0	82.9	0.160	16	0
15	8		115.0	0.160	16	None	--	0.0	0.0	0.0	0.160	16	0
16	0		0.0	0.160	16	Vertical Up	Up	10.0	15.0	2.6	0.160	17	2

PULLING CALCULATION

POLE SCHEDULE - FDR 467 (Underground - Stage 2 pole Removal)

FIELD POLE NEW	FIELD POLE EXISTING	COORDINATES EASTING	COORDINATES NORTHING	LANTERNS NEW	LANTERNS REMOVE	LANTERNS EXISTING	LANTERNS REPLACE	LANTERNS BRACKET	CONSTRUCTION SPAN LENGTH	CONSTRUCTION LINE DEV DEGREES	CONSTRUCTION OPGW	CONSTRUCTION TR	CONSTRUCTION HV	CONSTRUCTION LV	CONSTRUCTION SV	CONSTRUCTION ADSS	CONSTRUCTION SL	CONSTRUCTION STAY	HOLE DIA (mm)	HOLE DEPTH (m)	HOLE EVALUATION (Z)	POLE TYPE	POLE STAY	POLE FOOTING	POLE RELOCATE	POLE REPLACE	POLE NEW	POLE EXISTING	POLE REMOVE	POLE NUMBER	COMMENTS
																													X	32	Removed after decommissioned
																													X	31	Removed after 11kV
	2167																												X	31S	Removed after decommissioned
	2182																											X			Removed in ARP 4126
	2711																												X	30	Removed after decommissioned
	2179																												X	29	Removed after decommissioned
	2177																												X	28	Removed after decommissioned
	2176																												X	27	Removed after decommissioned
	2195																												X	26	Removed after decommissioned
	2196																												X	25	Removed after decommissioned
	2197																												X	24	Removed after decommissioned
	2198																												X	23	Removed after decommissioned
	518563																												X	22	Removed after decommissioned
	518103																												X	21	Removed after decommissioned
	849231																												X	20	Removed after decommissioned
	518080																											X			Removed in ARP 4126
	849230																												X	19	Removed after decommissioned
	518107																											X			Removed in ARP 4126
	518106																												X	18	Removed after decommissioned
	518029																												X	17	Removed after decommissioned
	728967																												X	16	Removed after decommissioned
	518018																											X			Removed in ARP 4126
	518030																											X			Removed in ARP 4126
	518031																											X		15	Maintain for APR 4126
	518004																											X		15S	Maintain for APR 4126
	750067																											X		14	Removed after decommissioned

OVERHEAD SCHEDULE - STAGE 2

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK
CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING
I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

AMENDMENTS: A ORIGINAL ISSUE DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY: AUSCONNEX ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S

WORK ORDERS

GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION UG (STAGE 2)
UNDERGROUND

Endeavour Energy

A1 | 515253 | A

SHEET No 14 OF 20 SHEETS

68426

JOINT/TERMINATION TYPE: .....

NETWORK ACCESS AUTHORISATION: .....

JOINT/TERMINATION KIT #: .....

JOINT/TERMINATION BATCH #: .....

DATE OF MANUFACTURE: .....

LEABONES LANE ZS

9533B04 9533B05 2303

888064

2401

2702 2703 2704 2705

BLACKTOWN RD

2401137

2167

400602

1223 1224 1224 1225

TO NEWTON ZS

TUDOR AVE

BLACKTOWN RD

A — A

JOINT/TERMINATION TYPE: .....

NETWORK ACCESS AUTHORISATION: .....

JOINT/TERMINATION KIT #: .....

JOINT/TERMINATION BATCH #: .....

DATE OF MANUFACTURE: .....

TO BLACKTOWN TS

46601

46726

KEYWORTH DR

BLACKTOWN RD

LANCELOT ST

BLACKTOWN RD

LEGEND	
○	NEW POLE
✱	DELETED POLE
●	EXISTING POLE
●	MODIFY POLE TOP
———	EXISTING STAY
—I—I—	NEW OH STAY
· · · · · · ·	REMOVE CONDUCTOR (J74) 19/3.25
—//—	FDR 467 - NEW UG CABLE - 33kV 800mm² Cu, XLPE (R.L????m, C.L ????)
—V—	FDR 467 - NEW UG FIBRE 144C
—Z—	FDR 467 - NEW ECC 240mm² Cu
—E—	EXISTING 467 CONDUCTOR NEPTUNE (J74) 2 X 19/3.25
—P—	EXISTING OPGW 48C
—T—	EXISTING 144C ADSS

FINAL MAIN TRANSMISSION CIRCUIT

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No. 01

FOR INFORMATION ONLY
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TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN H.SINGAM

DATE 26/06/2019

CH'D

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
FINAL TRANSMISSION CIRCUIT

Endeavour Energy

A1 | 515253 | A

SHEET No 15 OF 20 SHEETS

68426

JOINT/TERMINATION TYPE: .....
NETWORK ACCESS AUTHORISATION: .....
JOINT/TERMINATION KIT #: .....
JOINT/TERMINATION BATCH #: .....
DATE OF MANUFACTURE: .....

LEABONES LANE ZS

9533SB05

2401B3

BLACKTOWN RD

888064

2401B

2702

2703

2704

2705

2401137

TO NEWTON ZS

TUDOR AVE

BLACKTOWN RD

JOINT/TERMINATION TYPE: .....
NETWORK ACCESS AUTHORISATION: .....
JOINT/TERMINATION KIT #: .....
JOINT/TERMINATION BATCH #: .....
DATE OF MANUFACTURE: .....

TO BLACKTOWN TS

KEYWORTH DR

BLACKTOWN RD

LANCELOT ST

BLACKTOWN RD

LEGEND	
	NEW POLE
	DELETED POLE
	EXISTING POLE
	MODIFY POLE TOP
	144C SPLICE BOX
	EXISTING STAY
	NEW OH STAY
	REMOVE CONDUCTOR OPGW
//	FDR 467 - NEW UG CABLE - 33kV 800mm² Cu, XLPE (R.L????m, C.L ????)
V	FDR 467 - NEW UG FIBRE 144C (R.L ???, C.L ????)
Z	FDR 467 - NEW ECC 240mm² Cu (R.L ???, C.L ?)
E	EXISTING 467 CONDUCTOR NEPTUNE (J74) 2 X 19/3.25
P	EXISTING OPGW 48C
G	EXISTING EARTHWIRE ON FDR OS28
T	EXISTING 144C ADSS

FINAL EATHWIRE / ECC ON FDR 467
FINAL EARTH WIRE ON FDR OS/28

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS			
				CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D
DESIGN H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
FINAL TRANSMISSION EARTH CIRCUIT

Endeavour Energy

A1 | 515253 | A

SHEET No 16 OF 20 SHEETS

68426

JOINT/TERMINATION TYPE: .....
NETWORK ACCESS AUTHORISATION: .....
JOINT/TERMINATION KIT #: .....
JOINT/TERMINATION BATCH #: .....
DATE OF MANUFACTURE: .....

9533SB05
LEABONES LANE ZS

N

BLACKTOWN RD

TO NEWTON ZS

TUDOR AVE

JOINT/TERMINATION TYPE: .....
NETWORK ACCESS AUTHORISATION: .....
JOINT/TERMINATION KIT #: .....
JOINT/TERMINATION BATCH #: .....
DATE OF MANUFACTURE: .....

TO BLACKTOWN TS

KEYWORTH DR

BLACKTOWN RD

BLACKTOWN RD

LANCELOT ST

LEGEND	
○	NEW POLE
⊗	DELETED POLE
●	EXISTING POLE
●	MODIFY POLE TOP
■	144C SPLICE BOX
———	EXISTING STAY
—I—I—	NEW OH STAY
· · · · · ·	REMOVE CONDUCTOR OPGW
—// —	FDR 467 - NEW UG CABLE - 33kV 800mm² Cu, XLPE (R.L????m, C.L ????)
—V—	FDR 467 - NEW UG FIBRE 144C (R.L 1056, C.L ????)
—Z—	FDR 467 - NEW ECC 240mm² Cu (R.L 1056, C.L ????)
—E—	EXISTING OH 467 CONDUCTOR NEPTUNE (J74) 2 X 19/3.25
—P—	EXISTING OH OPGW 48C
—G—	EXISTING OH EARTHWIRE ON FDR OS28
—T—	EXISTING OH 144C ADSS
—>—	EXISTING UG 144C ADSS

FINAL OPGW / FIBRE
-OP0 218 FIBRE CIRCUIT ON FDR 467

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

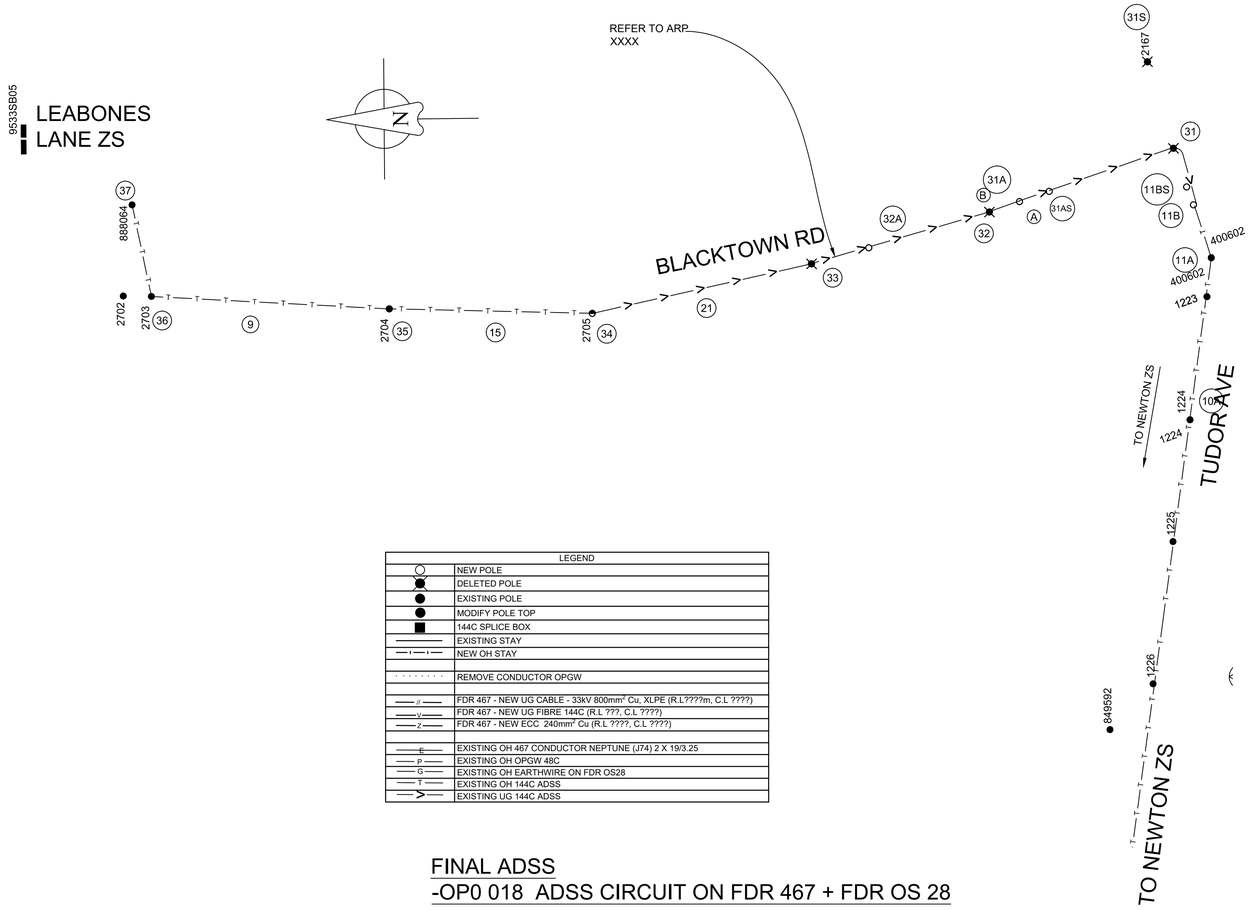
ORIGINAL SCALE 1:2500
DRAWN H.SINGAM
DATE 26/06/2019
CH'D
DESIGN H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
FINAL OPGW & FIBRE CIRCUIT

Endeavour Energy
A1 515253 A
SHEET No 17 OF 20 SHEETS

68426



LEGEND	
○	NEW POLE
⊗	DELETED POLE
●	EXISTING POLE
●	MODIFY POLE TOP
■	144C SPLICE BOX
———	EXISTING STAY
—I—I—	NEW OH STAY
· · · · · · · ·	REMOVE CONDUCTOR OPGW
—// —	FDR 467 - NEW UG CABLE - 33kV 800mm² Cu, XLPE (R.L????m, C.L ????)
—V—	FDR 467 - NEW UG FIBRE 144C (R.L ???, C.L ????)
—Z—	FDR 467 - NEW ECC 240mm² Cu (R.L ????, C.L ????)
—E—	EXISTING OH 467 CONDUCTOR NEPTUNE (J74) 2 X 19/3.25
—P—	EXISTING OH OPGW 48C
—G—	EXISTING OH EARTHWIRE ON FDR OS28
—T—	EXISTING OH 144C ADSS
—>—	EXISTING UG 144C ADSS

FINAL ADSS
-OP0 018 ADSS CIRCUIT ON FDR 467 + FDR OS 28

AMENDMENTS
A ORIGINAL ISSUE
DRAFT No. 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP3266
				AM PROJ. No.	ANRP0003
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	UBD 189 B5
		UNDERGROUND		GIS MAP No	U916074
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE U14
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	
DESIGN	H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

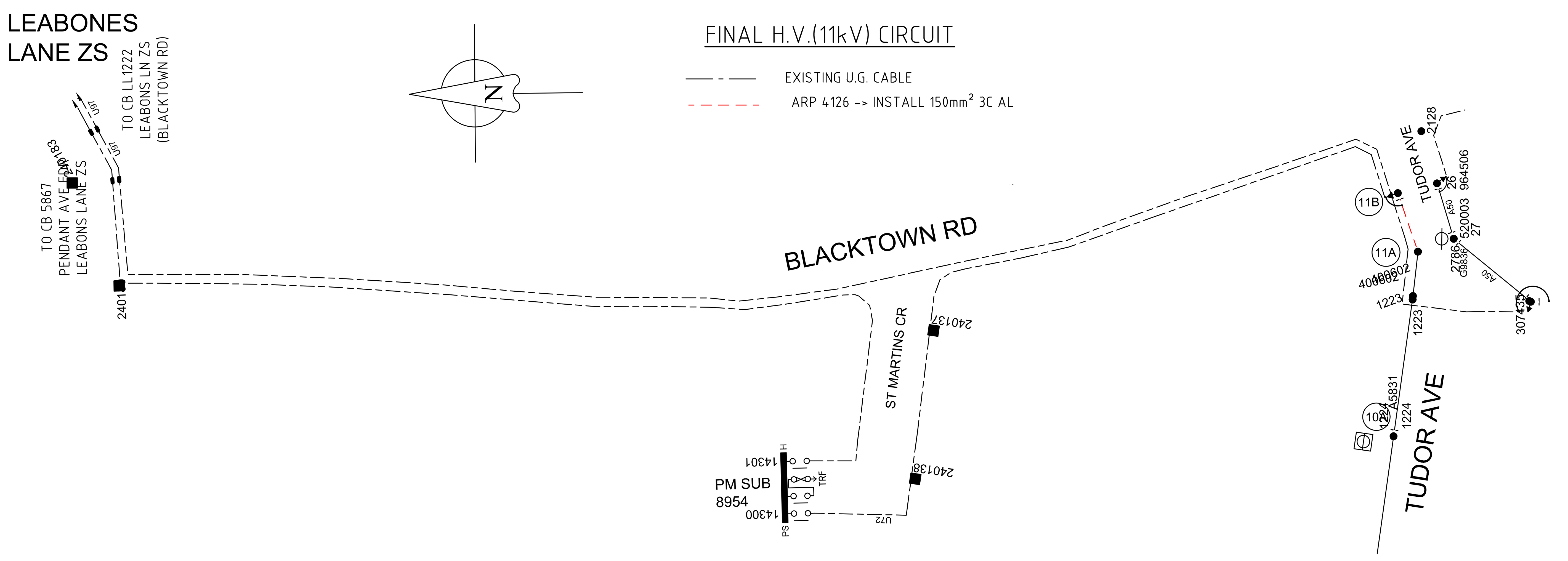
PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
FINAL ADSS CIRCUIT

Endeavour Energy

A1 | 515253 | A

SHEET No 18 OF 20 SHEETS

68426



REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN H.SINGAM

PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
FINAL ADSS CIRCUIT

Endeavour Energy

A1 515253 H

SHEET No 19 OF 20 SHEETS

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

FOR INFORMATION ONLY
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AMENDMENTS | ORIGINAL ISSUE | A | DRAFT No. 01

TEMPLATE VERSION No. 4.3

68426

FINAL LV/SL REFER TO APR 4126

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No 01

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

TEMPLATE VERSION No. 4.3

PREPARED BY:
AUSCONNEX
ENABLING COMMUNITIES THROUGH INFRASTRUCTURE

TEMPLATE VERSION No.

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP3266
AM PROJ. No.	ANRP0003
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	UBD 189 B5
GIS MAP No	U916074
HV OP DIAGRAM	LEABONS LANE U14
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:2500

DRAWN	H.SINGAM
DATE	26/06/2019
CH'D	
DESIGN	H.SINGAM

DO NOT SCALE
DIMENSIONS IN METRES

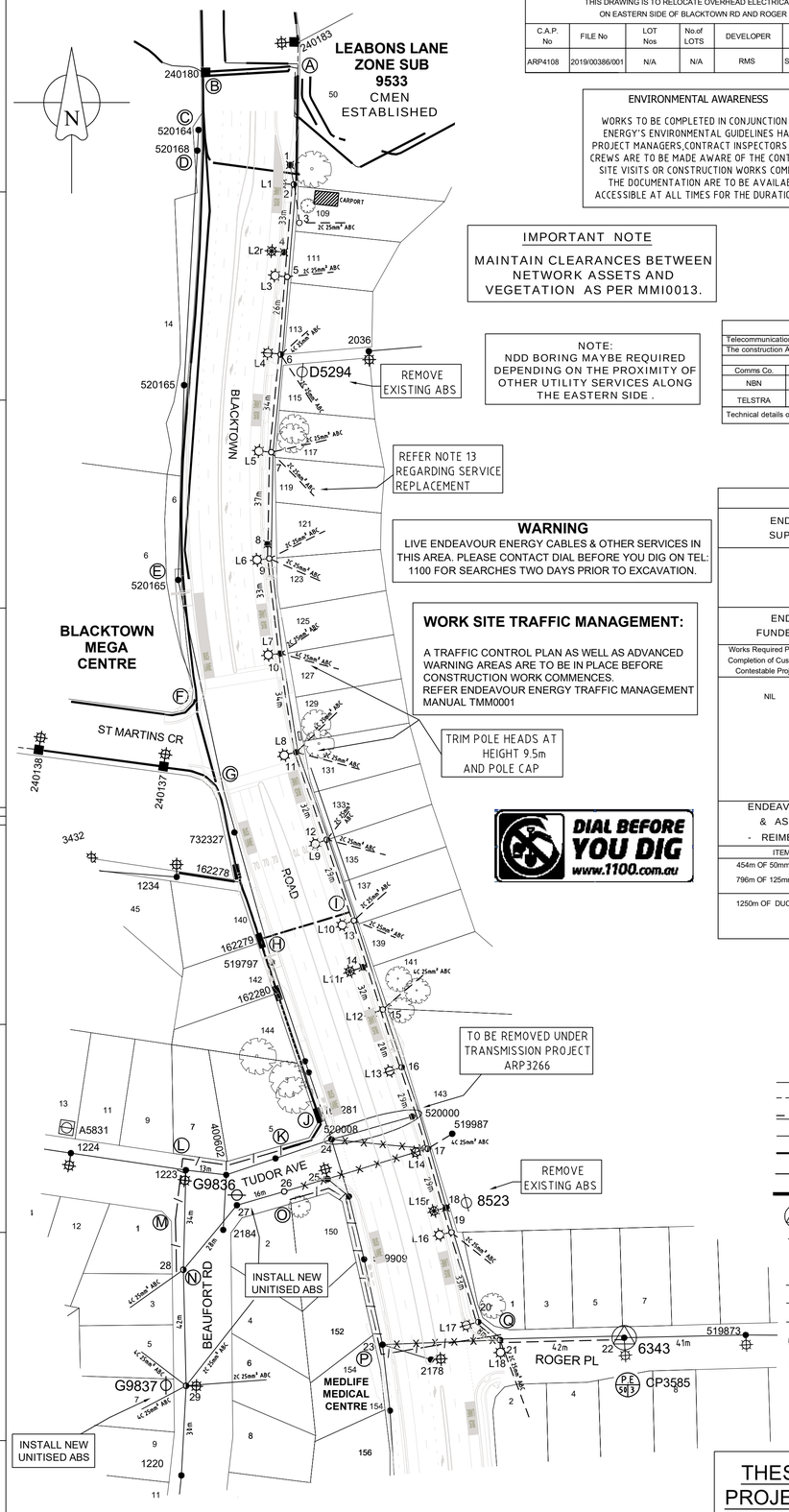
PROSPECT HWY & BLACKTOWN RD
BLACKTOWN
ARP3266
33kV FEEDER 467 ASSET RELOCATION
TRANSMISSION
HV/LV/SL/SM FINAL CIRCUIT

Endeavour Energy

A1 | 515253 | A

SHEET No 20 OF 20 SHEETS

68426



THIS DRAWING IS TO RELOCATE OVERHEAD ELECTRICAL ASSETS ON EASTERN SIDE OF BLACKTOWN RD AND ROGER PLACE						
C.A.P. No	FILE No	LOT Nos	No.of LOTS	DEVELOPER	DEVELOPERS REP	PHONE No
ARP4108	2019/00386/001	N/A	N/A	RMS	SUNNY MEHFOOZ	02 9157 3669

ENVIRONMENTAL AWARENESS

WORKS TO BE COMPLETED IN CONJUNCTION WITH ENDEAVOUR ENERGY'S ENVIRONMENTAL GUIDELINES HANDBOOK 2017.ALL PROJECT MANAGERS,CONTRACT INSPECTORS AND CONSTRUCTION CREWS ARE TO BE MADE AWARE OF THE CONTENTS PRIOR TO ANY SITE VISITS OR CONSTRUCTION WORKS COMMENCING.COPIES OF THE DOCUMENTATION ARE TO BE AVAILABLE ON SITE AND ACCESSIBLE AT ALL TIMES FOR THE DURATION OF THE PROJECT.

IMPORTANT NOTE

MAINTAIN CLEARANCES BETWEEN NETWORK ASSETS AND VEGETATION AS PER MMI0013.

NOTE:
NDD BORING MAYBE REQUIRED DEPENDING ON THE PROXIMITY OF OTHER UTILITY SERVICES ALONG THE EASTERN SIDE .

WARNING

LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TEL: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.

WORK SITE TRAFFIC MANAGEMENT:

A TRAFFIC CONTROL PLAN AS WELL AS ADVANCED WARNING AREAS ARE TO BE IN PLACE BEFORE CONSTRUCTION WORK COMMENCES.
REFER ENDEAVOUR ENERGY TRAFFIC MANAGEMENT MANUAL TMM0001

AUTHORISATION OF ESTIMATED VALUE OF ENDEAVOUR ENERGY FUNDING ASSETS

Signed:
Print Name:
Service Number:
Funding Amount:
Date:

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

COMMUNICATION ASSETS ALTERATION / RELOCATION

Telecommunication Assets are not affected by this project.
The construction ASP must coordinate the work with the following Telecommunication Companies:

Comms Co.	Contact Name	Phone No.	Initial Contact Date	Arrangement Details and Date Agreed
NBN	-	1800626262	15/4/19	-
TELSTRA	-	1800653935	15/4/19	-

Technical details of the arrangements are available from the Design ASP.

KEY DOCUMENTS TABLE

THE CERTIFICATION OF THIS PROJECT IS SUPPORTED BY THE FOLLOWING KEY DOCUMENTS

DOCUMENT NAME	NOTATION DATE
SUMMARY ENVIRONMENTAL REPORT (SER) - FAT0038 part of EMS0001	17/06/2019
AGREEMENT FOR ENTRY, GRANT and CREATION OF EASEMENT - FPJ5013	N/A
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4252	18/06/19
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4253	N/A
TELECOMMUNICATION ASSET AGREEMENT - FPJ4184	04/06/2019
DESIGN SAFETY REPORT	12/06/2019

IMPORTANT NOTE: DBYD SERVICES

- TELSTRA MAINS
- JEMENA GAS
- SYDNEY WATER

ABOVE UTILITY MAINS ARE IN THE VICINITY AND NON-DESTRUCTIVE BORING SHOULD BE CONSIDERED IN ORDER TO IDENTIFY OTHER UTILITY UNDERGROUND ASSETS

ENVIRONMENTAL CONTROLS

USE SILT TRAPS/SOCKS OR OTHER APPROVED METHODS TO PREVENT RUN-OFF ENTERING DRAINS AND STORMWATER CHANNELS.REFER EMS 0002-POLLUTION CONTROL PROCEDURE

WORKS COMPLETED / FIELD BOOK

CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING

I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

REFER TO ENDEAVOUR ENERGY STANDARD REQUIREMENT WNV1001 "WORK ON OVERHEAD MAINS AND APPARATUS UNDER OR ADJACENT TO ENERGISED CIRCUITS.

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY.
2. ENDEAVOUR ENERGY CONTACT PHONE: 131081.
3. DESIGN CERTIFICATION SHALL LAPSE WHERE:
   (i) NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION, OR
   (ii) CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX MONTHS OR WHERE DESIGN CERTIFICATION HAS LAPSED THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.
4. ATTENTION:
   PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF WORK.
5. ATTENTION:
   ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.
6. WARNING:
   LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TELEPHONE: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.
7. ATTENTION:
   SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPT DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE 131081
8. OPERATIONAL LIMITS:
   UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED:
   -MOBILE GENERATORS AND SUBSTATIONS
   -LIVE LINE WORK
   -DESIGN ALTERNATIVES
   -LOW VOLTAGE PARALLELS
   -WORK PRACTICES/STANDARDS.
9. AN EARTH CONNECTION WARNING LABEL MUST BE INSTALLED WHERE EARTH CONDUCTOR OR AN EXTENDED EARTH GRID IS TO BE CONNECTED TO LV STREET NEUTRAL TO ACHIEVE AN MEN SYSTEM AS PER EDI100. REFER TO DRAWING No.010646.
10. ALL THE EXISTING ASSETS BEEN FIELD CHECKED AND ARE ACCURATE AT THE TIME OF DESIGN.
11. ENVIRONMENTAL MANAGEMENT PLAN: EMP YES IS PART OF THIS DESIGN.
12. RMS TO ARRANGE FOR THE PROVISION OF SURVEYING SERVICES TO PEG ALL PROPERTY BOUNDARIES AS REQUIRED PRIOR TO CONSTRUCTION COMMENCING
13. REPLACE EXISTING 2W(1 ϕ),3W(2ϕ),4W(3ϕ) OH SERVICES AFFECTED BY THE POLE RELOCATION/REPLACEMENT/LV AUGMENTATION WITH 25 SQ.mm.2C AL ABC: CL- 255m, ,25 SQ.mm.4C AL ABC : CL- 120m

CAUTION: RESIDENTIAL SOLAR CONNECTIONS

CUSTOMER SOLAR SYSTEMS ARE TO BE IDENTIFIED AND ISOLATED PRIOR TO CONSTRUCTION WORK COMMENCING RESTORE TO NORMAL OPERATION ONCE CONSTRUCTION IS COMPLETED

CAUTION: LIFE SUPPORT CUSTOMERS

CONSTRUCTOR TO IDENTIFY AND CONFIRM LOCATION OF LIFE SUPPORT CUSTOMER IN THE AREA

FUNDING ARRANGEMENTS FOR SCOPE OF WORKS

ASP LEVEL 1 ELECTRICAL WORKS		CUSTOMER
ENDEAVOUR ENERGY SUPPLIED MATERIALS	CUSTOMER FUNDED NON - CONTESTABLE WORKS	CUSTOMER FUNDED
NIL	Inspection and access Authority -System Switching -Provision of access Authority (As per EE fee sort by EE's CWA's)	Includes but not limited to: - Pegging of property boundaries & infrastructure locations - Providing site access - Own service & service connection - Confirm finished ground levels
ENDEAVOUR ENERGY FUNDED & CONSTRUCTED		EXISTING DUCT USAGE CHARGES (exc GST)
Works Required Prior to Completion of Customer Contestable Project: NIL Works Required in Association of Customer Contestable Project: NIL	CUSTOMER FUNDED CONTESTABLE WORKS	842m OF 125mm DUCTS @ $23/m TOTAL USAGE - $19366.00
ENDEAVOUR ENERGY FUNDED & ASP L1 CONSTRUCTED - REIMBURSEMENT (exc GST)	All other works and materials including but not limited to: • Excavation and Trenching • Cable laying and/or installations • Overhead installation • Duct Installation • cable installation(pulling & laying) • Cable Jointing • Pole installation & dressing • Overhead Installation • Conductor stringing & tension • Installation of earth • Removal of redundant assets	CO - ORDINATION SUPPLY REQUIRED DATE (TO BE CONFIRMED BY THE CUSTOMER) DAY: 01 MONTH: 10 YEAR: 2019
ITEM / AMOUNT 454m OF 50mm DUCTS @ $6/m — $2724.00 796m OF 125mm DUCTS @ $23/m — $18308.00 1250m OF DUCTS — $21032.00		ASSET TO BE RETURNED TO NEAREST ENDEAVOUR ENERGY DEPOT BY L1 ASP 1167m OF COPER CONDUCTOR, 2 X ABS's ARE TO BE REMOVED(REFER TO MATERIAL RETURN SHEET FOR DETAILS

SITE PLAN LEGEND

- POLE- EXIST
- POLE- NEW
- POLE- REPLACE
- POLE- REMOVE
- EXISTING OVERHEAD CONDUCTOR
- NEW OVERHEAD CONDUCTOR
- AUGMENT MAINS- RELOCATE/REPLACE
- REMOVE OH CONDUCTOR
- LOW VOLTAGE UNDERBORE
- HIGH VOLTAGE TRENCH/UNDERBORE
- EXISTING DUCT ROUTE
- POLE MOUNTED SUB-EXIST
- AIR BREAK SWITCH (N/C)
- LOAD BREAK SWITCH (N/C)
- LANTERN-EXIST
- LANTERN-NEW
- LANTERN-REMOVE
- TREES
- LV PILLAR-EXIST
- SL COLUMN-EXIST

SITE PLAN:
(SCALE - 1:1000)

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Connection Policy
EMS: Environmental Management Standard
MCI: Mains Construction Instruction
MDI: Mains Design Instruction
PDI: Protection Design Instruction
SDI: Substation Design Instruction
SAD 0001: Design Drawing Standard
MMI: Mains Maintenance Instruction
SMI: Substation Maintenance Instruction
LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:
Name: MOHAMMED JANIF
Service Provider Number: 4863 Date: 24/05/19

( ) DENOTES EXISTING CONSTRUCTION

COORDINATES		FIELD POLE NUMBER		LANTERNS					CONSTRUCTION					HOLE		POLE								
X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV		DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
			520169									STAY POLE										X	1
307462.8030	6260193.3675	964492	750127				X	A6		-		A05+LUOGH-A x 2 + LUSL-A		600	2.2	11 /8		C		X				2
		964493								-				POA		6.4m		P			X			3
			782998		X			(A6)			(B21)	(B01)				(12.5/8)						X	4
307460.5284	6260162.0239	964494		X				A7	33m			A01		600	1.85	11 /8		P		X				5
307458.3038	6260135.5848	964495	520111				X	A7	26m			A01		600	1.85	11 /8		P			X			6
307455.1013	6260102.3632	964496		X				A7	34m	4°		A01		600	1.85	11 /8		P		X				7
			519997								(B23)	(LUSL-BB)				(12.5/8)						X	8
307454.4593	6260066.2075	964497		X				A6	37m	8°		LUSL-AA		600	1.85	11 /8		P		X				9
307458.2477	6260033.8868		520011	X				A6	33m			A01				(12.5/8)		-				X		10
307463.5662	6260000.4041		519988	X				A7	34m	10°		A01				(12.5/8)		-				X		11
307474.0096	6259970.6496	964498	844079	X				A6	32m			A01		600	1.85	11 /8		C		X				12
307483.2161	6259943.1743	964499		X				A6	29m			A03+LUGOH-A		600	2.2	11 /8		P			X			13
			844080		X			(A6)			(B21)	(B01)				(12.5/8)		-					X	14
307492.9833	6259912.8965	964500			X			A6	32m			A01		600	1.85	11 /8		P			X			15
307499.4530	6259893.2751	964501	520005				X	A6	20m			A01		600	1.85	11 /8		P		X				16
307508.3736	6259865.5921	964502	520002				X	A6	29m			A01		600	1.85	11 /8		P		X				17
			750120		X			(A6)			(HABS-BB)	(LUSL-BB)				(12.5/8)							X	18
307516.4347	6259837.1582	964503			X			A7	29m			LUSL-AA		600	1.85	11 /8		P			X			19
307525.5115	6259806.6633	964504	519874				X	A7	33m	34°		A02		600	1.85	11 /8		C		X				20
307532.9190	6259800.5545	964505	732321	X				A6	8m	41°	A25+HUGOH-A	A03+LUGOH-A		900	2.5	14 /12		C		X				21
307575.1115	6259801.3017		519864						42m		A25+(SUB)	A05+(B05)+ LUSL-AB				(12.5/12)						X		22
		TR POLE	519908								TO BE REMOVED	UNDER ARP3266										X		23
		TR POLE	520008								TO BE REMOVED	UNDER ARP3266										X		24
		HV POLE	520004								TO BE REMOVED	UNDER ARP4126										X		25
307459.5028	6259851.0711	964506									B25+HUGOH-B			600	2.5	14 /8		C		X				26
			520003						16m		HABS-BB					(12.5/8)						X		27
307425.1731	6259824.4389	964507	307435						28m	3°	B24+HUGOH	B01		600	2.5	14 /8		C		X				28
307426.1526	6259784.9603	964509	519774						42m		HABS-BB	B01		600	1.85	12.5 /8		P		X				29

THESE WORKS ARE TO BE DONE IN CONJUNCTION WITH PROJECT ARP4126 BLACKTOWN RD BLACKTOWN STAGE 2B

Cadastre: © Land and Property Information 2016

AMENDMENTS		
A	ORIGINAL ISSUE	DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS	
515628	ARP4126 BLACKTOWN RD STG 2B	GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4108
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189/B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000
DRAWN MJ
DATE 24/5/19
CH'D
DESIGN MJ

DO NOT SCALE
DIMENSIONS IN METRES

BLACKTOWN RD
BLACKTOWN
ARP4108
ASSET RELOCATION (SECTION 1)
LEABONS LANE ZS TO ROGERS PL

Endeavour Energy

A1 | 515695 | A

SHEET No 1 OF 4 SHEETS

74403

TO CB LL1222
LEABONS LN ZS
(BLACKTOWN RD)

JOINT/TERMINATION TYPE:.....
NETWORK ACCESS
AUTHORISATION:.....
JOINT/TERMINATION KIT #:.....
JOINT/TERMINATION BATCH #:.....
DATE OF MANUFACTURE:.....

LOCATE,ID & SPIKE EXISTING 240mm² Cu 11kV CABLE AT THE EXISTING ST.J LOCATION BETWEEN CB LL1222,LEABONS LN ZS,AND EXISTING UGOH POLE,BREAK EXISTING HV ST.J, MAKE NEW HV ST.J TO NEW 240 mm²HV CABLE AS SHOWN..

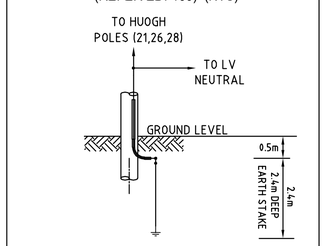
DROP DOWN EXISTING HV UGOH ON EX POLE 750127 (BLACKTOWN RD) ,CUT HV CABLE AT POLE BASE,END CAP AND ABANDON EXISTING HV CABLE UP TO THE NEW ST.J

HV CONDUCTOR REFERENCE
U97 - 240mm2 Cu 3C XLPE/PVC/HDPE Screened (UG) 11kV
A50 - 19/0.101 HDCU 19/12 Gauge (OH) 11 kV
A54 - 19/3.25 AAC (19/0.128) Neptune (Hor (OH) 11 kV

HV UGOH EARTHING DETAILS (POLES 21,26 & 28)

Soil Resistively (ohms.m)	Layer 1	9.87	Depth (m)	2.58
	Layer 2	16.95		--
Earthing System Type (HV, LV, SEP or Com)				COM
Designed earth resistance (ohms)				6.92
Measured earth resistance (ohms)				
Number of electrodes				1
Length of bare electrode (m)				2.4
Connector type (CAD or CRIMP)				CRIMP

COMMON EARTHING DIAGRAM DETAIL
(REFER EDI-100) (NTS)



EARTHING LEGEND

- x — 70mm² (19/2.14) CU PVC
- / — / — 95mm² AL DOUBLE INSULATED
- EARTH ELECTRODE

LOCATE,ID & SPIKE EXISTING 240mm² Al 3.5C XLPE LV CABLE AND CUT AT THE BASE OF POLE 2008,MAKE STJ AND EXTEND NEW 240mm² LV XLPE CABLE TO LV UGOH ON NEW POLE 2 AS SHOWN.

TO PM SUB 18388
(BLACKTOWN RD)

TO LEABONS LANE ZS BACKUP
AUXILIARY SUPPLY
(BLACKTOWN RD)
(NOT VERIFIED)

LOCATE,ID & SPIKE EXISTING 25mm² Al 4C XLPE LV CABLE AND CUT AT THE BASE OF POLE 2008,MAKE STJ AND EXTEND NEW 240mm² LV XLPE CABLE TO LV UGOH ON NEW POLE 2 AS SHOWN.

INSTALL N/C LV LINKS

BLACKTOWN

LV CONDUCTOR REFERENCE
E44 - 7/4.50 AAC (7/0.173)
T52 - 240mm2 Al 3.5C XLPE (UG) .415
E30 - 7/0.104 or 19/0.064 HDCU 7/12 Gauge (OH) .415
E32 - 7/3.75 AAC (7/0.134) Mars (Fly) (OH) .415

FINAL LV/SL CIRCUIT (NTS)

- EXISTING UNDERGROUND CABLE
- EXISTING O.H CONDUCTOR
- ERECT 1 x 1kV 150mm² Al 4C LV ABC CABLE STRING TO TABLE LV19 (6% UTS) R.L. 452m C.L. 485m
- LAY 240 mm² Al 4C XLPE LV CABLE R.L. 77m C.L. 130m
- LAY 25 mm² Al 4C XLPE LV CABLE R.L. 2m C.L. 15m
- LV LINKS (N/O)
- LV LINKS (N/C)
- UNDERGROUND TO OVERHEAD MAINS TERMINATION
- SL CONTROL POINT PHOTO ELECTRIC-NEW

DESIGN COMPLIANCE AND INDEMNITY

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SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: .....

Name: MOHAMMED JANIF

Service Provider Number: 4863 Date: 24/05/19

ABORIGINAL HERITAGE

IF DURING CONSTRUCTION OF THIS PROJECT THE CONSTRUCTOR OR DEVELOPER BECOMES AWARE OF ANY PREVIOUSLY UNIDENTIFIED ABORIGINAL OBJECTS(s),ALL WORK LIKELY TO AFFECT THE OBJECT(s) SHALL CEASE IMMEDIATELY,AND THE OFFICE OF ENVIRONMENT & HERITAGE SHALL BE NOTIFIED IN ACCORDANCE WITH SECTION 89A OF THE NATIONAL PARKS & WILDLIFE ACT 1974.WORKS SHALL NOT RECOMMENCE UNTIL WRITTEN AUTHORISATION FROM THE NSW OFFICE OF ENVIRONMENT AND HERITAGE HAS BEEN ISSUED, IN ADDITION TO THE WRITTEN CONSENT FROM THE LOCAL ABORIGINAL LAND COUNCIL.

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:.....
Date Approved:.....
Examiner's Signature:.....
Print Name:.....
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

(HV CABLE TERMINATION TO SPARE SWITCH 14301 TO BE CARRIED OUT UNDER ARP4126)

TO SW 14301,
SUB 8954
(ST MARTINS CR)

TO SW 14300,
SUB 8954
(ST MARTINS CR)

ST MARTINS CR

ROAD

FINAL HV CIRCUIT (NTS)

- EXISTING UNDERGROUND CABLE
- EXISTING OVERHEAD CONDUCTOR
- LAY 240² mm Cu 3C XLPE HV CABLE R.L. 496m C.L. 535m
- *(Note : Copper Cable required)*
- LAY 240² mm Al 3C XLPE HV CABLE R.L. 117m C.L. 145m
- EARTH LOCATION
- STRAIGHT THROUGH JOINT
- UNDERGROUND TO OVERHEAD MAINS TERMINATION
- ERECT 11kV 150mm sq Al 3C ABC CABLE STRING TO TABLE HV8 (10% UTS) R.L. 42m C.L. 47m

JOINT/TERMINATION TYPE:.....
NETWORK ACCESS
AUTHORISATION:.....
JOINT/TERMINATION KIT #:.....
JOINT/TERMINATION BATCH #:.....
DATE OF MANUFACTURE:.....

JOINT/TERMINATION TYPE:.....
NETWORK ACCESS
AUTHORISATION:.....
JOINT/TERMINATION KIT #:.....
JOINT/TERMINATION BATCH #:.....
DATE OF MANUFACTURE:.....

JOINT/TERMINATION TYPE:.....
NETWORK ACCESS
AUTHORISATION:.....
JOINT/TERMINATION KIT #:.....
JOINT/TERMINATION BATCH #:.....
DATE OF MANUFACTURE:.....

BOND THE 11kV FEEDER CABLE'S SHEATH/SCREEN,ARMOUR TO THE DISTRIBUTION NEUTRAL/EARTHING AT THE FIRST UGOH POLE FROM LEABONS LANE ZS & PLACE LABELS.REFER DRAWING 348254/B

TENSION TO 7% CBL

BEAUFORT RD

TUDOR AVE

ROGER PL

TO USL 4924
ON POLE 732390
(BEAUFORT RD),
ABS A2439 ON POLE 887355
(HAWKINS ST)

HV ABC CATENARY EARTHING HAS TO BE COMBINED TO THE EXISTING SUB EARTHING

WARNING
CMEN EARTH CONNECTION
DO NOT DISCONNECT

TO PM SUB 8954
(ST MARTINS CR)

TO N/O LINKS ON POLE 519779
(LANEWAY)

TO N/O LINKS
ON POLE 519778
(TUDOR PL)
SUB 2530,,
N/O LINKS ON
POLE 519746
(YALE PL)

TO N/O LINKS ON
POLE 518103
(BLACKTOWN RD)

NOTE: PUBLIC LIGHTING DESIGN HAS BEEN DONE UNDER PROJECT ARP4126 BLACKTOWN RD BLACKTOWN STAGE 2B

- NEW P.E CELL
- NEW STREET LIGHT LANTERN NUMBER
- NEW POLE NUMBER
- NEW P.E CELL
- NEW STREET LIGHT LANTERN NUMBER
- EXISTING POLE NUMBER
- EXISTING SL CCT
- EX STREET LIGHT LANTERN NUMBER
- EXISTING POLE NUMBER

INSTALL 1ϕ PHOTO ELECTRIC SLCP TO CONTROL LANTERNS ON THE EAST SIDE OF SUB 6343

TO POLE 519879
(END OF CCT)
ROGER PL

POTENTIAL SPOIL STORAGE SITE NOT IDENTIFIED IN THE IMMEDIATE AREA. OPS/PROJECT MANAGERS TO ARRANGE FOR AN APPROVED SITE WITH LOCAL COUNCIL.USE APPROPRIATE ENVIRONMENTAL CONTROLS.

WORKS COMPLETED / FIELD BOOK

CONSTRUCTED BY: .....

WORKS COMPLETED: .....

SIGNATURE: ..... DATE: .....

INSPECTED BY: .....

SIGNATURE: ..... DATE: .....

ASSET RECORDING

I: .....

OF: .....

CONTACT No.: .....

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: .....

DATE: .....

Cadastre: © Land and Property Information 2016

AMENDMENTS
ORIGINAL ISSUE
A DRAFT No 01

TEMPLATE VERSION No. 5.0

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

REFERENCE DRAWING'S		WORK ORDERS			
515628	ARP4126 BLACKTOWN RD STG 2B	GENERAL		CAP / SAMP No.	ARP4108
		OVERHEAD		AM PROJ. No.	SMECEE01
		UNDERGROUND		HV SWITCHING	LEABONS LN/S4
		SUBSTATIONS		UBD/PENGUIN REF	189/B6
				GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

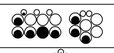
ORIGINAL SCALE 1:1000
DRAWN MJ
DATE 24/5/19
CH'D
DESIGN MJ
DO NOT SCALE DIMENSIONS IN METRES

BLACKTOWN RD
BLACKTOWN
ARP4108
ASSET RELOCATION (SECTION 1)
LEABONS LANE ZS TO ROGERS PL

Endeavour Energy
A1 515695 A
SHEET No 2 OF 4 SHEETS

74403

DUCT BREAKDOWN TABLE

ROUTE	CONFIGURATION	DESCRIPTION	ROUTE LENGTH	DUCT RE-IMBURSEMENT				DUCT USAGE CHARGE			
				No OF 50mm DUCTS	AMOUNT @ ($6/m)	No OF 125mm DUCTS	AMOUNT @ ($23/m)	No OF 50mm DUCTS	AMOUNT @ ($6/m)	No OF 125mm DUCTS	AMOUNT @ ($23/m)
A — B		EXISTING ROAD CROSSING 14 X 125mm & 5 X 50mm PVC DUCTS	36m	-	-	-	-	-	-	2(72m)	$1656.00
B — C		EXISTING 7 X 125mm & 1 X 50mm PVC DUCTS	12m	-	-	-	-	-	-	2(24m)	$552.00
C — D		EXISTING 7 X 125mm & 1 X 50mm PVC DUCTS	16m	-	-	-	-	-	-	2(32m)	$736.00
D — E		EXISTING 4 X 125mm & 1 X 50mm PVC DUCTS	142m	-	-	-	-	-	-	2(284m)	$6532.00
E — F		EXISTING 6 X 125mm & 2 X 50mm PVC DUCTS	45m	-	-	-	-	-	-	2(90m)	$2070.00
F — G		EXISTING ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	30m	-	-	-	-	-	-	2(60m)	$1380.00
G — H		EXISTING 6 X 125mm & 2 X 50mm PVC DUCTS	55m	-	-	-	-	-	-	2(110m)	$2530.00
H — I		UNDERBORE AND INSTALL ROAD CROSSING 4 X 125mm & 2 X 50mm PVC DUCTS	35m	2(70m)	$420.00	2(70m)	$1610.00	-	-	-	-
H — J		EXISTING 6 X 125mm & 2 X 50mm PVC DUCTS	65m	-	-	-	-	-	-	2(130m)	$2990.00
J — K		EXISTING 6 X 125mm & 2 X 50mm PVC DUCTS	20m	-	-	-	-	-	-	2(40m)	$920.00
K — L		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	35m	2(70m)	$420.00	4(140m)	$3220.00	-	-	-	-
L — M		UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	20m	2(40m)	$240.00	4(80m)	$1840.00	-	-	-	-
M — N		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	20m	2(40m)	$240.00	4(80m)	$1840.00	-	-	-	-
O — P		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	75m	2(150m)	$900.00	4(300m)	$6900.00	-	-	-	-
P — Q		UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	42m	2(84m)	$504.00	3(126m)	$2898.00	-	-	-	-
		SUB TOTALS			$2724.00		$18308.00				$19366.00
		TOTALS		$21032.00				$19366.00			

CONDUIT/CABLE LEGEND

- LV ● LV CABLE - DIRECT BURIED
- HV ● HV CABLE - DIRECT BURIED
- RM ● EXISTING DIRECT BURIED REMOVED
- ○ 50mm DUCT-SPARE
- ◉ 50mm DUCT WITH EXISTING CABLE
- ○ 125mm DUCT-SPARE
- ◉ 125mm DUCT WITH EXISTING CABLE
- ● 125mm DUCT WITH NEW CABLE

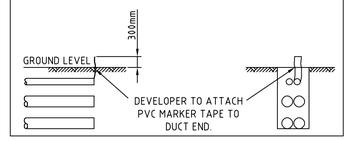
EXCLUSIONS FROM THE DUCT BREAKDOWN TABLE:
- LV SERVICE CONDUITS
- EXTENDED LV SERVICE CONDUITS
- LOCALIZED EARTHING
- SHORT SECTIONS

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED / FIELD BOOK
CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING
I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

DUCT END LOCATION DETAIL



LIGHTING EQUIPMENT AND BILLING SCHEDULE

ITEM ID	STATE	SL NUMBER	SUPPORT NUMBER	SL NUMBER	SUPPORT NUMBER	LUMINAIRE				COLUMN/POLE					BRACKET/OUTREACH			UPCAST	K/B(m)	M/H(m)	CATEGORY	CHARGE TO
		EXISTING	EXISTING	NEW	NEW	DESCRIPTION	PART NO	QTY	RATE CODE	DESCRIPTION	PART NO	FOOTING (BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION	PART NO	RATE CODE					
L1r	Remove	37960	750127	-	-	250 W HPS	SONT250WGES	1	038	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L1	New	-	-	286424	PL964492	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L2r	Remove	37959	782998	-	-	250 W HPS	SONT250WGES	1	561	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L3	New	-	-	286425	PL964494	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L4r	Remove	38104	520111	-	-	250 W HPS	SONT250WGES	1	038	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L4	New	-	-	286426	PL964495	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L5	New	-	-	286427	PL964496	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L6	New	-	-	286428	PL964497	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L7	New	-	520011	286429		250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L8	New	-	519988	286430		250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L9	New	-	-	286431	PL964498	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L10	New	-	-	286432	PL964499	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A7	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L11r	Remove	44409	844080	-	-	250 W HPS	SONT250WGES	1	561	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L12	New	-	-	286433	PL964500	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L13r	Remove	44408	520005	-	-	250 W HPS	SONT250WGES	1	561	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L13	New	-	-	286434	PL964501	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L14	New	-	-	286435	PL964502	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L15r	Remove	44406	750120	-	-	250 W HPS	SONT250WGES	1	561	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L16	New	-	-	286436	PL964503	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	7.3	10	V3	BLACKTOWN CITY COUNCIL(100%)
L17r	Remove	43918	519874			250 W HPS	SONT250WGES	1	561	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L17	New	-	-	286437	PL964504	250 W HPS AS	PR47G31	1	868	TIMBER POLE	-	-	1	-	A7(5.755m x 2.684m)	IE-A7	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L18	New	-	-	286681	PL964505	150 W HPS AS	PR47G31	1	865	TIMBER POLE	-	-	1	-	A6(4.418m x 2.060m)	IE-A6	891	5°	7.0	10	P4	BLACKTOWN CITY COUNCIL(100%)

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Connection Policy
EMS: Environmental Management Standard
MCI: Mains Construction Instruction
MDI: Mains Design Instruction
PDI: Protection Design Instruction
SDI: Substation Design Instruction
SAD 0001: Design Drawing Standard
MMI: Mains Maintenance Instruction
SMI: Substation Maintenance Instruction
LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: .
Name: MOHAMMED JANIF
Service Provider Number: 4863 Date: 24/05/19

Cadastre: © Land and Property Information 2016

AMENDMENTS
A ORIGINAL ISSUE DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S

WORK ORDERS

GENERAL		CAP / SAMP No.	SMECEE01
OVERHEAD		AM PROJ. No.	ARP4108
UNDERGROUND		HV SWITCHING	LEABONS LN/S4
SUBSTATIONS		UBD/PENGUIN REF	189/B6
		GIS MAP No	U9160/74
		HV OP DIAGRAM	
		LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:100
DRAWN MJ
DATE 24/05/19
CH'D
DESIGN MJ
DO NOT SCALE DIMENSIONS IN METRES

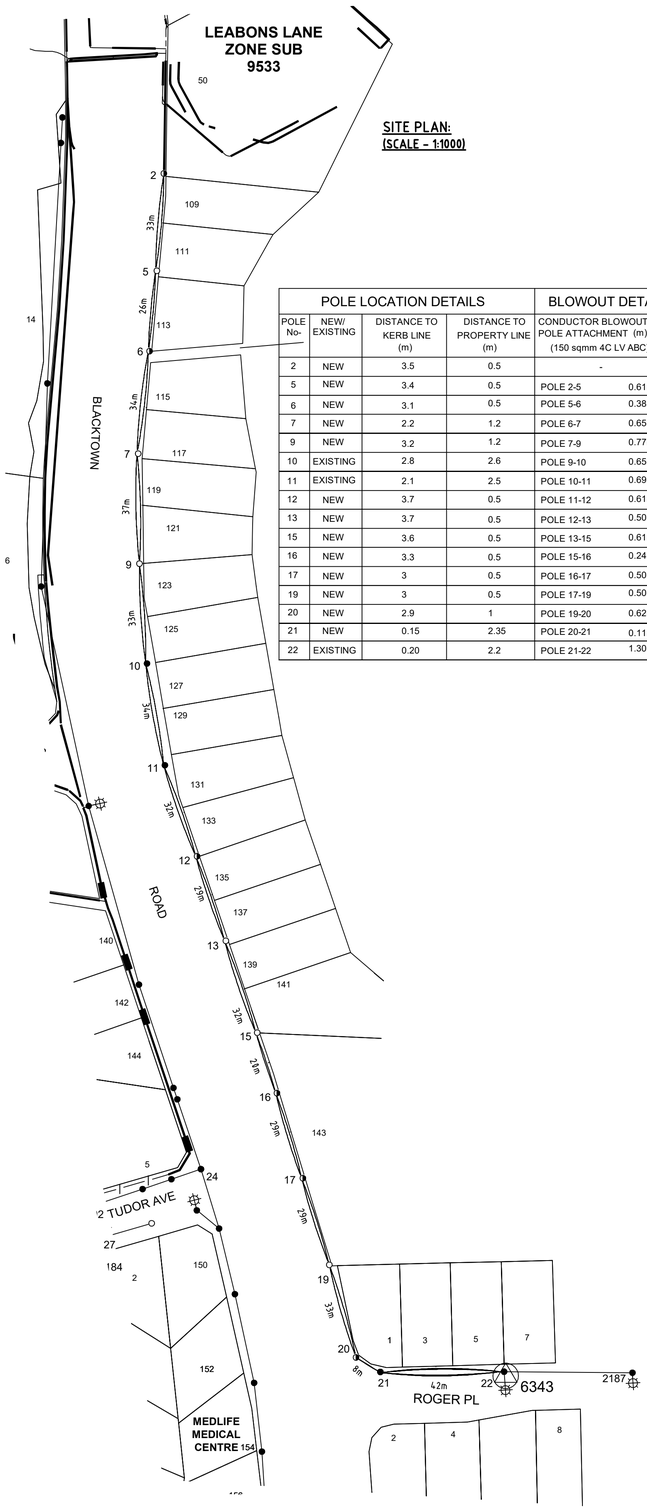
BLACKTOWN RD
BLACKTOWN
ARP4108
ASSET RELOCATION (SECTION 1)
LEABONS LANE ZS TO ROGERS PL

Endeavour Energy

A1 515695 A
SHEET No 3 OF 4 SHEETS

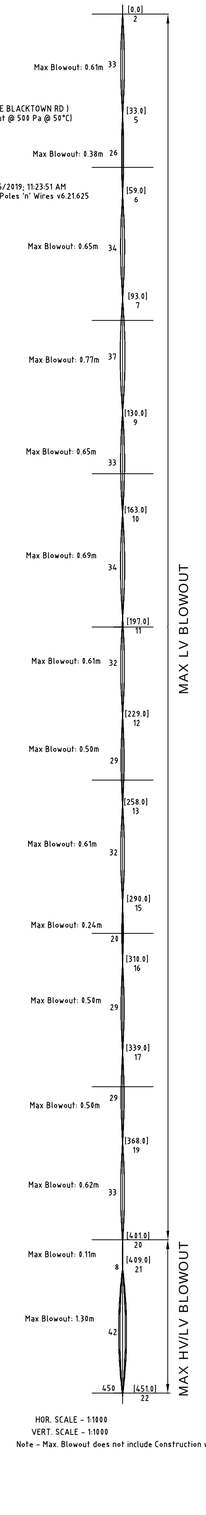
74403

150 mm² 4C LV ABC & 150 mm² 3C HV ABC CONDUCTOR MAX BLOWOUT DETAILS



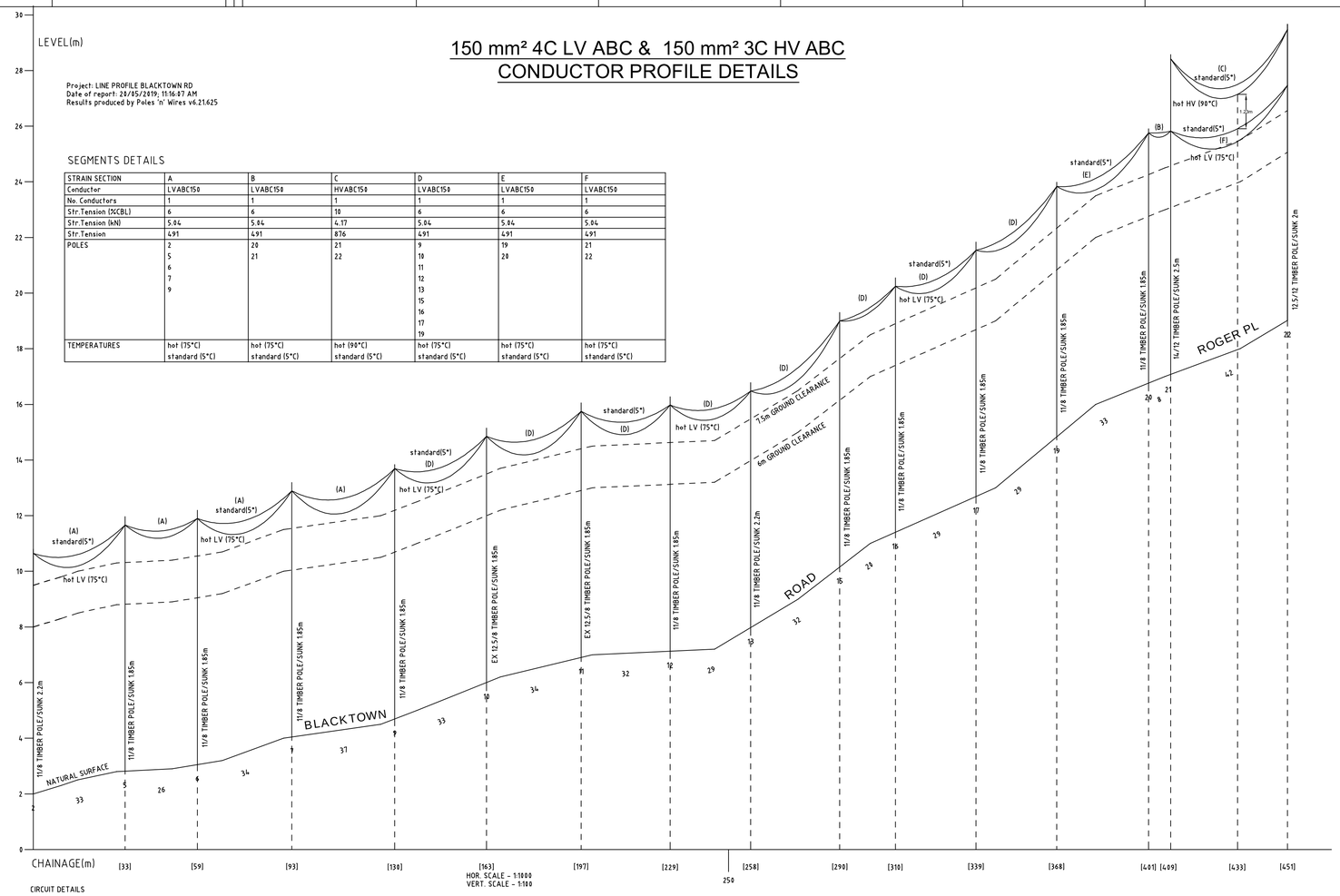
SITE PLAN:
(SCALE - 1:1000)

POLE LOCATION DETAILS				BLOWOUT DETAILS
POLE No-	NEW/ EXISTING	DISTANCE TO KERB LINE (m)	DISTANCE TO PROPERTY LINE (m)	CONDUCTOR BLOWOUT FROM POLE ATTACHMENT (m) (150 sqmm 4C LV ABC)
2	NEW	3.5	0.5	-
5	NEW	3.4	0.5	POLE 2-5 0.61m
6	NEW	3.1	0.5	POLE 5-6 0.38m
7	NEW	2.2	1.2	POLE 6-7 0.65m
9	NEW	3.2	1.2	POLE 7-9 0.77m
10	EXISTING	2.8	2.6	POLE 9-10 0.65m
11	EXISTING	2.1	2.5	POLE 10-11 0.69m
12	NEW	3.7	0.5	POLE 11-12 0.61m
13	NEW	3.7	0.5	POLE 12-13 0.50m
15	NEW	3.6	0.5	POLE 13-15 0.61m
16	NEW	3.3	0.5	POLE 15-16 0.24m
17	NEW	3	0.5	POLE 16-17 0.50m
19	NEW	3	0.5	POLE 17-19 0.50m
20	NEW	2.9	1	POLE 19-20 0.62m
21	NEW	0.15	2.35	POLE 20-21 0.11m
22	EXISTING	0.20	2.2	POLE 21-22 1.30m



HOR. SCALE - 1:1000
VERT. SCALE - 1:1000
Note - Max. Blowout does not include Construction width

150 mm² 4C LV ABC & 150 mm² 3C HV ABC CONDUCTOR PROFILE DETAILS



SEGMENTS DETAILS

STRAIN SECTION	A	B	C	D	E	F
Conductor	LVABC150	LVABC150	HVABC150	LVABC150	LVABC150	LVABC150
No. Conductors	1	1	1	1	1	1
Str.Tension (%CBL)	6	6	10	6	6	6
Str.Tension (kN)	5.04	5.04	4.17	5.04	5.04	5.04
Str.Tension	491	491	876	491	491	491
POLES	2 5 6 7 9	20 21	21 22	9 10 11 12 13 15 16 17 19	19 20	21 22
TEMPERATURES	hot (75*C) standard (5*C)	hot (75*C) standard (5*C)	hot (90*C) standard (5*C)	hot (75*C) standard (5*C)	hot (75*C) standard (5*C)	hot (75*C) standard (5*C)

CIRCUIT DETAILS

Cct ID	Left Pole	Left Att(m)	Right Pole	Right Att(m)	Cond	Sag (m)	Time/3 pulses (s)	Span (m)	Act Temp	MES/RS (m)	Std Tens (%CBL)	Std Tens (kN)	Str Sect	Act NW Tens (kN)
standard	2	8.65	5	8.85	LVABC150	0.54	4.0	33.00	5	33.22	6.00	5.04	A	5.04
hot	2	8.65	5	8.85	LVABC150	0.95	5.3	33.00	75	33.22	6.00	5.04	A	2.83
standard	5	8.85	6	8.85	LVABC150	0.33	3.1	26.00	5	33.22	6.00	5.04	A	5.04
hot	5	8.85	6	8.85	LVABC150	0.59	4.2	26.00	75	33.22	6.00	5.04	A	2.83
standard	6	8.85	7	8.85	LVABC150	0.57	4.1	34.00	5	33.22	6.00	5.04	A	5.04
hot	6	8.85	7	8.85	LVABC150	1.01	5.4	34.00	75	33.22	6.00	5.04	A	2.83
standard	7	8.85	9	9.00	LVABC150	0.67	4.4	37.00	5	33.22	6.00	5.04	A	5.04
hot	7	8.85	9	9.00	LVABC150	1.20	5.9	37.00	75	33.22	6.00	5.04	A	2.83
standard	20	9.00	21	8.75	LVABC150	0.03	0.9	8.00	5	8.00	6.00	5.04	B	5.04
hot	20	9.00	21	8.75	LVABC150	0.19	2.4	8.00	75	8.00	6.00	5.04	B	0.83
standard	21	11.35	22	10.45	HVABC150	1.55	6.7	42.00	5	42.00	10.00	4.17	C	4.17
hot	21	11.35	22	10.45	HVABC150	1.91	7.5	42.00	90	42.00	10.00	4.17	C	3.38
standard	10	8.85	11	8.85	LVABC150	0.57	4.1	34.00	5	30.54	6.00	5.04	D	5.04
hot	10	8.85	11	8.85	LVABC150	1.07	5.6	34.00	75	30.54	6.00	5.04	D	2.67
standard	11	8.85	12	8.85	LVABC150	0.50	3.8	32.00	5	30.54	6.00	5.04	D	5.04
hot	11	8.85	12	8.85	LVABC150	0.95	5.3	32.00	75	30.54	6.00	5.04	D	2.67
standard	12	8.85	13	8.50	LVABC150	0.41	3.5	29.00	5	30.54	6.00	5.04	D	5.04
hot	12	8.85	13	8.50	LVABC150	0.78	4.8	29.00	75	30.54	6.00	5.04	D	2.67
standard	13	8.50	15	8.85	LVABC150	0.50	3.8	32.00	5	30.54	6.00	5.04	D	5.04
hot	13	8.50	15	8.85	LVABC150	0.95	5.3	32.00	75	30.54	6.00	5.04	D	2.67
standard	15	8.85	16	8.85	LVABC150	0.20	2.4	20.00	5	30.54	6.00	5.04	D	5.04
hot	15	8.85	16	8.85	LVABC150	0.37	3.3	20.00	75	30.54	6.00	5.04	D	2.67
standard	16	8.85	17	8.85	LVABC150	0.41	3.5	29.00	5	30.54	6.00	5.04	D	5.04
hot	16	8.85	17	8.85	LVABC150	0.78	4.8	29.00	75	30.54	6.00	5.04	D	2.67
standard	17	8.85	19	9.00	LVABC150	0.41	3.5	29.00	5	30.54	6.00	5.04	D	5.04
hot	17	8.85	19	9.00	LVABC150	0.78	4.8	29.00	75	30.54	6.00	5.04	D	2.67
standard	9	9.00	10	8.85	LVABC150	0.54	4.0	33.00	5	30.54	6.00	5.04	D	5.04
hot	9	9.00	10	8.85	LVABC150	1.01	5.4	33.00	75	30.54	6.00	5.04	D	2.67
standard	19	9.00	20	9.00	LVABC150	0.54	4.0	33.00	5	33.00	6.00	5.04	E	5.04
hot	19	9.00	20	9.00	LVABC150	0.96	5.3	33.00	75	33.00	6.00	5.04	E	2.82
standard	21	8.75	22	8.45	LVABC150	0.87	5.1	42.00	5	42.00	6.00	5.04	F	5.04
hot	21	8.75	22	8.45	LVABC150	1.34	6.3	42.00	75	42.00	6.00	5.04	F	3.27

AMENDMENTS
A ORIGINAL ISSUE
DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4108
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189/B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000
DRAWN MJ
DATE 24/05/2019
CH'D
DESIGN MJ
DO NOT SCALE DIMENSIONS IN METRES

BLACKTOWN RD
BLACKTOWN
ARP4108
ASSET RELOCATION(SECTION 1)
LINE PROFILE AND MAX BLOWOUT DETAILS

Endeavour Energy
A1 515695 A
SHEET No 4 OF 4 SHEETS

74403

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- ROAD CROSSING CONDUITS TO BE INSTALLED BY RMS
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
- POLE TO BE REMOVED
- EXISTING AERIAL STAY
- NEW AERIAL STAY
- POLE-MOUNTED SUBSTATION
- AIR BREAK SWITCH(N.O/N.C)
- HV LOAD BREAK SWITCH (N.O/N.C)
- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)
- TRANSMISSION AND/OR DISTRIBUTION POLE NUMBER
- DISTRIBUTION POLE NUMBER ONLY

ROAD LEGEND

- EXISTING ROAD ALIGNMENT
- PROPOSED ROAD ALIGNMENT (TOP OF THE KERB)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name:

Date Approved:

Reviewers Signature:

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

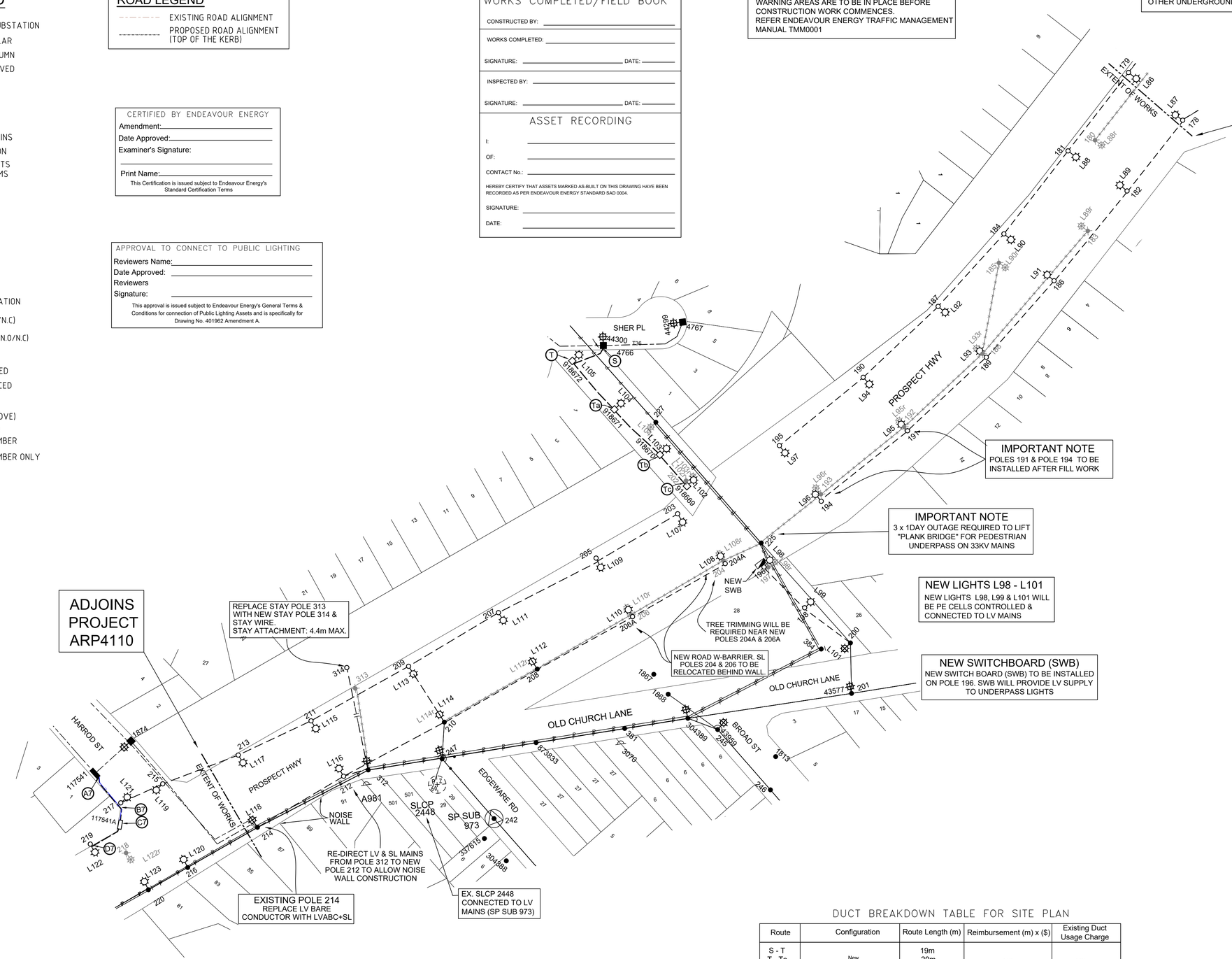
DATE:

WORK SITE TRAFFIC MANAGEMENT:

A TRAFFIC CONTROL PLAN AS WELL AS ADVANCED WARNING AREAS ARE TO BE IN PLACE BEFORE CONSTRUCTION WORK COMMENCES.
REFER ENDEAVOUR ENERGY TRAFFIC MANAGEMENT MANUAL TMM0001

NON DESTRUCTIVE BORING FOR NEW POLES

NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY.
2. ENDEAVOUR ENERGY CONTACT PHONE: 131081.
3. DESIGN CERTIFICATION SHALL LAPSE WHERE:
   (i) NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION, OR
   (ii) CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX MONTHS.
   WHERE DESIGN CERTIFICATION HAS LAPSED THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.
4. ATTENTION:
   PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF WORK.
5. ATTENTION:
   ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.
6. WARNING:
   LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TELEPHONE: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.
7. ATTENTION:
   SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPT DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE 131081
8. OPERATIONAL LIMITS:
   UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED:
   -MOBILE GENERATORS AND SUBSTATIONS
   -LIVE LINE WORK
   -DESIGN ALTERNATIVES
   -LOW VOLTAGE PARALLELS
   -WORK PRACTICES/STANDARDS.

DUCT BREAKDOWN TABLE FOR SITE PLAN

Route	Configuration	Route Length (m)	Reimbursement (m) x ($)	Existing Duct Usage Charge
S - T T - Ta Ta - Tb Tb - Tc	SL New	19m 29m 29m 20m	- NIL	- NIL
	TOTAL	97m	- NIL	- NIL

LEGEND

- SPARE DUCT
- DUCT WITH NEW CABLE
- DUCT WITH EXISTING CABLE
- DIRECT BURIED CABLE

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:

Name:

Service Provider Number: Date:

FOR POLE CONSTRUCTION TABLE REFER TO SHEET 6.

PRELIMINARY DESIGN.
NOT FOR CONSTRUCTION

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 3.5

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

REFERENCE DRAWING'S

WORK ORDERS

GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP4109
AM PROJ. No.	2019/00388/001
HV SWITCHING	LEABONS LANE
UBD/PENGUIN REF	189 - B8
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN P.C

DATE 27-06-2019

CH'D P. PARAJULI

DESIGN

DO NOT SCALE DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
SITE PLAN

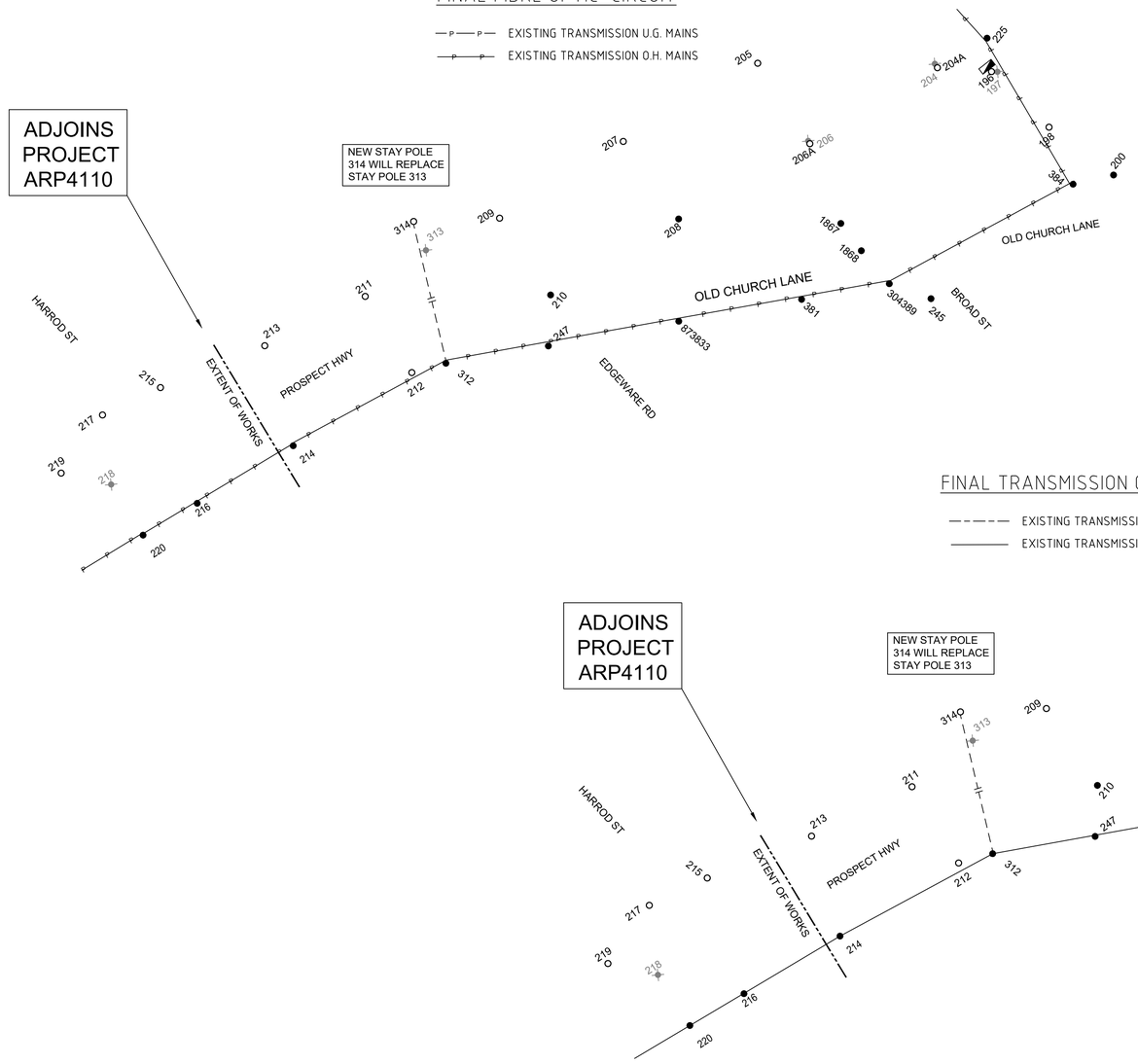
Endeavour Energy

A1 | ARP4109 | A

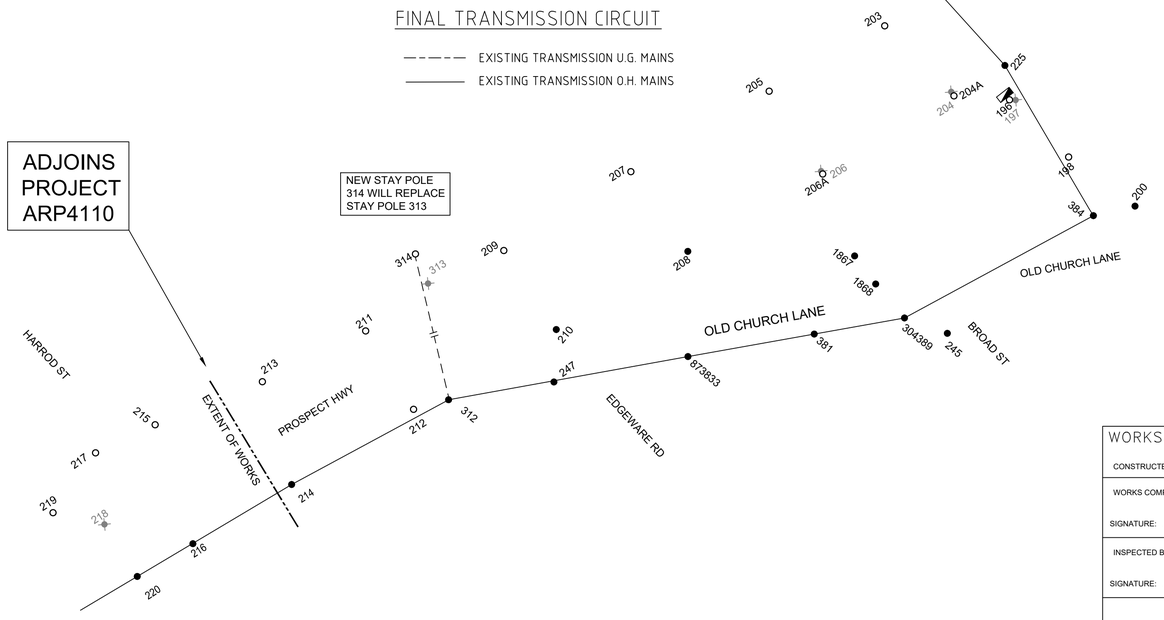
SHEET No 1 OF 7 SHEETS

45658

FINAL FIBRE OPTIC CIRCUIT



FINAL TRANSMISSION CIRCUIT



CERTIFIED BY ENDEAVOUR ENERGY

Amendment:_____

Date Approved:_____

Examiner's Signature:

_____

Print Name:_____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

APPROVAL BY ENDEAVOUR ENERGY TRANSMISSION ENGINEER

Reviewers Name:_____

Date Approved: _____

Reviewers

Signature: _____

This approval is issued subject to Endeavour Energy's Standard Certification Terms and is specifically for Drawing No. xxxxxx Amendment x.

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION

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Glendenning NSW 2761
www.ausconnex.com.au

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4109
				AM PROJ. No.	2019/00388/001
		GENERAL		HV SWITCHING	LEABONS LANE
		OVERHEAD		UBD/PENGUIN REF	
		UNDERGROUND		GIS MAP No	
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DO NOT SCALE DIMENSIONS IN METRES

DRAWN	P.C
DATE	27-06-2019
CH'D	P.PARAJULI
DESIGN	

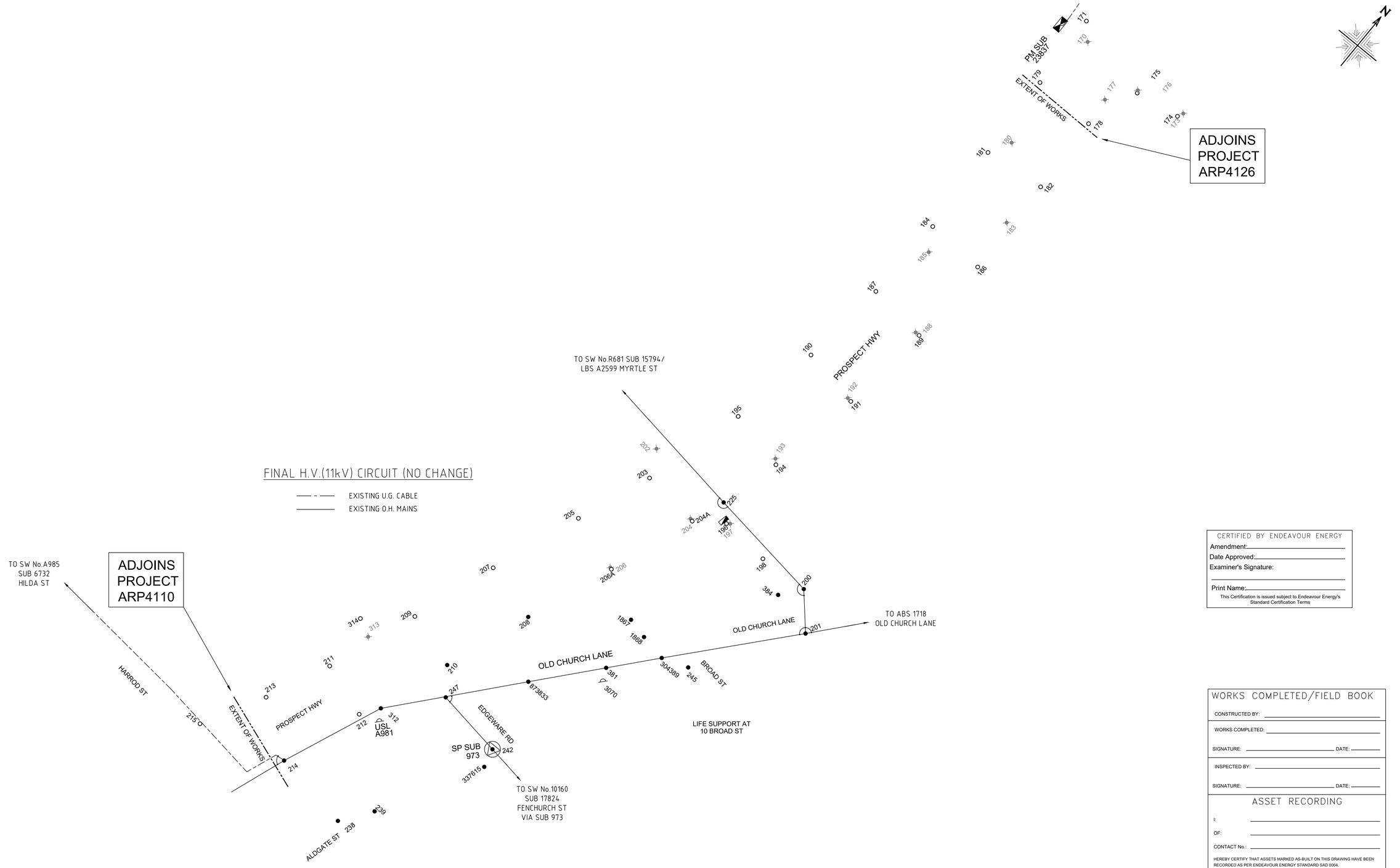
PROSPECT HWY
BLACKTOWN
ARP4109
TRANSMISSION FINAL CIRCUIT

Endeavour Energy

A1 | ARP4109 | A

SHEET No 2 OF 7 SHEETS

45658



CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

AMENDMENTS: A ORIGINAL ISSUE

DRAFT No. 01

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION

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Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 3.5

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4109
				AM PROJ. No.	2019/00388/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	
		UNDERGROUND		GIS MAP No	
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN P.C

DATE 27-06-2019

CH'D P. PARAJULI

DESIGN

DO NOT SCALE DIMENSIONS IN METRES

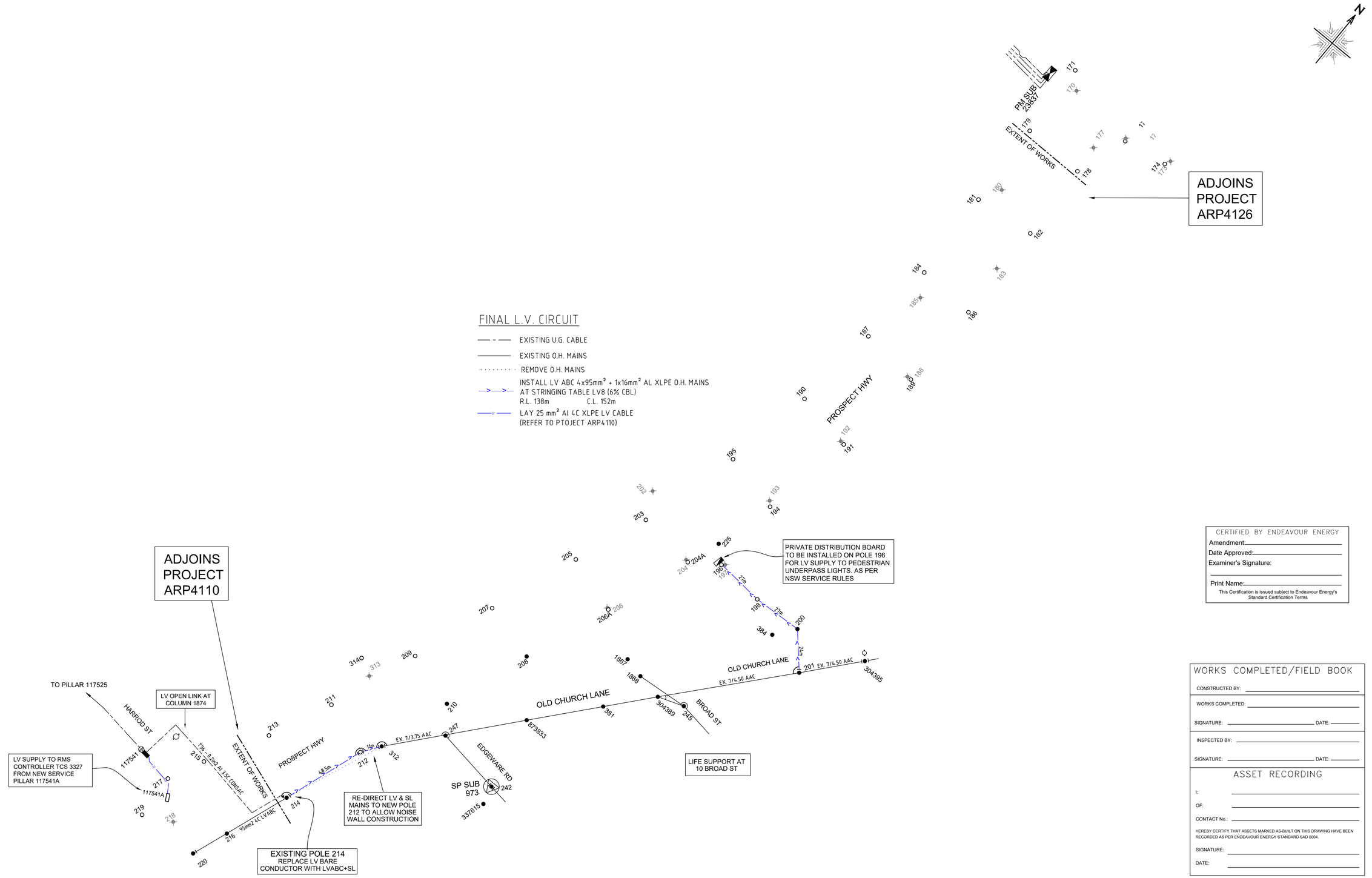
PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
HV FINAL CIRCUIT

Endeavour Energy

A1 | ARP4109 | A

SHEET No 3 OF 7 SHEETS

45658



FINAL L.V. CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE O.H. MAINS
- INSTALL LV ABC 4x95mm² + 1x16mm² AL XLPE O.H. MAINS AT STRINGING TABLE LV8 (6% CBL) R.L. 138m C.L. 152m
- LAY 25 mm² Al 4C XLPE LV CABLE (REFER TO PTOJECT ARP4110)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

FOR POLE CONSTRUCTION TABLE REFER TO SHEET 6.

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION

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Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 3.5

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4109
				AM PROJ. No.	2019/00388/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	
		UNDERGROUND		GIS MAP No	
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DO NOT SCALE — DIMENSIONS IN METRES

DRAWN P.C

DATE 27-06-2019

CH'D P. PARAJULI

DESIGN

PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
LV FINAL CIRCUIT

Endeavour Energy

A1 | ARP4109 | A

SHEET No 4 OF 7 SHEETS

45658

FINAL S.L. CIRCUIT

- EXISTING O.H. MAINS
- EXISTING U.G. CABLE
- REMOVE S.L. MAINS
- NEW STREET LIGHTING CONDUCTOR CONTAINED WITHIN LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS
- INSTALL2x1C 16mm² CU (1 PHASE) U.G. MAINS R.L. 180m C.L. 406m
- INSTALL 2x25mm² AL LVABC O.H. MAINS R.L. 1237m C.L. 1385m
- INSTALL2x1C 16mm² CU (1 PHASE) U.G. MAINS (REFER TO PTOJECT ARP4110)

POLES 178 & 179 AND LANTERNS L86 & L87 WILL BE INSTALLED UNDER PROJECT ARP4126.

TO SLCP 1512 INSTALLED UNDER PROJECT ARP4126

TO SLCP 1512 INSTALLED UNDER PROJECT ARP4126

ADJOINS PROJECT ARP4126

ADJOINS PROJECT ARP4110

TO SLCP 1283 IN PM SUB 6731 @ HILDA ST

FUTURE SL CONDUCTOR TO BE INSTALLED UNDER PROJECT ARP4110

EXISTING SL CONDUCTOR. REFER TO PROJECT ARP4110 FOR FINAL SL CIRCUIT DETAILS.

NEW LIGHTS L98 - L101

NEW LIGHTS L98, L99, L100 & L101 WILL BE PE CELLS CONTROLLED & CONNECTED TO LV MAINS

MYRTLE ST · KEYNE ST · SHER PL · PROSPECT HWY · OLD CHURCH LANE · BROAD ST · EDGEWARE RD · HARROD ST · EXTENT OF WORKS · SLCP 2448

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name:

Date Approved:

Reviewers Signature:

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

FOR POLE CONSTRUCTION TABLE REFER TO SHEET 6.

FOR STREET LIGHTING BILLING DETAILS REFER TO SHEET 7.

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

PRELIMINARY DESIGN. NOT FOR CONSTRUCTION

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4109
				AM PROJ. No.	2019/00388/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	
		UNDERGROUND		GIS MAP No	
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DO NOT SCALE DIMENSIONS IN METRES

DRAWN P.C — DATE 27-06-2019 — CH'D P. PARAJULI — DESIGN

PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
SL FINAL CIRCUIT

Endeavour Energy

A1 | ARP4109 | A

SHEET No 5 OF 7 SHEETS

45658

NUMBER	X & Y COORDINATES	FIELD POLE NUMBER NEW	FIELD POLE NUMBER EXISTING	LANTERNS NEW	LANTERNS REMOVE	LANTERNS EXISTING	LANTERNS REPLACE	LANTERNS BRACKET	CONSTRUCTION SPAN LENGTH	CONSTRUCTION LINE DEV DEGREES	CONSTRUCTION OPGW (TYPE)	CONSTRUCTION TRANSMISSION 33KV	CONSTRUCTION HV	CONSTRUCTION LV	HOLE DIA mm	HOLE DEPTH m	POLE TYPE	POLE STAY	POLE FOOTING	POLE RELOCATE	POLE REPLACE	POLE NEW	POLE EXISTING	POLE REMOVE	NUMBER
215	X = 307208.2804 Y = 6258292.0259	918609		X				A6 BRKT 4.5M OUT 2M RISE	22.5m	3°				SL ONLY	600	1.85	12.5/8		C			X			215
214			234			X			38m	1°				EX. A05 + EX. LV UGOH + A05									X		214
213	X = 307226.4376 Y = 6258325.0992	918608		X				A7 BRKT 6M OUT 2.6M RISE	38m	4°				SL ONLY	600	1.85	12.5/8		C			X			213
212	X = 307270.2965 Y = 6258349.4352	918607		X				A6 BRKT 4.5M OUT 2M RISE	47m	2°				A03	600	1.85	12.5/8		C			X			212
314	X = 307238.6000 Y = 6258389.0331	929612										NEW STAY FOR TR POLE 308			750	1.85	12.5/12	4/0	C			X			314
313			232																					X	313
312			233			X						EX.	EX.	EX. + A05									X		312
211	X = 307241.9786 Y = 6258359.2908	918606		X				A6 BRKT 4.5M OUT 2M RISE	38m	4°				SL ONLY	600	1.85	12.5/8		C			X			211
210			231				X	A6 BRKT 4.5M OUT 2M RISE	54m	2°				SL ONLY									X		210
209	X = 307260.1865 Y = 6258408.1905	918605		X				A6 BRKT 4.5M OUT 2M RISE	53m	2°				SL ONLY	600	1.85	12.5/8		C			X			209
208			230				X	A6 BRKT 4.5M OUT 2M RISE	50m	1°				SL ONLY									X		208
207	X = 307275.9324 Y = 6258454.4227	918604		X				A7 BRKT 6M OUT 2.65M RISE	49m	2°				SL ONLY	600	1.85	12.5/8		C			X			207
206A	X = 307324.8225 Y = 6258493.5714	918661		X				A7 BRKT 6M OUT 2.65M RISE	51m	1°				SL ONLY	600	1.85	12.5/8		C			X			206A
206			229		X																			X	206
205	X = 307294.1597 Y = 6258503.3562	918603		X				A7 BRKT 6M OUT 2.65M RISE	53m	1°				SL ONLY	600	1.85	12.5/8		C			X			205
204A	X = 307341.7463 Y = 6258540.4539	918660		X				A6 BRKT 4.5M OUT 2M RISE	50m					SL ONLY	600	1.85	12.5/8		C			X			204A
204			228		X																			X	204
203	X = 307309.7795 Y = 6258543.7775	918602		X				A7 BRKT 6M OUT 2.65M RISE	44m					SL ONLY	600	1.85	12.5/8		C			X			203
202			226		X																			X	202
201			383			X								EX. + A05									X		201
200			385				X	A3 BRKT 2.6M OUT 1.7M RISE						A03										X		200
199		NUMBER NOT IN USE																							199
198	X = 307383.3528 Y = 6258548.7908	918600		X				A3 BRKT 2.6M OUT 1.7M RISE						A01	600	1.85	11/8		C			X			198
197			224		X																			X	197
196	X = 307356.5960 Y = 6258550.9654	918599		X				A3 BRKT 2.6M OUT 1.7M RISE						A05	600	1.85	11/8		C			X			196
195	X = 307325.3603 Y = 6258598.8065	918598		X				A7 BRKT 6M OUT 2.65M RISE	50.5m					SL ONLY	600	1.85	12.5/8		C			X			195
194	X = 307357.0722 Y = 6258591.6719	918597		X				A6 BRKT 4.5M OUT 2M RISE	53m					SL ONLY	600	1.85	12.5/8		C			X			194
193			223		X																			X	193
192			222		X																			X	192
191	X = 307366.4478 Y = 6258642.8297	918596		X				A6 BRKT 4.5M OUT 2M RISE	52m	4°				SL ONLY	600	1.85	12.5/8		C			X			191
190	X = 307334.5244 Y = 6258648.4257	918595		X				A7 BRKT 6M OUT 2.65M RISE	51m	4°				SL ONLY	600	1.85	12.5/8		C			X			190
189	X = 307372.2318 Y = 6258692.7957	918594		X				A6 BRKT 4.5M OUT 2M RISE	50m	5°				SL ONLY	600	1.85	12.5/8		C			X			189
188			221		X																			X	188
187	X = 307339.7293 Y = 6258696.2895	918593		X				A7 BRKT 6M OUT 2.65M RISE	48.5m	4°				SL ONLY	600	1.85	12.5/8		C			X			187
186	X = 307373.2224 Y = 6258740.4953	918592		X				A6 BRKT 4.5M OUT 2M RISE	48m	2°				SL ONLY	600	1.85	12.5/8		C			X			186
185			220		X																			X	185
184	X = 307341.2082 Y = 6258741.9833	918591		X				A6 BRKT 4.5M OUT 2M RISE	46m	5°				SL ONLY	600	1.85	12.5/8		C			X			184
183			219		X																			X	183
182	X = 307372.0510 Y = 6258794.4828	918590						A6 BRKT 4.5M OUT 2.0 RISE	54m	1°				SL ONLY	600	1.85	12.5/8		C			X			182
181	X = 307338.9274 Y = 6258790.8689	916978		X				A6 BRKT 4.5M OUT 2M RISE	49m					SL ONLY	600	1.85	12.5/8		C			X			181
180			218		X																			X	180
179	X = 307336.7308 Y = 6258837.0152	916977		X				A6 BRKT 4.5M OUT 2M RISE	47m					SL ONLY	600	1.85	12.5/8		C			X			179

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

AMENDMENTS: A ORIGINAL ISSUE

DRAFT No. 01

PRELIMINARY DESIGN.
NOT FOR CONSTRUCTION

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 3.5

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4109
AM PROJ. No.	2019/00388/001
HV SWITCHING	
UBD/PENGUIN REF	
GIS MAP No	
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN P.C

DATE 27-06-2019

CH'D P. PARAJULI

DESIGN

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
CONSTRUCTION TABLE

Endeavour Energy

A1 | ARP4109 | A

SHEET No 6 OF 7 SHEETS

45658

ITEM No	ASSET NUMBER	DESRIPTION	TARIFF CLASS	LUMINAIRE RATE	DESCRIPTION	TARIFF CLASS	RATE	DESCRIPTION	REMOVE	EXISTING	TARIFF CLASS	RATE	LIGHTING CAT.	CHARGE
		REMOVED			BRACKET/OUTREACH				ASSET NUMBER	ASSET NUMBER				
		LANTERN							POLE/COLUMN					
L114r	44436	250W Sodium - STD	3	561	MAJOR BRACKET	3	BRMA (591)		210 (231)					BLACKTOWN C. COUNCIL
L112r	44437	250W Sodium - STD	3	561	MAJOR BRACKET	3	BRMA (591)		208 (230)					BLACKTOWN C. COUNCIL
L110r	44438	250W Sodium - STD	3	561	MAJOR BRACKET	3	BRMA (591)		Relocate 206 (229)		3		598	BLACKTOWN C. COUNCIL
L108r	44439	250W Sodium - STD	3	561	MAJOR BRACKET	3	BRMA (591)		Relocate 204 (228)		3		598	BLACKTOWN C. COUNCIL
L104r	117115	80W MF	1	LEG93	MINOR BRACKET	1	LBRMI (224)		A227		-			BLACKTOWN C. COUNCIL
L103r	44420	80W MF	1	LEG93	MINOR BRACKET	1	LBRMI (224)		202 (226)					BLACKTOWN C. COUNCIL
L102r	44421	250W MF F/L	1	LEG114	MAJOR BRACKET	1	LBRMA (225)		202 (226)					BLACKTOWN C. COUNCIL
L98r	44423	18W LED P4 Gerard	3	585	MAJOR BRACKET	1	LBRMA (225)		197 (224)					BLACKTOWN C. COUNCIL
L96r	44440	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		193 (223)		3	598		BLACKTOWN C. COUNCIL
L95r	44441	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		192 (222)		3	598		BLACKTOWN C. COUNCIL
L93r	44442	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		188 (221)		3	598		BLACKTOWN C. COUNCIL
L90r	44443	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		185 (220)					BLACKTOWN C. COUNCIL
L89r	44444	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		183 (219)					BLACKTOWN C. COUNCIL
L88r	44445	250W Sodium	3	561	MAJOR BRACKET	3	BRMA (591)		180 (218)					BLACKTOWN C. COUNCIL

LIGHTING EQUIPMENT AND BILLING SCHEDULE (REMOVAL)

ITEM No	ASSET NUMBER	DESRIPTION	EE LANTERN S/C No	LAMP	EE LAMP S/C No	EXISTING	DESCRIPTION	EE S/C No	KBH	MH	DESCRIPTION	ITEM No	EXISTING	NEW	EE S/C	FOUNDATION /RAGBOLT	TARIFF CLASS	LUMINAIRE RATE	POLE / COLUMN RATE	BRACKET / OUTREACH RATE	UPCAST	LIGHTING CAT.	CHARGE	X & Y COORDINATES	SETBACK	ITEM No
		NEW											ASSET NUMBER													
		LANTERN					BRACKET/OUTREACH				POLE /COLUMN															
L118	43941					250W - HPS	Ex.			9.00		214	234				3	561	-	BRMA	5	V3	BLACKTOWN C. COUNCIL	X = 307208.2740 Y = 6258292.0280	1.10	L118
L117	262768	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	213		918608			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307226.4338 Y = 6258325.0925	5.10	L117
L116	262767	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	212		918607			4	863	-	891	5	V3	BLACKTOWN C. COUNCIL	X = 307270.3009 Y = 6258349.3869	2.20	L116
L115	262766	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	211		918606			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307241.9786 Y = 6258359.2908	2.70	L115
L114	262882	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	210	231					863	-	891	5	V3	BLACKTOWN C. COUNCIL	X = 307289.7874 Y = 6258399.1289	3.20	L114
L113	262765	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	209		918605			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307260.1865 Y = 6258408.1905	2.80	L113
L112	262881	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	208	230					863	-	891	5	V3	BLACKTOWN C. COUNCIL	X = 307306.7972 Y = 6258446.1119	2.40	L112
L111	262764	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	207		918604			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307275.9324 Y = 6258454.4227	4.60	L111
L110	262880	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	206A		918661			4	863	896	891	5	V3	BLACKTOWN C. COUNCIL	X = 307324.8225 Y = 6258493.5714	3.40	L110
L109	262763	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	205		918603			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307294.1623 Y = 6258503.3630	5.00	L109
L108	262879	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	204A	228 (PL517970)	918660			4	863	896	891	5	V3	BLACKTOWN C. COUNCIL	X = 307341.7463 Y = 6258540.4539	3.60	L108
L107	262762	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	203		918602			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307309.7795 Y = 6258543.7775	4.40	L107
L106	Number 'Not in use'																									L106
L105	262759	Street LED 18W	1564129	LED 18			3m Curve pipe Outreach	1545201		7.50	Enlarge Base column IE/EB 5.5	C918672		C918672	1545128	TYPE 2	4	885	995	991	5	P4	BLACKTOWN C. COUNCIL	X = 307226.0916 Y = 6258566.2728	2.00	L105
L104	262758	Street LED 18W	1564129	LED 18			3m Curve pipe Outreach	1545201		7.50	Enlarge Base column IE/EB 5.5	C918671		C918671	1545128	TYPE 2	4	885	995	991	5	P4	BLACKTOWN C. COUNCIL	X = 307255.7072 Y = 6258561.7382	2.00	L104
L103	262757	Street LED 18W	1564129	LED 18			3m Curve pipe Outreach	1545201		7.50	Enlarge Base column IE/EB 5.5	C918670		C918670	1545128	TYPE 2	4	885	995	991	5	P4	BLACKTOWN C. COUNCIL	X = 307285.6171 Y = 6258559.3938	2.00	L103
L102	262756	Street LED 18W	1564129	LED 18			3m Curve pipe Outreach	1545201		7.50	Enlarge Base column IE/EB 5.5	C918669		C918669	1545128	TYPE 2	4	885	995	991	5	P4	BLACKTOWN C. COUNCIL	X = 307304.7190 Y = 6258556.4459	2.00	L102
L101	117116	18W LED P4 Gerard				18W LED	Ex. Bracket IE	1019752	5.80	7.50	Wood Pole	200	385 (PL517980)				3	585	-	LBRMI (224)		P4	BLACKTOWN C. COUNCIL	X = 307410.2749 Y = 6258550.1430	1.00	L101
L100	Number 'Not in use'																						BLACKTOWN C. COUNCIL			L100
L99	262755	Street LED 18W	1564129	LED 18			2.6m Bracket IE - A3	1019752	5.80	7.50	Wood Pole	198		918601			4	885	-	890	5	P4	BLACKTOWN C. COUNCIL	X = 307383.3528 Y = 6258548.7908	1.00	L99
L98	262753	Street LED 18W	1564129	LED 18			2.6m Bracket IE - A3	1019752	5.80	7.50	Wood Pole	196		918599			4	885	-	890	5	P4	BLACKTOWN C. COUNCIL	X = 307356.5960 Y = 6258550.9654	1.00	L98
L97	262752	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	195		918598			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307325.3611 Y = 6258598.8106	4.40	L97
L96	262751	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	194		918597			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307357.0722 Y = 6258591.6719	3.40	L96
L95	262750	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	191		918596			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307366.4478 Y = 6258642.8297	3.30	L95
L94	262749	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	190		918595			4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307334.5244 Y = 6258648.4257	4.80	L94
L93	262748	250W SODIUM - STANDARD	1540517	250W - HPS	1015527		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	189		918594			4	861	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307372.2318 Y = 6258692.7957	3.30	L93
L92	262747	250W SODIUM - STANDARD	1540517	250W - HPS	1015527		6m Bracket IE - A7	1558022	7.35	10.00	Wood Pole	187		918593			4	861	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307339.7262 Y = 6258696.2607	4.80	L92
L91	262746	250W SODIUM - STANDARD	1540517	250W - HPS	1015527		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	186	PL918592				4	861	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307373.2224 Y = 6258740.4953	2.50	L91
L90	262745	250W SODIUM - STANDARD	1540517	250W - HPS	1015527		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	184	PL918591				4	861	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307341.2505 Y = 6258741.9833	4.70	L90
L89	262744	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	182	PL918590				4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307372.0510 Y = 6258794.4828	2.90	L89
L88	262743	400W SODIUM - STANDARD	1540533	400W - HPS	SL25888		4.5m Bracket IE - A6	1558014	8.00	10.00	Wood Pole	181	PL916978				4	863	895	891	5	V3	BLACKTOWN C. COUNCIL	X = 307338.9271 Y = 6258790.8750	5.20	L88

LIGHTING EQUIPMENT AND BILLING SCHEDULE

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: _____

Date Approved: _____

Reviewers Signature: _____

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

PRELIMINARY DESIGN.
NOT FOR CONSTRUCTION

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 3.5

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4109
AM PROJ. No.	2019/00388/001
HV SWITCHING	
UBD/PENGUIN REF	
GIS MAP No	
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN P.C

DATE 27-06-2019

CH'D P. PARAJULI

DESIGN

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4109
ASSET RELOCATION
LIGHTING EQUIPMENT AND BILLING SCHEDULE

Endeavour Energy

A1 | ARP4109 | A

SHEET No 7 OF 7 SHEETS

45658

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- EXISTING TRANSMISSION MAINS
- EXISTING PILOT CABLE
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- ROAD CROSSING CONDUITS TO BE INSTALLED BY RMS
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
- POLE TO BE REMOVED
- EXISTING AERIAL STAY
- NEW AERIAL STAY
- POLE-MOUNTED SUBSTATION
- AIR BREAK SWITCH(N.O/N.C)
- HV LOAD BREAK SWITCH (N.O/N.C)
- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)
- TRANSMISSION AND/OR DISTRIBUTION POLE NUMBER
- DISTRIBUTION POLE NUMBER ONLY

ROAD LEGEND

- EXISTING ROAD ALIGNMENT
- PROPOSED ROAD ALIGNMENT (TOP OF THE KERB)

SUPPLY INTERRUPTION NOTIFICATION

AFFECTED RESIDENCES AND BUSINESSES SHALL BE NOTIFIED SEVEN (7) DAYS PRIOR TO THE DISRUPTION. THIS NOTIFICATION SHALL INCLUDE AN EXAMINATION OF THE LOCATION OF ANY LIFE SUPPORT SYSTEMS THAT MAY BE AFFECTED AS A RESULT OF THE DISRUPTION.

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____

Name:

Service Provider Number: Date:

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

NEW LIGHTS L102 - L106

NEW LIGHTS L102, L103, L104 & L105 WILL BE PE CELLS CONTROLLED & CONNECTED TO LV MAINS IN COLUMN 4766

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

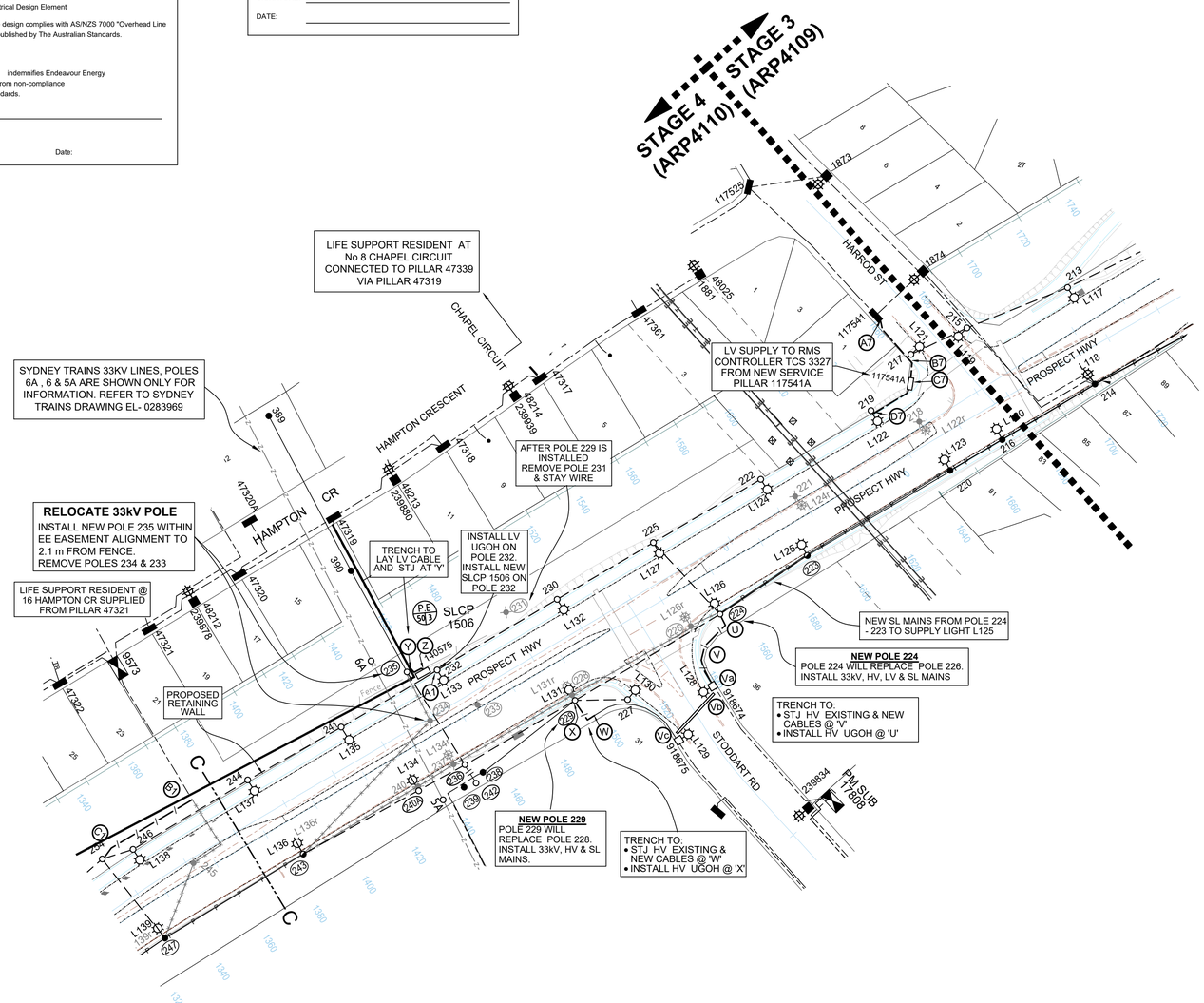
Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

NON DESTRUCTIVE BORING FOR NEW POLES

NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS



ARP 4110 Draft 1

AMENDMENTS	
A	ORIGINAL ISSUE
DRAFT No. 01	

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE	1:1000
DRAWN	RSC
DATE	27/06/2019
CH'D	PP
DESIGN	RSC

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SITE PLAN - 1

Endeavour Energy

A1 | ARP4110 | A

SHEET No 1 OF SHEETS

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING & NEW LV PILLAR
- EXISTING & NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- NEW OH MAINS
- REMOVE OH MAINS
- EXISTING DUCT LOCATION
- ROAD CROSSING DUCT
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
- POLE TO BE REMOVED
- AERIAL STAY
- POLE-MOUNTED SUBSTATION
- AIR BREAK SWITCH(N.O/N.C)
- HV LOAD BREAK SWITCH (N.O/N.C)
- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)
- TRANSMISSION AND/OR DISTRIBUTION POLE NUMBER
- X DISTRIBUTION POLE NUMBER

SUPPLY INTERRUPTION NOTIFICATION

AFFECTED RESIDENCES AND BUSINESSES SHALL BE NOTIFIED SEVEN (7) DAYS PRIOR TO THE DISRUPTION. THIS NOTIFICATION SHALL INCLUDE AN EXAMINATION OF THE LOCATION OF ANY LIFE SUPPORT SYSTEMS THAT MAY BE AFFECTED AS A RESULT OF THE DISRUPTION.

NON DESTRUCTIVE BORING FOR NEW POLES

NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS

DESIGN COMPLIANCE AND INDEMNITY

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EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
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SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____

Name:

Service Provider Number: Date:

ROAD LEGEND

- EXISTING ROAD ALIGNMENT
- PROPOSED ROAD ALIGNMENT (TOP OF THE KERB)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:_____

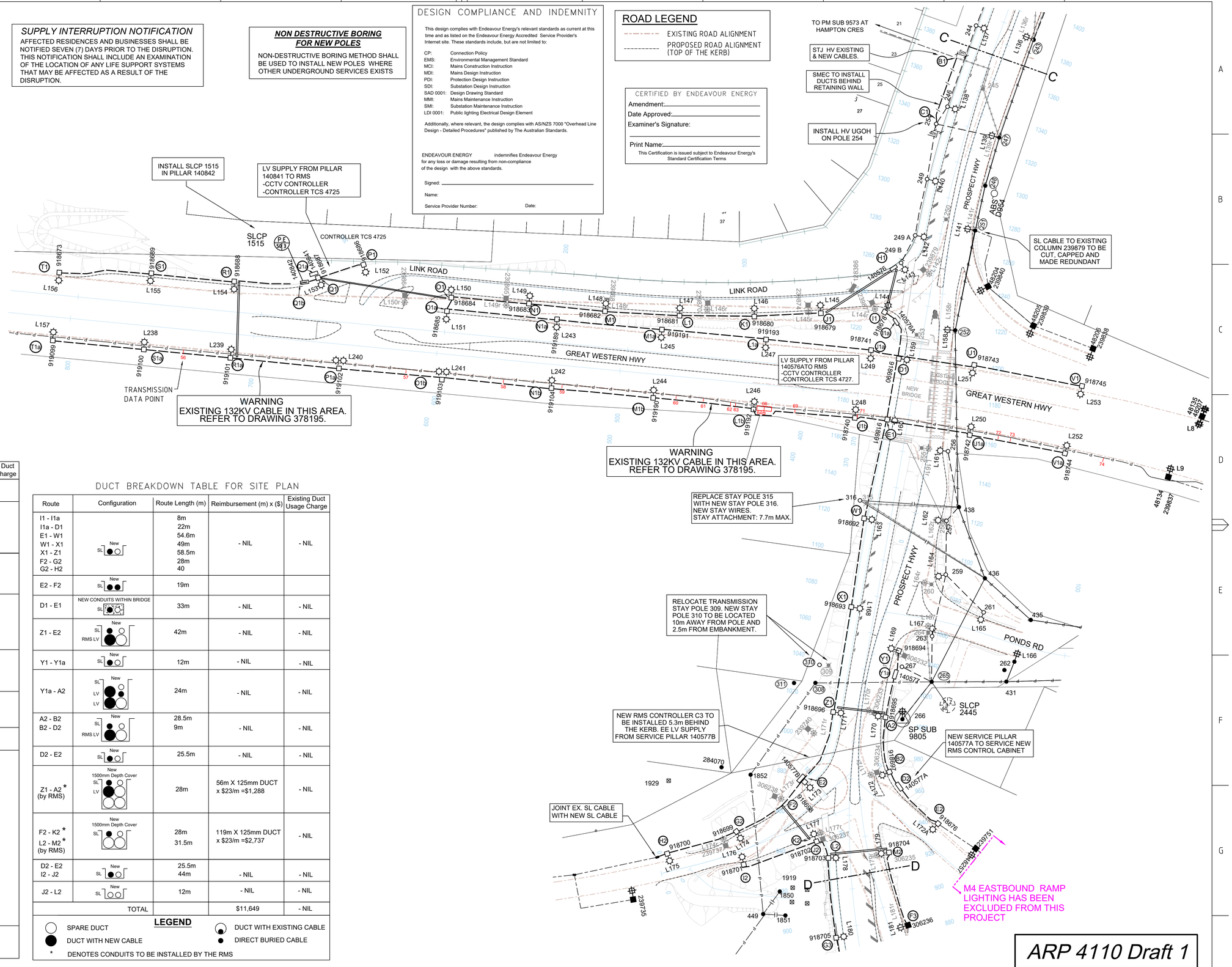
Date Approved:_____

Examiner's Signature:

_____

Print Name:_____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms



DUCT BREAKDOWN TABLE FOR SITE PLAN

Route	Configuration	Route Length (m)	Reimbursement (m) x ($)	Existing Duct Usage Charge
B1 - C1	New HV	36m	- NIL	- NIL
H1 - I1 * (by RMS)	New 1500mm Depth Cover SL LV RMS LV	26m	104m X 125mm DUCT x $23/m =$1,192	- NIL
H1 - J1 * O1 - Q1 * (by RMS)	New 1500mm Depth Cover SL LV	45m 69m	- NIL	- NIL
R1 - R1a * (by RMS)	New 1500mm Depth Cover SL LV HV	45m	180m X 125mm DUCT x $23/m =$4,140	- NIL
J1 - K1 K1 - L1 L1 - M1 M1 - N1 N1 - O1	New 1500mm Depth Cover SL LV	36.5m 41m 40.5m 41.6m 42m	- NIL	- NIL
Q1 - Q1a	4c 25mm2 Cu XLPE/PVC TO SLCP 1515 SL LV	6m	- NIL	- NIL
Q1 - Q1b	New SL	8m	- NIL	- NIL
Q1 - P1 R1 - S1 S1 - T1 T1a - S1a S1a - R1a R1a - P1a P1a - O1b O1b - N1b N1b - M1b M1b - L1b L1b - J1b J1b - U1a U1a - V1a O1 - O1a O1a - N1a N1a - M1a M1a - L1a L1a - J1a J1a - U1 U1 - V1	New SL	27m 47m 49.5m 50m 47.5m 59.3m 56.3m 59.8m 54.3m 55m 58m 62m 53m 9m 60m 57.5m 57m 57m 57m 57m	- NIL	- NIL
Q1b - R1	New SL	38.5m	- NIL	- NIL

DUCT BREAKDOWN TABLE FOR SITE PLAN

Route	Configuration	Route Length (m)	Reimbursement (m) x ($)	Existing Duct Usage Charge
I1 - I1a I1a - D1 E1 - W1 W1 - X1 X1 - Z1 F2 - G2 G2 - H2	New SL	8m 22m 54.6m 49m 58.5m 28m 40	- NIL	- NIL
E2 - F2	New SL	19m		
D1 - E1	NEW CONDUITS WITHIN BRIDGE SL	33m	- NIL	- NIL
Z1 - E2	New SL RMS LV	42m	- NIL	- NIL
Y1 - Y1a	New SL	12m	- NIL	- NIL
Y1a - A2	New SL LV LV	24m	- NIL	- NIL
A2 - B2 B2 - D2	New SL RMS LV	28.5m 9m	- NIL	- NIL
D2 - E2	New SL	25.5m	- NIL	- NIL
Z1 - A2 * (by RMS)	New 1500mm Depth Cover SL LV	28m	56m X 125mm DUCT x $23/m =$1,288	- NIL
F2 - K2 * L2 - M2 * (by RMS)	New 1500mm Depth Cover SL	28m 31.5m	119m X 125mm DUCT x $23/m =$2,737	- NIL
D2 - E2 I2 - J2	New SL	25.5m 44m	- NIL	- NIL
J2 - L2	New SL	12m	- NIL	- NIL
TOTAL			$11,649	- NIL

LEGEND

- SPARE DUCT
- DUCT WITH NEW CABLE
- DUCT WITH EXISTING CABLE
- DIRECT BURIED CABLE
- * DENOTES CONDUITS TO BE INSTALLED BY THE RMS

ARP 4110 Draft 1

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DRAWN RSC — DATE 27/06/2019 — CH'D PP

DO NOT SCALE DIMENSIONS IN METRES — DESIGN RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SITE PLAN - 2

Endeavour Energy

A1 | ARP4110 | A

SHEET No 2 OF SHEETS

NON DESTRUCTIVE BORING FOR NEW POLES

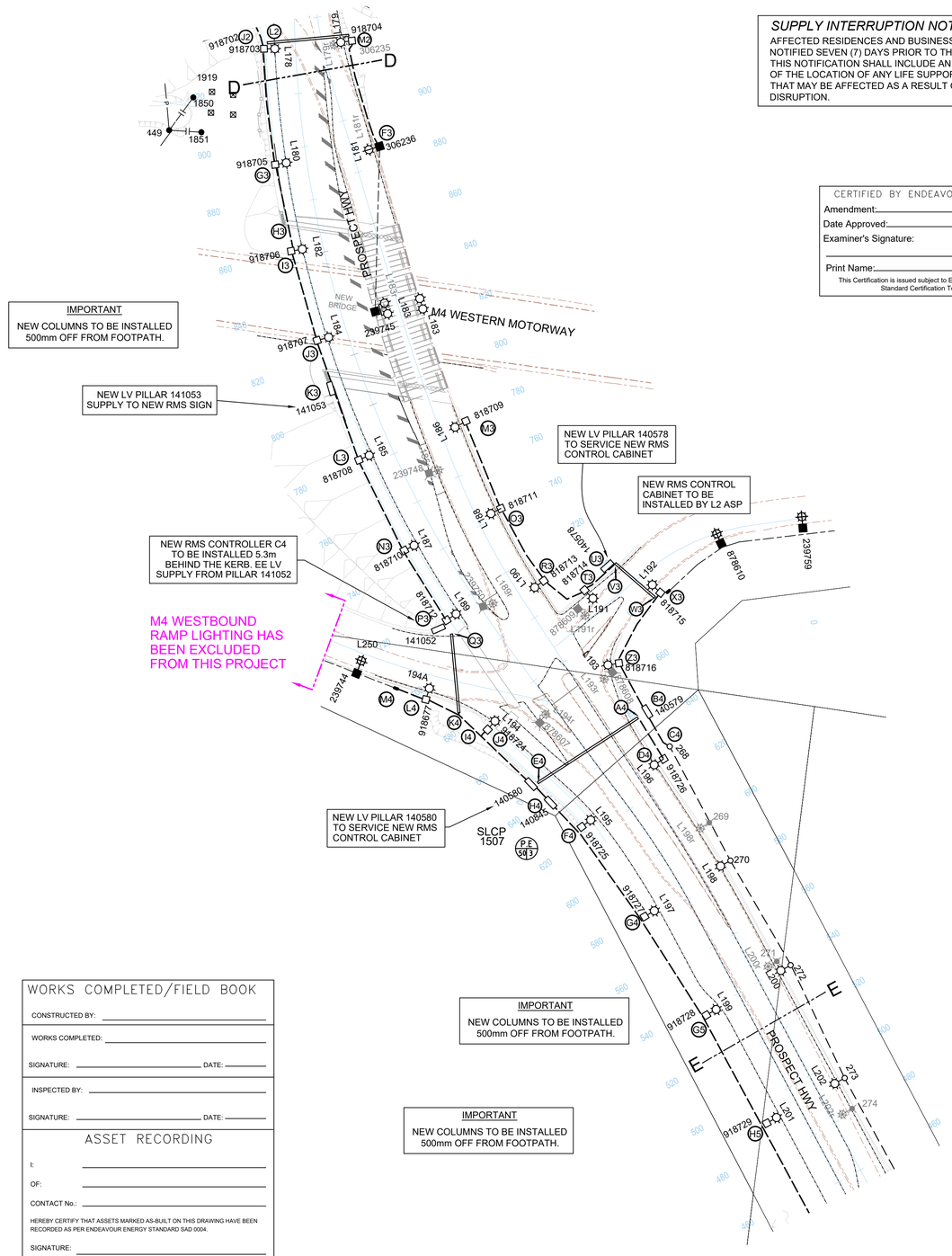
NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- EXISTING TRANSMISSION MAINS
- EXISTING PILOT CABLE
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- ROAD CROSSING CONDUITS TO BE INSTALLED BY RMS
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
- POLE TO BE REMOVED
- EXISTING AERIAL STAY
- NEW AERIAL STAY
- POLE-MOUNTED SUBSTATION
- AIR BREAK SWITCH (N.O/N.C)
- HV LOAD BREAK SWITCH (N.O/N.C)
- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)
- TRANSMISSION AND/OR DISTRIBUTION POLE NUMBER
- X DISTRIBUTION POLE NUMBER ONLY

ROAD LEGEND

- EXISTING ROAD ALIGNMENT
- PROPOSED ROAD ALIGNMENT (TOP OF THE KERB)



IMPORTANT

NEW COLUMNS TO BE INSTALLED 500mm OFF FROM FOOTPATH.

SUPPLY INTERRUPTION NOTIFICATION

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CERTIFIED BY ENDEAVOUR ENERGY

Amendment:_____

Date Approved:_____

Examiner's Signature:

_____

Print Name:_____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

DUCT BREAKDOWN TABLE FOR SITE PLAN

Route	Configuration	Route Length (m)	Reimbursement (m) x ($)	Existing Duct Usage Charge
M2 - F3	New: SL	41.5m	- NIL	- NIL
I3 - J3 * BRIDGE (by RMS)	New 750mm Depth Cover: SL, LV, HV	35m	140m X 125mm DUCT x $23/m =$3,220	- NIL
L2 - G3 G3 - I3 J3 - K3	New 750mm Depth Cover: SL, LV	45m 31m 20m	192m X 125mm DUCT x $23/m =$4,416	- NIL
K3 - L3 L3 - N3 N3 - P3	New 750mm Depth Cover: SL, LV, HV	25m 36m 30m	182m X 125mm DUCT x $23/m =$4,186	- NIL
M3 - O3 O3 - R3 R3 - T3 T3 - U3	New: SL	35m 32m 20m 15m	- NIL	- NIL
V3 -W3* (by RMS)	New 1500mm Depth Cover: SL, LV	21m	Reinstate existing conduit 1x125mm DIA - NIL	- NIL
Q3 - K4* (by RMS)	New 1500mm Depth Cover: SL, LV, HV	31m	62m X 125mm DUCT x $23/m =$1,426	- NIL
A4 - E4* (by RMS)	New 1500mm Depth Cover: SL, LV, HV	48m	96m X 125mm DUCT x $23/m =$2,208	- NIL
K4 - L4 L4 - M4	New: SL	14m 12m	- NIL	- NIL
k4 - I4	New: SL, LV, HV	13m	26m X 125mm DUCT x $23/m =$598	- NIL
I4 - E4	SL, LV, HV	27m	54m X 125mm DUCT x $23/m =$1,242	- NIL
E4 - H4	New: SL, LV, HV	10m	40m X 125mm DUCT x $23/m =$920	- NIL
X3 - Z3 Z3 - B4	New: SL, LV	30m 22m	- NIL	- NIL
A4 - D4	New: SL	18m	- NIL	- NIL
B4 - C4	New: LV	19m	- NIL	- NIL
H4 - F4	New: SL, LV, HV	18m	72m X 125mm DUCT x $23/m =$1,656	- NIL
F4 - G4 G4 - G5	New: SL, LV, HV	42m 45m	348m X 125mm DUCT x $23/m =$8,004	- NIL
	TOTAL		$27,876	- NIL

LEGEND

- SPARE DUCT
- DUCT WITH NEW CABLE
- DUCT WITH EXISTING CABLE
- DIRECT BURIED CABLE
- * DENOTES CONDUITS TO BE INSTALLED BY THE RMS

DESIGN COMPLIANCE AND INDEMNITY

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Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____

Name:

Service Provider Number: Date:

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

ARP 4110 Draft 1

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DO NOT SCALE, DIMENSIONS IN METRES

DRAWN	RSC
DATE	27/06/2019
CH'D	PP
DESIGN	RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SITE PLAN - 3

Endeavour Energy

A1 ARP4110 A

SHEET No 3 OF SHEETS

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- EXISTING TRANSMISSION MAINS
- EXISTING PILOT CABLE
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- ROAD CROSSING CONDUITS TO BE INSTALLED BY RMS
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- AIR BREAK SWITCH (N.O/N.C)
- HV LOAD BREAK SWITCH (N.O/N.C)
- EXISTING LANTERN
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- LANTERN TO BE REPLACED
- NEW LANTERN
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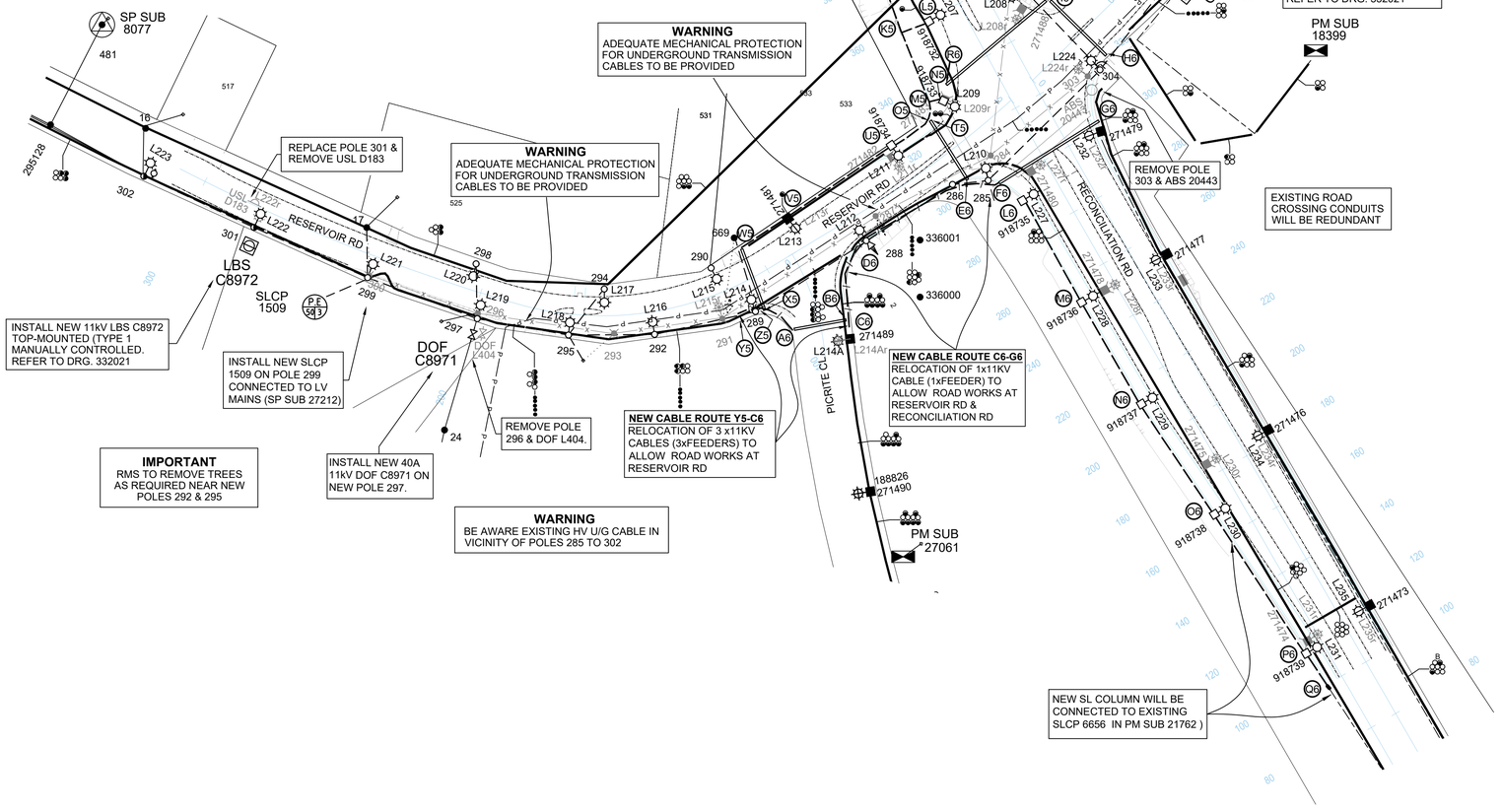
- X DISTRIBUTION POLE NUMBER ONLY



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WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

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ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

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NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS

ROAD LEGEND

- EXISTING ROAD ALIGNMENT
- PROPOSED ROAD ALIGNMENT (TOP OF THE KERB)

DUCT BREAKDOWN TABLE FOR SITE PLAN

Route	Configuration	Route Length (m)	Reimbursement (m) x ($)	Existing Duct Usage Charge
G5 - H5 H5 - I5 I5 - J5 J5 - K5 K5 - M5 M5 - O5	New 750mm Depth Cover: SL, LV, HV	41.5m 47.5m 48m 40m 26m 6m	836m X 125mm DUCT x $23/m =$19,228	- NIL
K5 - L5 M5 - N5	New: SL	11m 5m	**- NIL**	- NIL
T5 - E6* (by RMS)	New 1500mm Depth Cover: SL, LV, HV	22m	Reinstate existing road crossing conduits - NIL	- NIL
W5 - X5* (by RMS)	New 1500mm Depth Cover: SL, LV, HV	24m	96m X 125mm DUCT x $23/m + 48m x 50mm DUCT x $6/m =$2,496	- NIL
H6 - I6 * I6 - R6 * (by RMS)	New 1500mm Depth Cover: SL, LV, HV	27m 46m	Reinstate existing road crossing conduits - NIL	- NIL
O5 - U5 U5 - V5	New 750mm Depth Cover: SL, LV, HV	15m 42.5m	345m X 125mm DUCT x $23/m + 115m x 50mm DUCT x $6/m =$8,625	- NIL
V5 - W5	New 750mm Depth Cover: SL, LV, HV	18m	108m X 125mm DUCT x $23/m + 36m x 50mm DUCT x $6/m =$2,700	- NIL
Y5 - Z5	New 750mm Depth Cover: LV, HV, HV	8m	16m X 125mm DUCT x $23/m + 16m x 50mm DUCT x $6/m =$464	- NIL
Z5 - A6	New 750mm Depth Cover: SL, LV, HV, HV, HV	14m	28m X 125mm DUCT x $23/m =$644	- NIL
A6 - B6* (by RMS)	New 1500mm Depth Cover: LV, HV, HV, HV	20m	Reinstate existing road crossing conduits - NIL	- NIL
C6 - F6	New 750mm Depth Cover: SL, LV, HV	84m	Reinstate existing road crossing conduits - NIL	- NIL
F6 - G6* (by RMS)	New 1500mm Depth Cover: HV	44m	Reinstate existing road crossing conduits - NIL	- NIL
L6 - M6 M6 - N6 N6 - O6 O6 - P6 P6 - Q6	New 750mm Depth Cover: SL, LV, HV	39.5m 39m 45m 67m 16m	Reinstate existing road crossing conduits - NIL	- NIL
TOTAL			$34,157	- NIL

LEGEND

- SPARE DUCT
- DUCT WITH NEW CABLE
- DUCT WITH EXISTING CABLE
- DIRECT BURIED CABLE
- * DENOTES CONDUITS TO BE INSTALLED BY THE RMS

ARP 4110 Draft 1

AMENDMENTS		
ISSUE	ORIGINAL	DRAFT No. 01
A		

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE	1:1000	DO NOT SCALE DIMENSIONS IN METRES
DRAWN	RSC	
DATE	27/06/2019	
CH'D	PP	DESIGN RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SITE PLAN - 4

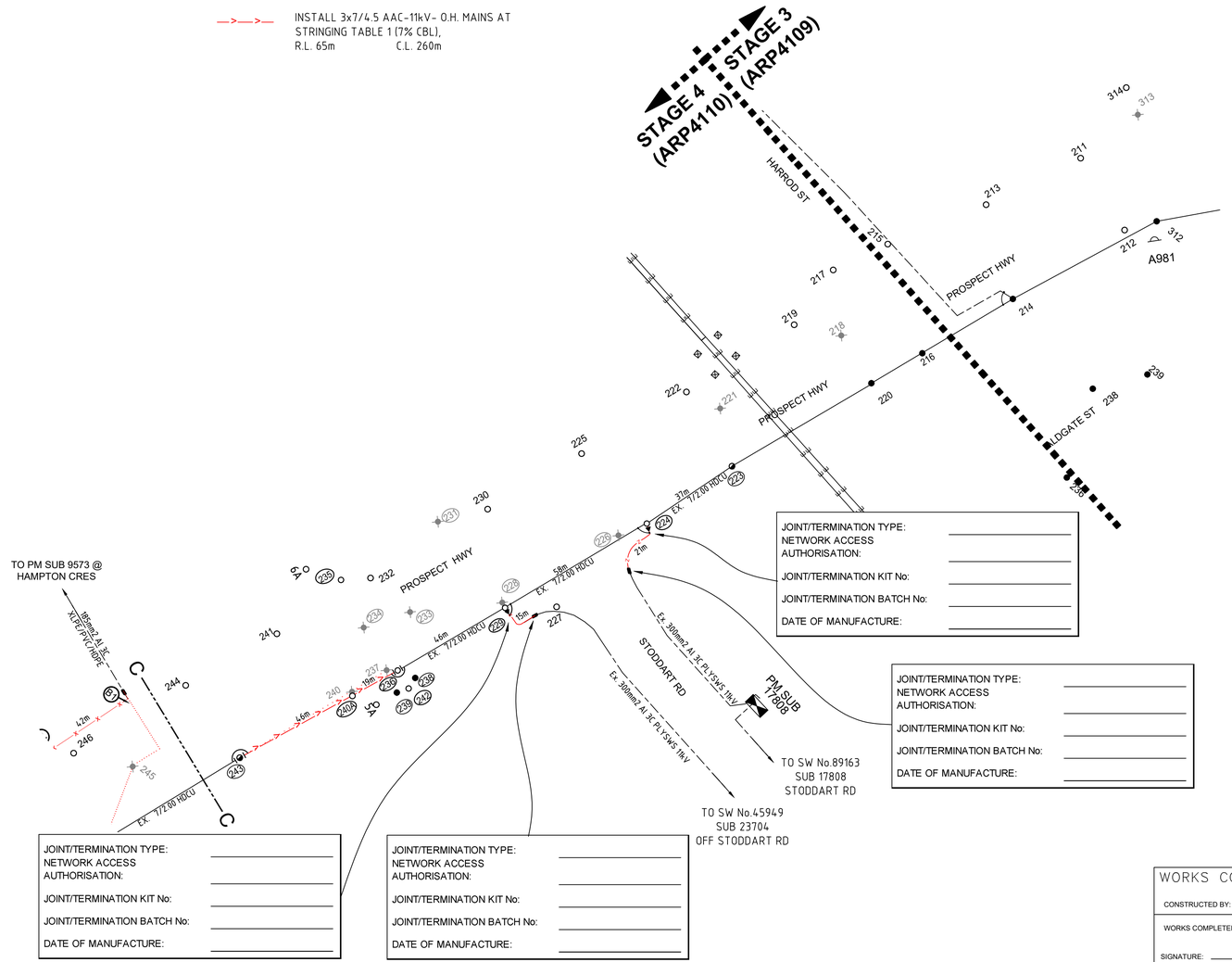
Endeavour Energy

A1 | ARP4110 | A

SHEET No 4 OF SHEETS

FINAL H.V.(11kV) CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE OH 11KV MAINS
- ABANDON/END CAP U.G. MAINS
- LAY 300mm2 Al 3C PLYSWS
  R.L. 36m C.L. 60m
- INSTALL 3x7/4.5 AAC-11kV- O.H. MAINS AT STRINGING TABLE 1 (7% CBL),
  R.L. 65m C.L. 260m



CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING

I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

DESIGN COMPLIANCE AND INDEMNITY

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Signed:
Name:
Service Provider Number: Date:

ARP 4110 Draft 1

AMENDMENTS
ORIGINAL ISSUE
A DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

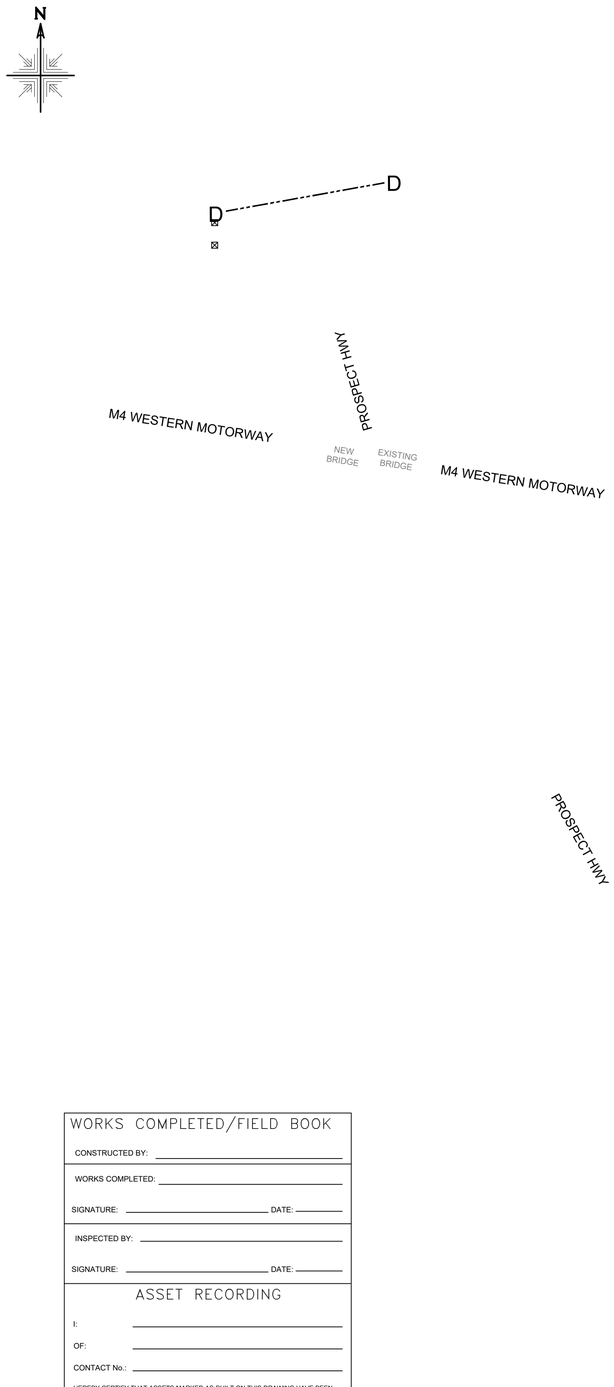
TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000
DRAWN RSC
DATE 27/06/2019
CH'D PP
DO NOT SCALE
DIMENSIONS IN METRES
DESIGN RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
HV FINAL CIRCUIT - 1

Endeavour Energy
A1 ARP4110 A
SHEET No 5 OF SHEETS



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Signed: _____

Name:

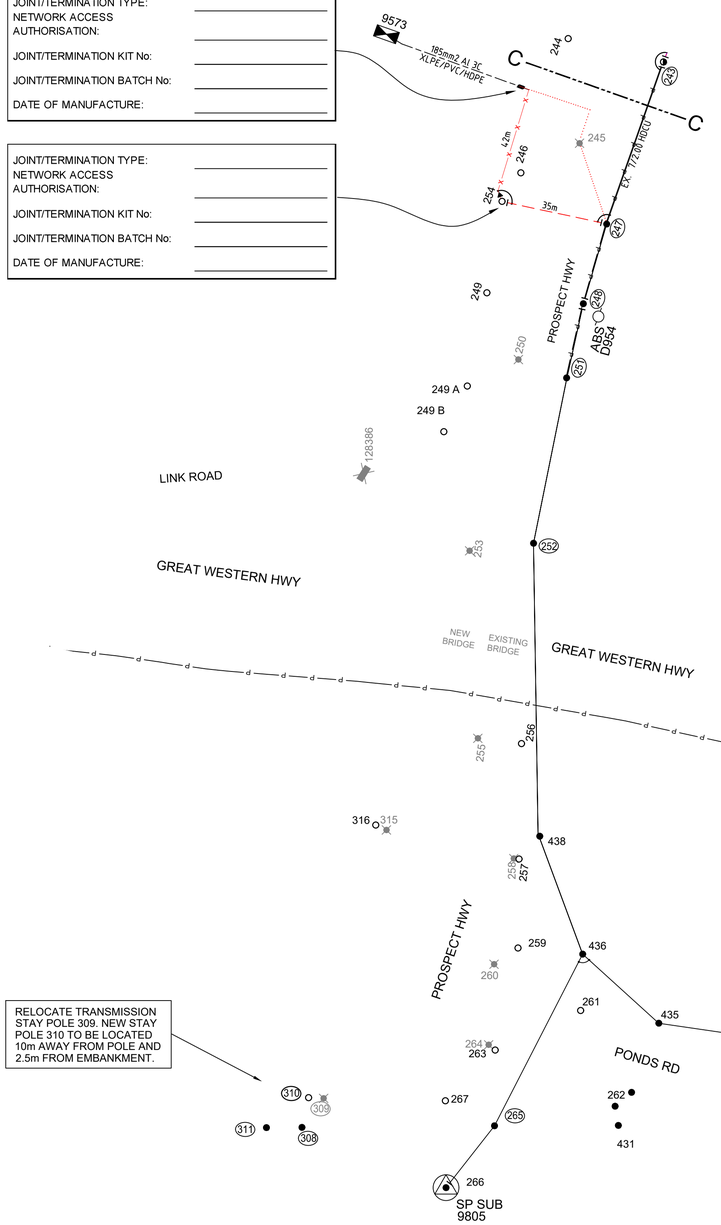
Service Provider Number: Date:

FINAL H.V.(11kV) CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE OH 11KV MAINS
- ABANDON/END CAP U.G. MAINS
- LAY 240 mm² AL 3C 11kV XLPE CABLE R.L. 42m C.L. 61m
- INSTALL 150mm² 3C AL XLPE NMS-11kV-ABC O.H. MAINS AT STRINGING TABLE HV8 (10% CBL), R.L. 35m C.L. 40m

JOINT/TERMINATION TYPE:	
NETWORK ACCESS AUTHORISATION:	
JOINT/TERMINATION KIT No:	
JOINT/TERMINATION BATCH No:	
DATE OF MANUFACTURE:	

JOINT/TERMINATION TYPE:	
NETWORK ACCESS AUTHORISATION:	
JOINT/TERMINATION KIT No:	
JOINT/TERMINATION BATCH No:	
DATE OF MANUFACTURE:	



WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

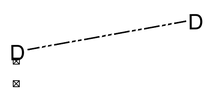
Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

Stringing Table: HVABC150 (HVABC NonMetal) (MES/RS equal to Span Length). %CBL: 10, Std Temp: 5 Displaying Actual Tension (No Wind) (kN)

Span Length(m)	Temperature at °C							
	5	10	15	20	25	30	35	40
35	4.17	4.08	4.00	3.92	3.85	3.78	3.72	3.65



ARP 4110 Draft 1

AMENDMENTS: A ORIGINAL ISSUE DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS			
				CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE	1:1000
DRAWN	RSC
DATE	27/06/2019
CH'D	PP
DESIGN	RSC

DO NOT SCALE DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
HV FINAL CIRCUIT - 2

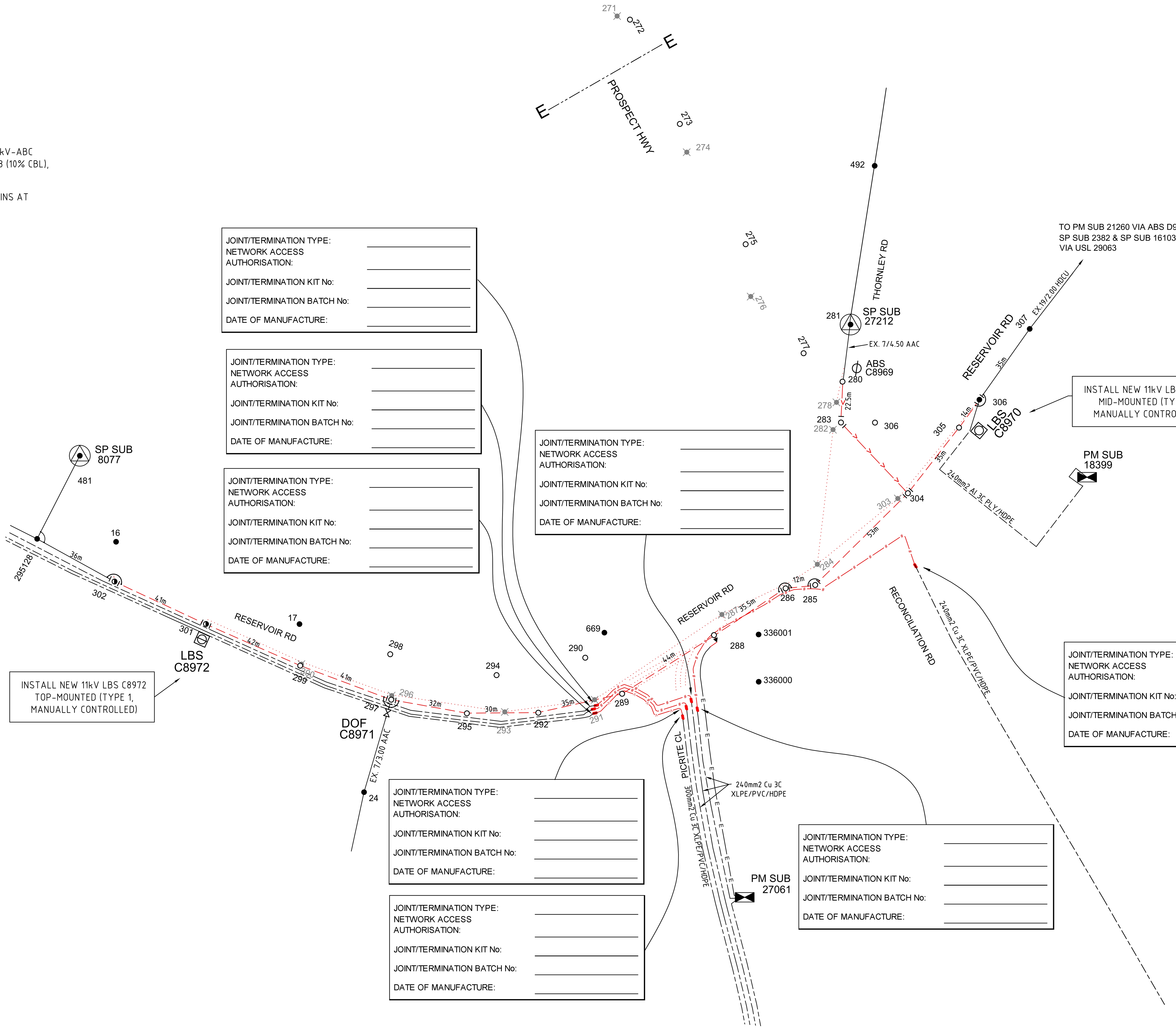
Endeavour Energy

A1 | ARP4110 | A

SHEET No 6 OF SHEETS

FINAL H.V.(11kV) CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE OH 11KV MAINS
- ABANDON/END CAP U.G. MAINS
- LAY 240mm2 AL 3C XLPE/PVC/HDPE R.L. 17m C.L. 35m
- LAY 240mm2 Cu 3C XLPE/PVC/HDPE R.L. 238m C.L. 272m
- LAY 300mm2 Cu 3C XLPE/PVC/HDPE R.L. 50m C.L. 60m
- INSTALL 150mm^2 3C AL XLPE NMS-11kV-ABC O.H. MAINS AT STRINGING TABLE HV8 (10% CBL), R.L. 485m C.L. 533.5m
- INSTALL 3x7/4.5 AAC-11kV- O.H. MAINS AT STRINGING TABLE 1 (7% CBL), R.L. 79.5m C.L. 267
- EXISTING EARTH CABLE



INSTALL NEW 11kV LBS C8972 TOP-MOUNTED (TYPE 1, MANUALLY CONTROLLED)

INSTALL NEW 11kV LBS C8970 MID-MOUNTED (TYPE 1, MANUALLY CONTROLLED)

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

JOINT/TERMINATION TYPE: ____
NETWORK ACCESS AUTHORISATION: ____
JOINT/TERMINATION KIT No: ____
JOINT/TERMINATION BATCH No: ____
DATE OF MANUFACTURE: ____

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: ____
WORKS COMPLETED: ____
SIGNATURE: ____ DATE: ____
INSPECTED BY: ____
SIGNATURE: ____ DATE: ____

ASSET RECORDING

I: ____
OF: ____
CONTACT No.: ____
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE: ____
DATE: ____

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: ____
Date Approved: ____
Examiner's Signature: ____
Print Name: ____
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

- CP: Connection Policy
- EMS: Environmental Management Standard
- MCI: Mains Construction Instruction
- MDI: Mains Design Instruction
- PDI: Protection Design Instruction
- SDI: Substation Design Instruction
- SAD 0001: Design Drawing Standard
- MMI: Mains Maintenance Instruction
- SMI: Substation Maintenance Instruction
- LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: ____
Name:
Service Provider Number: Date:

ARP 4110 Draft 1

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

AMENDMENTS | A | ORIGINAL ISSUE | DRAFT No. 01

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	RSC
DATE	27/06/2019
CH'D	PP

DO NOT SCALE
DIMENSIONS IN METRES
DESIGN RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
HV FINAL CIRCUIT - 3

Endeavour Energy

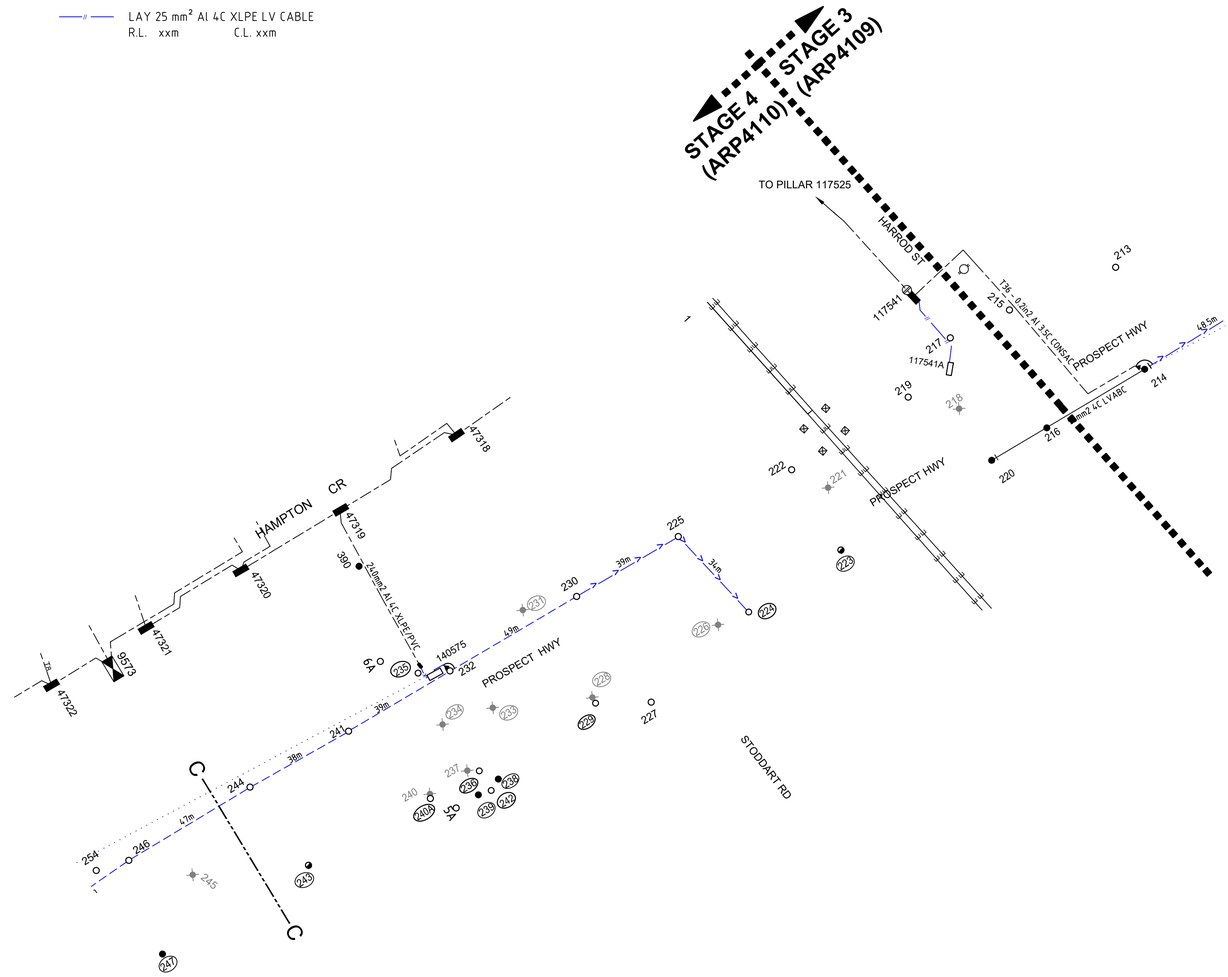
A1 | ARP4110 | A

SHEET No 7 OF SHEETS

FINAL L.V. CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE O.H. MAINS
- LAY 240 mm² Al 4C XLPE LV CABLE
  R.L. xxm C.L. xxm
- INSTALL LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS AT STRINGING TABLE LV19 (6% CBL)
  R.L. xxm C.L. xxm
- INSTALL LV ABC 4x95mm² + 1x16mm² AL XLPE O.H. MAINS AT STRINGING TABLE LV8 (6% CBL)
  R.L. xxm C.L. xxm
- LAY 25 mm² Al 4C XLPE LV CABLE
  R.L. xxm C.L. xxm

CERTIFIED BY ENDEAVOUR ENERGY
Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms



WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

DESIGN COMPLIANCE AND INDEMNITY

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CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:

Name:

Service Provider Number: Date:

ARP 4110 Draft 1

AMENDMENTS
A ORIGINAL ISSUE
DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

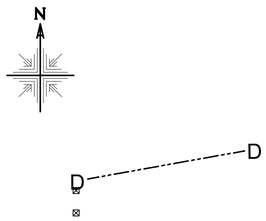
ORIGINAL SCALE	1:1000	DO NOT SCALE DIMENSIONS IN METRES	
DRAWN	RSC		
DATE	27/06/2019		
CH'D	PP	DESIGN	RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
LV FINAL CIRCUIT - 1

Endeavour Energy

A1 | ARP4110 | A

SHEET No 8 OF SHEETS



CERTIFIED BY ENDEAVOUR ENERGY

Amendment:

Date Approved:

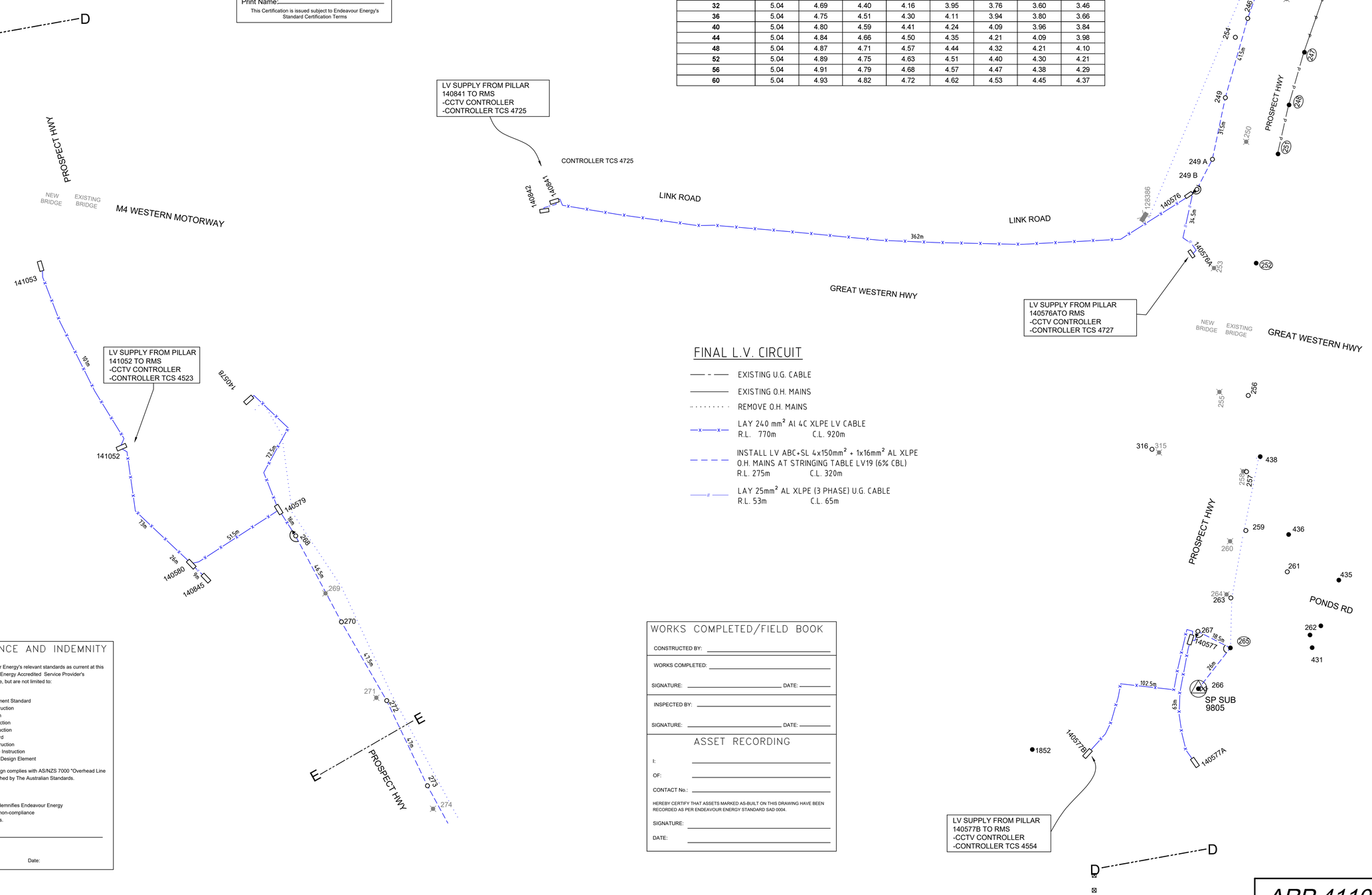
Examiner's Signature:

Print Name:

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

Stringing Table: LVABC150+S (ABC 150 SL 16) (MES/RS equal to Span Length). %CBL: 6, Std Temp: 5
Displaying Actual Tension (No Wind) (kN)

Span Length(m)	Temperature at °C							
	5	10	15	20	25	30	35	40
20	5.04	4.33	3.83	3.46	3.17	2.94	2.75	2.60
24	5.04	4.49	4.08	3.75	3.49	3.27	3.09	2.94
28	5.04	4.61	4.26	3.98	3.74	3.54	3.37	3.22
32	5.04	4.69	4.40	4.16	3.95	3.76	3.60	3.46
36	5.04	4.75	4.51	4.30	4.11	3.94	3.80	3.66
40	5.04	4.80	4.59	4.41	4.24	4.09	3.96	3.84
44	5.04	4.84	4.66	4.50	4.35	4.21	4.09	3.98
48	5.04	4.87	4.71	4.57	4.44	4.32	4.21	4.10
52	5.04	4.89	4.75	4.63	4.51	4.40	4.30	4.21
56	5.04	4.91	4.79	4.68	4.57	4.47	4.38	4.29
60	5.04	4.93	4.82	4.72	4.62	4.53	4.45	4.37



FINAL L.V. CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE O.H. MAINS
- LAY 240 mm² Al 4C XLPE LV CABLE R.L. 770m C.L. 920m
- INSTALL LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS AT STRINGING TABLE LV19 (6% CBL) R.L. 275m C.L. 320m
- LAY 25mm² AL XLPE (3 PHASE) U.G. CABLE R.L. 53m C.L. 65m

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:

Name:

Service Provider Number: Date:

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:

WORKS COMPLETED:

SIGNATURE: DATE:

INSPECTED BY:

SIGNATURE: DATE:

ASSET RECORDING

I:

OF:

CONTACT No.:

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE:

DATE:

ARP 4110 Draft 1

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4110
		GENERAL		AM PROJ. No.	2019/00389/001
		OVERHEAD		HV SWITCHING	
		UNDERGROUND		UBD/PENGUIN REF	189 A11
		SUBSTATIONS		GIS MAP No	U915211
				HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN RSC

DATE 27/06/2019

CH'D PP

DO NOT SCALE DIMENSIONS IN METRES

DESIGN RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
LV FINAL CIRCUIT - 2

Endeavour Energy

A1 ARP4110 A

SHEET No 9 OF SHEETS

N

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature:

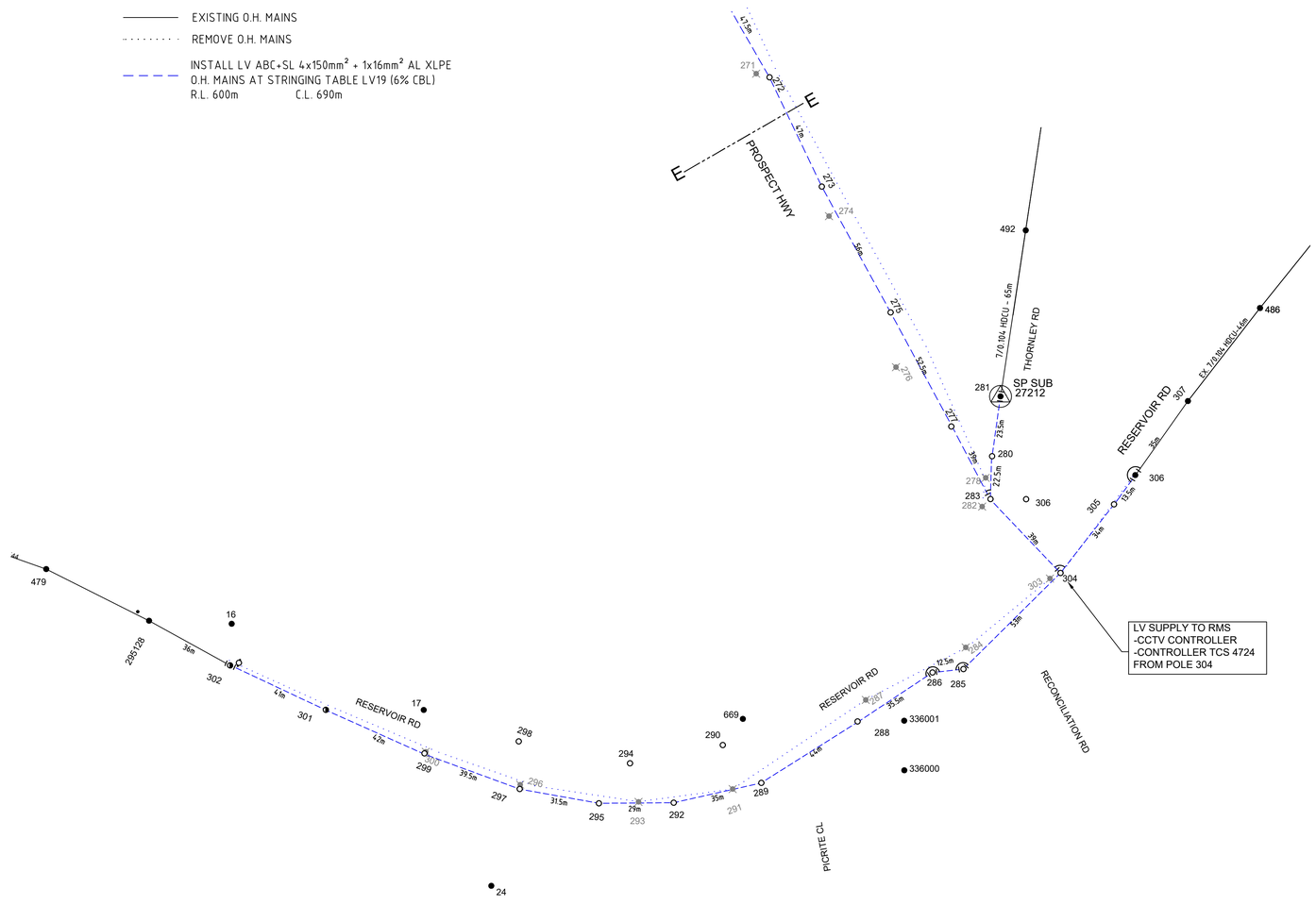
_____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

FINAL L.V. CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE O.H. MAINS
- INSTALL LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS AT STRINGING TABLE LV19 (6% CBL)
  R.L. 600m C.L. 690m



DESIGN COMPLIANCE AND INDEMNITY

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SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

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Signed: _____

Name:

Service Provider Number: Date:

Stringing Table: LVABC150+S (ABC 150 SL 16) (MES/RS equal to Span Length). %CBL: 6, Std Temp: 5 Displaying Actual Tension (No Wind) (kN)

Span Length(m)	Temperature at °C							
	5	10	15	20	25	30	35	40
20	5.04	4.33	3.83	3.46	3.17	2.94	2.75	2.60
24	5.04	4.49	4.08	3.75	3.49	3.27	3.09	2.94
28	5.04	4.61	4.26	3.98	3.74	3.54	3.37	3.22
32	5.04	4.69	4.40	4.16	3.95	3.76	3.60	3.46
36	5.04	4.75	4.51	4.30	4.11	3.94	3.80	3.66
40	5.04	4.80	4.59	4.41	4.24	4.09	3.96	3.84
44	5.04	4.84	4.66	4.50	4.35	4.21	4.09	3.98
48	5.04	4.87	4.71	4.57	4.44	4.32	4.21	4.10
52	5.04	4.89	4.75	4.63	4.51	4.40	4.30	4.21
56	5.04	4.91	4.79	4.68	4.57	4.47	4.38	4.29
60	5.04	4.93	4.82	4.72	4.62	4.53	4.45	4.37

ARP 4110 Draft 1

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DO NOT SCALE DIMENSIONS IN METRES

DRAWN	RSC
DATE	27/06/2019
CH'D	PP
DESIGN	RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
LV FINAL CIRCUIT - 3

Endeavour Energy

A1 | ARP4110 | A

SHEET No 10 OF SHEETS

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: ______

Name:

Service Provider Number: Date:

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: ______

Date Approved: ______

Examiner's Signature:

______

Print Name: ______

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

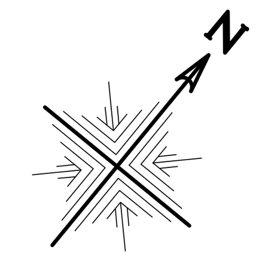
APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: ______

Date Approved: ______

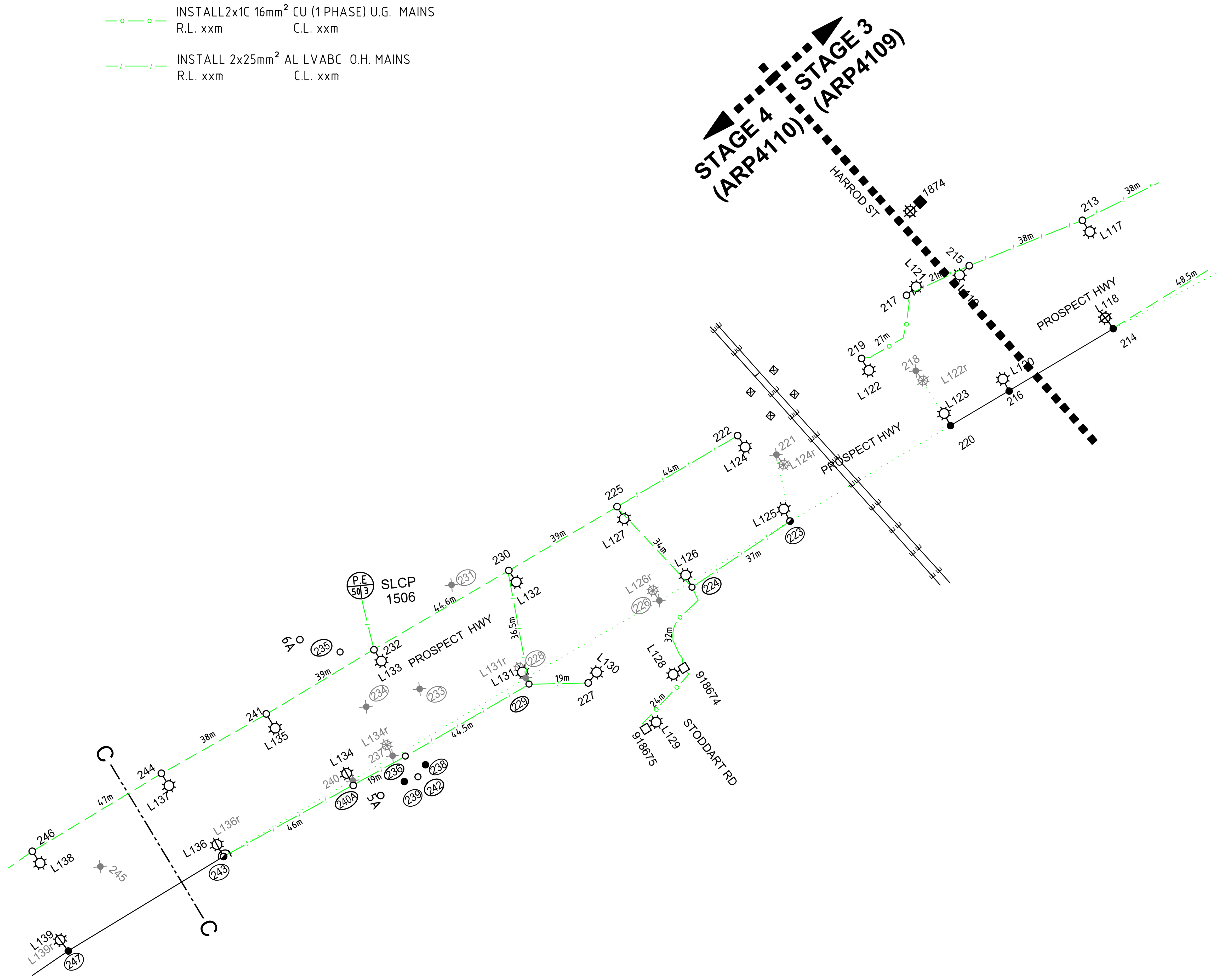
Reviewers Signature: ______

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.



FINAL S.L. CIRCUIT

- EXISTING O.H. MAINS
- EXISTING U.G. CABLE
- REMOVE S.L. MAINS
- NEW STREET LIGHTING CONDUCTOR CONTAINED WITHIN LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS
- INSTALL2x1C 16mm² CU (1 PHASE) U.G. MAINS R.L. xxm C.L. xxm
- INSTALL 2x25mm² AL LVABC O.H. MAINS R.L. xxm C.L. xxm



WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: ______

WORKS COMPLETED: ______

SIGNATURE: ______ DATE: ______

INSPECTED BY: ______

SIGNATURE: ______ DATE: ______

ASSET RECORDING

I: ______

OF: ______

CONTACT No.: ______

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: ______

DATE: ______

ARP 4110 Draft 1

AMENDMENTS	
A	ORIGINAL ISSUE
	DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS			
				CAP / SAMP No.	ARP4110
				AM PROJ. No.	2019/00389/001
		GENERAL		HV SWITCHING	
		OVERHEAD		UBD/PENGUIN REF	189 A11
		UNDERGROUND		GIS MAP No	U915211
		SUBSTATIONS		HV OP DIAGRAM	LEABONS LANE
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE	1:1000
DRAWN	RSC
DATE	27/06/2019
CH'D	PP

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN	RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SL FINAL CIRCUIT - 1

Endeavour Energy

A1	ARP4110	A

SHEET No 11 OF SHEETS

DESIGN COMPLIANCE AND INDEMNITY

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MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____

Name:

Service Provider Number: Date:

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: _____

Date Approved: _____

Reviewers Signature: _____

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

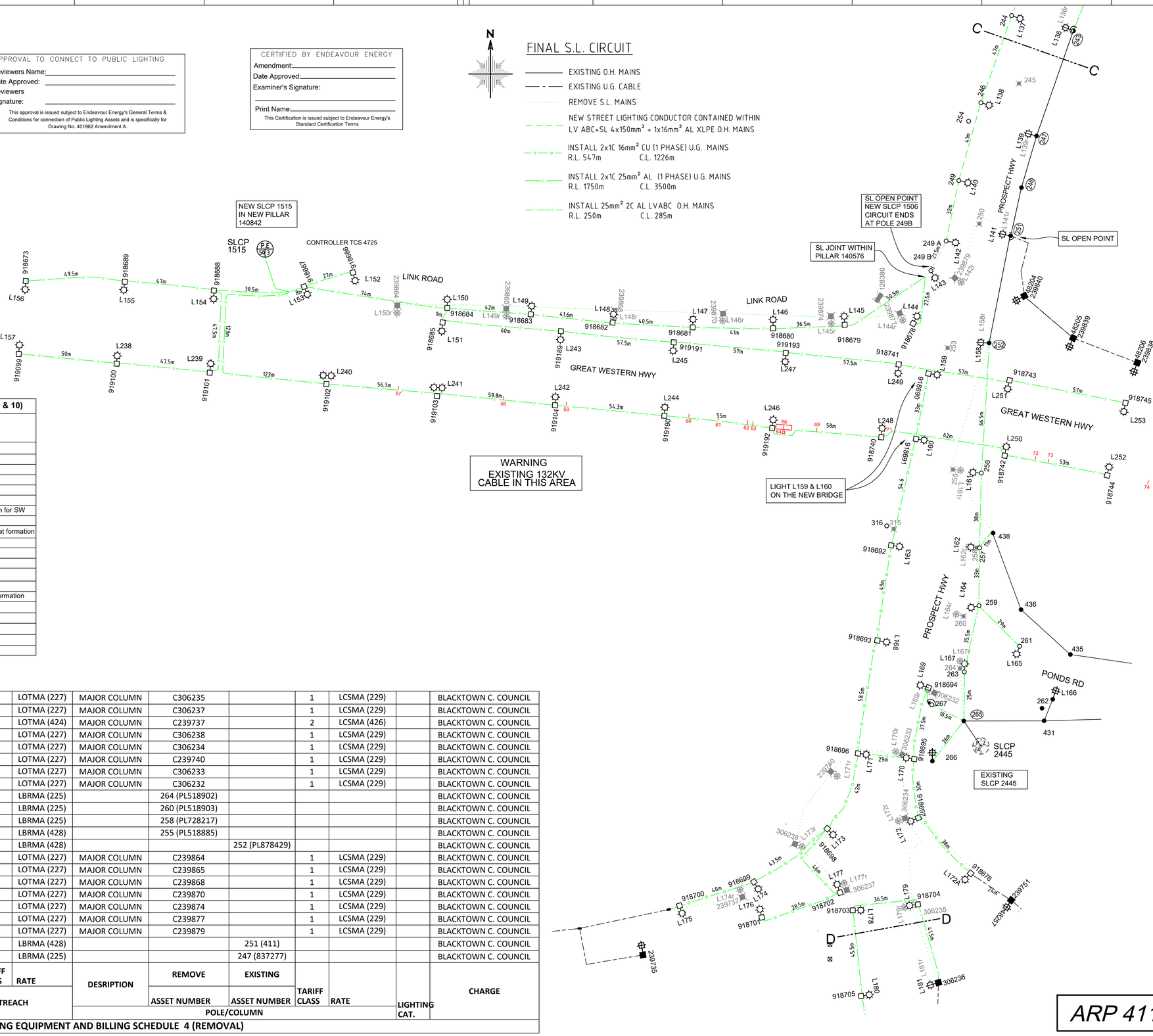
Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

N

FINAL S.L. CIRCUIT

- EXISTING O.H. MAINS
- EXISTING U.G. CABLE
- REMOVE S.L. MAINS
- NEW STREET LIGHTING CONDUCTOR CONTAINED WITHIN LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS
- INSTALL 2x1C 16mm² CU (1 PHASE) U.G. MAINS R.L. 547m C.L. 1226m
- INSTALL 2x1C 25mm² AL (1 PHASE) U.G. MAINS R.L. 1750m C.L. 3500m
- INSTALL 25mm² 2C AL LVABC O.H. MAINS R.L. 250m C.L. 285m



WAE CIVIL WORKS SURVEY TABLE - FEEDER 23G (From DRG378195-Sheet 9 & 10)

Data Point	Chainage (m)	MGA (M) Easting	MGA (M) Northing	AHD (m) Top of Conduit RL	Cover (m)	Comment
55	1703.71	306577.56	6257845.32	71.70	0.90	
56	1809.77	306683.82	6257834.70	73.25	0.90	
57	1931.09	306804.79	6257823.94	75.11	0.90	
58	1984.26	306857.75	6257818.61	75.66	0.90	
59	2016.41	306889.60	6257815.87	75.73	0.90	
60	2078.79	306951.61	6257809.95	75.73	0.90	
61	2093.60	306966.43	6257808.51	75.54	0.90	Start of Extra depth for SW
62	2108.49	306981.17	6257806.35	74.24	2.13	Under SW
63	2111.23	306983.88	6257805.96	75.52	0.95	Standard depth to flat formation
64	2122.97	306995.65	6257805.49			Cnr of JB 2
65	2122.97	306995.44	6257803.05			Cnr of JB 2
66	2126.97	306999.47	6257803.95	75.44	1.05	Centre ofJB 2
67	2130.97	307003.56	6257804.80			Cnr of JB 2
68	2130.97	307003.37	6257802.41			Cnr of JB 2
69	2143.75	307016.18	6257802.60	75.35	0.90	Standard trefoil formation
70	2172.73	307045.20	6257800.30	75.06	0.90	
71	2177.72	307050.07	6257799.84	74.67	1.23	Start of HDD
72	2255.17	307126.63	6257788.17	73.41	1.23	End of HDD
73	2261.90	307133.22	6257786.98	73.65	0.90	
74	2313.45	307183.65	6257776.14	72.32	0.90	

L179r	114569	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306235		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L177r	114567	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306237		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L174r	48271	250W SHP Gifted	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C239737		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L173r	114566	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306238		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L172r	114568	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306234		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L171r	114565	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239740		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L170r	114564	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306233		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L169r	114563	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C306232		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L167r	114562	250W SHP Legacy	1	LEG38	MAJOR BRACKET	1	LBRMA (225)		264 (PL518902)					BLACKTOWN C. COUNCIL
L164r	114561	250W SHP Legacy	1	LEG38	MAJOR BRACKET	1	LBRMA (225)		260 (PL518903)					BLACKTOWN C. COUNCIL
L162r	114560	250W SHP Legacy	1	LEG38	MAJOR BRACKET	1	LBRMA (225)		258 (PL728217)					BLACKTOWN C. COUNCIL
L161r	48123	250W SHP Gifted	2	LEG347	MAJOR BRACKET	2	LBRMA (428)		255 (PL518885)					BLACKTOWN C. COUNCIL
L158r	47909	400W SHP Gifted	2	LEG355	MAJOR BRACKET	2	LBRMA (428)			252 (PL878429)				BLACKTOWN C. COUNCIL
L150r	48197	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239864		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L149r	48198	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239865		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L148r	48199	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239868		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L146r	48200	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239870		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L145r	48201	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239874		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L144r	48202	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239877		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L142r	48203	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239879		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L141r	48160	250W SHP Gifted	2	LEG347	MAJOR BRACKET	2	LBRMA (428)			251 (411)				BLACKTOWN C. COUNCIL
L139r	47908	250W SHP Legacy	1	LEG38	MAJOR BRACKET	1	LBRMA (225)			247 (837277)				BLACKTOWN C. COUNCIL

ITEM No	ASSET NUMBER	DESRIPTION REMOVED LANTERN	TARIFF CLASS	LUMINAIRE RATE	DESCRIPTION BRACKET/OUTREACH	TARIFF CLASS	RATE	DESCRIPTION POLE/COLUMN	REMOVE ASSET NUMBER	EXISTING ASSET NUMBER	TARIFF CLASS	RATE	LIGHTING CAT.	CHARGE

LIGHTING EQUIPMENT AND BILLING SCHEDULE 4 (REMOVAL)

ARP 4110 Draft 1

AMENDMENTS
A ORIGINAL ISSUE
DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S

WORK ORDERS
GENERAL
OVERHEAD
UNDERGROUND
SUBSTATIONS

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	RSC
DATE	27/06/2019
CH'D	PP
DESIGN	RSC

DO NOT SCALE
DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SL FINAL CIRCUIT - 2

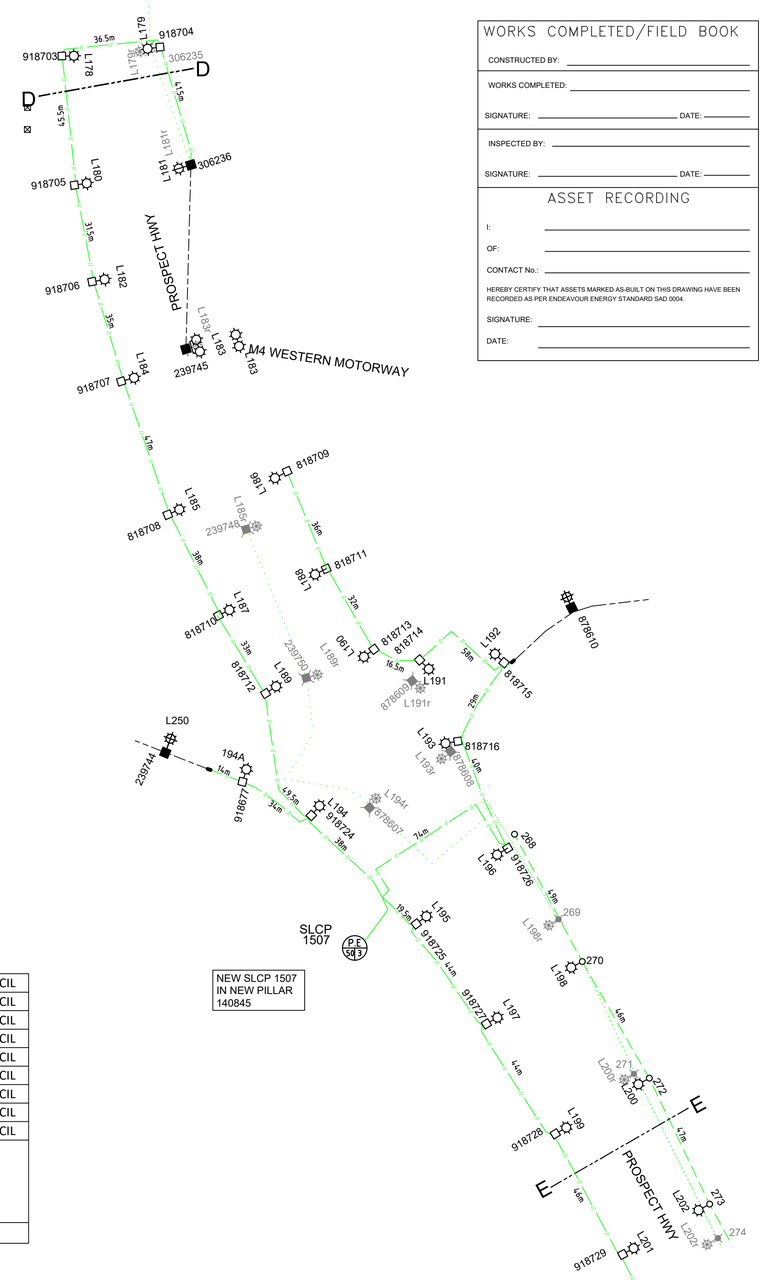
Endeavour Energy

A1 ARP4110 A

SHEET No 12 OF SHEETS

FINAL S.L. CIRCUIT

- EXISTING O.H. MAINS
- EXISTING U.G. CABLE
- REMOVE S.L. MAINS
- NEW STREET LIGHTING CONDUCTOR CONTAINED WITHIN LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS
- INSTALL 2x1C 25mm² AL (1 PHASE) U.G. MAINS
  R.L. 882.5m C.L. 1977m



NEW SLCP 1507
IN NEW PILLAR
140845

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: _____
Date Approved: _____
Reviewers
Signature: _____

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____
Date Approved: _____
Examiner's Signature:
_____
Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: _____
Name:
Service Provider Number: Date:

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____
WORKS COMPLETED: _____
SIGNATURE: _____ DATE: _____
INSPECTED BY: _____
SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____
OF: _____
CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____
DATE: _____

ITEM No	ASSET NUMBER	DESRIPTION (REMOVED LANTERN)	TARIFF CLASS	LUMINAIRE RATE	DESCRIPTION (BRACKET/OUTREACH)	TARIFF CLASS	RATE	DESRIPTION (POLE/COLUMN)	REMOVE ASSET NUMBER	EXISTING ASSET NUMBER	TARIFF CLASS	RATE	LIGHTING CAT.	CHARGE
L200r	114578	125W MF	1	LEG94	MINOR BRACKET	1	LBRMI (224)		271 (1881)					BLACKTOWN C. COUNCIL
L198r	114577	125W MF	1	LEG94	MINOR BRACKET	1	LBRMI (224)		269 (1880)					BLACKTOWN C. COUNCIL
L194r	242424	400W Sodium - STD	4	863	MAJOR OUTREACH	4	991	MAJOR COLUMN	C878607		4	996		BLACKTOWN C. COUNCIL
L193r	242425	400W Sodium - STD	4	863	MAJOR OUTREACH	4	991	MAJOR COLUMN	C878608		4	996		BLACKTOWN C. COUNCIL
L191r	242426	400W Sodium - STD	4	863	MAJOR OUTREACH	4	991	MAJOR COLUMN	C878609		4	996		BLACKTOWN C. COUNCIL
L189r	245088	400W Sodium - STD	4	863	MAJOR OUTREACH	4	991	MAJOR COLUMN	C239750		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L185r	114571	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN	C239748		1	LCSMA (229)		BLACKTOWN C. COUNCIL
L183r	48246	250W SHP Gifted	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN		C239745	2	LCSMA (426)		BLACKTOWN C. COUNCIL
L181r	114570	250W SHP Legacy	1	LEG55	MAJOR OUTREACH	1	LOTMA (227)	MAJOR COLUMN		C306236	1	LCSMA (229)		BLACKTOWN C. COUNCIL

LIGHTING EQUIPMENT AND BILLING SCHEDULE 5 (REMOVAL)

ARP 4110 Draft 1

AMENDMENTS
ORIGINAL ISSUE
A DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S

WORK ORDERS
GENERAL
OVERHEAD
UNDERGROUND
SUBSTATIONS

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000
DRAWN RSC
DATE 27/06/2019
CH'D PP
DESIGN RSC
DO NOT SCALE DIMENSIONS IN METRES

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SL FINAL CIRCUIT - 3

Endeavour Energy
A1 ARP4110 A
SHEET No 13 OF SHEETS

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

- CP: Connection Policy
- EMS: Environmental Management Standard
- MCI: Mains Construction Instruction
- MDI: Mains Design Instruction
- PDI: Protection Design Instruction
- SDI: Substation Design Instruction
- SAD 0001: Design Drawing Standard
- MMI: Mains Maintenance Instruction
- SMI: Substation Maintenance Instruction
- LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

ENDEAVOUR ENERGY indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: ____________________

Name:

Service Provider Number: Date:

FINAL S.L. CIRCUIT

- EXISTING O.H. MAINS
- EXISTING U.G. CABLE
- REMOVE S.L. MAINS
- NEW STREET LIGHTING CONDUCTOR CONTAINED WITHIN LV ABC+SL 4x150mm² + 1x16mm² AL XLPE O.H. MAINS
- INSTALL 2x1C 25mm² CU (1 PHASE) U.G. MAINS R.L. 537m C.L. 1203m
- INSTALL 25mm² 2C AL LVABC O.H. MAINS R.L. 72m C.L. 84m

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: ____________________

Date Approved: ____________________

Reviewers Signature: ____________________

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: ____________________

WORKS COMPLETED: ____________________

SIGNATURE: ____________________ DATE: __________

INSPECTED BY: ____________________

SIGNATURE: ____________________ DATE: __________

ASSET RECORDING

I: ____________________

OF: ____________________

CONTACT No.: ____________________

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: ____________________

DATE: ____________________

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: ____________________

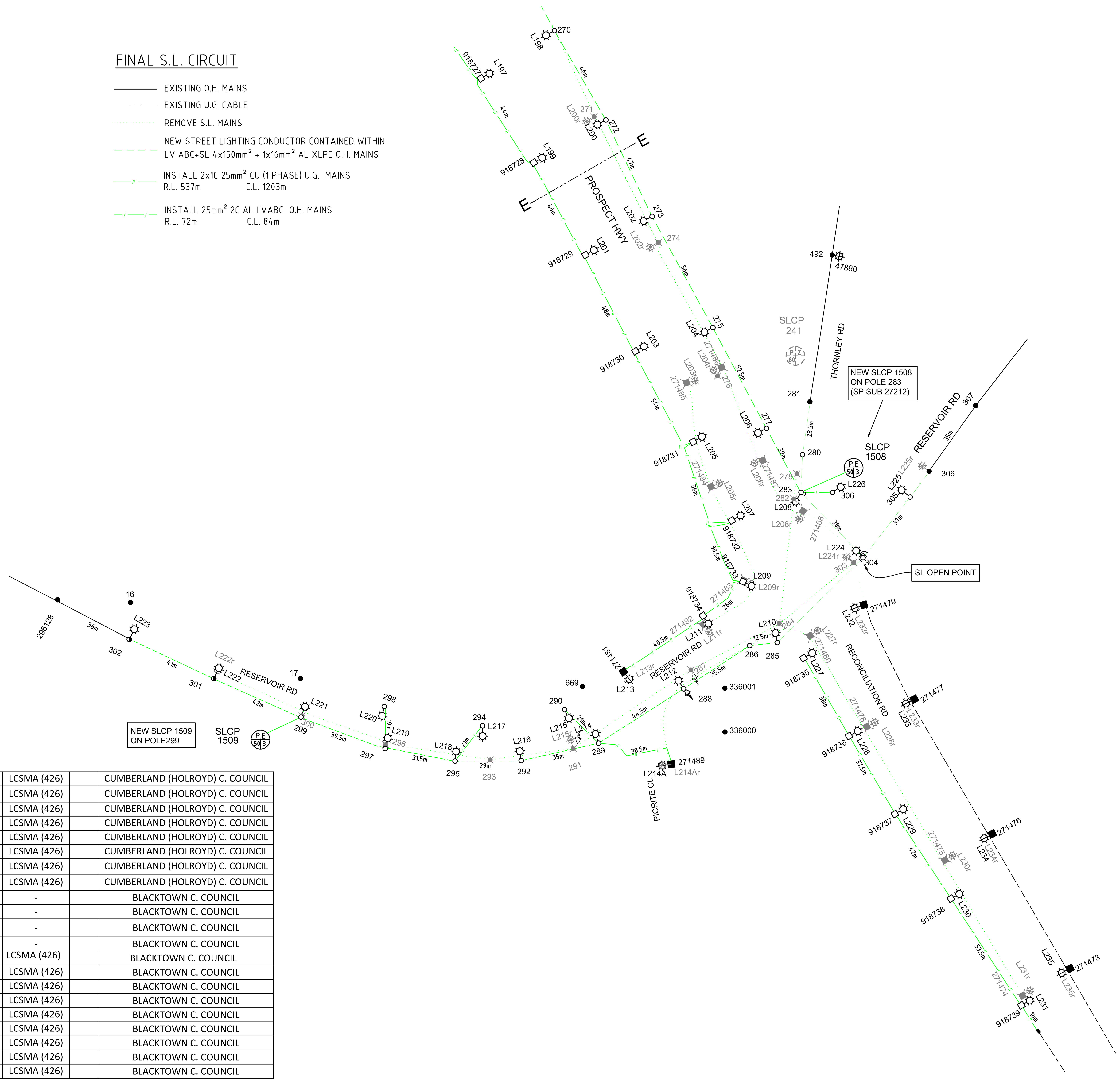
Date Approved: ____________________

Examiner's Signature:

____

Print Name: ____________________

This Certification is issued subject to Endeavour Energy's Standard Certification Terms



ITEM No	ASSET NUMBER	LANTERN – REMOVED – DESRIPTION	TARIFF CLASS	LUMINAIRE RATE	BRACKET/OUTREACH – DESCRIPTION	TARIFF CLASS	RATE	POLE/COLUMN – DESRIPTION	REMOVE – ASSET NUMBER	EXISTING – ASSET NUMBER	TARIFF CLASS	RATE	LIGHTING CAT.	CHARGE
L235r	188808	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271473		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L234r	188811	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271476		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L233r	188812	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271477		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L232r	188814	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271479		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L231r	188809	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271474		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L230r	188810	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271475		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L228r	188813	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271478		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L227r	188815	250W Sodium STD	3	561	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271480		2	LCSMA (426)		CUMBERLAND (HOLROYD) C. COUNCIL
L225r	247681	42W CFL - STD	3	553	MINOR BRACKET	3	BRMI (590)		306 (1934)		-	-		BLACKTOWN C. COUNCIL
L224r	188824	250W SHP Gifted	2	LEG347	MAJOR BRACKET	2	LBRMA (428)		303 (306221)		-	-		BLACKTOWN C. COUNCIL
L222r	47869	100W Sodium STD	3	557	MINOR BRACKET	1	LBRMI (224)			Replace 301 (623)	-	-		BLACKTOWN C. COUNCIL
L215r	47870	42W CFL - STD	3	553	MINOR BRACKET	1	LBRMI (224)		291 (22)		-	-		BLACKTOWN C. COUNCIL
L214Ar	188825	100W SHP Gifted	2	LEG380	MAJOR OUTREACH	2	LOTMA (424)			C271489	2	LCSMA (426)		BLACKTOWN C. COUNCIL
L213r	188816	100W SHP Gifted	2	LEG380	MAJOR OUTREACH	2	LOTMA (424)			C271481	2	LCSMA (426)		BLACKTOWN C. COUNCIL
L211r	188817	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271482		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L209r	188818	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271483		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L208r	188823	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271488		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L206r	188822	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271487		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L205r	188819	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271484		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L203r	188820	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271485		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L204r	188821	250W SHP Legacy	2	LEG343	MAJOR OUTREACH	2	LOTMA (424)	MAJOR COLUMN	C271486		2	LCSMA (426)		BLACKTOWN C. COUNCIL
L202r	114579	125W MF	1	LEG94	MINOR BRACKET	1	LBRMI (224)		274 (1882)					BLACKTOWN C. COUNCIL

LIGHTING EQUIPMENT AND BILLING SCHEDULE 6 (REMOVAL)

ARP 4110 Draft 1

AMENDMENTS	
A	ORIGINAL ISSUE – DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 4.3

REFERENCE DRAWING'S		WORK ORDERS	
		GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4110
AM PROJ. No.	2019/00389/001
HV SWITCHING	
UBD/PENGUIN REF	189 A11
GIS MAP No	U915211
HV OP DIAGRAM	LEABONS LANE
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE	1:1000
DRAWN	RSC
DATE	27/06/2019
CH'D	PP

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN	RSC

PROSPECT HWY
BLACKTOWN
ARP4110 (STAGE 4)
ASSET RELOCATION
SL FINAL CIRCUIT - 4

Endeavour Energy

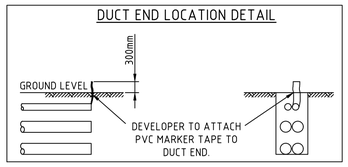
A1	ARP4110	A

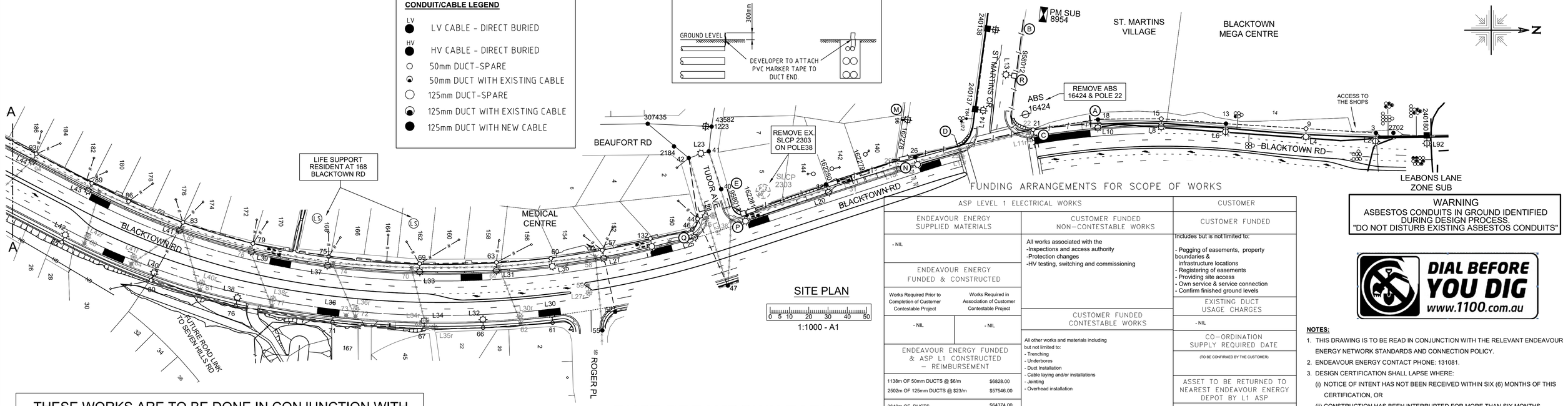
SHEET No 14 OF SHEETS

CONDUIT/CABLE LEGEND

- LV
- LV CABLE - DIRECT BURIED
- HV
- HV CABLE - DIRECT BURIED
- 50mm DUCT-SPARE
- 50mm DUCT WITH EXISTING CABLE
- 125mm DUCT-SPARE
- 125mm DUCT WITH EXISTING CABLE
- 125mm DUCT WITH NEW CABLE

DUCT END LOCATION DETAIL





SITE PLAN

0 5 10 20 30 40 50

1:1000 - A1

THESE WORKS ARE TO BE DONE IN CONJUNCTION WITH PROJECT ARP4108 BLACKTOWN RD BLACKTOWN STAGE 1

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
- POLE TO BE REMOVED
- POLE-MOUNTED SUBSTATION
- AIR BREAK SWITCH(N.O/N.C)
- HV LOAD BREAK SWITCH (N.O,N.C)
- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

AUTHORISATION OF ESTIMATE VALUE OF ENDEAVOUR ENERGY FUNDED ASSETS

Signed:

Print Name:

Service Number:

Funding Amount: $

Date:

CAUTION: RESIDENTIAL SOLAR CONNECTIONS

CUSTOMER SOLAR SYSTEMS ARE TO BE IDENTIFIED AND ISOLATED PRIOR TO CONSTRUCTION WORK COMMENCING RESTORE TO NORMAL OPERATION ONCE CONSTRUCTION IS COMPLETED

CAUTION: LIFE SUPPORT CUSTOMERS

CONSTRUCTOR TO IDENTIFY AND CONFIRM LOCATION OF LIFE SUPPORT CUSTOMER IN THE AREA

DUCT BREAKDOWN TABLE

ROUTE	CONFIGURATION	DESCRIPTION	ROUTE LENGTH	DUCT RE-IMBURSEMENT No OF 50mm DUCTS	AMOUNT @ ($6/m)	No OF 125mm DUCTS	AMOUNT @ ($23/m)	DUCT USAGE CHARGE No OF 50mm DUCTS	AMOUNT @ ($6/m)	No OF 125mm DUCTS	AMOUNT @ ($23/m)
A→C	FOR ADSS CABLE	TRENCH AND INSTALL 6 X 125mm & 2 X 50mm & 1 X 100mm PVC DUCTS	34m	2(68m)	$408.00	4(136m)	$3128.00	-	-	-	
C→D	FOR ADSS CABLE	UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm & 1 X 100mm PVC DUCTS	39m	-	-	6(234m)	$5382.00	-	-	-	-
D→N	FOR ADSS CABLE	UNDERBORE AND INSTALL 6 X 125mm & 2 X 50mm & 1 X 100mm PVC DUCTS	30m	-	-	2(60m)	$1380.00	-	-	-	-
N→E	FOR ADSS CABLE	UNDERBORE AND INSTALL 6 X 125mm & 2 X 50mm & 1 X 100mm PVC DUCTS	104m	2(208m)	$1248.00	2(208m)	$4784.00	-	-	-	-
F→G		UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	122m	2(244m)	$1464.00	4(488m)	$11224.00	-	-	-	-
H→I		UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	20m	2(40m)	$240.00	2(80m)	$1840.00	-	-	-	-
I→J		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	53m	2(106m)	$636.00	4(212m)	$4876.00	-	-	-	-
K→L		UNDERBORE AND INSTALL ROAD CROSSING 6 X 125mm & 2 X 50mm PVC DUCTS	205m	2(410m)	$2460.00	4(820m)	$18860.00	-	-	-	-
M→N		UNDERBORE AND INSTALL 2 X 125mm PVC DUCTS	24m	-	-	-	-	-	-	-	-
P→Q		UNDERBORE AND INSTALL ROAD CROSSING 2 X 125mm PVC DUCTS	28m	-	-	-	-	-	-	-	-
C→R		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	35m	-	-	4(140m)	$3220.00	-	-	-	-
R→B		TRENCH AND INSTALL 6 X 125mm & 2 X 50mm PVC DUCTS	31m	2(62m)	$372.00	4(124m)	$2852.00	-	-	-	-
		SUB TOTALS			$6828.00		$57546.00				
		TOTALS			$64374.00					-	

FUNDING ARRANGEMENTS FOR SCOPE OF WORKS

ASP LEVEL 1 ELECTRICAL WORKS		CUSTOMER
ENDEAVOUR ENERGY SUPPLIED MATERIALS	CUSTOMER FUNDED NON-CONTESTABLE WORKS	CUSTOMER FUNDED
- NIL	All works associated with the -Inspections and access authority -Protection changes -HV testing, switching and commissioning	Includes but is not limited to: - Pegging of easements, property boundaries & infrastructure locations - Registering of easements - Providing site access - Own service & service connection - Confirm finished ground levels
ENDEAVOUR ENERGY FUNDED & CONSTRUCTED		EXISTING DUCT USAGE CHARGES
Works Required Prior to Completion of Customer Contestable Project: - NIL Works Required in Association of Customer Contestable Project: - NIL	CUSTOMER FUNDED CONTESTABLE WORKS	- NIL
ENDEAVOUR ENERGY FUNDED & ASP L1 CONSTRUCTED – REIMBURSEMENT	All other works and materials including but not limited to: - Trenching - Underbores - Duct Installation - Cable laying and/or installations - Jointing - Overhead installation	CO-ORDINATION SUPPLY REQUIRED DATE (TO BE CONFIRMED BY THE CUSTOMER)
1138m OF 50mm DUCTS @ $6/m $6828.00 2502m OF 125mm DUCTS @ $23/m $57546.00 3640m OF DUCTS $64374.00		ASSET TO BE RETURNED TO NEAREST ENDEAVOUR ENERGY DEPOT BY L1 ASP ALL REMOVED ASSETS

WARNING
ASBESTOS CONDUITS IN GROUND IDENTIFIED DURING DESIGN PROCESS.
"DO NOT DISTURB EXISTING ASBESTOS CONDUITS"

DIAL BEFORE YOU DIG www.1100.com.au

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE RELEVANT ENDEAVOUR ENERGY NETWORK STANDARDS AND CONNECTION POLICY.
2. ENDEAVOUR ENERGY CONTACT PHONE: 131081.
3. DESIGN CERTIFICATION SHALL LAPSE WHERE:
   (i) NOTICE OF INTENT HAS NOT BEEN RECEIVED WITHIN SIX (6) MONTHS OF THIS CERTIFICATION, OR
   (ii) CONSTRUCTION HAS BEEN INTERRUPTED FOR MORE THAN SIX MONTHS.
   WHERE DESIGN CERTIFICATION HAS LAPSED THE DESIGN MUST BE RESUBMITTED FOR CERTIFICATION BY THE ACCREDITED DESIGNER.
4. ATTENTION:
   PERMANENT SURVEY MARKS MAY EXIST IN THIS AREA. THESE ARE TO BE LOCATED BY A SURVEYOR PRIOR TO COMMENCEMENT OF WORK.
5. ATTENTION:
   ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.
6. WARNING:
   LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TELEPHONE: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.
7. ATTENTION:
   SERVICE PROVIDER TO NOTIFY ENDEAVOUR ENERGY'S ASSET DATA CUSTOMER DEPT DAILY WHEN CABLE WORKS IS IN PROGRESS. TELEPHONE 131081
8. OPERATIONAL LIMITS:
   UNLESS APPROVED OTHERWISE, INTERRUPTION TO ANY CUSTOMER'S SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED:
   -MOBILE GENERATORS AND SUBSTATIONS
   -LIVE LINE WORK
   -DESIGN ALTERNATIVES
   -LOW VOLTAGE PARALLELS
   -WORK PRACTICES/STANDARDS.
9. AN EARTH CONNECTION WARNING LABEL MUST BE INSTALLED WHERE EARTH CONDUCTOR OR AN EXTENDED EARTH GRID IS TO BE CONNECTED TO LV STREET NEUTRAL TO ACHIEVE AN MEN SYSTEM AS PER SDI 100. REFER TO DRAWING No.010646.
10. HAVE ALL THE EXISTING ASSETS BEEN FIELD CHECKED AND ARE ACCURATE AT THE TIME OF DESIGN? YES
11. ENVIRONMENTAL MANAGEMENT PLAN: EMP YES IS PART OF THIS DESIGN.

KEY DOCUMENTS TABLE
THE CERTIFICATION OF THIS PROJECT IS SUPPORTED BY THE FOLLOWING KEY DOCUMENTS

DOCUMENT NAME	NOTATION DATE
SUMMARY ENVIRONMENTAL REPORT (SER) - FAT0038 part of EMS0001	22/05/2019
AGREEMENT FOR ENTRY, GRANT and CREATION OF EASEMENT - FPJ5013	N/A
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4252	N/A
EQUIPMENT TO BE RETURNED TO ENDEAVOUR ENERGY - FPJ4253	N/A
TELECOMMUNICATION ASSET AGREEMENT - FPJ4184	N/A
DESIGN SAFETY REPORT	22/05/2019

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS			
515695	ARP4108 BLACKTOWN RD STG1	GENERAL		CAP / SAMP No.	ARP4126
		OVERHEAD		AM PROJ. No.	SMECEE01
		UNDERGROUND		HV SWITCHING	LEABONS LN/S4
		SUBSTATIONS		UBD/PENGUIN REF	189 B6
				GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	JP
DATE	7/6/19
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES
DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 1 OF 10 SHEETS

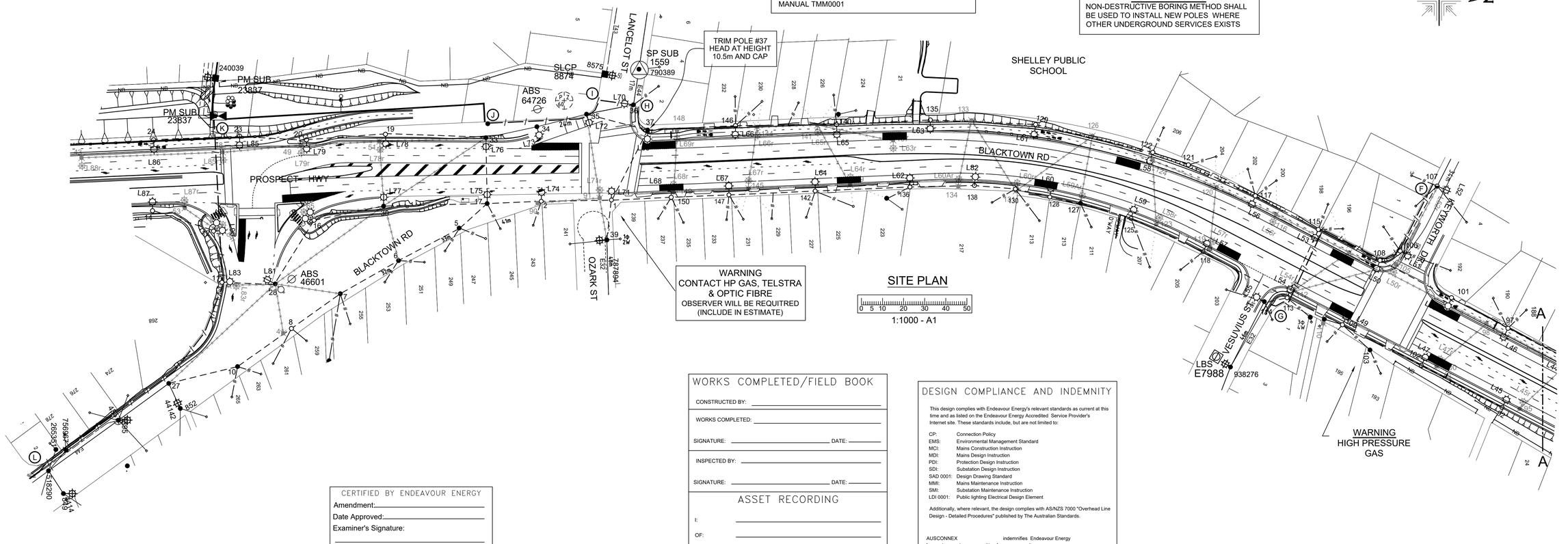
74990

WORK SITE TRAFFIC MANAGEMENT:

A TRAFFIC CONTROL PLAN AS WELL AS ADVANCED WARNING AREAS ARE TO BE IN PLACE BEFORE CONSTRUCTION WORK COMMENCES.
REFER ENDEAVOUR ENERGY TRAFFIC MANAGEMENT MANUAL TMM0001

NON DESTRUCTIVE BORING FOR NEW POLES

NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS



SITE PLAN

1:1000 - A1

SITE PLAN LEGEND

- EXISTING PADMOUNT SUBSTATION
- EXISTING / NEW LV PILLAR
- EXISTING / NEW SL COLUMN
- SL COLUMN TO BE REMOVED
- EXISTING UG CABLE
- EXISTING OH MAINS
- NEW OH MAINS
- REMOVE OH MAINS
- REMOVE OH SERVICE MAINS
- EXISTING DUCT LOCATION
- TR/HV TRENCH
- LV/SL TRENCH
- EXISTING & NEW POLE
- POLE TO BE REPLACED
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- EXISTING LANTERN
- LANTERN TO BE REMOVED
- LANTERN TO BE REPLACED
- NEW LANTERN
- FLOODLIGHT (NEW/REMOVE)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment:
Date Approved:
Examiner's Signature:
Print Name:
This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY:
WORKS COMPLETED:
SIGNATURE: DATE:
INSPECTED BY:
SIGNATURE: DATE:

ASSET RECORDING

I:
OF:
CONTACT No.:
HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.
SIGNATURE:
DATE:

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

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AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed:
Name: JIM PAPPAS
Service Provider Number: 4863 Date: 07/06/19

WARNING

LIVE ENDEAVOUR ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TEL: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.

WORK SITE TRAFFIC MANAGEMENT:

A TRAFFIC CONTROL PLAN AS WELL AS ADVANCED WARNING AREAS ARE TO BE IN PLACE BEFORE CONSTRUCTION WORK COMMENCES.
REFER ENDEAVOUR ENERGY TRAFFIC MANAGEMENT MANUAL TMM0001

SUPPLY INTERRUPTION NOTIFICATION

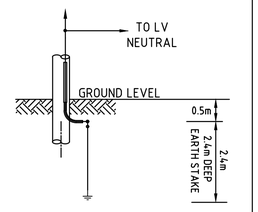
AFFECTED RESIDENCES AND BUSINESSES SHALL BE NOTIFIED SEVEN (7) DAYS PRIOR TO THE DISRUPTION. THIS NOTIFICATION SHALL INCLUDE AN EXAMINATION OF THE LOCATION OF ANY LIFE SUPPORT SYSTEMS THAT MAY BE AFFECTED AS A RESULT OF THE DISRUPTION.

NON DESTRUCTIVE BORING FOR NEW POLES

NON-DESTRUCTIVE BORING METHOD SHALL BE USED TO INSTALL NEW POLES WHERE OTHER UNDERGROUND SERVICES EXISTS

COMMON EARTHING DIAGRAM DETAIL (REFER EDI-100) (NTS)

TO HV UG/OH POLES (40, 107, 114,36,)



HV UGOH EARTHING DETAILS

Soil Resistively (ohms.m)	Layer 1	9.87	Depth (m)	2.58
	Layer 2	16.95		--
Earthing System Type	(HV, LV, SEP or Com)			COM
Designed earth resistance limit (ohms)				4.05/6.92
Measured earth resistance (ohms)				
Number of electrodes				1
Length of bare electrode (m)				2.4
Connector type (CAD or CRIMP)				CRIMP

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS			
515695	ARP4108 BLACKTOWN RD STG1	GENERAL		CAP / SAMP No.	ARP4126
		OVERHEAD		AM PROJ. No.	SMECEE01
		UNDERGROUND		HV SWITCHING	LEABONS LN/S4
		SUBSTATIONS		UBD/PENGUIN REF	189 B6
				GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000
DRAWN JP
DATE 7/6/19
CH'D
DO NOT SCALE
DIMENSIONS IN METRES
DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 2 OF 10 SHEETS

74990

X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV	DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
																	NUMBER NOT IN USE						100
																	NUMBER NOT IN USE						99
			518103																			X	98
307426.1355	6259478.972	964939		X				A7				A01	600	1.85	11/8		P			X			97
		964938	519779									A05 + LUGOH-A	600	2.0	11/8		C		X				96
			518553		X																	X	95
			518563																			X	94
307441.0743	6259507.579	964937		X				A7				A01	600	1.85	11/8		P			X			93
307463.6465	6259476.168	964936		X				A7				S/L ONLY	600	1.85	11/8		P			X			92
			787895																			X	91
			518019																			X	90
307456.3005	6259536.477	964935		X				A7				LUSL-AA	600	1.85	11/8		P			X			89
			518552																			X	88
			2198																			X	87
307465.6875	6259555.531	964934										A01	600	1.85	11/8		P			X			86
307486.8397	6259520.861	964933		X				A7				S/L ONLY	600	1.85	11/8		P			X			85
			2202		X																	X	84
307476.5722	6259583.734	964932		X				A7				A01	600	1.85	11/8		P			X			83
			2197																			X	82
			2203		X																	X	81
307506.651	6259567.238	964931		X				A7				S/L + LS01	600	1.85	11/8		P			X			80
307487.5442	6259620.049	964930		X				A7				A01	600	1.85	11/8		P			X			79
			2196																			X	78
			2204		X																	X	77
307519.9574	6259611.136	964929		X				A7				S/L ONLY	600	1.85	11/8		P			X			76
307494.3182	6259659.399	964928		X				A7				A01	600	1.85	11/8		P			X			75
			2195																			X	74
			959635																			X	73
			400604		X																	X	72
307528.4291	6259661.336	964927		X				A7				S/L ONLY	600	1.85	11 /8		P			X			71
			2176																			X	70
307497.9439	6259706.555	964926		X				A7				A01	600	1.85	11/8		P			X			69
			2173		X																	X	68
307531.8995	6259708.922	964925		X				A7				S/L ONLY	600	1.85	11/8		P			X			67
307531.211	6259739.489	964924		X				A6				S/L ONLY	600	1.85	11/8		P			X			66
			787900		X																	X	65
			2177																			X	64
307497.3098	6259746.415	964923		X				A7				A01	600	1.85	11/8		P			X			63
			2676		X																	X	62
307528.6041	6259775.552	964922		X				A7				S/L ONLY	600	1.85	11/8		P			X			61
307495.2099	6259774.686	964921		X				A6				A01	600	1.85	11/8		P			X			60
			2178		X																	X	59
			2179		X																	X	58
307491.0141	6259801.347	964920		X				A6				A01 + LUSL-AA	600	2.0	11/8		C			X			57
			787897		X																	X	56
			2185									EX.									X		55
			787898		X																	X	54
			787899		X																	X	53
			2172				X					EX. + A05									X		52
			518022		X																	X	51
X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV	DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
COORDINATES		FIELD POLE NUMBER		LANTERNS					CONSTRUCTION				HOLE		POLE								

X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV	DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
			2711																			X	50
			518023		X																	X	49
			728966		X																	X	48
			2170								EX.	EX.									X		47
307480.237	6259848.044	964919		X				A7				A03 + LUGOH-A	600	2.0	11/8		C			X			46
			2182		X																	X	45
307474.6984	6259850.798	964918		X				A6			A25-S + B25	A05	600	2.0	12.5/8		C			X			44
			518007		X																	X	43
			2786								EX + A25-S	EX.									X		42
			400602	X				A4			EX. + A25-S	EX. + A05									X		41
			???								A25-S + HUGOH	A05+LUGOH-A									X		40
			518016									B05 + A05									X		39
			2709																			X	38
			518031	X				A7				A03 + A05									X		37
			518004				X	A6			B25 + HUGOH	B05 + A05									X		36
			787892				X	A6			-	A05 + A05									X		35
			787891	X				A6			-	S/L ONLY									X		34
			771163				X	A6			-	S/L ONLY									X		33
			???	X				A7													X		32
			2878																			X	31
			518036				X	A7			-	S/L ONLY									X		30
			400603																			X	29
			518005								-	S/L ONLY									X		28
			518033								-	B05 + A05									X		27
			???	X				A7				S/L ONLY									X		26
			2707																			X	25
307336.7308	6258837.015	964916		X				A7				S/L ONLY	600	1.85	11 /8		C			X			24
307335.0565	6258877.79	964915		X				A7				S/L ONLY	600	1.85	11 /8		P			X			23
			2706																			X	22
307428.4881	6260024.891	964914		X				A7				S/L ONLY	600	1.85	11 /8		C			X			21
307336.7709	6258909.48	964913		X				A6				S/L ONLY	600	1.85	11 /8		P			X			20
307334.143	6258946.913	964912		X				A7				S/L ONLY	600	1.85	11 /8		P			X			19
			2705				X	A7				S/L ONLY									X		18
			335680				X	A7				A01 + S/L									X		17
307374.8914	6258913.052	964911		X				A7				S/L ONLY	600	2.0	14 /8		P			X			16
307422.7766	6260091.382	964910		X				A7				S/L ONLY	600	1.85	11 /8		P			X			15
307370.429	6258836.471	964909		X				A6				S/L ONLY	600	1.85	11 /8		C			X			14
			2704				X	A6				S/L ONLY									X		13
307380.0869	6258865.389	964908		X				A7				S/L ONLY	600	2.0	14 /8		C			X			12
307404.3527	6258869.394	964907		X				A6				S/L ONLY	600	1.85	11 /8		C			X			11
			518009									A01									X		10
307427.907	6260166.482	964906		X				A6				S/L ONLY	600	1.85	11/8		P			X			9
307426.2003	6258902.363	964905										A01	600	1.85	11/8		P			X			8
			518032									A01									X		7
			518010									A01									X		6
			750067									LUSL-AA									X		5
			518034																			X	4
			2703				X	A6				S/L ONLY									X		3
307365.8983	6259020.725	964904		X				A6				A01	600	1.85	11/8		P			X			2
307365.3175	6259054.018	964903		X				A7				A03 + A03	600	2.0	11/8		C			X			1
X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV	DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
COORDINATES		FIELD POLE NUMBER		LANTERNS					CONSTRUCTION				HOLE		POLE								

AMENDMENTS

	ORIGINAL ISSUE	DRAFT No. 01
A		

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S

515695	ARP4108 BLACKTOWN RD STG1

WORK ORDERS

GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP4126
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189 B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	JP
DATE	7/6/19
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 3 OF 10 SHEETS

74990

X	Y	NEW	EXISTING	NEW	REMOVE	EXISTING	REPLACE	BRACKET	SPAN LENGTH	LINE DEV DEGREES	HV	LV	DIA mm	DEPTH m	TYPE	STAY	FOOTING	RELOCATE	REPLACE	NEW	EXISTING	REMOVE	NUMBER
COORDINATES		FIELD POLE NUMBER		LANTERNS					CONSTRUCTION				HOLE		POLE								
307364.003	6259082.353	964963		X				A7				A01	600	1.85	11/8		P			X			150
			728968		X																	X	149
			518030		X																	X	148
307362.899	6259109.699	964962		X				A6				A01	600	1.85	11/8		P			X			147
307330.0388	6259112.838	964961		X				A7				A01	600	1.85	11/8		P			X			146
			518012		X																	X	145
			518018		X																	X	144
																						NUMBER NOT IN USE	143
307361.0511	6259150.621	964960		X				A6				A01	600	1.85	11/8		P			X			142
			728967		X																	X	141
307329.549	6259160.695	964959		X				A7				A01	600	1.85	11/8		P			X			140
			518013		X																	X	139
307358.4434	6259226.072	964966		X				A7				A01	600	1.85	11/8		P			X			138
			787901																			X	137
307359.131	6259195.541	964958		X				A6				A01	600	1.85	11/8		P			X			136
307327.3767	6259205.139	964957		X				A7				A01	600	1.85	11/8		P			X			135
0	0	964956	675702		X							A01	600	1.85	11/8		P		X				134
			518029																			X	133
307484.9057	6259826.3	964964		X				A7				A01	600	1.85	11/8		P			X			132
			518015		X																	X	131
307360.07	6259245.451	964955										A01	600	1.85	11/8		P			X			130
307329.51	6259255.07	964954		X				A7				A01	600	1.85	12.5/8		P			X			129
307363.8883	6259261.818	964965		X				A7				A01	600	1.85	11/8		P			X			128
			518097		X							LUSL-AA									X		127
			518106																			X	126
307373.9704	6259300.268	964953		X				A7				A01	600	1.85	11/8		P			X			125
			518107																			X	124
			518096																			X	123
307342.695	6259310.594	964952		X				A7				LUSL-AA	600	1.85	11 /8		P			X			122
307348.6463	6259327.454	964951										A01	600	1.85	11 /8		P			X			121
			849230																			X	120
			518098		X																	X	119
307389.8044	6259334.492	964950		X				A6				A01	600	1.85	11/8		P			X			118
307363.3551	6259359.237	964949		X				A7				A01	600	1.85	11/8		P			X			117
			518080		X																	X	116
307379.2728	6259389.06	964948		X				A7				A01 + A05	600	2.0	11/8		C			X			115
			518094	X				A6			B25 + HUGOH	LUSL-AB									X		114
307411.6616	6259374.261	964946		X				A7				A03 + A03	600	2.0	11/8		C			X			113
			518092		X																	X	112
			849231																			X	111
			518089																			X	110
307424.4367	6259400.506	964945		X				A7				A05 + S/L	600	1.85	11/8		P			X			109
307393.962	6259418.328	964944		X				A7				A01 + A05	600	2.0	11/8		C			X			108
		964943	518082				X	A6			B25 + HUGOH	A05 + B05	600	2.0	12.5/12		C		X				107
307389.496	6259427.87	964942		X				A6				A03	600	2.0	11/8		C			X			106
			518099		X																	X	105
																						NUMBER NOT IN USE	104
			518093									LS01									X		103
307443.6768	6259437.853	964941		X				A7				S/L ONLY	600	1.85	11/8		P			X			102
307411.6146	6259452.193	964940		X				A7				A01	600	1.85	11/8		P			X			101

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

AMENDMENT'S
ORIGINAL ISSUE
A DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S	
515695	ARP4108 BLACKTOWN RD STG1

WORK ORDERS			
		CAP / SAMP No.	ARP4126
		AM PROJ. No.	SMECEE01
GENERAL		HV SWITCHING	LEABONS LN/S4
OVERHEAD		UBD/PENGUIN REF	189 B6
UNDERGROUND		GIS MAP No	U9160-74
SUBSTATIONS		HV OP DIAGRAM	
		LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	JP
DATE	7/6/19
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 4 OF 10 SHEETS

74990

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: ______

WORKS COMPLETED: ______

SIGNATURE: ______ DATE: ______

INSPECTED BY: ______

SIGNATURE: ______ DATE: ______

ASSET RECORDING

I: ______

OF: ______

CONTACT No.: ______

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: ______

DATE: ______

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: ______

Date Approved: ______

Examiner's Signature: ______

Print Name: ______

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
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AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . [signature] . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

FINAL H.V.(11kV) CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE OH 11KV MAINS
- LAY 240mm² Cu 3C 11kV XLPE CABLE R.L. 14m C.L. 30m
- LAY 240mm² Al 3C 11kV XLPE CABLE R.L. 12m C.L. 28m
- INSTALL 150mm² 3C AL XLPE NMS-11kV-ABC O.H. MAINS AT STRINGING TABLE HV8 (10% CBL), R.L. 53m C.L. 60m

HV CONDUCTOR REFERENCE

CODE	SIZE & TYPE
A40	19/.083 - 19/2.0 Cu
A50	19/.101 Cu
U24	300mm² Al PLYSWS
U72	240mm² AL XLPE
U74	240mm² AL PLY/HDPE

FOR POLE CONSTRUCTION TABLE REFER TO SHEET 3 & 4

AMENDMENTS | ORIGINAL ISSUE | A | DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS	
515695	ARP4108 BLACKTOWN RD STG1	GENERAL	
		OVERHEAD	
		UNDERGROUND	
		SUBSTATIONS	

CAP / SAMP No.	ARP4126
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189 B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	JP
DATE	7/6/19
CH'D	

DO NOT SCALE
DIMENSIONS IN METRES
DESIGN JP

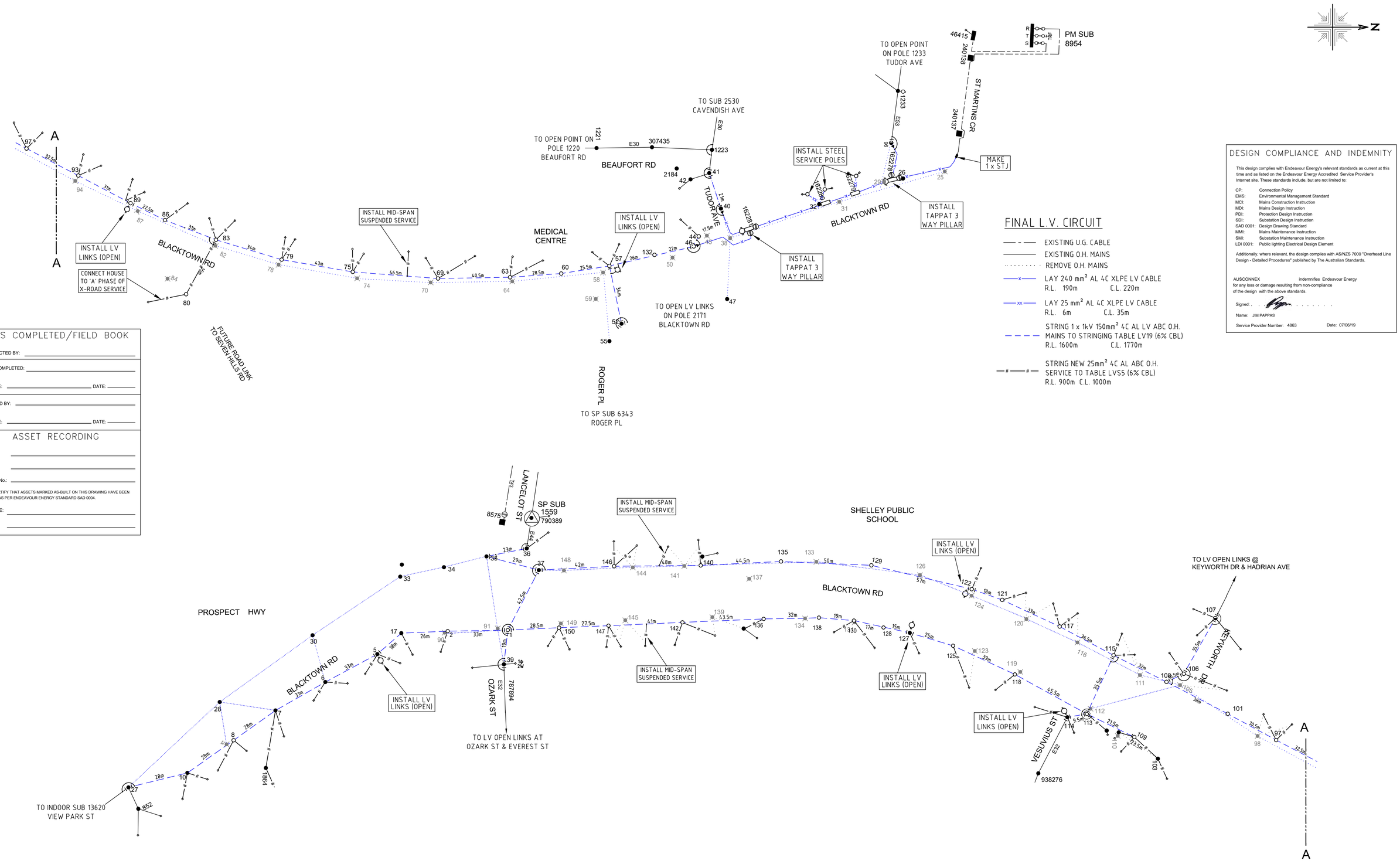
BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 515628 A

SHEET No 5 OF 10 SHEETS

74990



FINAL L.V. CIRCUIT

- EXISTING U.G. CABLE
- EXISTING O.H. MAINS
- REMOVE O.H. MAINS
- LAY 240 mm² AL 4C XLPE LV CABLE R.L. 190m C.L. 220m
- LAY 25 mm² AL 4C XLPE LV CABLE R.L. 6m C.L. 35m
- STRING 1 x 1kV 150mm² 4C AL LV ABC O.H. MAINS TO STRINGING TABLE LV19 (6% CBL) R.L. 1600m C.L. 1770m
- STRING NEW 25mm² 4C AL ABC O.H. SERVICE TO TABLE LVS5 (6% CBL) R.L. 900m C.L. 1000m

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

AMENDMENTS: A ORIGINAL ISSUE — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS		CAP / SAMP No.	ARP4126
515695	ARP4108 BLACKTOWN RD STG1	GENERAL		AM PROJ. No.	SMECEE01
		OVERHEAD		HV SWITCHING	LEABONS LN/S4
		UNDERGROUND		UBD/PENGUIN REF	189 B6
		SUBSTATIONS		GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000 — DO NOT SCALE, DIMENSIONS IN METRES

DRAWN	JP
DATE	7/6/19
CH'D	
DESIGN	JP

BLACKTOWN ROAD BLACKTOWN ARP4126 ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 515628 A

SHEET No 6 OF 10 SHEETS

74990

FINAL S.L. CIRCUIT

EXISTING O.H. MAINS

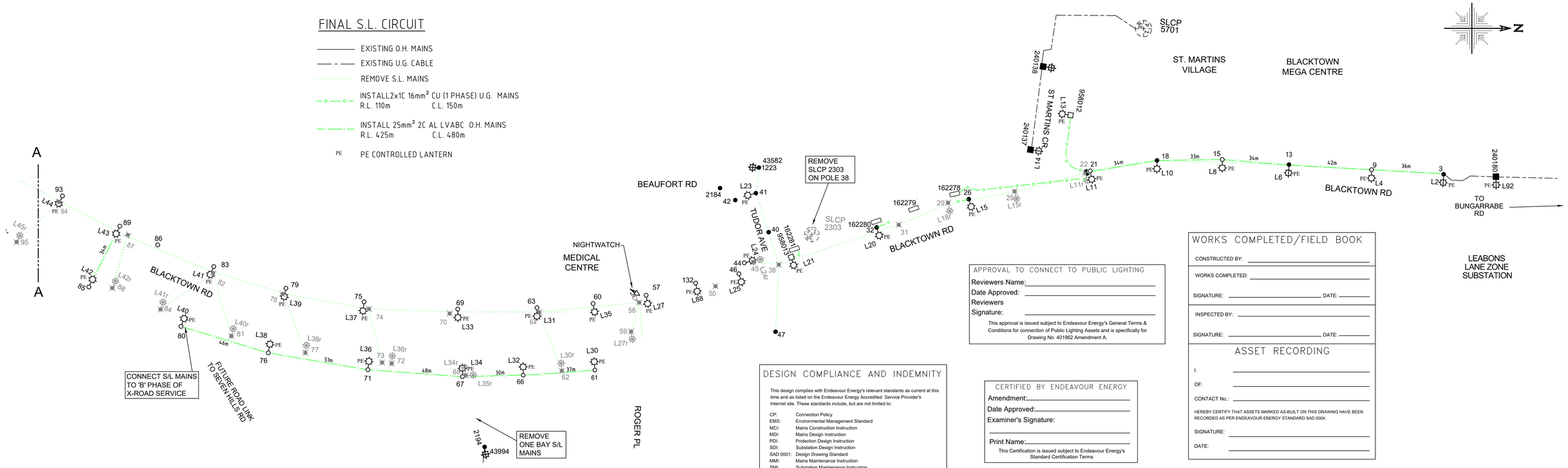
EXISTING U.G. CABLE

REMOVE S.L. MAINS

INSTALL 2x1C 16mm² CU (1 PHASE) U.G. MAINS
R.L. 110m C.L. 150m

INSTALL 25mm² 2C AL LVABC O.H. MAINS
R.L. 425m C.L. 480m

PE PE CONTROLLED LANTERN



DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Connection Policy
EMS: Environmental Management Standard
MCI: Mains Construction Instruction
MDI: Mains Design Instruction
PDI: Protection Design Instruction
SDI: Substation Design Instruction
SAD 0001: Design Drawing Standard
MMI: Mains Maintenance Instruction
SMI: Substation Maintenance Instruction
LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: _____

Date Approved: _____

Reviewers Signature: _____

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____

ITEM ID	STATE	EXISTING	EXISTING	NEW	NEW	DESCRIPTION	QTY	RATE CODE	DESCRIPTION	PART NO	FOOTING (BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION	PART NO	RATE CODE	UPCAST	K/B(m)	M/H(m)	CATEGORY	CHARGE TO
		SL NUMBER	SUPPORT NUMBER	SL NUMBER	SUPPORT NUMBER	LUMINAIRE			COLUMN/POLE					BRACKET/OUTREACH							
L45r	Remove	44397	518553	-	-	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L42r	Remove	44398	571	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L41r	Remove	44400	2202	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L40r	Remove	207018	2203	-	-	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L38r	Remove	44401	2204	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L36r	Remove	44402	2205	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L35r	Remove	188965	2173	-	-	80W MF	1	093	TIMBER POLE	-	-	1	-	A4	IE-A4	224					BLACKTOWN CITY COUNCIL(100%)
L34r	Remove	44176	2173	-	-	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L30r	Remove	44403	2676	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L27r	Remove	44404	2178	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L24r	Remove	44407	2182	-	-	90 W SLP	1	034	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L18r	Remove	43568	400603	-	-	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L15r	Remove	44410	2707	-	-	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L11r	Remove	44411	2706	-	-	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)

LIGHTING EQUIPMENT AND BILLING SCHEDULE (REMOVAL)

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S	
515695	ARP4108 BLACKTOWN RD STG1

WORK ORDERS	
GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP4126
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189 B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN JP

DATE 7/6/19

CH'D

DO NOT SCALE
DIMENSIONS IN METRES

DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 515628 A

SHEET No. 7 OF 10 SHEETS

74990

APPROVAL TO CONNECT TO PUBLIC LIGHTING

Reviewers Name: _____

Date Approved: _____

Reviewers Signature: _____

This approval is issued subject to Endeavour Energy's General Terms & Conditions for connection of Public Lighting Assets and is specifically for Drawing No. 401962 Amendment A.

WORKS COMPLETED/FIELD BOOK

CONSTRUCTED BY: _____

WORKS COMPLETED: _____

SIGNATURE: _____ DATE: _____

INSPECTED BY: _____

SIGNATURE: _____ DATE: _____

ASSET RECORDING

I: _____

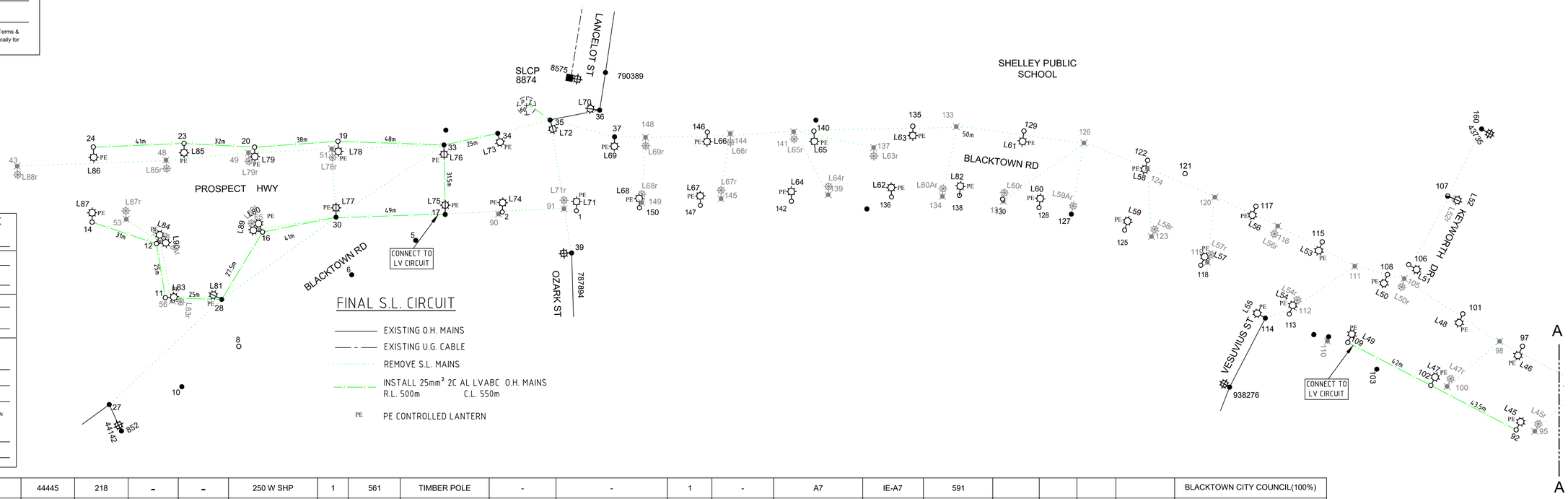
OF: _____

CONTACT No.: _____

HEREBY CERTIFY THAT ASSETS MARKED AS-BUILT ON THIS DRAWING HAVE BEEN RECORDED AS PER ENDEAVOUR ENERGY STANDARD SAD 0004.

SIGNATURE: _____

DATE: _____



ITEM ID	STATE	EXISTING	EXISTING	NEW	NEW	DESCRIPTION	QTY	RATE CODE	DESCRIPTION	PART NO	FOOTING (BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION	PART NO	RATE CODE	UPCAST	K/B(m)	M/H(m)	CATEGORY	CHARGE TO
		SL NUMBER	SUPPORT NUMBER	SL NUMBER	SUPPORT NUMBER	LUMINAIRE			COLUMN/POLE					BRACKET/OUTREACH							
LIGHTING EQUIPMENT AND BILLING SCHEDULE (REMOVAL)																					
L88r	Remove	44445	218	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L87r	Remove	217378	787899	–	–	400 W SHP	1	355	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L85r	Remove	44447	728966	–	–	400 W SHP	1	040	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L84r	Remove	217375	787898	–	–	400 W SHP	2	361	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L83r	Remove	217374	787897	–	–	400 W SHP	1	355	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L80r	Remove	217377	210	–	–	400 W SHP	2	361	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L79r	Remove	216315	518023	–	–	400 W SHP	1	355	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L78r	Remove	44451	518022	–	–	400 W SHP	1	563	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L71r	Remove	216328	787895	–	–	400 W SHP	1	355	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L69r	Remove	216319	518030	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L68r	Remove	44389	728968	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L67r	Remove	44390	518012	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L66r	Remove	216320	518018	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L65r	Remove	216321	728967	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L64r	Remove	216325	518013	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L63r	Remove	216322	787901	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L60Ar	Remove	216324	675702	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L60r	Remove	44392	518015	–	–	250 W SHP	1	347	TIMBER POLE	-	-	1	-	A5	IE-A5	428					BLACKTOWN CITY COUNCIL(100%)
L59Ar	Remove	44393	518097	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L58r	Remove	43570	518096	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L57r	Remove	44214	518098	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L56r	Remove	44213	518080	–	–	250 W SHP	1	038	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L54r	Remove	44394	518092	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)
L52r	Remove	43736	518082	–	–	90 W SLP	1	034	TIMBER POLE	-	-	1	-	A6	IE-A6	225					BLACKTOWN CITY COUNCIL(100%)
L50r	Remove	43569	518099	–	–	150 W SHP	1	559	TIMBER POLE	-	-	1	-	A4	IE-A4	590					BLACKTOWN CITY COUNCIL(100%)
L47r	Remove	44396	518554	–	–	250 W SHP	1	561	TIMBER POLE	-	-	1	-	A7	IE-A7	591					BLACKTOWN CITY COUNCIL(100%)

CERTIFIED BY ENDEAVOUR ENERGY

Amendment: _____

Date Approved: _____

Examiner's Signature: _____

Print Name: _____

This Certification is issued subject to Endeavour Energy's Standard Certification Terms

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP: Connection Policy
EMS: Environmental Management Standard
MCI: Mains Construction Instruction
MDI: Mains Design Instruction
PDI: Protection Design Instruction
SDI: Substation Design Instruction
SAD 0001: Design Drawing Standard
MMI: Mains Maintenance Instruction
SMI: Substation Maintenance Instruction
LDI 0001: Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

AMENDMENTS
A ORIGINAL ISSUE
DRAFT No. 01

TEMPLATE VERSION No. 5.0

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

REFERENCE DRAWING'S		WORK ORDERS			
515695	ARP4108 BLACKTOWN RD STG1	GENERAL		CAP / SAMP No.	ARP4126
		OVERHEAD		AM PROJ. No.	SMECEE01
		UNDERGROUND		HV SWITCHING	LEABONS LN/S4
		SUBSTATIONS		UBD/PENGUIN REF	189 B6
				GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN JP

DATE 7/6/19

CH'D

DO NOT SCALE DIMENSIONS IN METRES

DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 515628 A

SHEET No 8 OF 10 SHEETS

74990

ITEM ID	STATE	EXISTING	EXISTING	NEW	NEW	DESCRIPTION	QTY	RATE CODE	DESCRIPTION	PART NO	FOOTING (BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION	PART NO	RATE CODE	UPCAST	K/B(m)	M/H(m)	CATEGORY	CHARGE TO
		SL NUMBER	SUPPORT NUMBER	SL NUMBER	SUPPORT NUMBER	LUMINAIRE			COLUMN/POLE					BRACKET/OUTREACH							
L68	NEW	-	-	286622	PL964963	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L67	NEW	-	-	286621	PL964962	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L66	NEW	-	-	286620	PL964961	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L65	NEW	-	-	286619	PL964959	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L64	NEW	-	-	286618	PL964960	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L63	NEW	-	-	286617	PL964957	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L62	NEW	-	-	286616	PL964958	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L61	NEW	-	-	286615	PL964954	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L60	NEW	-	-	286614	PL964965	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L59	NEW	-	-	286613	PL964953	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L58	NEW	-	-	286612	PL964952	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L57	NEW	-	-	286611	PL964950	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L56	NEW	-	-	286610	PL964949	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L55	NEW	-	-	286609	PL964947	150 W SHP AS	1	859	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7	9	V3	BLACKTOWN CITY COUNCIL(100%)
L54	NEW	-	-	286608	PL964946	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L53	NEW	-	-	286607	PL964948	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L52	NEW	-	-	286647	PL964943	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L51	NEW	-	-	286646	PL964942	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L50	NEW	-	-	286606	PL964944	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L49	NEW	-	-	286605	PL964945	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L48	NEW	-	-	286604	PL964940	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L47	NEW	-	-	286603	PL964941	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L46	NEW	-	-	286602	PL964939	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L45	NEW	-	-	286601	PL964936	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L44	NEW	-	-	286600	PL964937	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L43	NEW	-	-	286599	PL964935	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L42	NEW	-	-	286598	PL964933	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L41	NEW	-	-	286597	PL964932	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L40	NEW	-	-	286596	PL964931	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L39	NEW	-	-	286595	PL964930	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L38	NEW	-	-	286594	PL964929	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L37	NEW	-	-	286593	PL964928	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L36	NEW	-	-	286592	PL964927	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L35	NEW	-	-	286645	PL964921	250 W SHP AS	1	868	TIMBER POLE	-	-	1		A6	IE-A6	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L34	NEW	-	-	286591	PL964925	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L33	NEW	-	-	286590	PL964926	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L32	NEW	-	-	286589	PL964924	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L31	NEW	-	-	286588	PL964923	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L30	NEW	-	-	286587	PL964922	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L27	NEW	-	-	286586	PL964920	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L25	NEW	-	-	286585	PL964919	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L24	NEW	-	-	286584	PL964918	150 W SHP AS	1	859	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.0	9	V3	BLACKTOWN CITY COUNCIL(100%)
L23	NEW	-	400602	286583	-	150 W SHP AS	1	859	TIMBER POLE	-	-	1	-	A4	IE-A4	890	5°	5.8	9	V3	BLACKTOWN CITY COUNCIL(100%)
L21	NEW	-	-	286582	C958013	250 W SHP AS	1	868	COLUMN	-	-	1	-	4.5m OUTREACH	1540228	991	5°		10.5	V3	BLACKTOWN CITY COUNCIL(100%)
L20	NEW	-	-	286581	TR POLE	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L15	NEW	-	-	286580	TR POLE	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L14	NEW	44686	C240137	286644	-	250 W SHP AS	1	868	COLUMN					4.5m OUTREACH	1540228	991	5°	-	10.5	V3	BLACKTOWN CITY COUNCIL(100%)
L13	NEW	-	-	286579	C958012	150 W SHP AS	1	859	COLUMN	-	-	1	-	4.5m OUTREACH	1540228	991	5°	-	9	V3	BLACKTOWN CITY COUNCIL(100%)
L11	NEW	-	-	283002	PL964914	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.2	9.8	V3	BLACKTOWN CITY COUNCIL(100%)
L10	NEW	-	2705	283001	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L8	NEW	-	-	283000	PL964910	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L6	NEW	43567	2704	262667	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L4	NEW	-	-	282999	PL964906	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L2	NEW	38103	2703	262666	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)

LIGHTING EQUIPMENT AND BILLING SCHEDULE (REMOVAL)

DESIGN COMPLIANCE AND INDEMNITY

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CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

AMENDMENTS: ORIGINAL ISSUE — A — DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S		WORK ORDERS			
515695	ARP4108 BLACKTOWN RD STG1	GENERAL		CAP / SAMP No.	ARP4126
		OVERHEAD		AM PROJ. No.	SMECEE01
		UNDERGROUND		HV SWITCHING	LEABONS LN/S4
		SUBSTATIONS		UBD/PENGUIN REF	189 B6
				GIS MAP No	U9160-74
				HV OP DIAGRAM	
				LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN	JP
DATE	7/6/19
CH'D	

DO NOT SCALE — DIMENSIONS IN METRES

DESIGN JP

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 9 OF 10 SHEETS

74990

ITEM ID	STATE	EXISTING SL NUMBER	EXISTING SUPPORT NUMBER	NEW SL NUMBER	NEW SUPPORT NUMBER	DESCRIPTION LUMINAIRE	QTY	RATE CODE	DESCRIPTION COLUMN/POLE	PART NO	FOOTING (BOLT/FOUNDATION)	QTY	RATE CODE	DESCRIPTION BRACKET/OUTREACH	PART NO	RATE CODE	UPCAST	K/B(m)	M/H(m)	CATEGORY	CHARGE TO
L92	NEW	37958	C240180	262665	-	250 W SHP AS	1	868	COLUMN	-	-	-	-	4.5m OUTREACH	1540228	991	5°		10.5	V3	BLACKTOWN CITY COUNCIL(100%)
L90	NEW	-	-	286643	PL964908	400W SHP FLOOD	1	875	TIMBER POLE	-	-	-	-	-	-	-	0°	-	13	V3	BLACKTOWN CITY COUNCIL(100%)
L89	NEW	-	-	286642	PL964911	400W SHP FLOOD	1	875	TIMBER POLE	-	-	-	-	-	-	-	0°	-	13	V3	BLACKTOWN CITY COUNCIL(100%)
L88	NEW	-	-	286641	PL964964	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L87	NEW	-	-	286640	PL964909	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L86	NEW	-	-	286639	PL964916	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L85	NEW	-	-	286638	PL964915	250 W SHP AS	1	868	TIMBER POLE			1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L84	NEW	-	-	286637	PL964908	400 W SHP FT	1	863	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	10.9	13.5	V3	BLACKTOWN CITY COUNCIL(100%)
L83	NEW	-	-	286636	PL964907	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L82	NEW	-	-	286648	PL964966	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L81	NEW	44457	518005	286635	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L80	NEW	-	-	286634	PL964911	400 W SHP FT	1	863	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	10.9	13.5	V3	BLACKTOWN CITY COUNCIL(100%)
L79	NEW	-	-	286633	PL964913	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A6	IE-A6	891	5°	8.0	10	V3	BLACKTOWN CITY COUNCIL(100%)
L78	NEW	-	-	286632	PL964912	250 W SHP AS	1	868	TIMBER POLE	-	-	1	895	A7	IE-A7	891	5°	7.4	10	V3	BLACKTOWN CITY COUNCIL(100%)
L77	NEW	216330	518036	286631	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L76	NEW	216316	771163	286630	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L75	NEW	216329	335680	286629	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L74	NEW	-	-	286628	PL964904	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L73	NEW	-	787891	286627	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L72	NEW	216317	787892	286626	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.7	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L71	NEW	-	-	286625	PL964903	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)
L70	NEW	216318	518004	286624	-	150 W SHP	1	859	TIMBER POLE	-	-	1	-	A6	IE-A6	891	5°	7.0	9	V3	BLACKTOWN CITY COUNCIL(100%)
L69	NEW	-	518031	286623	-	250 W SHP AS	1	868	TIMBER POLE	-	-	1	-	A7	IE-A7	891	5°	7.1	9.65	V3	BLACKTOWN CITY COUNCIL(100%)

LIGHTING EQUIPMENT AND BILLING SCHEDULE (REMOVAL)

DESIGN COMPLIANCE AND INDEMNITY

This design complies with Endeavour Energy's relevant standards as current at this time and as listed on the Endeavour Energy Accredited Service Provider's Internet site. These standards include, but are not limited to:

CP:	Connection Policy
EMS:	Environmental Management Standard
MCI:	Mains Construction Instruction
MDI:	Mains Design Instruction
PDI:	Protection Design Instruction
SDI:	Substation Design Instruction
SAD 0001:	Design Drawing Standard
MMI:	Mains Maintenance Instruction
SMI:	Substation Maintenance Instruction
LDI 0001:	Public lighting Electrical Design Element

Additionally, where relevant, the design complies with AS/NZS 7000 "Overhead Line Design - Detailed Procedures" published by The Australian Standards.

AUSCONNEX indemnifies Endeavour Energy for any loss or damage resulting from non-compliance of the design with the above standards.

Signed: . . . . . .

Name: JIM PAPPAS

Service Provider Number: 4863 Date: 07/06/19

AMENDMENTS
ORIGINAL ISSUE
A
DRAFT No. 01

AUSCONNEX
49 Glendenning Road
Glendenning NSW 2761
www.ausconnex.com.au

TEMPLATE VERSION No. 5.0

REFERENCE DRAWING'S

515695	ARP4108 BLACKTOWN RD STG1

WORK ORDERS

GENERAL	
OVERHEAD	
UNDERGROUND	
SUBSTATIONS	

CAP / SAMP No.	ARP4126
AM PROJ. No.	SMECEE01
HV SWITCHING	LEABONS LN/S4
UBD/PENGUIN REF	189 B6
GIS MAP No	U9160-74
HV OP DIAGRAM	
LOCAL GOV AREA	BLACKTOWN

ORIGINAL SCALE 1:1000

DRAWN JP
DATE 7/6/19
CH'D
DESIGN JP

DO NOT SCALE
DIMENSIONS IN METRES

BLACKTOWN ROAD
BLACKTOWN
ARP4126
ASSET RELOCATION (SECTION 2B)

Endeavour Energy

A1 | 515628 | A

SHEET No 10 OF 10 SHEETS

74990

Appendix I

Historical Archaeological Test Excavation Report

Prospect Highway Upgrade: Intersection of Prospect Highway and Reservoir Road, Prospect

Historical Archaeological Test Excavation Report

Report to SMEC on behalf of Roads and Maritime Services

August 2019

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EXECUTIVE SUMMARY

This report provides the results of archaeological test excavation carried out in the study area at Reservoir Road Prospect to the west of the Prospect Highway / Reconciliation Road intersection on 22 May and 23 May 2019.

Roads and Maritime Services (Roads and Maritime) proposes to upgrade Prospect Highway, between Reservoir Road, Prospect, and St Martins Crescent, Blacktown (the proposal). A Non-Aboriginal Heritage Assessment and Statement of Heritage Impact (SoHI) completed by Artefact Heritage in January 2014 (Artefact Heritage 2014) and updated in October 2015 (Artefact Heritage 2015) found that the proposal has the potential to impact on archaeological remains associated with earlier phases of the 'Former Great Western Road, Prospect,' an item listed on the State Heritage Register (SHR No. 01911).

Roads and Maritime engaged Artefact Heritage to prepare a Historical Archaeological Management Plan (AMP) (Artefact Heritage 2016) to define proposed measures for the management of the potential heritage resource at the study area. The AMP proposed a management strategy illustrated in the figure below. In accordance with this strategy a section 57 (2) exemption under the NSW Heritage Act was sought by Roads and Maritime to permit archaeological test excavations at Reservoir Road to the west of the Prospect Highway / Reconciliation Road intersection. A section 57 (2) exemption was provided by the NSW Office of Environment and Heritage on 6 March 2019 (OEH reference DOC 19/51899), under site specific exemption 2B.

Findings

Three archaeological test trenches were excavated in the study area by Artefact Heritage on 22 and 23 May. No significantly intact remains associated with the former alignment of the Great Western Road were identified during excavations, although partial remains that likely relate to the first phase of road construction were identified. The test excavation program found that there is low archaeological potential within the footprint of Reservoir Road due to ongoing road construction and maintenance in the study area. Evidence has been recovered that would indicate that better preserved elements of the Great Western Road may be present beneath the road verge and/or road reserve immediately south of the test excavation locations.

Recommendations

- A s57 exemption for the project works within the SHR curtilage should be obtained prior to works commencing. Note the following:
    - The exemption is unlikely to allow impact to, or removal of, archaeological remains which have not been previously identified in the archaeological assessment for the project
    - The exemption is unlikely to allow impact to, or removal of, state significant relics
    - Where substantial intact archaeological relics of state or local significance, not identified in the original assessment or during the test excavation program, are unexpectedly discovered during excavation, work must cease within the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the NSW Heritage Act. Depending on the nature of the discovery, additional assessment and

possibly an excavation permit may be required prior to the recommencement of excavation in the affected area

- Works north of the southern fog line of Reservoir Road Prospect may proceed without further archaeological investigation, and should be managed under the Roads and Maritime Standard Management Procedure for Unexpected Finds.[1] An unexpected archaeological find would be anything of potential heritage significance which has not been identified in the previous archaeological assessment for the project, or identified during the archaeological test excavation (see Section 4.3)
- As above, the low archaeological potential within the Reservoir Road corridor would be appropriately managed through adherence to the Roads and Maritime Standard Management Procedure for Unexpected Finds[2]
- Works that will involve excavation south of the fog line of Reservoir Road Prospect should be archaeologically monitored to detect and prevent damage to potentially better-preserved elements of the Great Western Road, and to establish the original width and position of the Great Western Road in this location. Areas recommended for monitoring are shown on Figure 4-14
- Results of this archaeological monitoring will be provided in the form of an addendum to this report.

[1] Roads and Maritime Services (2015) Standard Management Procedure Unexpected Heritage Finds. https://www.rms.nsw.gov.au/documents/about/environment/protecting-heritage/managing-development/unexpected-heritage-items-procedure.pdf

[2] Roads and Maritime Services (2015) Standard Management Procedure Unexpected Heritage Finds. https://www.rms.nsw.gov.au/documents/about/environment/protecting-heritage/managing-development/unexpected-heritage-items-procedure.pdf

CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This report provides the results of archaeological test excavation carried out at Reservoir Road Prospect west of the Prospect Highway / Reconciliation Road intersection. Archaeological test excavations were carried out by Artefact Heritage on 22 May and 23 May 2019 to inform the following processes:

Roads and Maritime Services (Roads and Maritime) proposes to upgrade Prospect Highway, between Reservoir Road, Prospect, and St Martins Crescent, Blacktown (the proposal). A Non-Aboriginal Heritage Assessment and Statement of Heritage Impact (SoHI) completed by Artefact Heritage in January 2014 (Artefact Heritage 2014) and updated in October 2015 (Artefact Heritage 2015) found that the proposal has the potential to impact on a section of the 'Former Great Western Road, Prospect' that is listed on the State Heritage Register (SHR No. 01911).

Roads and Maritime engaged Artefact Heritage to prepare a Historical Archaeological Management Plan (AMP) (Artefact Heritage 2016) to define proposed measures for the management of the potential heritage resource at the study area. The AMP proposed a management strategy illustrated in the figure below. In accordance with this strategy a section 57 (2) exemption under the NSW Heritage Act was sought by Roads and Maritime to permit archaeological test excavations at Reservoir Road to the west of the Prospect Highway / Reconciliation Road intersection. A section 57 (2) exemption was provided by the NSW Office of Environment and Heritage on 6 March 2019 (OEH reference DOC 19/51899), under site specific exemption 2B.

1.2 Study area

The proposal comprises that section of Prospect Highway from Reservoir Road in Prospect to St Martins Crescent in Blacktown, approximately 3.6km in length (Figure 1-1, Figure 1-2). It includes a stretch of Reservoir Road, on either side of Prospect Highway, approximately 380m in length. The study area for this report consists of the proposal along Reservoir Road for 285 metres west of the Prospect Highway / Reconciliation Road intersection, which is within the SHR curtilage of the 'Former Great Western Road, Prospect. The proposed works at the study area are shown in Figure 1-3. The excavations study area is within the local government area (LGA) of Blacktown.

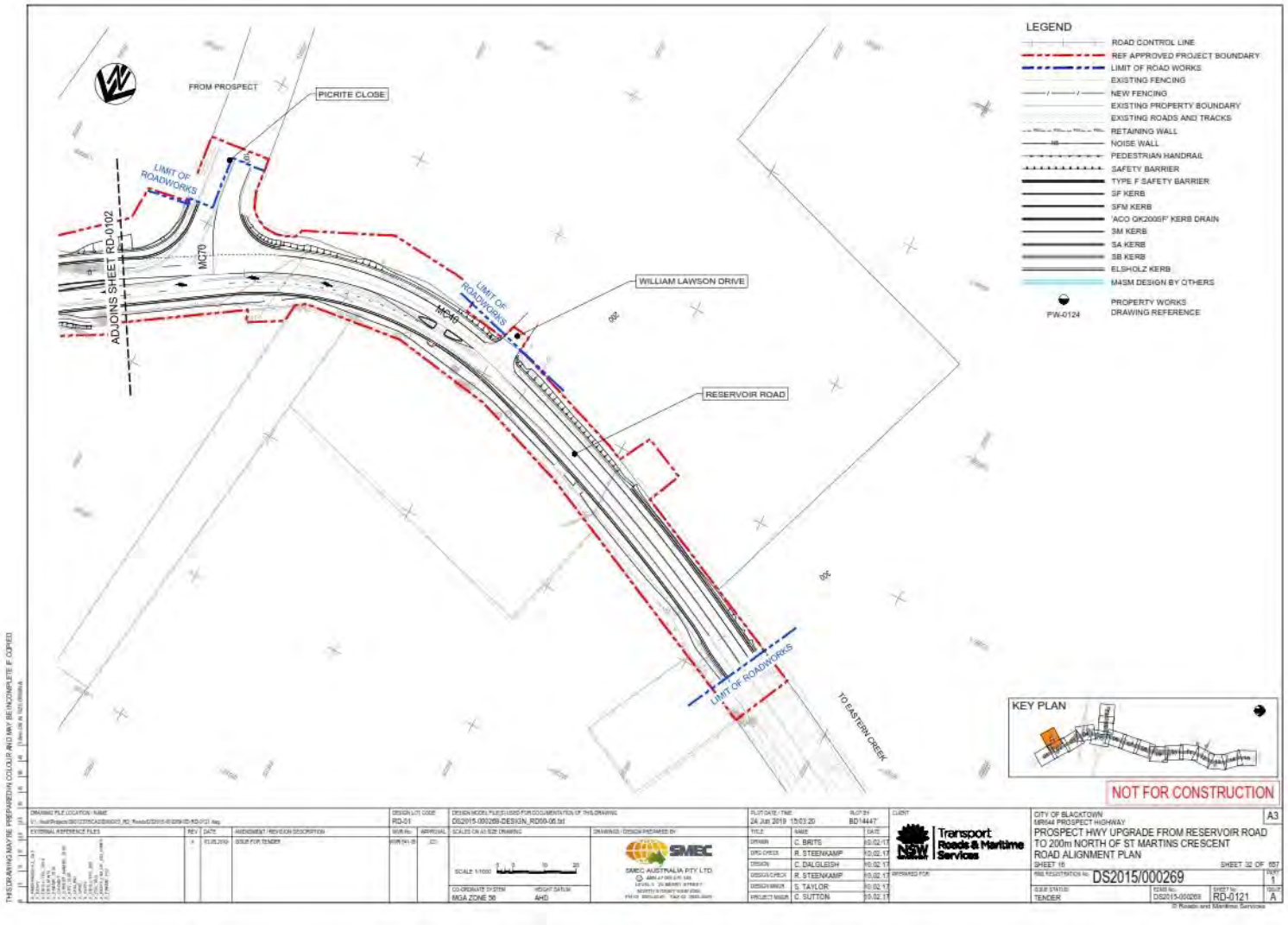
1.3 Report authorship and acknowledgements

This report was prepared by Michael Lever (Senior Heritage Consultant) with input and review by Jenny Winnett (Principal).

Figure 1-1: The SHR map of 'Former Great Western Road, Prospect'.

Figure 1-2: Study area outlined red with SHR curtilage shaded yellow (Google Earth, marked up).

Figure 1-3: Proposed road alignment along Reservoir Road (SMEC Australia, DS 2015/ 000269 24/06/2019Road alignment plan, Sheet No. RD-0121)



2.0 HISTORICAL CONTEXT

The Great Western Road allowed European colonists to cross the Blue Mountains and therefore played a vital role in the expansion of colonial settlement across the Cumberland Plain and beyond the Sydney Basin to the Western Plains.. The drought of 1812 provided an impetus for colonists to move inland seeking more fertile soil for crop production. Aboriginal guides led Blaxland, Lawson and Wentworth in tracing the route over the Blue Mountains in 1813. In 1814 William Cox was commissioned by Governor Macquarie to construct a road along this route, from Emu Plains to the Bathurst Plains along with the surveyor George Evans. The Great Western Road was one of three Great Roads that were built with convict labour and were intended to establish European settlement in the colony beyond the Cumberland Plain[3].

The initial section of the Great Western Road, built in 1815, ran west from the Nepean River through the Blue Mountains. In 1817, construction of a further section of the Great Western Road was commenced, again under Cox. This ran from Emu Plains to Parramatta, establishing a connection between the city and the Western Plains[4].

The SHR listing provides a quote from Helen Proudfoot on the material connection and importance of the road construction in her Thematic History of Penrith (sourced from The Prospect Heritage Study):

> *The great road west became a symbolic road as soon as it was formed. Its point of departure was George Street and Sydney Cove, the genesis of the colony; it travelled west to Parramatta, and then, near Prospect, its symbolic character begins to become apparent as the topography of long parallel ridges dipping down to the Nepean in prelude to the ascent of the river ramparts of the Blue Mountains beyond the river begins to unfold. The road held a strange sense of promise to its travellers, a sense of anticipation, quite unlike that felt on any other road out of Sydney.*[5]

The construction of the stretch of the Great Western Road passing through the study area began in 1818. There is some suggestion that this alignment may have followed an earlier Aboriginal route across Prospect Hill. Early plans indicate that the original alignment of the road through the study area may have been slightly different (Artefact Heritage 2014). The Great Western Road at Prospect is recorded as having been constructed with the macadam roadmaking method and is described as likely the first attempt at macadam construction in NSW[6]. This was probably due to the local availability in Prospect of ironstone to be broken into road base and which is depicted as used in the construction of the Great Western Road in this location[7]. The use of macadam road in Prospect would not only have been innovative for NSW. It was also by global standards a rapid and pioneering uptake of new roadmaking technology. The macadam method is phonetically named after its inventor John Loudon McAdam of Scotland, who pioneered its use from around 1820. Only two years later, in 1822 F. Goulburn, the Colonial Secretary of NSW placed an advertisement calling for:

> *…the REMAKING on the principles of John London* [sic] *McAdam, Esq of any Part or Parts of the ROAD from Prospect to Richmond*[8] (original capitalisation)

[3] Office of Environment and Heritage, Former Great Western Road, Prospect. Accessed online at: http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5061510
[4] Artefact Heritage, 2014, *Prospect Highway Upgrade*, p. 15
[5] Office of Environment and Heritage, Former Great Western Road, Prospect
[6] Department of Main Roads NSW, 1976, *The Roadmakers. A history of main roads in New South Wales.* Department of Main Roads NSW, p36
[7] Ibid
[8] *The Sydney Gazette and New South Wales Advertiser* 11 January 1822, p1

The mode of macadam construction described as used in NSW consisted of ballast stones laid into a concave earthen bed with very little camber[910]. The later practice in NSW of mixing the Telford and macadam systems through including a sandstone base under a macadam road is less likely to have been utilised in early macadam construction such as at the Great Western Road. The principles behind Telford and McAdam's roads relied on very different engineering concepts, and at least at first it seems a rigid adherence to one method or the other was maintained[11]. Telford perceived the natural ground surface as unstable and therefore to be reinforced with large blocks of sandstone at the base of a road, while McAdam considered that if dry, the natural ground could carry great weight. Hetherefore prioritised installation of graded ballast layers that would be largely impermeable to water[12]. The size of these macadam stones was crucial to the effectiveness of the macadam method. Earlier forms of macadam road such as may be anticipated in the study area comprised a lower course of ballast approximately 200mm thick, with a maximum size for each stone of 3 inches (7.5cm). This was topped with an upper (wearing) course of ballast to varying thicknesses, with stones measuring no larger than 2cm. Later macadam roads included more complex strata and bedding construction. The first macadam road in the United States of America was laid at around the same time (1823) as the Great Western Highway and its construction was the subject of the painting shown in Figure 2-1 below[13]. In this painting workers are shown breaking stones from a local source down to size under the supervision of an inspector holding a ring-gauge for measuring stone size. No preparation of the underlying ground surface other than excavation of a shallow trench appears to have taken place. Although a stylised representation, it nonetheless provides graphic insight to road construction technology of the same period and with the same method as described in the study area.

Figure 2-1: 1823-First American Macadam Road (painting by Carl Rakeman - from U.S Department of Transportation)

[9] Ibid.
[10] Coutie, B. M. 1927. Coanes' Australasian roads: the location, design, construction and maintenance of roads and pavements.
[11] Karskens, G. 1985. *The Grandest Improvement in the Country. An Historical and Archaeological Study of The Great North Road 1825-1836.* Doctoral Thesis, University of Sydney.
[12] Karskens Ibid. pp220-225
[13] https://www.fhwa.dot.gov/rakeman/1823.htm accessed 24/05/2019

William Cox (1764-1837)[14] constructed the first stage of the Great Western Road across the Blue Mountains to a width of at least 12 feet (3.6m). A width of 16ft (4.9m) would allow for two carts or carriages to pass. The width of the Great Western Road at Prospect is likely to have been somewhere between these measurements[15]. By the 1860s several quarries were operating in the Prospect area[16] and by approximately 1866 local blue stone (basalt) quarrying supplied contractors through most of Sydney with road metal. Local quarrying continued through the nineteenth and twentieth centuries. It is likely that locally sourced materials were used in the later construction and maintenance of the Great Western Road through the study area. In the later 1820s regular coach services were used along the Great Western Road. Five toll bars were placed between Parramatta and Penrith with one toll bar located adjacent to the study area; opposite the entrance to William Lawson's estate to the south of the road. The Great Western Road was gazetted as a main road in September 1833[17]. The road had been metalled by 1865[18]. In 1925, the road came under the control of the Department of Main Roads. In 1929, the Great Western Road was reclassified as a state highway and renamed the Great Western Highway[19]. The road was asphalted and line-marked by 1936[20]. A photograph from about this time (Figure 2-2) shows a two-lane road, which appears to have a central asphalt pavement with little camber and narrow shoulders. The nature of the road pavement is not clear in the 1943 aerial photograph shown in Figure 2-3, but the central part of the road is certainly distinct from the shoulders and no kerbing is visible. Following the Second World War there was a large increase in motor traffic and congestion along the Great Western Road. One of the responses to this increase in traffic was the construction of the Prospect Deviation in 1968. This created a straighter alignment of road through Prospect, superseding the Great Western Highway within the study area. Nevertheless, the study area is still subject to high volumes of often heavy load-bearing traffic. The Former Great Western Road at Prospect was recognised for its heritage value and significance and was gazetted as an item on the State Heritage Register on 27 June 2014.

[14] http://adb.anu.edu.au/biography/cox-william-1934 accessed 24/05/2019
[15] Office of Environment and Heritage, Former Great Western Road, Prospect
[16] Sydney Water Corporation, 2005, pp.11-12
[17] Ibid
[18] Office of Environment and Heritage, Former Great Western Road, Prospect
[19] Office of Environment and Heritage, Former Great Western Road, Prospect
[20] Department of Main Roads NSW, 1976 (*The Roadmakers)*, Map showing Bituminous surfacing of state highways as at 30th June 1936.

Figure 2-2: A 1938 photograph of a section of the highway in the vicinity of the study area (State Highway 5 – entrance to Prospect Quarry looking south, State Library NSW, Digital order no. d1_32547).

Figure 2-3: Aerial photo of the study area in 1943 (LPI, SIXMaps).

3.0 ARCHAEOLOGICAL SIGNIFICANCE

3.1 Archaeological potential and significance

This section provides a brief summary of the archaeological potential and significance of the study area as fully elaborated in previous reporting by Artefact Heritage for the proposal (Artefact Heritage 2014, 2015, 2016)

The archaeological potential of the Former Great Western Road, Prospect, is addressed in the SHR listing as follows:

> *While there has been no formal extensive archaeological assessment of the Former Great Western Road, Prospect, there is every likelihood that the road has the potential to retain archaeology of convict built infrastructure of the early colonial period. This is based on the premise that the road has not been substantially widened or improved since the middle of the twentieth century and that any road improvements until then involved new pavements over older layers. Experience shows that when early roads are disturbed that evidence of earlier road fabric and surfaces may be revealed and that deposits which include archaeological 'relics' may also be encountered.*[21]

Regarding the proposal footprint within the SHR curtilage, the SoHI identified the potential for historical archaeological remains only within that section to the west of the Prospect Highway intersection (Artefact Heritage 2015: 9). The roadway in the study area appears to have remained preserved and distinct from the generally straightened remainder of the road from Parramatta to Penrith. It is described in the SHR listing as being, '*aligned along the undulating ground to the north of Prospect Hill and Prospect Reservoir….It winds gently over the low northern ridge and spurs of Prospect Hill, along northern boundary of Prospect Reservoir'.* [22]

No documentary evidence has been found of formed kerbing or guttering on this section of the road, or of culverts or bridges. The expected remains are likely to be limited to earlier road pavement and sub-base. The archaeological remains that are likely to be present would be defined as works, rather than relics, as defined and protected by Section 139 of the *Heritage Act 1977*. However, they are likely to form an important part of the SHR-listed item the Former Great Western Road, Prospect, and are therefore protected by Section 57 of the Act. Infrastructure and fabric relating to the 1818 convict-built Great Western Road would have the ability to demonstrate early nineteenth century road techniques, skills and technologies. These remains may be of significance at a State level. Remains from later phases of construction and use would more likely be of local heritage significance.

[21] Office of Environment and Heritage, Former Great Western Highway, Prospect.
[22] Ibid

Table 1: Summary of the historical archaeological potential of the study area.

Chronology of events	Possible archaeological remains	Potential	Significance
1818 Construction of road	Evidence of the macadam road surface which may include sandstone (used for base courses on some macadam type roads) and differing sizes of ironstone or basalt ballast possibly locally obtained from quarries in Prospect. Lower layers of ironstone would be of maximum 7.5cm size, higher layers and wearing course would be of maximum 2cm size. Broken basalt used in construction of road and obtained from Prospect Hill as early as the 1820s. Size constraints likely same as for ironstone. Drainage infrastructure associated with the construction of the convict-built road. Artefacts / rubbish deposits contained within features such as drains, or in fills.	Low	State
1865 Road is metalled	Basalt which was quarried and supplied to the Great Western Road contractors. Likely similar size grading from lower to upper courses as for earlier roadway.	Low	State
1936 Road is asphalted	Asphalt and bitumen. Likely poorly sorted with higher proportion of bitumen than modern asphalt, possibly applied as spray-on bitumen over gravel or existing surface.	High	Local
Ongoing maintenance and replacement in Modern Period	Likely presence of layers of highly compacted and well sorted asphalt. Layer interfaces may be undetectable particularly if roadway was milled prior to application of new surface.	nil	nil

4.0 ARCHAEOLOGICAL TESTING

Test excavations were carried out at the study area by Artefact Heritage over two days on the 22 and 23 May 2019. Staff comprised Michael Lever (Senior Heritage Consultant), Jessica Horton (Heritage Consultant) and Sarah Hawkins (Graduate Heritage Consultant).

4.1 Constraints

Testing was carried out in a busy traffic environment. This placed constraints on the possible size of archaeological test excavation trenches. Only one lane of Reservoir Road could be closed at a time and roadway had to be reopened immediately following excavation. This constrained excavation along the road centre portions of test trenches. Test trenches were backfilled and were covered with road plates immediately after excavation and recording in order to facilitate reopening. The maximum size of road plates that could be practically managed in the space available determined the maximum possible size of test trenches. These test trenches all measured approximately 3m x 1.5m. Photographic recording was constrained by the safe positions from which images could be taken in the busy traffic conditions that were present. Due to the robust and frequently tightly consolidated nature of the various archaeological contexts that were identified and which were often adhered to each other, manual excavation was not practical and most excavation was undertaken mechanically under close archaeological supervision.

4.2 Excavation methodology

Test excavation consisted of the excavation of three test trenches, placed in as shown in Figure 4-1.

Each trench was placed at approximately 300mm from the centre line of the carriageway, extending to the outer edge (fog line) of the carriageway. Trench placement was intended to attempt to capture a maximum sample of the likely location of underlying historical roadway, and to a limited extent to test for variation in road formation methods relating to local topographic differences. The offset of 300mm from the centre line was implemented to maintain a safe operating distance between both the mechanical excavator bucket and staff in the trench, and traffic in the opposite live lane. Test trench 1 was placed at a lower point in the local topography. Test trench 2 and test trench 3 were placed adjacent to each other across the roadway on a localised low slope. Test trench 2 and test trench 3 were placed to gain a full cross-section of the roadway stratigraphy, with the exception of approximately 600mm in the current road centre that could not be excavated due to the above-mentioned traffic and safety considerations. Test trenches were aligned with current property boundary perimeters to facilitate the relocation of these trenches if required.

Excavation was undertaken in the following method

- Mechanical (cement saw) pre-cutting of the current road pavement.
- Mechanical (excavator) removal of the current road pavement.
- Combined manual and mechanical investigation and removal of underlying strata.
- Photographic recording of each strata, prior to further excavation to establish underlying layers
- Combined manual and mechanical excavation into natural soils
- Documentary, graphic and photographic recording of stratigraphy, including depths and measurements
- Following recording, the test trenches were backfilled, and test trenches road plated pending reinstatement of road surface.

Figure 4-1: Location of test trenches

4.3 Excavation results

No significantly intact remains associated with the former alignment of the Great Western Road were identified during excavations, although partial remains were identified that likely relate to the first phase of construction of the Great Western Road. The historical alignment of the Great Western Road was identified as likely different to the modern alignment.

4.3.1 Test trench 1

Test trench 1 was located on the westbound lane of Reservoir Road immediately opposite the shared boundary of Lot 1 DP394382 and Lot 1A DP361322. Road surface was cut by mechanical saw and removed mechanically. Road surface (context 01) consisted of 100mm to 120mm of modern highly compacted asphalt. Beneath this, a thin layer (60mm) of bituminous asphalt (context 05) was at times adhered to the under surface of context 01, but otherwise remained in place (Figure 4-2). Removal of this bituminous material revealed a layer of basalt ballast (context 02) to 200mm deep with ballast sized on average 50mm to 100mm and containing small amounts of very finely graded ballast (<20mm), dispersed throughout (Figure 4-3). Beneath this, a highly compressed and red-brown stained layer was evident. Manual excavation of this was attempted but was unsuccessful due to the high level of compression (Figure 4-4). Mechanical excavation demonstrated this to be a thin (100mm) layer of ironstone ballast (context 03) that had stained surrounding soils (Figure 4-5), and which was embedded into underlying solid and undisturbed natural clay (context 04) (Figure 4-6). Excavation was continued up to 200mm into this clay, with no further features identified (Figure 4-7). Test trench 1 is shown excavated in local context in Figure 4-8.

The underlying road surfaces that were identified in test trench 1 appeared to continue without change into the adjacent southern road shoulder. The base of the lowest identified constructed context (context 05, ironstone ballast) appeared level and did not display upwards or downwards curvature, or taper to either end of the test trench. Images below all face west and were all taken on 22 May 2019 by J. Horton and S. Hawkins.

Figure 4-2: Test trench 1 showing top of context 05 – bituminous asphalt

Figure 4-3: Test trench 1 showing top of context 02 – basalt ballast

Figure 4-4: Test trench 1 showing interface at base of context 02 (basalt ballast) and the top of context 03 (ironstone ballast) and attempts to excavate by hand

Figure 4-5: Test trench 1 showing context 03 (ironstone ballast)

Figure 4-6: Test trench 1 at base showing stratigraphy and context 04 (underlying solid clay)

Figure 4-7: Test trench 1 west wall showing stratigraphy

Figure 4-8: Test trench 1 in context

4.3.2 Test trench 2

Test trench 2 was one of a pair situated on low slope, approximately 100m west of test trench 1. Both test trench 2 and test trench 3 were placed aligned with the shared boundary of Lot A DP361322 and Lot 101 DP872728. Test trench 2 was excavated in the west bound lane of Reservoir Road, and test trench 3 in the east bound lane. The same excavation methods were followed as in test trench 1, and an identical stratigraphy was identified in test trench two to that found in test trench one. This comprised modern road surface to 100mm, above 80mm of bituminous asphalt, over 200mm of basalt ballast, overlying 150mm of ironstone ballast, directly on natural clay (Figure 4-9). Basalt and ironstone ballast sizes were as found in test trench 1.

Due to safety considerations it was not possible to fully excavate the portion of test trench two in its northern extremity along the centre line of the roadway (to the right of the image in Figure 4-10). However, it appeared that the base of the historical deposit trends upwards towards the current road centre in the north of test trench two. Images below face west and were taken on 22 May 2019 by J. Horton and S. Hawkins.

Figure 4-9: Test trench 2 at base

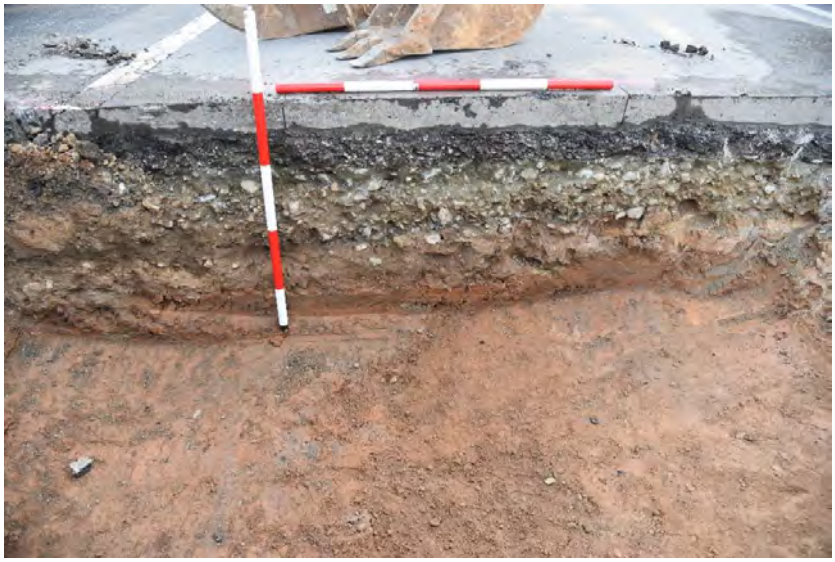


Figure 4-10: Test trench 2 in context

4.3.3 Test trench 3

Test trench 3 was situated in the eastbound lane of Reservoir Road and was located directly north of test trench two. The same stratigraphic components were identified here as in test trench one and test trench two, but in different extent and composition. Modern road surface (context 01 -120mm) overlay an even 10mm layer of bituminous asphalt (context 05 – 100mm). Below this, basalt macadam ballast (context 02) was thickest (90mm) in the southern extent of test trench three. The base of the basalt ballast tapered upwards to the north and basalt ballast was not present at all in the northern meter of test trench 3. Ironstone ballast (context 03) was only present in a shallow lens (50mm) in the southernmost metre of test trench 3 and did not extend into the northern two metres of test trench three. Images below face west and were taken on 22 May 2019 by J. Horton and S. Hawkins.

Figure 4-11: Test trench 3 at base, in context

Figure 4-12: Test trench 3, northern extent showing basalt ballast tapering upwards to north (right)

4.3.4 Discussion

4.3.4.1 Stratigraphy

The stratigraphy identified during test excavation is consistent with the history of road construction that was developed during reporting for the proposal (Artefact Heritage 2014, 2015, 2016). The macadam road construction identified comprised a lower or base layer of large ironstone ballast placed directly into a shallow cut in local soils or clay.

Context 03 identified in all three test trenches consists of a thin (and in test trench three partial) lens of ironstone ballast pieces sized between 50mm and 100mm. This likely represents the vestigial remains of the base layer of the first iteration of roadway constructed in 1818. The absence of smaller ironstone gravels that are characteristic of upper macadam courses may reflect erosion of the road surface or may result from the removal of smaller grade ballast prior to the deposition of large basalt ballast (context 02).

The roadway is recorded as having been metalled in 1865, likely with basalt. The large basalt ballast identified (context 02) likely relates to this historical phase of roadworks. The absence of smaller basalt grades overlying large basalt again may have resulted from erosion of the road surface or may result from stripping and grading of basalt ballast prior to the deposition of bituminous asphalt (context 05) that is documented as in place by 1936.

No sandstone paving or edging such as associated with Telford or some macadam road construction was identified.

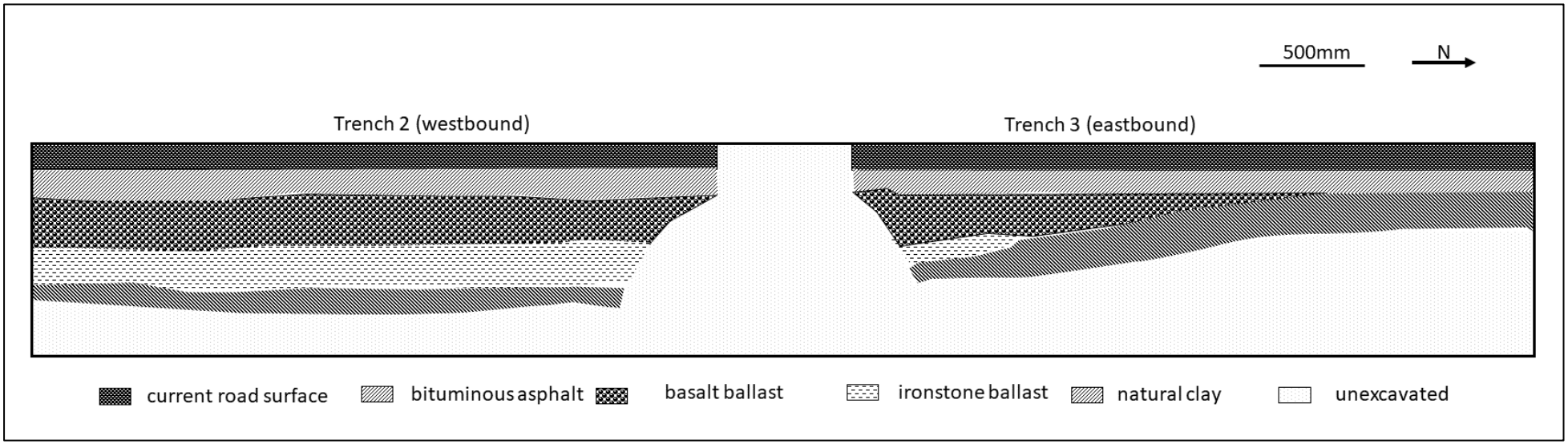
4.3.4.2 Indicative location of the old Great Western Highway

The test excavation has identified the full depth and northern extent of the old Great Western Highway in Reservoir Road. Excavations demonstrate that the current alignment of Reservoir Road in this location does not exactly overlie the historical alignment of the Great Western Highway. It is probable that the footprint of the Great Western Highway extends slightly south of the current southern fog line of Reservoir Road, as evidenced by the tapering of historical road deposits to the north of test trench 3, and the lack of ironstone ballast (context 03) in the north two thirds of the trench.

This indicates that the main weightbearing portion of the Great Western Highway was not within test trench three (eastbound lane of Reservoir Road). In contrast, excavations on the south side / westbound lane of Reservoir Road encountered historical road surface that continued level and without taper into the southern baulk of test trench two. This indicates that in this location, the Great Western Highway continues southwards beyond the current fog line of Reservoir Road into road verge and road reserve.

The test excavation identified that the former highway fabric had been impacted by modern road construction and maintenance. Therefore, it is possible that portions of the former highway may survive in the verge to the south of the Reservoir Road southern fogline, where archaeological remains may be better preserved. The relationship between historical road deposits which taper to the north and historical road deposits which appear to continue to the south beyond the limits of archaeological excavation is shown in Figure 4-13 below.

Figure 4-13: Stratigraphy of test trench 2 and test trench three, view to west.



4.4 Response to research questions

The AMP (Artefact Heritage 2016: 26) proposed four research questions to be addressed by the results of test excavation. The information presented above allows these questions to be briefly addressed as below, along with how these findings may relate to relevant NSW historical themes (Artefact Heritage 2016: Table 2):

- Are archaeological remains relating to earlier phases of the construction and use of the Great Western Road present in the study area?
    - Yes. Archaeological testing has identified partial archaeological remains that relate to all identified phases of road construction in the study area.
- What is the nature and extent of these surviving archaeological remains?
    - The archaeological remains relating to the earliest and most historically significant phase of road construction are fragmentary and only partially preserved. They are large (50mm to 100mm) pieces of ironstone ballast in a layer not more than 100mm to 150mm thick, resting directly on natural clay. The identified remains are below current roadway that has been resurfaced and worked at least several times. Test excavation indicates that the older road alignment may extend several meters to the south of the current road alignment. It is possible that better preserved elements of the first construction phases of the Great Western Road may be present beneath what is currently road verge or road reserve. These early road elements may be better preserved in road verge or reserve due to their potentially not having been subject to the same level of disturbances associated with road renewal and maintenance as have archaeological remains located within the current road footprint.
- What historical information are these remains likely to be able to provide.
    - The test excavations carried out for this report are very limited in scope and can therefore only expand information on the location of the Great Western Highway that was archaeologically tested. Test excavations would clarify that the original road construction at the study area was carried out as a macadam road containing an ironstone ballast base and without the underlying sandstone paving or Telford road elements that have been at times suggested. It has not been possible to identify the original width of the Great Western Highway in this location. The northern perimeter of the Great Western Highway was identified in test trench three, however no features such as remnant camber or taper were identified in the southern test trenches one and two that would allow estimation of the original road width.
    - Convict: Apart from the likely chronological connection between ironstone ballast and the convict era of NSW, no evidence was recovered that would directly relate to the convict era or system.
    - Transport: The general location, history and construction schedules of the Great Western Road are relatively well documented. The remains identified during test excavation would not contribute markedly to knowledge of the Great Western Road overall. The identified remains may assist in clarifying the original route and construction

of the Great Western Road in this specific location. Potentially better preserved and more informative remains of the Great Western Road may be located immediately south of the test excavation locations for this report.

- Utilities: no historical drainage services or utilities were identified during test excavations.

4.5 Future management

The archaeological test excavations did not identify preserved elements of the Former Great Western Road. However, the program did identify trace remains of what may be the base layer of the first road constructed in this location in 1818, consisting of a deposit consisting of large ironstone ballast. Only the base 100mm to 150mm of this ironstone ballast has been preserved and it is generally intermixed with and heavily compressed into the overlying basalt ballast.

The testing program did recover evidence that better preserved elements of the Great Western Road may be present beneath the road verge and/or road reserve immediately south of the test excavation locations. It is therefore recommended that should excavation be required in the locations identified in Figure 4-14, that archaeological monitoring be undertaken to detect and prevent damage to potentially better-preserved elements of the Great Western Road, and to establish the original width and position of the former road corridor.

As defined by the 2009 'Relics provisions' of the *Heritage Act 1977* the archaeological remains identified during testing were found to be 'works' and not 'relics'. 'Works' have a separate designation to archaeological 'relics' and include evidence of past infrastructure, including former road surfaces and pavement, kerbing, culverts, drains and footings (where there are no artefact bearing deposits in association).

4.5.1 Archaeological monitoring methodology

Archaeological monitoring is a methodology utilised where there is lower potential for significant archaeological remains and/or where minor excavation work is in an area of archaeological sensitivity. An archaeologist is in attendance during excavation work with potential to expose or impact archaeological remains.

If archaeological remains are identified during monitoring, they would be exposed by the archaeologist and their significance assessed, as per the 2009 guidelines produced by the NSW Heritage Division - *Assessing Significance for Historical Archaeological Sites and 'Relics'*.

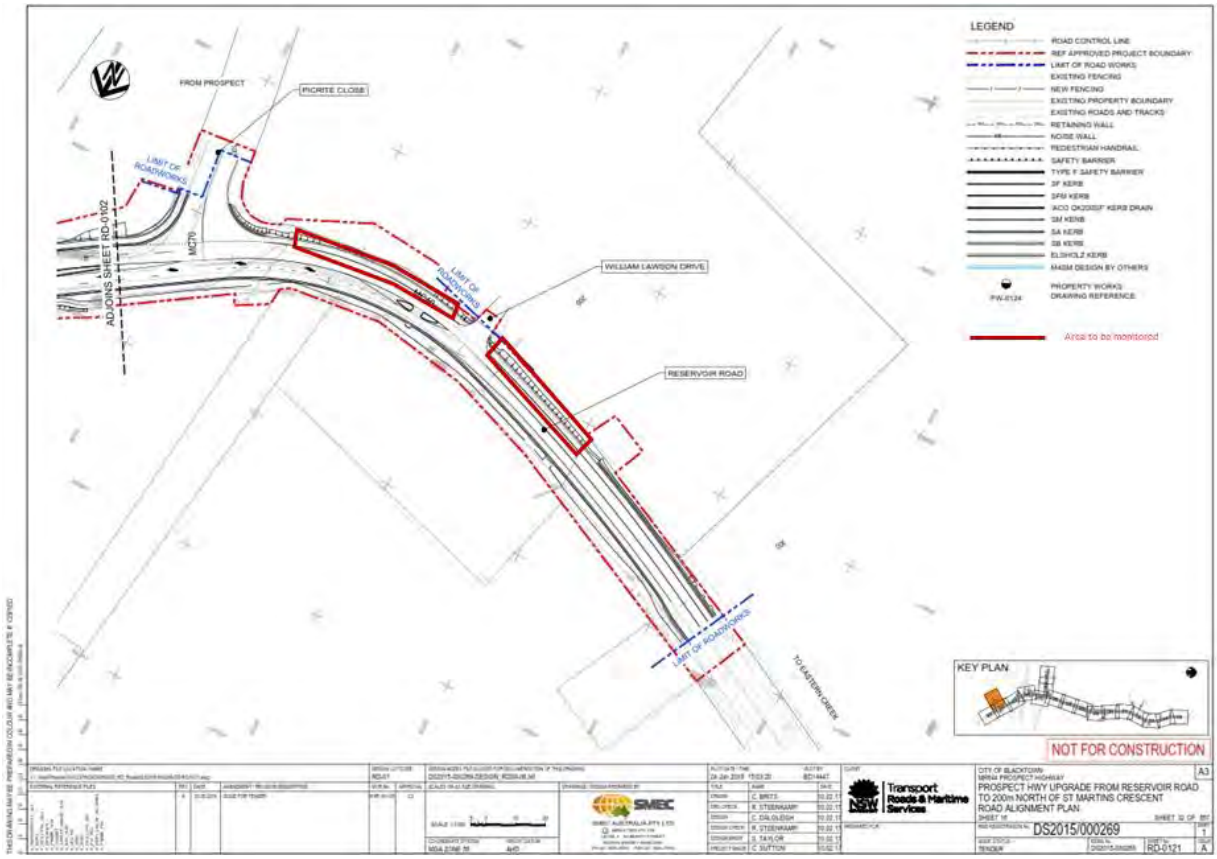
Should identified remains be found to be consistent with those approved for impact under the s57 exemption, archaeological salvage and recording would be undertaken. On completion of this work, project excavation can continue.

It is noted that where substantial intact archaeological remains of State or local significance not identified in the archaeological assessment, are identified during monitoring, work must cease, and the Heritage Council must be notified in writing in accordance with section 146 of the Act. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area.

Archaeological monitoring in those locations identified in Figure 4-14 would comprise the following activities, subject to any conditions of the section 57 exemption:

- Supervision by an archaeologist of excavation for the project
- Excavation will proceed in coordination with the monitoring archaeologist and will be carried out using methods advised by the archaeologist as required in order to minimise damage to potential archaeology.
- Generally, excavation should proceed in shallow horizontal scrapes using bladed (mud) buckets
- If potential archaeology is identified, hand excavation and archaeological excavation may be required to better clarify its extent and nature
- Archaeological remains will be recorded by the archaeologist. This will include detailed description, photography, and measurements of dimension and location.

Figure 4-14: Proposed road alignment along Reservoir Road (SMEC Australia, DS 2015/ 000269 24/06/2019Road alignment plan, Sheet No. RD-0121) showing locations to be monitored during excavation works



5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Three archaeological test trenches were excavated in the study area by Artefact Heritage on 22 and 23 May. No significantly intact remains associated with the former alignment of the Great Western Road were identified during excavations, although partial remains were identified that likely relate to the first phase of road construction. The test excavation program found that there is low archaeological potential within the footprint of Reservoir Road due to ongoing road construction and maintenance in the study area. Evidence has been recovered that would indicate that better preserved elements of the Great Western Road may be present beneath the road verge and/or road reserve immediately south of the test excavation locations.

5.2 Standard exemptions

This assessment has found that the project work will have negligible direct adverse impact on the heritage significance of the 'Former Great Western Road, Prospect' SHR item, and on archaeological resources within the study area.

Based on the results of the test excavation program, and on the findings of the original archaeological assessment for the project, it has been concluded that the proposal would be exempt from the requirement to obtain approval under s60 of the NSW Heritage Act 1977. The proposed works fall within the definition of the following standard exemptions:

> **Standard Exemption 7**: Minor activities with little or no adverse impact on heritage significance.
>
> 1. Anything which in the opinion of the Director-General is of a minor nature and will have little or no adverse impact on the heritage significance of the item does not require approval under subsection 57(1) of the Act.
>
> **Standard Exemption 4**: Excavation.
>
> 1. Excavation or disturbance of land of the kind specified below does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a), (b) or (c) have been met and the person proposing to undertake the excavation or disturbance of land has received a notice advising that the Director-General is satisfied that:
>   c. A statement describing the proposed excavation demonstrates that evidence relating to the history or nature of the site, such as its level of disturbance, indicates that the site has little or no archaeological research potential.

5.3 Recommendations

- A s57 exemption for the project works within the SHR curtilage should be obtained prior to works commencing. Note the following:
    - The exemption is unlikely to allow impact to, or removal of, archaeological remains which have *not* been previously identified in the archaeological assessment for the project

  - The exemption is unlikely to allow impact to, or removal of, state significant relics
  - Where substantial intact archaeological relics of state or local significance, not identified in the original assessment or during the test excavation program, are unexpectedly discovered during excavation, work must cease within the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the NSW Heritage Act. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area

- Works north of the southern fog line of Reservoir Road Prospect may proceed without further archaeological investigation, and should be managed under the Roads and Maritime Standard Management Procedure for Unexpected Finds.[23] An unexpected archaeological find would be anything of potential heritage significance which has not been identified in the previous archaeological assessment for the project, or identified during the archaeological test excavation (see Section 4.3)
- As above, the low archaeological potential within the Reservoir Road corridor would be appropriately managed through adherence to the Roads and Maritime Standard Management Procedure for Unexpected Finds[24]
- Works that will involve excavation south of the fog line of Reservoir Road Prospect should be archaeologically monitored to detect and prevent damage to potentially better-preserved elements of the Great Western Road, and to establish the original width and position of the Great Western Road in this location. Areas recommended for monitoring are shown on Figure 4-14
- Results of this archaeological monitoring will be provided in the form of an addendum to this report.

[23] Roads and Maritime Services (2015) Standard Management Procedure Unexpected Heritage Finds. https://www.rms.nsw.gov.au/documents/about/environment/protecting-heritage/managing-development/unexpected-heritage-items-procedure.pdf
[24] Roads and Maritime Services (2015) Standard Management Procedure Unexpected Heritage Finds. https://www.rms.nsw.gov.au/documents/about/environment/protecting-heritage/managing-development/unexpected-heritage-items-procedure.pdf

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