PROFESSIONAL SERVICES CONTRACT

No. PSC 2001

ETTT Technical Advisor – Detailed Design and Construction Support
Epping to Thornleigh Third Track

Between

Transport for NSW
[PRINCIPAL]
ABN 18 804 239 602

and

AECOM AUSTRALIA PTY LTD
[PROFESSIONAL SERVICES CONTRACTOR]
ABN 20 093 846 925
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Professional Services Contract

This Agreement is between the Principal and the Professional Services Contractor set out in the Contract Particulars.

1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this Agreement:

"Agreement" means the contractual relationship between the Principal and the Professional Services Contractor constituted by:

(a) these Conditions of Contract;
(b) the Contract Particulars attached to these Conditions of Contract; and
(c) the other documents (if any) referred to in the Contract Particulars.

"Authority" includes any governmental or semi-governmental or local government authority, administrative or judicial body or tribunal, department, commission, public authority, agency, Minister, statutory corporation or instrumentality (and includes RailCorp and the Principal insofar as the Principal is exercising any of the functions of the Transport for NSW described in the Contract Particulars), and any private electricity, telecommunications, gas or other utility company having statutory rights in relation to the Services.

"Business Day" means any day other than:

(a) a Saturday, Sunday or public holiday in New South Wales, or
(b) 27, 28, 29, 30 or 31 December.

"Certificate of Construction Compliance" means the certificate in the form set out in Schedule 7.

"Certificate of Design Compliance" means the certificate in the form set out in Schedule 6.

"Commencement Date" means the date stated in the Contract Particulars.

"Competence Records" means, with respect to any Rail Safety Worker engaged in connection with the Services (including those engaged by subcontractors), the following information:

(a) the rail safety training undertaken by the Rail Safety Worker, including when, and for how long, the training was undertaken,
(b) the qualifications of the Rail Safety Worker, including (if applicable):
   (i) the units of competence undertaken to achieve the qualification;
   (ii) the level of qualification attained;
   (iii) if, and when, a re-assessment of competence is to be conducted;
   (iv) if, and when, any re-training is due and was undertaken; and
   (v) the name of any organisation conducting training or re-training;
(c) the name and qualifications of any person who assessed the competence of the worker; and
(d) any further information requested by the Principal with respect to the competence of the Rail Safety Worker.

"Confidential Information" includes, but is not limited to, the following:

(a) the documents specified in the Contract Particulars;
(b) any material produced by the Professional Services Contractor under this Agreement; and
(c) any other information or data that the Professional Services Contractor is given or which comes to the Professional Services Contractor’s knowledge during the course of the consultancy that:

(i) the Professional Services Contractor is told is confidential; or

(ii) a reasonable person would expect to be confidential from its nature and content,

but does not include:

(d) information which, at the time of disclosure, was already in the public domain;

(e) information which, subsequent to disclosure, enters the public domain except through breach of this Agreement, through breach of the Confidentiality Deed Poll in Schedule 1 by a recipient of disclosed information, or through breach of any other obligation of confidence; or

(f) information which the Professional Services Contractor or a recipient of disclosed information (who has signed a Confidentiality Deed Poll in Schedule 1) is required to disclose by law or the listing rules of the Australian Stock Exchange.

"Construction Contractor" means the contractor or contractors that will be engaged by TfNSW pursuant to the Project Deed for the purposes of completing the design and construction of the Project.

"Contract Material" means those documents (including, but not limited to, information stored by electronic and other means) and materials created or required to be created under the Agreement by the Professional Services Contractor, which includes the Design Documentation.

"Deed of Novation" means the deed in Schedule 4.

"Design Documentation" means all design documentation (including design standards, design reports, durability reports, construction descriptions, specifications, models, samples, prototypes, calculations, drawings, digital records, computer software and all other relevant data) in computer readable and written forms, or stored by any means, required by this Agreement or necessary to be produced by the Professional Services Contractor to carry out the Services.

"Event of Insolvency" means if:

(a) a party informs the other party in writing or creditors generally that the party is insolvent or is financially unable to proceed with the Agreement;

(b) execution is levied against a party by a creditor;

(c) a party is an individual person or a partnership including an individual person, and if that person:

(i) commits an act of bankruptcy;

(ii) has a bankruptcy petition presented against him or her or presents his or her own petition;

(iii) is made bankrupt;

(iv) makes a proposal for a scheme of arrangement or a composition; or

(v) has a deed of assignment or deed of arrangement made, accepts a composition, is required to present a debtor’s petition, or has a sequestration order made, under Part X of the Bankruptcy Act 1966 (Cth); or

(d) in relation to a party being a corporation:

(i) notice is given of a meeting of creditors with a view to the corporation entering a deed of company arrangement;

(ii) the party enters a deed of company arrangement with creditors;

(iii) a controller or administrator is appointed;

(iv) an application is made to a court for the winding-up of the party and not stayed within 14 days;
(v) a winding-up order is made in respect of the party;
(vi) resolves by special resolution that the party be wound up voluntarily (other than for a members' voluntary winding-up); or
(vii) a mortgagee of any property of the party takes possession of that property.

"Fee" means the fee set out in the Contract Particulars.

"Intellectual Property Right" means any patent, registered design, trademark or name, copyright or other protected right.

"Other Contractor" means any consultant, contractor, supplier or other person engaged by the Principal in relation to the Project other than the Professional Services Contractor and its subconsultants and includes the Construction Contractor.

“Personal Information” means information or an opinion (including information or an opinion forming part of a database) whether true or not and whether recorded in a material form or not, about an individual whose identity is apparent or can reasonably be ascertained from the information or opinion.

"Principal's Representative" means the person nominated in the Contract Particulars or any other person appointed from time to time by the Principal under clause 11.2.

"Project" means the project or projects in respect of which the Services are provided.

"Project Deed" means the agreement to be entered into between TfNSW and the Construction Contractor in respect of the Project.

"Provisional Sum Work" means the part of the Services detailed in the Contract Particulars.

"Rail Safety Work" has the meaning given in section 7 of the Rail Safety Act 2008 (NSW).

"Rail Safety Worker" has the meaning given in section 4 of the Rail Safety Act 2008 (NSW).

"Safety Report" means the report required to be prepared by a designer of a structure by regulation 295 of the Work Health and Safety Regulations 2011 (NSW).

"Services" means the services described in the Contract Particulars.


“Statutory Requirements” include:
(a) Acts, Ordinances, regulations, by-laws, orders, awards and proclamations of the Commonwealth and the State of New South Wales;
(b) certificates, licences, consent, permits, approvals and requirements of organisations having jurisdiction applicable to the Services; and
(c) relevant Australian Standards applicable to the Services.

“TfNSW” means Transport for NSW (ABN 18 804 239 602), a NSW Government Agency constituted under the Transport Administration Act 1988 (NSW).

“WHS Legislation” means the following as it may apply from time to time:
(a) the Work Health and Safety Act 2011 (NSW) and the Work Health and Safety Regulations 2011 (NSW); and
(b) all other Acts, Regulations and Codes of Practice relating to work health and safety which apply in the State in which the Services are being executed.

"Works" means the physical works to be constructed pursuant to the Project Deed and upon completion handed over to TfNSW.
1.2 Interpretation

In this Agreement unless the context otherwise requires:

(a) references to a person include an individual, a body politic, the estate of an individual, a firm, a corporation, an authority, an association or joint venture (whether incorporated or unincorporated), or a partnership;

(b) the words "including", "includes" and "include" will be read as if followed by the words "without limitation";

(c) a reference to any party to this Agreement includes that party's executors, administrators, successors, and permitted substitutes and assigns, including any person taking part by way of novation;

(d) a reference to any Authority, institute, association or body is:

(i) if that Authority, institute, association or body is reconstituted, renamed or replaced or if the powers or functions of that Authority, institute, association or body are transferred to another organisation, deemed to refer to the reconstituted, renamed or replaced organisation or the organisation to which the powers or functions are transferred, as the case may be; and

(ii) if that Authority, institute, association or body ceases to exist, deemed to refer to the organisation which serves substantially the same purposes or objects as that Authority, institute, association or body;

(e) a reference to this Agreement or to any other deed, agreement, document or instrument is deemed to include a reference to this Agreement or such other deed, agreement, document or instrument as amended, novated, supplemented, varied or replaced from time to time;

(f) a reference to any legislation or to any section or provision of it includes:

(i) any statutory modification or re-enactment of, or any statutory provision substituted for, that legislation, section or provision; and

(ii) ordinances, by-laws, regulations of and other statutory instruments issued under that legislation, section or provision;

(g) words in the singular include the plural (and vice versa) and words denoting any gender include all genders;

(h) headings are for convenience only and do not affect the interpretation of this Agreement;

(i) a reference to:

(i) a party, clause, Schedule or Exhibit is a reference to a party, clause, Schedule or Exhibit of or to this Agreement; and

(ii) a paragraph or a sub-paragraph is a reference to a paragraph or sub-paragraph in the clause in which the reference appears;

(j) a reference to this Agreement includes all Schedules and Exhibits.

(k) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(l) for all purposes (other than where otherwise designated as a Business Day), "day" means calendar day;

(m) a reference to $ is to Australian currency;

(n) no rule of construction applies to the disadvantage of a party on the basis that the party put forward or drafted this Agreement or any part;

(o) any reference to "information" will be read as including information, representations, statements, data, samples, calculations, assumptions, deductions, determinations, drawings, design, specifications, models, plans and other documents in all forms including the electronic form in which it was generated; and
any reference in this Agreement to "the Contract" or "this Contract" will be taken to be a reference to this Agreement.

1.3 Authorities

(a) This Agreement will not in any way unlawfully restrict or otherwise unlawfully affect the unfettered discretion of RailCorp or the Principal to exercise any of their respective functions and powers pursuant to any legislation.

(b) Without limiting clause 1.3(a), anything RailCorp or the Principal do, or fail to do or purport to do, pursuant to their respective functions and powers under any legislation, will be deemed not to be an act or omission by the Principal under this Agreement.

(c) The Professional Services Contractor:

(i) waives any claims that it may have against the Principal as a result of the exercise by RailCorp or the Principal of their respective functions and powers under any legislation; and

(ii) acknowledges and agrees that:

(A) there are many Authorities with jurisdiction over aspects of the Services;

(B) such Authorities may from time to time exercise their statutory functions and powers in such a way as to disrupt, interfere with or otherwise affect the Services (including, the exercise by persons (including individuals) acting on behalf of such Authorities of powers and functions including as necessary for such Authorities to comply with their statutory functions and powers); and

(C) it bears the full risk of all occurrences of the kind referred to in clause 1.3(c)(ii)(B) and will not be entitled to make, and the Principal will not be liable upon, any claim arising out of or in any way in connection with such occurrences.

2 TERMS OF ENGAGEMENT

The Principal engages the Professional Services Contractor to perform the Services in accordance with this Agreement.

3 PROFESSIONAL SERVICES CONTRACTOR'S OBLIGATIONS

3.1 General

The Professional Services Contractor must:

(a) perform the Services in accordance with the Agreement in consideration of the payments to be made by the Principal under clause 17;

(b) perform the Services to that standard of skill, care and diligence to be expected of a professional services contractor who regularly acts in the capacity in which the Professional Services Contractor is engaged and who possesses the knowledge, skill and experience of a professional services contractor qualified to act in that capacity;

(c) use all reasonable efforts to inform itself of the requirements of the Principal and regularly consult with the Principal during the performance of the Services;

(d) liaise, co-operate and confer with others as directed by the Principal;

(e) employ the person or persons specified in the Contract Particulars in the performance of the Services ("Key People");

(f) immediately take steps to replace any Key People specified in the Contract Particulars who are unable to work or are requested by the Principal, acting reasonably, to be removed from the Services with a replacement of equivalent expertise and experience, and obtain the written approval of the Principal, which will not be unreasonably withheld, to the replacement prior to engaging the replacement;
(g) commence and progress the Services expeditiously, without delay and in accordance with any program provided to the Professional Services Contractor by the Principal and the directions of the Principal and, if a date for completion is included in the Contract Particulars, complete the Services by that date provided that such date will be extended by a reasonable time for any delay to the Services caused by an event which is beyond the reasonable control of the Professional Services Contractor;

(h) without limiting clause 12.2, promptly give written notice to the Principal if and to the extent the Professional Services Contractor becomes aware that any document or other information provided by the Principal is ambiguous or inaccurate or is otherwise insufficient to enable the Professional Services Contractor to carry out the Services;

(i) make reasonable enquiries to ascertain the requirements of the Principal regarding the Services, including in respect of any hazards and risks at the site upon which the Project is to be constructed of which the Principal is aware;

(j) regularly consult the Principal regarding the carrying out of the Services;

(k) as soon as practicable after becoming aware of any matter or circumstances which may adversely affect or has adversely affected the scope, timing or carrying out of the Services, give written notice to the Principal detailing the matter or circumstances and its anticipated effect on the Services;

(l) ensure that any person employed or engaged by the Professional Services Contractor and its subcontractors who undertakes any work in connection with the Services complies with all Statutory Requirements, including the WHS Legislation;

(m) without limiting any other provision of this Agreement, consult with the Principal as required to enable the Principal to discharge its obligations under regulation 294 of the Work Health and Safety Regulation 2011 (NSW);

(n) after the Agreement has been novated to the Construction Contractor pursuant to clause 5(c), when the Professional Services Contractor submits Design Documentation to the Principal in accordance with this Agreement, such Design Documentation must be accompanied by the Certificates of Design Compliance;

(o) after the Agreement has been novated to the Construction Contractor pursuant to clause 5(c), at monthly intervals during the construction of the Works and at the completion of the Works or each portion (if applicable), the Professional Services Contractor must submit to the Principal a Certificate of Construction Compliance identifying the work covered. For the purposes of this paragraph (m), the Principal will notify the Professional Services Contractor when a portion is complete;

(p) whilst performing the Services, require all persons to:

(iii) report for work and whilst working be free from the influence of alcohol (have less than 0.02 grams of alcohol in 210 litres of breath or 100 millilitres of blood) and free from the influence of any other drugs (below the cut off level stipulated by the Australian Standard AS/NZS 4308:2008); and

(iv) undergo random and targeted alcohol and drug testing in accordance with the TfNSW standard Alcohol and Other Drugs Standard 60-ST-010-1 and TfNSW procedure Testing for Alcohol and Other Drugs 60-PR-085;

(q) ensure that any person employed or engaged by the Professional Services Contractor and its subcontractors who undertakes any Rail Safety Work in connection with the Services complies with any Statutory Requirements, including:

(i) the provisions of the Rail Safety (Drug and Alcohol Testing) Regulation 2008 (NSW);

(ii) holding and maintaining Rail Safety Worker (“RSW”) certification; and

(iii) the WHS Legislation;

(r) prior to any Rail Safety Worker carrying out any Rail Safety Work in connection with the Services, provide the Principal with the Competence Records in the form directed by the Principal (which may be electronic);
(s) ensure that any Rail Safety Worker who carries out Rail Safety Work in connection with the Principal's railway operations has the competence to carry out that work;

(t) ensure that each Rail Safety Worker used in connection with the Services has a form of identification that is sufficient to enable the type of competence and training undertaken by that Rail Safety Worker to be checked by a rail safety officer; and

(u) without limiting any other provision of this Agreement, consult with the Principal as required to enable the Principal to discharge its obligations under regulation 294 of the Work Health and Safety Regulation 2011 (NSW).

3.2 Complying with Statutory Requirements

The Professional Services Contractor must comply with:

(a) all Statutory Requirements including the WHS Legislation;

(b) the requirements of the Building Code of Australia; and

(c) the requirements of any other standards or codes, which apply to the Services.

Without limiting the above the Professional Services Contractor must prepare the Safety Report in accordance with the requirements of, and otherwise discharge its obligations under, the provisions of the WHS Legislation. The Professional Services Contractor must give a copy of the Safety Report to the Principal within the time specified in the Contract Particulars.

3.3 Non-Complying Services

If the Principal discovers or believes that any Services have not been performed in accordance with the Agreement (including any Contract Material not complying with the requirements of the Agreement), the Principal may give the Professional Services Contractor a direction specifying the non-complying Services and doing one or more of the following:

(a) requiring the Professional Services Contractor to:

   (i) re-perform the non-complying Services (including by amending the Contract Material) within a specified time period; and

   (ii) take all such steps as are reasonably necessary to:

         (A) mitigate the effect on the Principal of the failure to perform the Services in accordance with the Agreement; and

         (B) put the Principal (as closely as possible) in the position in which it would have been if the Professional Services Contractor had performed the Services in accordance with the Agreement; and

(b) advising the Professional Services Contractor that the Principal will accept the non-complying Services despite the non-compliance, in which event the Principal will be entitled to recover from the Professional Services Contractor any additional costs which will be incurred by the Principal as a result of the non-compliance, including any costs incurred by the principal in having the non-complying Services re-performed by an Other Contractor.

3.4 Re-performance of the Non-complying Services

If a direction is given under clause 3.3(a), the Professional Services Contractor must, at its cost, re-perform the non-complying Services:

(a) within the time specified in the Principal's instruction; and

(b) so as to minimise the delay and disruption to the performance of the Services.

3.5 Safety and Environment

(a) The Professional Services Contractor must:
(i) prior to appointing any subcontractor, assess the work health and safety management capability of such subcontractor and institute systems to obtain regular written assurances from all subcontractors about their ongoing compliance with the WHS Legislation including the due diligence obligation contained therein;

(ii) prior to commencing to perform the Services on the site of the Project ensure that all Professional Services Contractor staff have undertaken any induction required by the Principal;

(iii) in the provision of the Services comply with and procure that any subcontractor and its employees comply with all the requirements of the WHS Legislation and any other requirements of this Agreement for work health, safety and rehabilitation management;

(iv) comply with, and procure that any subcontractor complies with, any reasonable directions issued by the Principal's Representative in relation to work, health, safety or the environment including where the direction is given because Key People are not complying with their obligations under this clause 3.5;

(v) immediately inform the Principal's Representative verbally of all work health, safety and environment matters arising out of, or in any way connected with the Services or the Project;

(vi) provide written assurances obtained pursuant to paragraph (a)(i), together with written assurances from the Consultant about the Consultant's ongoing compliance with the WHS Legislation, to the Principal;

(vii) comply with its obligation under the WHS Legislation to consult, cooperate and coordinate activities with all other persons who have a work health and safety duty in relation to the same matter including cooperate with the Principal's Representative and any contractor engaged by the Principal with respect to the Project and coordinate the Services with the work of the Principal's Representative and any contractor engaged by the Principal with respect to the Project;

(viii) exercise a duty of utmost good faith to the Principal in carrying out the Services to enable the Principal to discharge the Principal's duties under the WHS Legislation; and

(ix) ensure its subcontracts include provisions equivalent to the obligations of the Professional Services Contractor in this clause 3.5 and any other provisions of the Agreement concerning work health and safety matters.

(b) The Professional Services Contractor's design (if any) must:

(i) take into account best work health and safety practice applicable to the construction, utilisation, operation, safety and/or maintenance of the Project; and

(ii) be subject to a health, safety and environment review by a suitably qualified person at appropriate stages of the design development process (if any) to verify the design's compliance with the WHS Legislation.

3.6 Licensing and Authorisation

The Professional Services Contractor must:

(a) ensure that if any Statutory Requirement (including the WHS Legislation) requires that:

(i) a person:

(A) be authorised or licensed (in accordance with the WHS Legislation) to carry out any part of the Services at that workplace, that person is so authorised or licensed, and complies with any conditions of such authorisation or licence; and/or

(B) has prescribed qualifications or experience to carry out any part of the Services or, if not, is to be supervised by a person who has prescribed qualifications or
experience (as defined in the WHS Legislation), that person has the required qualifications or experience or is so supervised; or

(ii) a workplace, plant or substance (or design), or work (or class of work) be authorised or licensed, that workplace, plant or substance, or work is so authorised or licensed;

(b) not direct or allow a person to carry out work or use plant or substance at a workplace unless the requirements of paragraph (a) are met (including any requirement to be authorised, licensed, qualified or supervised); and

(c) if requested by the Principal, the Principal's Representative or required by the WHS Legislation, produce evidence of any approvals, certificates, authorisations, licences, prescribed qualifications or experience, or any other information relevant to work health and safety (as the case may be) to the satisfaction of the Principal before the Professional Services Contractor commences such work.

3.7 Duties under WHS Legislation

Without limiting the Professional Services Contractor's obligations under any other clause of this Agreement, insofar as the Professional Services Contractor, in carrying out the Services, is a person conducting a business or undertaking that designs plant, substances or structures to whom section 22 of the Work Health and Safety Act 2011 (NSW) applies, then to the extent that the obligations under that section apply to the Services the Professional Services Contractor must comply with the applicable obligations under the WHS Legislation.

4 JOINT AND SEVERAL LIABILITY

If the Professional Services Contractor comprises more than one person, those persons are jointly and severally liable for the performance and obligations of the Professional Services Contractor.

5 SUBCONTRACTING AND NOVATION

(a) The Professional Services Contractor must not subcontract any part of the Services without the prior written approval of the Principal except to a subconsultant named in the Contract Particulars.

(b) An approval given by the Principal permitting the Professional Services Contractor to subcontract any portion of the Services does not relieve the Professional Services Contractor from its obligations and liabilities pursuant to the Agreement and the Professional Services Contractor will be vicariously liable for the acts and omissions of its subcontractors and consultants.

(c) The Principal may at any time, without the consent of the Professional Services Contractor, novate this Agreement by assigning its rights and obligations under the Agreement to a Construction Contractor. If the Principal elects to novate the Agreement it will notify the Professional Services Contractor, and the Professional Services Contractor must promptly execute and provide to the Principal three copies of the duly executed Deed of Novation within 5 Business Days of receipt of the Principal's notice.

6 CONTRACTOR PERFORMANCE REPORTING

The Professional Services Contractor acknowledges that the Principal has in place processes for assessing the performance of its Professional Services Contractors and that these processes will apply to the Agreement. The Professional Services Contractor agrees to participate in the Principal's Contractor Performance Reporting process.
Without limiting the previous paragraph, the Professional Services Contractor authorises the Principal, its employees and agents to make information concerning the Professional Services Contractor available to NSW government departments or agencies. Such information may include, but need not be limited to, any information provided by the Professional Services Contractor to the Principal and any information relating to the Professional Services Contractor's performance under the Agreement.

The Professional Services Contractor acknowledges that:

(a) any information about the Professional Services Contractor from any source, including but not limited to substantiated reports of unsatisfactory performance, may be taken into account by the Principal and NSW government departments and agencies in considering whether to offer the Professional Services Contractor future opportunities for NSW government work; and

(b) the Principal may be required to publish information concerning this Agreement in accordance with sections 27-35 of the Government Information (Public Access) Act 2009. If the Professional Services Contractor reasonably believes that any part of this Agreement contains information which is commercial-in-confidence or could reasonably be expected to affect public safety or security, the Professional Services Contractor must immediately advise the Principal in writing, identifying the provisions and providing reasons so that the Principal may consider exempting those provisions from publication.

7 INTELLECTUAL PROPERTY

7.1 Ownership

The Intellectual Property Rights in or relating to the Contract Material will vest in the Principal.

The Principal grants to the Professional Services Contractor an irrevocable licence to use those Intellectual Property Rights for the purpose of carrying out the Services. The Professional Services Contractor will retain the Intellectual Property Rights in any original ideas, equipment processes or systems created outside the terms of the Agreement and used in carrying out the Services.

The Professional Services Contractor must grant or cause to be granted to the Principal an irrevocable royalty-free licence (which includes the right to sublicense third parties) to use such Intellectual Property Rights for any purpose the Services are provided for including, but limited to, any subsequent repairs to, maintenance or servicing of (including the supply of replacement parts) or additions or alterations to, the Project and the copying of any document for such purposes.

7.2 Warranty and Indemnity

The Professional Services Contractor warrants that in providing the Services the Professional Services Contractor owns or is licensed to use the Intellectual Property Rights in the Contract Material and the Professional Services Contractor must indemnify the Principal against any action, claim, demand, liability, loss or damage suffered or incurred by the Principal arising out of or in connection with any alleged or actual infringement of the Intellectual Property Rights of a third party in the performance of the Services or the use by the Principal of the Contract Material.

The Principal warrants that documents and materials provided by the Principal to the Professional Services Contractor for the Services will not infringe the Intellectual Property Rights of a third party.

7.3 Moral Rights

If the Professional Services Contractor in performing the Services includes or makes use of any work or other subject matter in which copyright subsists, the Professional Services Contractor must procure from every person (whether a subcontractor or an officer, employee or consultant of the Professional Services Contractor or of a subcontractor) who is an author of that work or subject matter a written consent signed by that person for the benefit of the Principal and the Professional Services Contractor, under which (to the maximum extent permitted by law) that person irrevocably and unconditionally:

(a) consents to the Principal and the Professional Services Contractor:
(i) using, disclosing, reproducing, transmitting, exhibiting, communicating, adapting, publishing or otherwise exercising its rights in relation to that work or subject matter anywhere in the world in whatever form the Principal and the Professional Services Contractor thinks fit (including, but not limited to, the making of any distortions, additions, or alterations to that work or subject matter or any adaptation thereof, or to any part of that work or subject matter or of any such adaptation in a manner which but for the consent, infringes or may infringe that person's moral rights in the work or other subject matter) as so used, disclosed, reproduced, transmitted, exhibited, communicated, adapted or published; and

(ii) using, disclosing, reproducing, transmitting, exhibiting, communicating, adapting, publishing or otherwise exercising its rights in relation to that work or subject matter or any adaptation thereof (or any part of that work or subject matter or of any such adaptation) anywhere in the world without making any identification of that person in relation thereto; and

(b) waives, to the extent permitted by law, all and any moral rights to which that person may be entitled anywhere in the world in relation to any Contract Material.

8 CONFLICT OF INTEREST

The Professional Services Contractor warrants that no conflict of interest exists in relation to the Services at the date of the Agreement.

The Professional Services Contractor must immediately provide the Principal written notice upon becoming aware of the existence, or possibility, of a conflict of interest in the performance of the Services.

On receipt of a notice under clause 8, the Principal may:

(a) approve the Professional Services Contractor continuing to perform the Services, which approval may be subject to conditions specified by the Principal (including requirements relating to separation arrangements) to ensure appropriate management of the conflict; or

(b) where in the Principal's view the conflict of interest cannot be appropriately managed and without limiting clause 21, terminate this Agreement by notice in writing to the Professional Services Contractor effective from the date specified in the notice.

The Principal may, at its sole discretion and at any time, require the Professional Services Contractor to sign and procure that each of its officers, employees, subcontractors or agents involved in the performance of the Services signs and delivers to the Principal a Statement of Interests and Associations in the form attached in Schedule 3.
10 INSURANCE

10.1 Professional Indemnity Insurance

Before the Professional Services Contractor commences carrying out the Services, the Professional Services Contractor must effect a professional indemnity insurance policy for the Services with a total aggregate cover of not less than the sum stated in the Contract Particulars.

The policy must include provisions for one automatic reinstatement of the sum insured and for loss of documents. The policy and such level of cover must be maintained until the Professional Services Contractor completes carrying out the Services and thereafter for a period as stated in the Contract Particulars.

The Professional Services Contractor must ensure that its subcontractors and consultants have professional indemnity insurance to a level approved by the Principal.

10.2 Public Liability Insurance

The Professional Services Contractor must maintain a public liability policy for an amount in respect of any one claim or series of claims arising from one original cause of not less than the sum stated in the Contract Particulars. The policy must be maintained until the Professional Services Contractor completes carrying out the Services.

The policy must cover the Professional Services Contractor in respect of liability to the Principal and third parties in respect of any claim arising from the acts or omissions of the Professional Services Contractor, its employees, subcontractors and consultants in the course of carrying out the Services and must extend to indemnify the Principal as one of the class of persons constituting the Insured or note the Principal as an interested party but not in respect of liability to the extent that the liability is due to or results from the negligence of the Principal.

10.3 Insurance of Employees

Before the Professional Services Contractor commences carrying out the Services, the Professional Services Contractor must insure against liability for death or injury to persons employed by the Professional Services Contractor including, but not limited to, liability, statute and at common law. The insurance cover must be maintained until the Professional Services Contractor completes carrying out the Services.

Where permitted by law, the insurance cover must be extended to indemnify the Principal for the Principal's statutory liability for persons employed by the Professional Services Contractor. The Professional Services Contractor must ensure that employees of the Professional Services Contractor's subcontractors and consultants are similarly insured.

10.4 Professional Services Contractor's Insurance Obligations

The Professional Services Contractor must:

(a) provide the Principal's Representative with a copy of, or certificate of currency for, any insurance policies required by this clause 10 prior to commencement of the Services and evidence satisfactory to the Principal's Representative that the policy is current as required by the Principal's Representative from time to time; and

(b) ensure that it:

(i) does not do anything which prejudices the insurance;

(ii) if necessary, rectifies anything which might prejudice any insurance;

(iii) reinstates any insurance policy if it lapses;

(iv) does not cancel, vary or allow an insurance policy to lapse without providing prior written notification to the Principal's Representative. Such notification will not constitute a waiver of the Principal's rights under this Agreement;

(v) immediately notifies the Principal's Representative of any event which may result in an insurance policy lapsing or being cancelled; and
gives full, true and particular information to the insurer of all matters and things the non-disclosure of which might in any way prejudice or affect any such policy or the payment of all or any benefits under the insurance.

11 REPRESENTATIVES

11.1 Professional Services Contractor’s Representative

The person nominated in the Contract Particulars is the Professional Services Contractor’s Representative for this Agreement and has the legal power to bind the Professional Services Contractor in respect of any matter arising in connection with the Services. Any substitute representative must be notified promptly in writing to the Principal.

11.2 Principal’s Representative

The person nominated in the Contract Particulars is the Principal’s Representative for this Agreement and has the legal power to bind the Principal in respect of any matter arising in connection with the Services. Any substitute representative must be notified promptly in writing to the Professional Services Contractor.

The Principal’s Representative may by notice in writing to the Professional Services Contractor delegate any or all of its functions to another person.

12 DIRECTIONS AND PROGRAMMING

12.1 Directions

The Professional Services Contractor must comply with the directions of the Principal or the Principal's Representative. Except where the Agreement otherwise provides, a direction may be given orally.

If the Professional Services Contractor in writing requests the Principal to confirm an oral direction, the Principal must as soon as practicable confirm the oral direction in writing.

12.2 Programming

The Professional Services Contractor must give the Principal reasonable advance notice of when the Professional Services Contractor needs other information, materials, documents or instructions from the Principal.

The Principal shall not be obliged to give any information, materials, documents or instructions earlier than the Principal should reasonably have anticipated at the date of the Agreement and in any event no earlier than 10 Business Days after the request for the information, materials, document or instruction was made by the Professional Services Contractor.

The Principal may direct in what order and at what time the various stages or portions of the Services must be carried out and the Professional Services Contractor must comply with any such direction.

If compliance with any such direction under this clause, except where the direction is given due to the Professional Services Contractor's default, causes the Professional Services Contractor to incur more cost than otherwise would have been incurred had the Professional Services Contractor not been given the direction, the Professional Services Contractor will be entitled to an adjustment to the Fee for the additional costs reasonably incurred in complying with the direction.

13 RECORD KEEPING AND PROGRAM REPORTING

The Professional Services Contractor must:

(a) keep and ensure its subcontractors keep, accurate records of the performance of the Services;

(b) ensure that all persons engaged in the performance of the Services produce and maintain:
(i) a daily diary record of tasks performed; and
(ii) where the Fee is time based, a daily timesheet accurately recording the time spent in the performance of the Services;

(c) at the Principal’s request, provide, and ensure that its subcontractors provide, the records referred to in this clause 13 for their inspection and copying by the Principal;

(d) if required, provide the Principal’s Representative with periodic program reports on the engagement as required by the Agreement;

(e) ensure that all records required to be kept by the Agreement, including the Competence Records, are current and accurate; and

(f) whenever requested by the Principal's Representative provide the Principal's Representative with a written report containing details on all work health and safety matters arising out of the Services, including in respect of any matters concerning or arising out of clause 3.2 and clauses 3.5 to 3.7.

The records referred to in this clause 13 must be retained for seven (7) years after completion of the Services.

14 COLLABORATIVE AUDITING PROCESS

The Professional Services Contractor and the Principal will, on a collaborative basis, develop, agree and implement, a scope and program for the Principal's Representative to undertake audits of the Professional Services Contractor's quality management system (if applicable) as these may apply to the Services and obligations under the Agreement and:

(a) the Professional Services Contractor agrees to participate and assist in the development and completion of these audits; and

(b) the Professional Services Contractor and the Principal's Representative shall when requested share the results of any self verification by the Professional Services Contractor and/or the outcome of any audits completed.

15 ACCESS TO PROFESSIONAL SERVICE CONTRACTOR’S PREMISES

The Professional Services Contractor must, at all reasonable times and upon reasonable notice, permit the Principal access to the Professional Services Contractor premises in order for the Principal to inspect, discuss and assess the Contract Material and any other material obtained by the Professional Services Contractor from any person in connection with the Agreement.

16 VARIATIONS

16.1 Proposal

(a) The Principal may direct in writing that the Professional Services Contractor vary the Services (including, but not limited to, omitting or deleting a part of the Services), or the timing, including, but not limited to, the time for completion, of the Services or both ("variation").

(b) If a variation the subject of a Direction by the Principal omits or deletes any part of the Services, the Principal may thereafter carry out the omitted or deleted Services either itself or by engaging an Other Contractor to do so.

(c) If the Principal gives such a direction where the need for the variation is in order to overcome any deficiency, error, omission or defect in or from the Services any costs or losses suffered or incurred by the Principal in having the Services which have been deleted or omitted carried out by an Other Contractor will be a debt due and payable by the Professional Services Contractor to the Principal which may be deducted from the Fee.

(d) Nothing in this clause 16.1(b) limits the Principal's rights under clause 3.3(b).
(e) If the Principal proposes a variation, the Principal will specify in the direction a reasonable time by which the Professional Services Contractor must provide a written estimate of the time, cost and programming effects of the proposed variation. If no time is specified, the Professional Services Contractor must provide the estimate within 14 days.

16.2 Variation Instruction

Whether or not the Professional Services Contractor provides a written estimate under clause 16.1(a) the Principal may instruct in writing the Professional Services Contractor to carry out a variation, and the Professional Services Contractor must comply with such instruction.

16.3 Valuation

The value of a variation instructed under clause 16.1 will be determined by the Principal’s Representative as follows:

(a) by agreement between the Principal’s Representative and the Professional Services Contractor including, but not limited to, where the Professional Services Contractor has provided a written estimate pursuant to clause 16.1(c) which the Principal has accepted, the amount in that written estimate;

(b) by using the hourly rates and other prices set out in the Contract Particulars where included and where these are reasonable to use; or

(c) on the basis of reasonable prices and rates determined by the Principal’s Representative.

The Fee will be adjusted by the value of each variation as determined in accordance with this clause 16.3.

16.4 Variation due to a Change in a Statutory Requirement

If a new Statutory Requirement or a change in a Statutory Requirement after the date of the Agreement necessitates:

(a) a change to the Services;

(b) has effect after the date of the Agreement; and

(c) could not reasonably have been anticipated at that date,

then the extent to which the Services are changed by the Statutory Requirement this shall be deemed to be a variation and will be valued pursuant to clause 16.3.

17 PAYMENT OF FEE

17.1 Payment Claim

Subject to clause 17.5 and the Professional Services Contractor performing the Services, the Principal must pay the Professional Services Contractor the Fee and any disbursements referred to in the Contract Particulars for which it is entitled to payment, in accordance with this clause 17.

The Professional Services Contractor must prepare and submit to the Principal claims for payment of the amount representing the value of the Services completed in accordance with the Agreement at the times set out in the Contract Particulars and containing the details required by the Principal. All invoices must be addressed to the Principal and must refer to the Professional Services Contract No. on the cover page of this Agreement.

Invoices for payment on a time basis must be for the period up to the last calendar day of the month prior to the issue of the payment claim and accompanied by timesheets and a summary of the Services performed in the time period of the claim.
It is a condition precedent to the Professional Services Contractor's right to submit a payment claim under this clause 17.1 that the Professional Services Contractor must, in respect of each payment claim, provide the Principal with:

(a) a duly completed and signed statutory declaration and subcontractor's statement in the form contained in Schedule 2 (or in any other form requested and/or approved by the Principal's Representative);

(b) a Certificate of Design Compliance;

(c) a Certificate of Construction Compliance;

(d) where clause 17.6(i) applies, the statement and the evidence (if any) required to be provided by the Professional Services Contractor pursuant to that clause; and

(e) a certificate of currency in respect of its workers compensation insurance.

17.2 Payment Statement

If the Principal intends making a payment that is less than the amount claimed by the Professional Services Contractor, the Principal must, within 10 Business Days following receipt of a payment claim give the Professional Services Contractor a payment statement which sets out:

(a) the value of the Services completed in accordance with the Agreement;

(b) the amount already paid to the Professional Services Contractor;

(c) the amount that the Principal is entitled to retain, deduct, withhold or set-off under the Agreement;

(d) the amount (if any) which the Principal proposes to pay to the Professional Services Contractor;

(e) the reason why the amount in paragraph (d) is less than the amount claimed in the payment claim; and

(f) if the reason for the difference is that the Principal is retaining, deducting, withholding or setting-off payment for any reason, the reason for the Principal retaining, deducting, withholding or setting-off payment.

The failure of the Principal to set out in a payment statement an amount which it is entitled to retain, deduct, withhold or set off under this Agreement will not prejudice its right to subsequently exercise such right.

17.3 Payments

The Principal must:

(a) where a payment statement is issued pursuant to clause 17.2, within the latter of:

(i) 15 Business Days of the issue of the payment statement; or

(ii) 25 Business Days following receipt of the payment claim,

(b) otherwise, within 25 Business Days following receipt of a payment claim,

pay the amount stated in the payment statement or the amount claimed by the Professional Services Contractor in its payment claim (as the case may be).

The making of a payment by the Principal under this clause 17.3 is not evidence of the value of the Services performed and does not constitute an admission by the Principal that any Services provided by the Professional Services Contractor conform with the requirements of this Agreement but is a payment on account only.
17.4 Fee Adjustment for Time Based Fees

To the extent that any part of the Fee is to be calculated on a time basis the hourly rates referred to in the Contract Particulars will be increased or decreased (as the case may be) on each 1 July occurring after the Commencement Date by the relevant percentage set out in the Contract Particulars applicable to the relevant period.

17.5 Set Off

The Principal may at any time withhold, set-off or deduct from amounts otherwise payable to the Professional Services Contractor:

(a) any debt or other moneys due from the Professional Services Contractor to the Principal (including any due debt from the Professional Services Contractor to the Principal pursuant to section 26C of the SOP Act; or

(b) any amount that is less than or equal to the amount claimed to be owed under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act, under this Agreement or in respect of the Services.

17.6 Security of Payment Act

(a) This clause applies if the SOP Act applies to the Services.

(b) The Professional Services Contractor agrees with the Principal that the date prescribed in clause 17.1 as the date on which the Professional Services Contractor must make a payment claim is, for the purposes of section 8 of the SOP Act, the "reference date".

(c) For the purposes of section 17(3)(b) of the SOP Act the Professional Services Contractor irrevocably chooses the Institute of Arbitrators and Mediators Australia as the authorised nominating authority (as that term is defined in the SOP Act) for any adjudication application it may make under the SOP Act in respect of the subject matter of the Agreement.

(d) When an adjudication occurs under the SOP Act, and the Principal has paid an adjudicated amount to the Professional Services Contractor:

(i) the amount will be taken into account by the Principal's Representative in issuing a payment statement under clause 16.2; and

(ii) if it is subsequently determined pursuant to the Contract that the Professional Services Contractor was not entitled under the Contract to payment of some or all of the adjudicated amount that was paid by the Principal ("overpayment"), the overpayment will be a debt due and payable by the Professional Services Contractor to the Principal which the Professional Services Contractor must pay to the Principal upon demand and in respect of which the Professional Services Contractor is not entitled to claim or exercise any set-off, counterclaim, deduction or similar right of defence.

(e) Without limiting clause 17.5, the Principal may withhold any amount that is less than or equal to the amount claimed to be owed under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act.

(f) If the Principal withholds from money otherwise due to the Professional Services Contractor any amount that is less than or equal to the amount claimed to be owed under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act, then:

(i) the Principal may plead and rely upon Division 2A of the SOP Act as a defence to any claim for the money by the Professional Services Contractor from the Principal; and

(ii) the period during which the Principal retains money due to the Professional Services Contractor pursuant to an obligation under Division 2A of the SOP Act will not be taken into account for the purpose of determining:

(A) any period for which money owed by the Principal to the Professional Services Contractor has been unpaid; and
(B) the date by which payment of money owed by the Principal to the Professional Services Contractor must be made.

(g) The Professional Services Contractor agrees not to commence proceedings to recover any amount withheld by the Principal pursuant to a payment withholding request served on the Principal in accordance with Division 2A of the SOP Act.

(h) Any amount paid by the Principal pursuant to section 26C of the SOP Act will be a debt due from the Professional Services Contractor to the Principal.

(i) If the Principal withholds money pursuant to a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act and the Professional Services Contractor:

(i) pays the amount claimed to be due under the adjudication application to which the payment withholding claim relates; or

(ii) becomes aware that the adjudication application to which the payment withholding claim relates has been withdrawn,

then the Professional Services Contractor must so notify the Principal within 5 days of the occurrence of the event in sub-paragraph (i) or (ii) above (as applicable) by providing to the Principal a statement in writing in the form of a statutory declaration together with such other evidence as the Principal may require evidencing that the amount has been paid or the adjudication application has been withdrawn (as the case may be).

17.7 Provisional Sum Work

For each item of Provisional Sum Work, the Principal will give the Professional Services Contractor a direction either requiring the Professional Services Contractor to proceed with the item of Provisional Sum Work or deleting the item of Provisional Sum Work from the Services.

Where the Principal gives the Professional Services Contractor a notice requiring the Professional Services Contractor to proceed with an item of Provisional Sum Work, the Principal may define the method of proceeding with the Provisional Sum Work including the method by which it will be valued.

The Fee will be adjusted for the item of Provisional Sum Work by the difference between:

(a) the amount allowed for the item of Provisional Sum Work in the Contract Particulars; and

(b) either:

(i) an amount agreed between the Professional Services Contractor and the Principal; or

(ii) if they fail to agree, an amount determined by the Principal under clause 16.3 as if the item of Provisional Sum Work were a variation.

Where the Principal's Representative gives the Contractor a direction deleting an item of Provisional Sum Work:

(c) the Fee will be reduced by the amount allowed for the item of Provisional Sum Work in Contract Particulars;

(d) the Principal may engage an Other Contractor to carry out the item of Provisional Sum Work; and

(e) the Principal will not be liable upon any claim by the Professional Services Contractor arising out of the deletion of the item of Provisional Sum Work.

18 SUSPENSION FOR CONVENIENCE

The Principal, may at any time by prior written notice to the Professional Services Contractor, suspend the carrying out of the Services or any part thereof.
The Principal must pay the Professional Services Contractor any costs and expenses reasonably incurred by the Professional Services Contractor by reason of the suspension. The Principal may at any time after giving such a notice, give the Professional Services Contractor reasonable notice to recommence carrying out those Services so suspended.

19 DISPUTE RESOLUTION

19.1 Notice of dispute
If a difference or dispute (together called a “dispute”) between the parties arises in connection with the subject matter of the Agreement then either party will give the other party written notice of a dispute by hand or by registered post which adequately identifies the details of the dispute (“Dispute Notice”).

19.2 Negotiation
The Professional Services Contractor and the Principal must endeavour to resolve any dispute expeditiously by negotiation within 20 Business Days (or any other time period agreed by the parties in writing) after receipt of the Dispute Notice. At such negotiations each party must be represented by a person who has the authority to agree to such resolution. All aspects of the negotiation (except the fact that the negotiations took place) will be privileged.

19.3 Expert Determination
If a dispute between the Professional Services Contractor and the Principal is not resolved by negotiation within 20 Business Days (or any other time period agreed by the parties in writing) after receipt of the Dispute Notice (“Negotiation Period”), then, subject to the parties’ right to seek injunctive or urgent declaratory relief, and before either party has recourse to litigation, the parties must submit the dispute to expert determination by an independent expert.

If the Professional Services Contractor and the Principal do not agree upon an independent expert within 10 Business Days of the end of the Negotiation Period then either party may request the President of the Institute of Arbitrators & Mediators Australia to nominate an expert.

The parties must enter into an agreement with the agreed or nominated expert on the terms of the agreement in Schedule 5 or such other terms as the parties and the expert may agree. Except where the parties otherwise agree in writing:

(a) each party must bear its own costs and pay one half of the expert's fees and expenses;
(b) the expert must not act as an arbitrator;
(c) the determination of the expert will be final and binding on the parties except where a party gives notice of appeal to the other party within 15 Business Days of the determination being given; and
(d) the determination is to be given effect to by the parties unless and until it is reversed, overturned or otherwise changed under the procedure in clause 19.4 below.

19.4 Litigation
If the determination of the expert is not final and binding, but without limiting clause 19.3(d), either party may commence litigation in relation to the dispute. To the extent permitted by law the determination of the expert will be admissible as evidence in these proceedings.

19.5 Continuation
Each party must continue to perform its obligations under this Agreement notwithstanding the existence of a dispute.

20 NOTICE OF BREACH
If the Professional Services Contractor is in breach of the Agreement, then the Principal may give a written notice to the Professional Services Contractor stating:
(a) that it is a notice under this clause 20;
(b) the breach relied upon; and
(c) that the Agreement will be terminated unless the breach is remedied within the period set out in the notice, which must be no less than 10 Business Days.

21 TERMINATION

21.1 Termination for Breach or Financial Difficulty
The Principal may, without prejudice to any other right, terminate the Agreement by notice in writing to the Professional Services Contractor from the date stated in the notice if:

(a) the Professional Services Contractor fails to remedy a breach of the Agreement within the time stated in a notice under clause 20; or
(b) an Event of Insolvency occurs to the Professional Services Contractor whether or not there has been a breach of contract by the Professional Services Contractor.

If the Agreement is terminated pursuant to clause 21 the parties’ remedies, rights and liabilities will be the same as they would have been under the law governing the Agreement had the Professional Services Contractor repudiated the Agreement and the Principal elected to treat the Agreement as at an end and recover damages.

21.2 Termination for Any Reason

(a) The Principal may terminate the Agreement at any time for any reason, by written notice to the Professional Services Contractor.

(b) If the Principal terminates the Agreement pursuant to this clause 21.2, the Principal:
   (i) may in its absolute discretion, complete the uncompleted part of the Services itself or by engaging any third party; and
   (ii) must reimburse the Professional Services Contractor for the cost of Services performed to the date of termination plus the direct costs reasonably incurred by the Professional Services Contractor as a result of the termination. Such payment will be a limitation upon the Principal's liability to the Professional Services Contractor in connection with the termination of the Agreement.

(c) If the Principal terminates the Agreement pursuant to this clause 21.2, the Professional Services Contractor must immediately hand over to the Principal all copies of any documents provided by the Principal to the Professional Services Contractor and all Contract Material (whether complete or not).

(d) This clause 21.2 survives the termination of the Agreement by the Principal under this clause 21.2.

22 CONFIDENTIALITY

22.1 Acknowledgement
The Professional Services Contractor acknowledges that all of the Confidential Information is and will be the sole and exclusive property of the Principal.

22.2 Warranty and Covenant
The Professional Services Contractor warrants and covenants that it will treat and keep the Confidential Information in the strictest of confidentiality and expressly acknowledges and agrees that the Confidential Information is of a confidential nature.

The Professional Services Contractor warrants and covenants that it will do everything reasonably necessary to protect and maintain the confidentiality of the Confidential Information.

The Professional Services Contractor may not disclose to any person other than:
(a) the Principal; or

(b) a person who has signed a Confidentiality Deed Poll in the form of Schedule 1 in favour of the Principal,

that the Confidential Information has been made available to the Professional Services Contractor or that discussions or negotiations are taking place concerning the Agreement, and undertakes:

(c) to protect and safeguard Confidential Information against unauthorised publication or disclosure; and

(d) not to use Confidential Information for any reason or purpose except as directed by the Principal; and

(e) to comply with any security measures in connection with Confidential Information that may be required by the Principal.

22.3 Personal Information

Without limiting any obligation that the Professional Services Contractor has under any applicable privacy laws, where the Professional Services Contractor has access to Personal Information in order to fulfil its obligations under this Agreement, it must where collecting personal information on behalf of the Principal, comply with the Privacy and Personal Information Protection Act 1998 as if it were the Principal.

22.4 Authorised Disclosure

If the Principal’s Representative approves in writing the disclosure of Confidential Information, the Professional Services Contractor may disclose that Confidential Information in accordance with the terms of that approval.

22.5 Return of Confidential Information

If the Principal requests it, the Professional Services Contractor must:

(a) promptly return to the Principal all documents and other physical records of Confidential Information in its possession, custody, power or control;

(b) if any Confidential Information in the possession, custody, power or control of the Professional Services Contractor is in a form that cannot be detached from valuable equipment (including, but not limited to, Confidential Information stored by electronic, electromagnetic or other means), the Professional Services Contractor must erase the Confidential Information; and

(c) provide a statutory declaration to the Principal confirming that all those records and any copies have been returned or erased, as appropriate.

Notwithstanding this clause 22.5 or any other provision of this Agreement, the Principal authorises the Professional Services Contractor to retain for record purposes one copy of material provided to the Professional Services Contractor by the Principal and one copy of the Contract Material. The Professional Services Contractor must treat all material retained under this provision as Confidential Information.

22.6 Confidentiality Deed Poll

Unless otherwise agreed, the Professional Services Contractor must procure each officer, employee, subcontractor, or agent of the Professional Services Contractor involved in the performance of the Services to sign and deliver to the Principal a Confidentiality Deed Poll in the form of Schedule 1.

22.7 Obligations To Continue

The obligations of the Professional Services Contractor under this clause 22 survive completion of the Services or termination of the Agreement and are enforceable at any time at law or in equity and continue to the benefit of and are enforceable by the Principal.
22.8 Injunctive Relief

In the event of a breach by the Professional Services Contractor of the Professional Services Contractor's obligations under this clause 22, then in addition to, and without prejudice to, any other remedy that the Principal may have, the Principal will be entitled to seek and obtain injunctive relief in any court of competent jurisdiction.

22.9 Further Assurances

The Professional Services Contractor must do all things and execute all documents, including, but not limited to, executing any agreements of assignment, or agreements under hand or seal, which may reasonably be required by the Principal, to give effect to the provisions of the Agreement.

23 DISCLOSURE OF CONTRACT INFORMATION

The Professional Services Contractor acknowledges that the Principal may disclose this Agreement (and information concerning the terms of this Agreement) under or in accordance with any one or more of the following:

(a) the Government Information (Public Access) Act 2009 (NSW);
(b) the Ombudsman Act 1974 (NSW); and
(c) to satisfy the disclosure requirements of the New South Wales Auditor General or to satisfy the requirements of Parliamentary accountability.

24 GOVERNING LAW

The Agreement is subject to the laws of the State of New South Wales.

25 GST

The Principal and the Professional Services Contractor agree:

(a) unless otherwise stated all dollar amounts referred to in this Agreement are GST exclusive;
(b) except where an amount is stated to be GST inclusive, if either party ("supplier") is or becomes liable to pay GST arising out of or in connection with any supplies under or in connection with the Agreement or the Services, the supplier will, in addition to any amount it may be entitled to recover for the relevant supply ("consideration"), also be entitled to recover the amount of any GST liability incurred as a result of the supply;
(c) where under the Agreement a party is entitled to any adjustment to the Fee or otherwise to the payment of money and such adjustment is based on the reasonable or actual cost to the party of performing any work, any input tax credits available to the party in relation to performing such work will be deemed to reduce the cost of such work;
(d) the supplier must as a condition precedent to the obligation to make a payment under paragraph (b) provide the other party with a valid tax invoice in respect of the supply;
(e) the Professional Services Contractor must ensure that each insurance policy referred to in clause 10 covers any liability to GST such that the proceeds of any claim under the policy (after payment of GST) are sufficient to fully indemnify the party who suffers the loss that is claimed; and
(f) in this clause 25:

(i) GST means the tax payable on taxable supplies under GST Law;
(ii) GST Law means the A New Tax System (Goods & Services Tax) Act 1999 (Cth) and any related Act imposing such tax or legislation that is enacted to validate, recapture or recoup such tax; and
(iii) terms which are defined in GST Law have the meaning provided by GST Law.
Subject to paragraphs (a) to (f) (inclusive), the Professional Services Contractor must pay all taxes, duties, levies, imposts and charges which may be payable arising out of or in any way in connection with the Services.

26 LIMITATION OF LIABILITY

(a) The Professional Services Contractor's aggregate liability to the Principal in contract, tort (including negligence) or otherwise under this Agreement is limited to the amount stated in the Contract Particulars, other than bodily injury and death which shall be unlimited in the aggregate.

(b) The limitation of liability in paragraph (a) will not apply to any liability which arises from any fraud, wilful misconduct or criminal conduct by the Professional Services Contractor or any of its employees, servants or agents.

27 NO WAIVER

Failure by the Principal to enforce or compel performance of any term or condition of this Agreement does not constitute a waiver of that term or condition and does not impair the right of the Principal to enforce it at a later time or to pursue remedies it may have for any subsequent breach of that term or condition.

28 RETURN OF DOCUMENTS

On completion of the Services or upon the termination of the Agreement, the Professional Services Contractor must deliver to the Principal:

(a) all Contract Material produced by the Professional Services Contractor regardless of its stage of completion; and

(b) the Principal's documents, samples, patterns, moulds and other information provided to the Professional Services Contractor in carrying out those Services.

29 ENTIRE AGREEMENT

To the extent permitted by law, in relation to its subject matter, this Agreement:

(a) embodies the entire understanding of the parties, and constitutes the entire terms agreed by the parties; and

(b) supersedes any prior written or other agreement of the parties.

30 PROPORTIONATE LIABILITY

(a) To the extent permitted by law, Part 4 of the Civil Liability Act 2002 (NSW) (and any equivalent statutory provision in any other state or territory) is excluded in relation to all and any rights, obligations or liabilities of either party under this Agreement whether such rights, obligations or liabilities are sought to be enforced in contract, tort or otherwise.

(b) Without limiting the above, the rights, obligations and liabilities of the Professional Services Contractor and the Principal under this Agreement with respect to proportionate liability are as specified in this Agreement and not otherwise, whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, in tort or otherwise.

(c) To the extent permitted by law:

(i) the Professional Services Contractor must not seek to apply the provisions of Part 4 of the Civil Liability Act 2002 (NSW) in relation to any claim by the Principal against the Professional Services Contractor (whether in contract, tort or otherwise); and

(ii) if any of the provisions of Part 4 of the Civil Liability Act 2002 (NSW) are applied to any claim by the Principal against the Professional Services Contractor (whether in contract, tort or otherwise), the Professional Services Contractor will indemnify the
Principal against any loss, damage, cost or expense which the Principal is not able to recover from the Professional Services Contractor because of the operation of Part 4 of the Civil Liability Act 2002 (NSW).

31 SEVERABILITY

If at any time a provision of this Agreement is or becomes illegal, invalid or unenforceable in any respect under the law of any jurisdiction, that will not affect or impair:

(a) the legality, validity or enforceability in that jurisdiction of any other provision of this Agreement; or

(b) the legality, validity or enforceability under the law of any other jurisdiction of that or any other provision of this Agreement.

32 NATIONAL CODE OF PRACTICE


(b) Compliance with the Code and Guidelines shall not relieve the Professional Services Contractor from responsibility to perform the Services, or from liability for any defect in the works arising from compliance with the Code and Guidelines.

(c) Where a change in the Agreement is proposed and that change would affect compliance with the Code and Guidelines, the Professional Services Contractor must submit a report to the Commonwealth specifying the extent to which the Professional Services Contractor’s compliance with the Code and Guidelines will be affected.

(d) The Professional Services Contractor must maintain adequate records of the compliance with the Code and Guidelines by:

   (i) the Professional Services Contractor;

   (ii) its Subcontractors;

   (iii) consultants; and

   (iv) its Related Entities (see Guidelines for meaning including Section 3.5 of the Guidelines).

(e) If the Professional Services Contractor does not comply with the requirements of the Code or the Guidelines in the performance of this Agreement such that a sanction is applied by the Minister for Employment and Workplace Relations, the Code Monitoring Group or the Commonwealth, without prejudice to any rights that would otherwise accrue, those parties shall be entitled to record that non-compliance and take it, or require it to be taken, into account in the evaluation of any future tenders that may be lodged by the Professional Services Contractor or a related entity in respect of work funded by the Commonwealth or its agencies.

(f) The Professional Services Contractor must not appoint a subcontractor or consultant in relation to the Project where:

   (i) the appointment would breach a sanction imposed by the Minister for Employment and Workplace Relations; or

   (ii) the subcontractor or consultant has had a judicial decision against them relating to employee entitlements, not including decisions under appeal, and has not paid the claim.
(g) The Professional Services Contractor agrees to require that it and its subcontractors or consultants and its related entities provide the Commonwealth or any person authorised by the Commonwealth, including a person occupying a position in the Office of the Australian Building and Construction Commissioner, with access to:

(i) inspect any work, material, machinery, appliance, article or facility;

(ii) inspect and copy any record relevant to the Project the subject of this Agreement; and

(iii) interview any person as is necessary to demonstrate its compliance with the Code and Guidelines.

(h) Additionally, the Professional Services Contractor agrees that the Professional Services Contractor and its related entities will agree to a request from the Commonwealth or any person authorised by the Commonwealth, including a person occupying a position in the Office of the Australian Building and Construction Commissioner, to produce a specified document within a specified period, in person, by fax or by post.

(i) The Professional Services Contractor must ensure that all subcontracts impose obligations on subcontractors’ equivalent to the obligations under these Agreement clauses.
CONTRACT PARTICULARS

Principal: Transport for NSW (a NSW Government Agency constituted under the Transport Legislation Amendment Act 2011 (NSW).
ABN 18 804 239 602
Address: Level 5 Tower A Zenith Centre
821 Pacific Highway
Chatswood NSW 2057
Tel: 02 9200 0200 Fax: 02 9200 0290

Professional Services Contractor: AECOM AUSTRALIA PTY LTD
ABN 20093846925
Address: Level 21, 420 George St
Sydney NSW 2000
Tel: 02 8934 0000 Fax: 02 8934 0001

Authority functions of TfNSW: Rail Transport Operator under Rail Safety Act 2008

Commencement Date: 6 September 2012

Confidential Information: Confidential Information: (Clause 1)

Other documents: (Clause 1, “Agreement” paragraph (c))
Schedule 1 - Confidentiality Deed Poll
Schedule 2 - Form of Statutory Declaration and Subcontractor’s Statement
Schedule 3 - Form of Statement of Interests and Associations
Schedule 4 - Deed of Novation
Schedule 5 - Expert Determination Agreement
Schedule 6 - Certificate of Design Compliance
Schedule 7 - Certificate of Construction Compliance

Fee: Fee comprises:
(a) a fixed lump sum amount of for performing the whole of the Services, except for the alliance procurement support and the construction support
(b) the amount determined by application of the rates in Schedule 8 to the actual hours expended in the provision of alliance procurement support during the procurement
process for the Epping to Thornleigh Third Track Alliance, in accordance with Services Brief Clause 2.1. The total amount expended must not exceed the upper limiting fee of [redacted] without the prior approval of the Principal.

(c) the amount determined by application of the rates in Schedule 8 to the actual hours expended in the provision of construction support during the construction of the Works for the Epping to Thornleigh Third Track by the Alliance, in accordance with Services Brief Clause 2.3.

**Provisional Sum Work:** (Clause 1)

**Services:** (Clause 1) Services specified in the ‘ETTT Technical Advisor – Detail Design and Construction Support’ Services Brief, Version 3.0, Document No. 1812574_14, dated September 2012, annexed as Attachment A, and the appendices included in Exhibit A.

**Key People:** (Clause 3.1(e))

**Date for Completion:** (Clause 3.1(g)) 29 September 2017

**Time period for provision of the Safety Report:** (Clause 3.2) As required by section 295 of the Regulations or when requested by the Principal. [See note to clause 3.2]

**Approved Subconsultants:** (Clause 5(a))
Minimum Level of Professional Indemnity Insurance: (Clause 10)

Time for maintaining Professional Indemnity Insurance: (Clause 10) 6 years

Minimum Level of Public Liability Insurance: (Clause 10.2)

Professional Services Contractor's Representative: (Clause 11.1)
Tel:  
Fax:  

Principal's Representative: (Clause 11.2)
Peter Church
Tel:  02 9200 0200  
Fax:  02 9200 0290

Hourly rates for the valuation of variations: (Clause 16.3)
As per Schedule 8.

Disbursements for which the Professional Services Contractor is entitled to be paid: (Clause 17.1) Nil

Times for Payment Claims: (Clause 17.1) Claims to cover period up to last calendar day of the previous month and to be submitted by the fifth Business Day of the month

Time for submission of review of rates (Clause 17.4) As per Schedule 8.

Limit of Professional Services Contractor's Liability: (Clause 26)
SIGNED as an agreement.

DATED 14th day of September, 2012

SIGNED for and on behalf of the Principal:

CHRISTOPHER DECCAN LOCK
(Name of Authorised Signatory)

in the presence of:

in the presence of:

(Signature of Authorised Signatory)
(Signature of Witness)

SIGNED for and on behalf of the Professional Services Contractor:

michael A. Batchelor
(Name of Authorised Signatory)

in the presence of:

in the presence of:

(Signature of Authorised Signatory)
(Signature of Witness)

(Signature of Witness)

(Peter Wyton
(Name of Witness)

(Name of Witness)
SCHEDULE 1
CONFIDENTIALITY DEED POLL

Professional Services Contract Number: PSC 2001
Professional Services Contractor: AECOM AUSTRALIA PTY LTD

(“Professional Services Contractor”)

Confidentiality Deed Poll made at Level 21, 420 George St, Sydney NSW 2000 on: 6/9/2012

By:
Name: [REDACTED]
Address: Level 21, 420 George St, Sydney NSW 2000

(“Recipient”)

In favour of:

Transport for NSW

(“Principal”)

Background

The Principal and the Professional Services Contractor entered into the Professional Services Contract numbered above (“Professional Services Contract”), in which the Professional Services Contractor agreed to perform certain services.

It is a requirement of the Professional Services Contract that the Professional Services Contractor procures such of its officers, employees, subcontractors and agents as are required by the Principal to sign an individual confidentiality deed poll.

The Professional Services Contractor has requested and the Recipient has agreed, to execute this deed poll.

Confidential Information

1. Confidential Information is:

   (a) any information (including, without limitation, information contained in proposals, designs, tenders, reports, advices, minutes of meetings or correspondence) in any form which has come to the knowledge of the Recipient by any means and which has been or will be given to the Recipient either directly or indirectly by the Principal or by a person on behalf of the Principal or by a proponent or tenderer,

   (b) any material produced by the Professional Services Contractor or the Recipient under the Professional Services Contract,

but does not include:

   (c) information which, at the time of disclosure, was already in the public domain;

   (d) information which, subsequent to disclosure, enters the public domain except through breach of this deed poll or any other obligation of confidence; or
(e) information which the Recipient is required to disclose by law or the listing rules of the Australian Stock Exchange.

In the event of uncertainty as to whether:
(a) any information is Confidential Information; or
(b) any information is lawfully within the public domain,
that information is taken to be Confidential Information and the Confidential Information is taken to be not within the public domain, unless the Recipient is informed by the Principal in writing to the contrary.

Warranty and covenant
2. The Recipient warrants and covenants that it will treat and keep the Confidential Information in the strictest of secrecy and confidentiality and expressly acknowledges and agrees that the Confidential Information is of a secret and confidential nature.
3. The Recipient warrants and covenants that it will do everything reasonably necessary to protect and maintain the confidentiality of the Confidential Information.
4. The Recipient may not disclose to any person other than:
   (a) the Principal;
   (b) a person who has signed a Confidentiality Deed Poll in favour of the Principal,
   that the Confidential Information has been made available to the Recipient or that discussions or negotiations are taking place concerning the Professional Services Contract, and undertakes:
   (c) to protect and safeguard Confidential Information against unauthorised publication or disclosure; and
   (d) not to use Confidential Information for any reason or purpose except as directed by the Principal; and
   (e) to comply with any security measures in connection with Confidential Information that may be required by the Principal.

Authorised disclosure
5. If the Principal's Representative approves in writing the disclosure of Confidential Information, the Recipient may disclose that Confidential Information in accordance with the terms of that approval.

Return of Confidential Information
6. If the Principal requests it, the Recipient must:
   (a) except as allowed under Clause 22 of the Professional Services Contract, promptly return to the Principal all documents and other physical records of Confidential Information in its possession, custody, power or control;
   (b) if any Confidential Information in the possession, custody, power or control of the Recipient is in a form that cannot be detached from valuable equipment (including, but not limited to, Confidential Information stored by electronic, electromagnetic or other means), the Recipient must erase the Confidential Information; and
   (c) provide a statutory declaration to the Principal confirming that all those records and any copies have been returned or erased, as appropriate.

Continuing obligation
7. The obligations of the Recipient under this deed poll continue after the completion or termination of any employment, engagement or assignment.

Injunctive relief
8. In the event of a breach by the Recipient of the Recipient's obligations under this deed poll, then in addition to, and without prejudice to, any other remedy that the Principal may have, the Principal will be entitled to seek and obtain injunctive relief in any court of competent jurisdiction.
Further assurances
9. The Recipient must do all things and execute all documents, including but not limited to executing any agreements of assignment, or agreements under hand or seal, which may be required by the Principal to give effect to the provisions of this Confidentiality Deed Poll at a later date.

Non-waiver
10. The failure of the Principal to enforce any of the provisions of this deed poll or the granting at any time of any other indulgence is not to be construed as a waiver of that provision or of the right of the Principal to enforce that or any other provision at a later date.

Jurisdiction
11. This deed poll is governed by and subject to the laws of New South Wales.

No revocation
12. This deed poll may not be revoked or otherwise modified without the prior written consent of the Principal.

Executed as a Deed Poll
by the Recipient: in the presence of:

__________________________________  ______________________________
Recipient                        Witness

__________________________________  ______________________________
Name (please print)             Name (please print)
FORM OF STATUTORY DECLARATION

Statutory Declaration

I, ......................................................................................................................................................

Of ......................................................................................................................................................

do solemnly and sincerely declare that:

1. I am the representative of:

......................................................................................................................................................

(“the Contractor”)

in the Office Bearer capacity of:

......................................................................................................................................................

2. The Contractor has a contract with the: [

......................................................................................................................................................

(“the Contract”)

3. I personally know the facts which I have set out in this declaration.

4. All employees who have at any time been engaged by the Contractor for work done under the

Contract:

a) have been paid all remuneration and benefits to the date of this declaration payable to them

by the Contractor in respect of their employment on work under the Contract, and

b) have otherwise had accrued to their account all benefits to which they are entitled from the

Contractor as at the date of this declaration in respect of their employment on work under

the Contract pursuant to any award, enterprise agreement, act or regulation,

with the exception of the employees and respective amounts unpaid or not accrued for each employee

listed below:

Employee

Amount unpaid or not accrued:

......................................................................................................................................................

......................................................................................................................................................

5. All subcontractors and suppliers to the Contractor have been paid all moneys which as at the
date of this declaration have been claimed by them to the Contractor for the performance of
work under the Contract (as applicable) and the supply of materials for use in work under the
Contract, with the exception of the subcontractors and suppliers and the respective unpaid
amounts listed below:

Subcontractor or supplier:

Amount unpaid:

......................................................................................................................................................

......................................................................................................................................................

6. In all cases where a subcontractor or supplier to the Contractor has provided services and/or
materials in respect of the Contract and has submitted a claim to the Contractor for these
services or materials which as at the date of this statutory declaration would have been due and
payable but which the Contractor disputes, the reasons for such dispute have been notified in
writing to the subcontractor or supplier by the Contractor prior to the date of this statutory
declaration. Where such dispute relates to part only of the subcontractor or supplier’s claim, that
part of the claim not in dispute has been paid by the Contractor to the subcontractor or supplier
as at the date of this statutory declaration except for the amounts listed in 5 above.

7. The provisions of the Contract relating to the payment of employees, subcontractors and
suppliers of the Contractor have been complied with by the Contractor.
8. The Contractor has been informed by each subcontractor to the Contractor (except for subcontracts not exceeding $25,000 at their commencement) by statutory declaration in equivalent terms to this declaration (made no earlier than the date 14 days before the date of this declaration):
   a) that their subcontracts with their subcontractors and suppliers comply with the requirements of the Contract relating to payment of employees and subcontractors, and
   b) that all their employees and subcontractors, as at the date of the making of such a declaration:
      i) have been paid all remuneration and benefits due and payable to them by; or
      ii) had accrued to their account all benefits to which they are entitled from;
        the subcontractor of the Contractor or from any other subcontractor (except for subcontracts not exceeding $25,000 at their commencement) in respect of any work under the Contract, and
   c) of details of any amounts due and payable or benefits due to be received or accrued described in 8(b) above which have not been paid, received or accrued,
      except for the following subcontractors to the Contractor who have failed to provide such a declaration:

Subcontractor:

Due amount unpaid:

...........................................................................................................................................
...........................................................................................................................................

9. Where a subcontractor to the Contractor has provided a declaration as in 8 above, and it includes unpaid amounts or benefits either not received or not accrued, details of the subcontractor, details of the affected employees, suppliers and subcontractors of the subcontractor, and the respective amounts or benefits either unpaid or not accrued are as follows:

Employee, subcontractor or supplier:

Amount unpaid or not accrued:

...........................................................................................................................................
...........................................................................................................................................

10. In relation to the statutory declaration provided by each subcontractor to the Contractor, I am not aware of anything to the contrary of what is contained therein, and on the basis of the contents of those statutory declarations, I believe that information to be true.

11. Attached to and forming part of this declaration is a "Subcontractor's Statement" given by the Contractor in its capacity as 'subcontractor' (as that term is defined in the Workers Compensation Act 1987, Payroll Tax Act 2007 and Industrial Relations Act 1996) which is a written statement:
   a) under section 175B of the Workers Compensation Act 1987 in the form and providing the detail required by that legislation;
   b) under Schedule 2 Part 5 of the Payroll Tax Act 2007 in the form and providing the detail required by that legislation; and
   c) under section 127 of the Industrial Relations Act 1996 in the form and providing the detail required by that legislation.

12. I personally know the truth of the matters which are contained in this declaration and the attached Subcontractor's Statement.

13. All statutory declarations and Subcontractor's Statements received by the Contractor from subcontractors were:
   a) given to the Contractor in its capacity as 'principal contractor' as defined in the Workers Compensation Act 1987, the Payroll Tax Act 2007 and the Industrial Relations Act 1996 ("Acts"); and
   b) given by the subcontractors in their capacity as 'subcontractors' as defined in the Acts.

14. I am not aware of anything which would contradict the statements made in the statutory declarations or written statements provided to the Contractor by its subcontractors, as referred to in this declaration.
I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act 1900 (NSW). I am aware that I may be subject to punishment by law if I wilfully make a false statement in this declaration.

Declared at: ........................................................................................................... on .........................................................................................................................

(place) (day) (month) (year)

..............................................................................................................................

(Signature of Declarant)

in the presence of an authorised witness, who states:

1. ..............................................................................................................................

(Name of authorised witness)

(* Please cross out any text that does not apply)

1. * I saw the face of the person.

   OR

   * I did not see the face of the person because the person was wearing a face covering, but I am satisfied that the person had a special justification for not removing the covering.

2. * I have known the person for at least 12 months.

   OR

   * I have not known the person for at least 12 months, but I have confirmed the person’s identity using an identification document and the document I relied on was: ...................................................................................................................................................................................

   (describe identification document relied on)

.............................................................................................................................. 

..............................................................................................................................

(signature of authorised witness) (date)
SUBCONTRACTOR’S STATEMENT
REGARDING WORKERS COMPENSATION, PAYROLL TAX AND REMUNERATION (Note 1 – see back of form)

For the purposes of this Statement a “subcontractor” is a person (or other legal entity) that has entered into a contract with a “principal contractor” to carry out work.

This Statement must be signed by a “subcontractor” (or by a person who is authorised, or held out as being authorised, to sign the statement by the subcontractor) referred to in any of s175B Workers Compensation Act 1987, Schedule 2 Part 5 Payroll Tax Act 2007, and s127 Industrial Relations Act 1996 where the “subcontractor” has employed or engaged workers or subcontractors during the period of the contract to which the form applies under the relevant Act(s). The signed Statement is to be submitted to the relevant principal contractor.

SUBCONTRACTOR’S STATEMENT (Refer to the back of this form for Notes, period of Statement retention, and Offences under various Acts.

Subcontractor: ……………………………………………………………………………………………………………………………………………………………………..ABN: ……………………………………...

(Business name)
of:
…………………………………………………………………………………………………………………………………………………………………………………………………….
(Address of subcontractor)

has entered into a contract with: ………………………………………………………………………………………………………………………………………..ABN:
…………………………………………………………………………………………………………………………………………………………………………………………………….
(Business name of principal contractor) (Note 2)

Contract number/identifier: ……………………………………………………………………………………………………………………………………………………………..(Note 3)

This Statement applies for work between: ……./……./……. and ……./……./……. inclusive, (Note 4)

subject of the payment claim dated: ……./……./……. (Note 5)

I, …………………………………………………………………………………………………………………………………………………………………………………………………..a Director or a person authorised by the Subcontractor on whose behalf this declaration is made, hereby declare that I am in a position to know the truth of the matters which are contained in this Subcontractor’s Statement and declare the following to the best of my knowledge and belief:

(a) The abovementioned Subcontractor has either employed or engaged workers or subcontractors during the above period of this contract. Tick [ ] if true and comply with (b) to (g) below, as applicable. If it is not the case that workers or subcontractors are involved or you are an exempt employer for workers compensation purposes tick [ ] and only complete (f) and (g) below. You must tick one box. (Note 6)

(b) All workers compensation insurance premiums payable by the Subcontractor in respect of the work done under the contract have been paid. The Certificate of Currency for that insurance is attached and is dated ……./……./……. (Note 7)

(c) All remuneration payable to relevant employees for work under the contract for the above period has been paid. (Note 8)

(d) Where the Subcontractor is required to be registered as an employer under the Payroll Tax Act 2007, the Subcontractor has paid all payroll tax due in respect of employees who performed work under the contract, as required at the date of this Subcontractor’s Statement. (Note 9)

(e) Where the Subcontractor is also a principal contractor in connection with the work, the Subcontractor has in its capacity of principal contractor been given a written Subcontractor’s Statement by its subcontractor(s) in connection with that work for the period stated above. (Note 10)

(f) Signature: ………………………………………………………………………………………………………………………………………………………………………………… Full Name: …………………………………………………………………………………………………………………………………………………………………………………

(g) Position/Title ………………………………………………………………………………………………………………………………………………………………………………… Date ……./……./…….

NOTE: Where required above, this Statement must be accompanied by the relevant Certificate of Currency to comply with section 175B of the Workers Compensation Act 1987.
Notes

1. This form is prepared for the purpose of section 175B of the Workers Compensation Act 1987, Schedule 2 Part 5 Payroll Tax Act 2007 and section 127 of the Industrial Relation Act 1996. If this form is completed in accordance with these provisions, a principal contractor is relieved of liability for workers compensation premiums, payroll tax and remuneration payable by the subcontractor.

A principal contractor can be generally defined to include any person who has entered into a contract for the carrying out of work by another person (or other legal entity called the subcontractor) and where employees of the subcontractor are engaged in carrying out the work which is in connection with the principal contractor’s business.

2. For the purpose of this Subcontractor’s Statement, a principal contractor is a person (or other legal entity), who has entered into a contract with another person (or other legal entity) referred to as the subcontractor, and employees/workers of that subcontractor will perform the work under contract. The work must be connected to the business undertaking of the principal contractor.

3. Provide the unique contract number, title, or other information that identifies the contract.

4. In order to meet the requirements of s127 Industrial Relations Act 1996, a statement in relation to remuneration must state the period to which the statement relates. For sequential Statements ensure that the dates provide continuous coverage.

Section 127(6) of the Industrial Relations Act 1996 defines remuneration ‘as remuneration or other amounts payable to relevant employees by legislation, or under an industrial instrument, in connection with work done by the employees.’

Section 127(11) of the Industrial Relations Act 1996 states ‘to avoid doubt, this section extends to a principal contractor who is the owner or occupier of a building for the carrying out of work in connection with the building so long as the building is owned or occupied by the principal contractor in connection with a business undertaking of the principal contractor.’

5. Provide the date of the most recent payment claim.

6. For Workers Compensation purposes an exempt employer is an employer who pays less than $7500 annually, who does not employ an apprentice or trainee and is not a member of a group.

7. In completing the Subcontractor’s Statement, a subcontractor declares that workers compensation insurance premiums payable up to and including the date(s) on the Statement have been paid, and all premiums owing during the term of the contract will be paid.

8. In completing the Subcontractor’s Statement, a subcontractor declares that all remuneration payable to relevant employees for work under the contract has been paid.

9. In completing the Subcontractor’s Statement, a subcontractor declares that all payroll tax payable relating to the work undertaken has been paid.

10. It is important to note that a business could be both a subcontractor and a principal contractor, if a business ‘in turn’ engages subcontractors to carry out the work. If your business engages a subcontractor you are to also obtain Subcontractor’s Statements from your subcontractors.

Statement Retention

The principal contractor receiving a Subcontractor’s Statement must keep a copy of the Statement for the periods stated in the respective legislation. This is currently up to seven years.

Offences in respect of a false Statement

In terms of s127(8) of the Industrial Relations Act 1996, a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence if:

(a) the person is the subcontractor;

(b) the person is authorised by the subcontractor to give the statement on behalf of the subcontractor; or

(c) the person holds out or represents that the person is authorised by the subcontractor to give the statement on behalf of the subcontractor.

In terms of s175B of the Workers Compensation Act and clause 18 of Schedule 2 of the Payroll Tax Act 2007 a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence.

Further Information

SCHEDULE 3 – FORM OF STATEMENT OF INTERESTS AND ASSOCIATIONS

This form is completed by the Professional Services Contractor when directed by the Principal as per clause 8.

Date: .............................................................................................................................

Name: .............................................................................................................................

Organisation: ................................................................................................................

To: Transport for NSW

............................................................................................................................. [Principal]

In relation to: [name of project in full]

..............................................................................................................................

Declaration

I ................................................................................................................................

..........................................................................................................................

[insert full name] of

..........................................................................................................................

[insert business address]

agree and acknowledge that, except for the matters disclosed below:

1. To the best of my knowledge, I do not have:
   (a) any financial or other interest, either directly or indirectly in;
   (b) any immediate family members (spouse, children, parents or siblings) or close friends with
       any financial or other interest in;
   (c) any other interest or association, either directly or indirectly with,
       the entities listed below.

Disclosure

(a) ...........................................................................................................................
(b) ...........................................................................................................................
(c) ...........................................................................................................................
(d) ...........................................................................................................................
(e) ...........................................................................................................................
(f) ...........................................................................................................................
(g) ...........................................................................................................................

(if further space is required please attach a signed separate letter)
I undertake to:

1. notify the Principal as soon as possible after I become aware of any matter which could affect the accuracy or completeness of the statements made in this deed or which would make them incorrect if this deed was given again; and

2. make a further updated declaration as soon as practicable.

I confirm that the statements set out in this deed are true and correct as at the date indicated below.

Executed as a Deed Poll

by the Recipient: ______________________________

in the presence of: ______________________________

__________________________  ______________________________
Recipient     Witness

__________________________  ______________________________
Name (please print)     Name (please print)

__________________________  ______________________________
Date      Date
SCHEDULE 4 – DEED OF NOVATION

Deed of Novation

[    ]
ABN [    ]

AECOM AUSTRALIA PTY LTD
ABN [20 093 846 925]

[    ]
ABN [    ]
Deed of Novation made at [insert name] ABN [insert] of [insert] (Retiring Party)

AECOM AUSTRALIA PTY LTD, ABN 20 093 846 925 of 420 George St, Sydney NSW 2000 (Continuing Party)

[Insert name] ABN [insert] of [insert] (Substitute Party)

Recitals

The Retiring Party and the Continuing Party are parties to the Contract.

The Retiring Party and the Substitute Party have asked the Continuing Party to agree to the novation of the Contract on the terms and conditions of this deed.

The Continuing Party has agreed to the novation of the Contract on the terms and conditions of this deed.

This deed provides

1. Definitions and interpretation

1.1 Definitions

Defined terms in the Contract have the same meanings in this deed, unless the contrary intention appears.

In this deed:

"Claim" means any claim, notice, demand, action, proceeding, litigation, investigation or judgment whether based in contract, tort, statute or otherwise.

"Contract" means the agreement between the Retiring Party and the Continuing Party described in the Schedule.

"Effective Date" means [insert date].

"GST" means the Goods and Services Tax as defined in the A New Tax System (Goods and Services) Act 1999 (Cth.).

"Liability" means all liabilities, losses, Claims, damages, outgoings, costs and expenses of whatever description.

"Related Entity" has the meaning ascribed to that term in section 9 of the Corporations Act 2001 (Cth).

1.2 Interpretation

In this deed:

(a) headings are for convenience only and do not affect interpretation;

and unless the context indicates a contrary intention:

(b) an obligation or a liability assumed by, or a right conferred on, 2 or more persons binds or benefits them jointly and severally;
(c) **person** includes an individual, the estate of an individual, a corporation, an authority, an association or a joint venture (whether incorporated or unincorporated), a partnership and a trust;

(d) a reference to a party includes that party’s executors, administrators, successors and permitted assigns, including persons taking by way of novation and, in the case of a trustee, includes a substituted or an additional trustee;

(e) a reference to a document (including this deed) is to that document as varied, novated, ratified or replaced from time to time;

(f) a reference to a statute includes its delegated legislation and a reference to a statute or delegated legislation or a provision of either includes consolidations, amendments, re-enactments and replacements;

(g) a word importing the singular includes the plural (and vice versa), and a word indicating a gender includes every other gender;

(h) a reference to a party, clause, schedule, exhibit, attachment or annexure is a reference to a party, clause, schedule, exhibit, attachment or annexure to or of this deed, and a reference to this deed includes all schedules, exhibits, attachments and annexures to it;

(i) if a word or phrase is given a defined meaning, any other part of speech or grammatical form of that word or phrase has a corresponding meaning;

(j) **includes** in any form is not a word of limitation; and

(k) a reference to $ or dollar is to Australian currency.

2. **Condition Precedent to Novation**

Clause 3 of this deed will have no force and effect until the Effective Date.

3. **Novation**

3.1 Novation

(a) The parties novate the Contract so that the Substitute Party and the Continuing Party are parties to a new agreement on the same terms as the Contract.

(b) Any reference in the Contract to the Retiring Party will be read as a reference to the Substitute Party.

3.2 Assumptions of rights and obligations

(a) The Substitute Party:

(i) will be bound by and must comply with the terms of the Contract and will enjoy the rights and benefits conferred on the Retiring Party under the Contract; and

(ii) will assume the obligations and Liability of the Retiring Party under the Contract,

in all respects as if the Substitute Party had originally been named in the Contract as a party instead of the Retiring Party.

(b) The Continuing Party will comply with the terms of the Contract on the basis that the Substitute Party has replaced the Retiring Party under the Contract in accordance with this deed.
3.3 **Release by Continuing Party**

(a) The Continuing Party releases the Retiring Party from:

(i) any obligation or Liability under or in respect of the Contract; and

(ii) any action, claim and demand it has against the Retiring Party under or in respect of the Contract.

(b) This release does not affect any rights the Continuing Party may have against the Substitute Party as a result of the assumption by the Substitute Party under the terms of this deed of the obligations and Liability of the Retiring Party under the Contract.

3.3A **Limitation of Liability**

The aggregate of the Continuing Party's liability to the Retiring Party under this Deed and the Continuing Party's liability to the Substitute Party under the Contract:

(c) will not exceed the liability which the Continuing Party would have had under the Contract if the Contract had named, as Principal, the Substitute Party and the Retiring Party jointly and severally; and

(d) is otherwise subject to the same limitations of liability, and qualifications on such limitations of liability, as are specified in the Contract.

3.4 **Insurance**

As from the Effective Date:

(a) the Substitute Party must replace any insurances effected and maintained by the Retiring Party under the terms of the Contract; and

(b) the Continuing Party will take the necessary steps to ensure that, for all insurances required to be effected by the Continuing Party under of the terms of the Contract, the Substitute Party is named in place of the Retiring Party as required by the Contract.

4. **Ongoing Rights of Retiring Party**

4.1 **Direct Enquiries**

In addition to any other rights which the Retiring Party may have, the Continuing Party and the Substitute Party each agree that the Retiring Party may make enquiries directly of the Continuing Party for the purpose of establishing whether the Continuing Party is complying with its obligations under the Contract.

4.2 **Retiring Party to have benefit of Promises**

(a) The Continuing Party warrants in favour of the Retiring Party that in performing the Services it will comply with its obligations under the Contract and that the Retiring Party will continue to have the benefit of all promises, undertakings, covenants and warranties made or given by the Continuing Party under the Agreement as if the Retiring Party remained a party to the Contract.

(b) Without limiting the above, the Continuing Party undertakes to the Retiring Party that it will exercise all reasonable skill, care and diligence in performing the Services including in issuing any certificates it is required to issue under clauses 3(l) or 3(m) of the Contract and further acknowledges that the Retiring Party will be relying upon the skill and judgment of the Continuing Party in issuing the certificates referred to in clauses 3(l) and 3(m) and acknowledges that:

(i) in performing the Services it will owe a duty of care to the Retiring Party; and
(ii) it is aware that the Retiring Party will be relying upon the skill and judgment of the Continuing Party in performing the Services and the warranties given by the Continuing Party in this deed.

4.3 Report by Continuing Party

The Continuing Party undertakes to the Retiring Party that it will exercise all reasonable skill, care and diligence to ensure that the design intent of the Works as contained in the Design Documentation existence at the date of execution of this Deed, is reflected in the completion of the Design Documentation and in the execution of the Works.

Without limiting the above, the Continuing Party must conduct such inspections of the Works at such times and in such detail as may reasonably be expected of a consultant engaged in a project of the size and complexity of the Works.

The Continuing Party must act in good faith towards the Retiring Party and promptly advise the Retiring Party about any matter in which the Continuing Party has been instructed by the Substitute Party to provide the Services in a manner which is, or may result in an outcome which is, not in accordance with the requirements of the Contract, including:

(a) any instruction or direction which it receives, or any work or services it becomes aware of, which in the reasonable opinion of the Continuing Party, is not in accordance with any provision of the Contract including where the Substitute Party's instructions:

(i) in relation to design are not consistent with the Contract or may result in the Works to be constructed not being fit for their intended purpose; or

(ii) require the Continuing Party to issue a certificate under clauses 3(l) or 3(m) of the Contract where the conditions for the issue of that certificate under the Contract have not been satisfied; and

(b) any non-conformity of any Design Documentation produced pursuant to the Contract, or to the Design Documentation in existence at the date of this deed, upon becoming aware of the non-conformity.

5. Overriding effect

The parties agree that the execution and operation of this deed will for all purposes be regarded as due and complete compliance with the terms of the Contract relating to any requirement for consent to assignment of the Contract so far as any such provisions would apply with respect to the novation of the Contract to the Substitute Party.

6. Representations and warranties

6.1 Authority

Each party represents and warrants to each other party that it has full power and authority to enter into and perform its obligations under this deed.

6.2 Authorisations

Each party represents and warrants to each other party that it has taken all necessary action to authorise the execution, delivery and performance of this deed in accordance with its terms.

6.3 Binding obligations

Each party represents and warrants to each other party that this deed constitutes its legal, valid and binding obligations and is enforceable in accordance with its terms.

7. Duties, costs and expenses

7.1 Stamp duty

The Substitute Party must pay all stamp duty, duties or other taxes of a similar nature (including
but not limited to any fines, penalties and interest) in connection with this deed or any transaction contemplated by this deed (except to the extent the terms of the Contract provide otherwise).

7.2 Costs
Each Party must pay its own legal costs and expenses in negotiating, preparing and executing this deed.

7.3 GST
The parties agree that:

(a) with any payment of amounts payable under or in connection with this deed including without limitation, by way of indemnity, reimbursement or otherwise, the party paying the amount must also pay any GST in respect of the taxable supply to which the amount relates;

(b) the party receiving the payment will provide a tax invoice; and

(c) the payment of any amount referred to in paragraph (a) which is a reimbursement or indemnification of a cost, expense, loss or liability will exclude any part of the amount for which the other party can claim an input tax credit.

8. General

8.1 Governing law
This deed is governed by and must be construed according to the laws of the State or Territory stated in Schedule 1.

8.2 Jurisdiction
Each party irrevocably:

(a) submits to the non-exclusive jurisdiction of the courts of the State or Territory stated in Schedule 1, and the courts competent to determine appeals from those courts, with respect to any proceedings which may be brought at any time relating to this deed; and

(b) waives any objection it may now or in the future have to the venue of any proceedings, and any claim it may now or in the future have that any proceedings have been brought in an inconvenient forum, if that venue falls within clause 8.2(a).

8.3 Amendments
This deed may only be varied by a document signed by or on behalf of each party.

8.4 Waiver

(a) Failure to exercise or enforce, or a delay in exercising or enforcing, or the partial exercise or enforcement of, a right, power or remedy provided by law or under this deed by a party does not preclude, or operate as a waiver of, the exercise or enforcement, or further exercise or enforcement, of that or any other right, power or remedy provided by law or under this deed.

(b) A waiver or consent given by a party under this deed is only effective and binding on that party if it is given or confirmed in writing by that party.

(c) No waiver of a breach of a term of this deed operates as a waiver of any other breach of that term or of a breach of any other term of this deed.

8.5 Counterparts
This deed may be executed in any number of counterparts and by the parties on separate counterparts. Each counterpart constitutes the deed of each party who has executed and
delivered that counterpart.

8.6 **Severance**

If at any time a provision of this deed is or becomes illegal, invalid or unenforceable in any respect under the law of any jurisdiction, that will not affect or impair:

(a) the legality, validity or enforceability in that jurisdiction of any other provision of this deed; or

(b) the legality, validity or enforceability under the law of any other jurisdiction of that or any other provision of this deed.

8.7 **Further acts and documents**

Each party must promptly do all further acts and execute and deliver all further documents (in form and content reasonably satisfactory to that party) required by law or reasonably requested by another party to give effect to this deed.

8.8 **Assignment**

A party cannot assign, novate or otherwise transfer any of its rights or obligations under this deed without the prior consent of each other party.
### Schedule

**Contract**  
(clause 1.1)  
PSC 2001 – Epping to Thornleigh Third Track Technical Advisor – Detailed Design and Construction Support

**Governing Law and Jurisdiction**  
(Clause 1.1 and 8.1)  
New South Wales
Executed as a deed.

Executed by [Retiring Party and ABN] by or in the presence of:

Signature of Director

Name of Director in full

Signature of Secretary/other Director

Name of Secretary/other Director in full

Executed by [Continuing Party and ABN] by or in the presence of:

Signature of Director

Michael A. Batchelor

Name of Director in full

Signature of Secretary/other Director

Richard N. Jackson

Name of Secretary/other Director in full
Executed by [Substitute Party and ABN] by
or in the presence of:

Signature of Director

Signature of Secretary/other Director

Name of Director in full

Name of Secretary/other Director in full
SCHEDULE 5

Expert Determination Agreement

[Insert name of Principal]
Principal

[Insert name of Contractor]
Contractor

[Insert name of Expert]
Expert
Expert Determination Agreement made at [insert name and address of Principal] ("Principal") on [insert name and address of Professional Services Contractor] ("Professional Services Contractor")

[Insert name and address of Expert agreed between the Parties or appointed pursuant to clause [to be inserted] of the PSC Contract] ("Expert")

Recitals

A. The Principal and the Professional Services Contractor (together "the Parties" and each "a Party") are parties to a contract (the "PSC Contract") for [to be inserted].

B. By written notice dated [to be inserted], the [insert Principal or Professional Services Contractor as applicable] has required that the matter described in Schedule 1, being a matter that the PSC Contract requires or permits to be referred to an Expert for determination, be determined by an Expert appointed under clause 19.3 of the PSC Contract (the "Matter").

C. Pursuant to clause 19.3 of the PSC Contract, the Expert has been appointed to determine the Matter in accordance with the process set out in this Agreement.

Operative part

APPOINTMENT OF EXPERT

A. The Parties appoint the Expert to determine the Matter in the manner and within the times set out in this Agreement and the Expert accepts the appointment on the basis set out in this Agreement.

(a) The Parties agree that:

(i) the Expert will act as an expert and not as an arbitrator;

(ii) neither the determination of the Matter, nor the process required by this Agreement is an arbitration and any conference conducted during the determination is not a hearing conducted under any legislation or rules relating to any form of arbitration;

(iii) the rules of evidence and natural justice do not apply to the determination; and

(iv) the Expert must conduct the determination of the Matter in accordance with the Rules for Expert Determination Process set out in Schedule 2.

(b) If, at any time during the determination, the Expert becomes aware of circumstances that might reasonably be considered to adversely affect the Expert's capacity to act independently or impartially, the Expert must inform the Parties immediately and, unless the Parties agree otherwise, terminate this Agreement.

CONFIDENTIALITY

All proceedings and submissions relating to the determination (including the fact that any step in
the determination is occurring), and all documents prepared for the purposes of the determination (including the Expert's determination), must be kept confidential between the Parties and the Expert. No such proceedings, submissions or documents, nor any other information relating to or arising out of the determination, may be divulged to any other person, except with the prior written consent of both Parties or as may be required by law or to the extent necessary to give effect to or enforce the Expert's determination.

2. COSTS AND FEES

(a) As between the Parties and the Expert, the Parties are jointly and severally liable for the payment of the Expert's fees and disbursements, calculated in accordance with the Schedule of Fees and Disbursements set out in Schedule 3. The Parties agree to comply with any direction from the Expert as to the provision of security deposits in respect of his or her fees and disbursements.

(b) The Parties agree as between themselves that:

(i) they will each pay one half of the Expert’s fees and disbursements, calculated in accordance with the Schedule of Fees and Disbursements set out in Schedule 3; and

(ii) they will each bear their own costs of and incidental to the preparation of this Agreement and their participation in the determination.

3. EXCLUSION OF LIABILITY AND INDEMNITY

3.1 Except in the case of fraud, the Expert will not be liable to either Party for any act or omission by the Expert in the performance or purported performance of this Agreement. The Parties jointly and severally indemnify the Expert against all claims arising out of or in any way referable to any act or omission by the Expert (except fraud) in the performance or purported performance by the Expert of the terms of this Agreement.

4. CO-OPERATION OF THE PARTIES

4.1 Each Party agrees to take part in the determination in good faith and to comply with the reasonable requests and directions of the Expert in relation to the conduct of the determination.

5. GOVERNING LAW

5.1 This Agreement is governed by and is to be construed in accordance with the laws in force in the State of New South Wales.

6. JURISDICTION

B. The Parties and the Expert irrevocably submit to the non-exclusive jurisdiction of the courts of the State of New South Wales and the courts to which the appeals from those courts may be made.

C. The Parties and the Expert irrevocably waive any objection they may now or in the future have to the venue of any proceedings, and any claim they may now or in the future have that any proceeding has been brought in an inconvenient forum, where that venue falls within clause 8.8B.
Schedule 1 - The Matter

[To be inserted when it comes time for expert determination]
Schedule 2 - Rules for Expert Determination Process

1. Commencement

1.1 Except as provided in clause 4.3 of these Rules, the expert determination process begins when the Expert accepts an appointment to determine the Matter in accordance with these Rules and the Code of Conduct appended to these Rules.

2. Written Submissions

2.1 Within 7 days after the date this process begins, Party A (ie the Party who gave notice of dispute under clause 19.1 of the PSC Contract) must, in addition to any particulars provided by Party A under clause 19.1 of the PSC Contract, give the other Party and the Expert a written statement of the Matter referred for Expert determination, any agreed statement of facts and a written submission on the Matter in support of Party A's contentions.

2.2 Within 7 days after the statement in clause 2.1 is served, the other Party must give Party A and the Expert a written response to Party A's submissions.

2.3 If the Expert considers it appropriate, Party A may reply in writing to the other Party's response in clause 2.2 within the time allowed by the Expert.

2.4 If the Expert decides further information or documentation is required for the determination of the Matter, the Expert may direct one or more Parties to provide such further submissions, information or documents as the Expert may require.

3. Conference

3.1 The Expert may, if he or she thinks appropriate, call a conference of the Parties. Unless the Parties agree otherwise, the conference will be held in Sydney.

3.2 At least 14 days before the conference, the Expert must inform the Parties of the date, venue and agenda for the conference.

3.3 The Parties must appear at the conference and may make submissions on the subject matter of the conference. If a Party fails to appear at a conference of which that Party had been notified under clause 3.2, the Expert and the other Party may nevertheless proceed with the conference and the absence of that Party will not terminate or discontinue the Expert determination process.

3.4 The Parties:

D. may be accompanied at a conference by legal or other advisers; and

E. will be bound by any procedural directions as may be given by the Expert in relation to the conference both before and during the course of the conference.

3.5 The conference must be held in private.

3.6 If required by any Party, transcripts of the conference proceedings must be taken and made available to the Expert and the Parties.

4. General

4.1 In making a determination or calling or holding a conference, the Expert must proceed in accordance with the PSC Contract.
4.2 All proceedings and submissions relating to the Expert determination process must be kept confidential except:

F. with the prior consent of the Parties;

G. as may be required by law; or

H. as may be required in order to enforce the determination of the Expert.

4.3 The Expert must:

I. inform the Parties of:

   (i) any relationship or interest with the Parties or their respective officers, employees, contractors, consultants or agents;

   (ii) any interest the Expert has in the matters in dispute; and

   (iii) any circumstance which might reasonably be considered to adversely affect the expert’s capacity to act independently or impartially,

... immediately upon becoming aware of any such circumstances; and

J. upon making any disclosure under this clause 4.3, unless and until the Parties agree otherwise terminate the proceedings.

5. The Determination

5.1 As soon as possible after receipt of the submissions or after any conference and, in any event not later than 90 days after the Expert’s acceptance of appointment, the Expert must:

K. determine the Matter between the Parties; and

L. notify the Parties of that determination.

5.2 The determination of the Expert must:

M. be in writing stating the Expert’s determination and giving reasons;

N. be made on the basis of the submissions (if any) of the parties, the conference (if any) and the Expert’s own expertise; and

O. meet the requirements of the PSC Contract.

5.3 Subject to clause 5.4, to the extent permitted by law, the Expert’s determination will be final and binding on the Parties, unless a Party gives a written notice of appeal to the other Party in accordance with clause 19.3(c) of the PSC Contract.

5.4 If the Expert’s determination contains a clerical mistake, an error arising from an accidental slip or omission, a material miscalculation of figures, a mistake in the description of any person, matter or thing, or a defect of form, then the Expert must correct the determination.

6. Costs

6.1 Security for costs must be deposited by both Parties at the commencement of the Expert determination process in accordance with any direction of the Expert.
7. **Modification**

7.1 These rules may be modified only by agreement of the Parties and, if the Expert has been appointed, the Expert.
APPENDIX 1 TO RULES FOR EXPERT DETERMINATION PROCESS

Code of Conduct for an Expert

1. The function of the Expert is to make a determination of the Matter in accordance with the PSC Contract and the Expert Determination Agreement, including the Rules and this Code of Conduct.

2. The Expert must receive the written submissions and responses of the Parties in accordance with the procedures specified in the Rules and may require further information or documentation from the Parties which is reasonably necessary to determine the Matter.

3. The Expert must decide whether a conference is necessary to receive further information. The Expert must inform the Parties of the subject matter of any conference and may hear representations only on those matters during any such conference.

4. The Expert must disclose to both Parties all information and documents received.

5. If a Party fails to make a written submission, the Expert may continue with the process.

6. Subject to clause 3.3 of the Rules in relation to conferences, meetings and discussions with the Expert must only take place in the presence of both Parties.
Schedule 3 - The Expert's Fees and Disbursements

[To be inserted when it comes time for expert determination]
Signed as an agreement.

Signed for and on behalf of the Principal by
[insert name] in the presence of:

________________________________________
[Signature]

[Name of witness]

________________________________________
[Signature of witness]

Signed for and on behalf of the Professional Services Contractor by
[insert name] in the presence of:

________________________________________
[Signature]

[Name of witness]

________________________________________
[Signature of witness]
Signed by the Expert [insert name] in the presence of:

[Signature]

[Name of witness]

[Signature of witness]
SCHEDULE 6
CERTIFICATE OF DESIGN COMPLIANCE

CERTIFICATE OF DESIGN COMPLIANCE

PROFESSIONAL SERVICES CONTRACTOR:

PROFESSIONAL SERVICES CONTRACTOR AGREEMENT:

DESIGN PACKAGE (limit of 1 per certificate) DESCRIPTION:

I certify that the [(delete one) Design Documentation for the package / Design Documentation for the design discipline of [*] for the package] or part thereof described above has been completed to the extent indicated above in accordance with the requirements of the Agreement described above, and complies with the requirements of that Agreement and all Statutory Requirements and deals adequately with safety (subject to the register of outstanding minor design non-conformances and unresolved issues attached).

I further certify that the attached compliance records as required by the Agreement described above reflect the true status of the design package.

NAME:_______________________  SIGNATURE:__________________DATE:       /      /

[(Design Team Member)]
# SCHEDULE 7

## CERTIFICATE OF CONSTRUCTION COMPLIANCE

<table>
<thead>
<tr>
<th>PROFESSIONAL SERVICES CONTRACTOR:</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>PORTION:</td>
</tr>
<tr>
<td>WORK PACKAGE (limit of 1 per certificate) DESCRIPTION:</td>
</tr>
</tbody>
</table>

I certify that the procurement and construction of [(delete one) the work package / that part of the work package relevant to the design discipline of [*]] or part thereof described above have been completed to the extent indicated above in accordance with the Design Documentation relevant to that work package and complies with all Statutory Requirements and deals adequately with safety (subject to the register of outstanding minor design non-conformances and unresolved issues attached).

I further certify that the attached compliance records as required by the Agreement described above reflect the true status of the work package.

NAME: ____________________ SIGNATURE: ____________________ DATE: /

([Design Team member])
Northern Sydney Freight Corridor
Detail Design and Construction Support Technical Advisor
Epping to Thornleigh Third Track
(PSC-2001)

Services Brief

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Version: 3.0
Status: Final
Date of Issue: September 2012

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1 Introduction

1.1 General

Transport for New South Wales (TfNSW) is working with the Australian Rail Track Corporation (ARTC), RailCorp and the Commonwealth Department of Infrastructure and Transport (DoIT) to develop and implement the Northern Sydney Freight Corridor (NSFC) program (the Program), which is part of the Commonwealth Government’s Nation Building Program. Feasibility studies undertaken for the Program have recommended a suite of four projects along the main north corridor, one of which is the Epping to Thornleigh Third Track (ETTT) project.

This Services Brief describes the Services required from the ETTT Detailed Design and Construction Support Technical Advisor (TA) for the ETTT project. It sets out the scope, performance and technical requirements of these Services.

1.2 Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detailed Designer</td>
<td>The Professional Services Contractor. Used interchangeably with Technical Advisor.</td>
</tr>
<tr>
<td>Principal’s Design</td>
<td>Means the design drawings and the signalling functional specification contained in Appendices 1 and 3 respectively.</td>
</tr>
<tr>
<td>Project</td>
<td>The Epping to Thornleigh Third Track (ETTT) project</td>
</tr>
<tr>
<td>Services</td>
<td>The activities to be undertaken by the TA as defined in this document.</td>
</tr>
<tr>
<td>Technical Advisor</td>
<td>The Professional Services Contractor. Used interchangeably with Detailed Designer.</td>
</tr>
<tr>
<td>Temporary Works</td>
<td>All temporary works necessary to be carried out to facilitate completion of the Works, including but not be limited to, installation of temporary walkways, erection of hoardings, signage and other works to facilitate the existing infrastructure to remain operational and the Works to be undertaken concurrently</td>
</tr>
<tr>
<td>Works</td>
<td>The activities to construct the Project including all permanent infrastructure and systems designed by the Technical Advisor (including its team of specialist technical advisors)</td>
</tr>
</tbody>
</table>

1.3 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>AFC</td>
<td>Approved for Construction</td>
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<tr>
<td>ATP</td>
<td>Automatic Train Protection</td>
</tr>
<tr>
<td>BMS</td>
<td>Building Management Systems</td>
</tr>
<tr>
<td>BRS</td>
<td>Business Requirements Specification</td>
</tr>
<tr>
<td>CCR</td>
<td>Configuration Change Review</td>
</tr>
<tr>
<td>CCTV</td>
<td>Closed Circuit Television</td>
</tr>
<tr>
<td>CDR</td>
<td>Critical Design Review</td>
</tr>
<tr>
<td>COREAM</td>
<td>Commissioning, Operational, Readiness, Engineering Assurance</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>CONO</td>
<td>Certificate of No Objection</td>
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<tr>
<td>CSR</td>
<td>Combined Services Route</td>
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<tr>
<td>CWIP</td>
<td>Certificate of Works in Progress</td>
</tr>
<tr>
<td>DB</td>
<td>Distribution Board</td>
</tr>
<tr>
<td>DCD</td>
<td>Design Co-ordination Drawing(s)</td>
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<tr>
<td>DCM</td>
<td>Design Co-ordination Manager</td>
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<tr>
<td>DMS</td>
<td>Document Management System</td>
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<tr>
<td>DSRP</td>
<td>Design and Sustainability Review Panel</td>
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<tr>
<td>DSS</td>
<td>Detail Services Search</td>
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<tr>
<td>DTRS</td>
<td>Digital Train Radio System</td>
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<tr>
<td>EACS</td>
<td>Electronic Access Control System</td>
</tr>
<tr>
<td>EBS</td>
<td>Existing Buildings and Structures</td>
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<tr>
<td>ESD</td>
<td>Environmentally Sustainable Design</td>
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<tr>
<td>ETN</td>
<td>Electrical Technical Note</td>
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<td>ETS</td>
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<tr>
<td>ETTT</td>
<td>Epping to Thornleigh Third Track</td>
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<tr>
<td>EWIS</td>
<td>Emergency Warning &amp; Intercommunication System</td>
</tr>
<tr>
<td>FER</td>
<td>Fire Engineering Report</td>
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<tr>
<td>FLS</td>
<td>Fire &amp; Life Safety</td>
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<tr>
<td>GPO</td>
<td>General Power Outlet</td>
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<tr>
<td>GRN</td>
<td>Government Radio Network</td>
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<tr>
<td>GSN</td>
<td>Goal Structured Notation</td>
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<tr>
<td>GST</td>
<td>Galvanised Steel Troughing</td>
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<tr>
<td>HMI</td>
<td>Human Machine Interface</td>
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<tr>
<td>HV</td>
<td>High Voltage</td>
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<tr>
<td>IMSB</td>
<td>Installation Main Switchboard</td>
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<tr>
<td>ITSR</td>
<td>Independent Transport Safety Regulator</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicators</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>LLPA</td>
<td>Long Line Public Address</td>
</tr>
<tr>
<td>LV</td>
<td>Low Voltage</td>
</tr>
<tr>
<td>MEW</td>
<td>Major External Works</td>
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<tr>
<td>NSFC</td>
<td>Northern Sydney Freight Corridor</td>
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<tr>
<td>OHW</td>
<td>Overhead Wiring</td>
</tr>
<tr>
<td>PA</td>
<td>Public Address</td>
</tr>
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<td>PDR</td>
<td>Preliminary Design Review</td>
</tr>
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<td>P&amp;P</td>
<td>Pit and Pipe</td>
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<tr>
<td>RAATM</td>
<td>Requirements Analysis Allocation Traceability Matrix</td>
</tr>
</tbody>
</table>
1.4 Overview of the NSFC Program

The 155 kilometre Sydney to Newcastle rail line is part of the east coast rail network - servicing Melbourne, Sydney and Brisbane.

The key challenges for freight rail services between Sydney and Newcastle are:

- a lack of passing loops;
- several steep inclines;
The NSFC program includes a number of proposed projects to increase freight capacity on the Main North Line between Sydney and Newcastle. Table 1 shows these proposed projects.

<table>
<thead>
<tr>
<th>Project</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Strathfield</td>
<td>Rail underpass</td>
</tr>
<tr>
<td>Hexham</td>
<td>Passing loop (1)</td>
</tr>
<tr>
<td>Epping to Thornleigh</td>
<td>Third track (uphill)</td>
</tr>
<tr>
<td>Gosford</td>
<td>Passing loops (2)</td>
</tr>
</tbody>
</table>

### 1.5 NSFC Program Objectives and Performance Criteria

The NSFC program will address freight rail availability, capacity and reliability. It has been designed to:

- improve freight train access through northern Sydney to the metropolitan freight network, Port Botany and intermodal (container) terminals;
- relieve the most serious bottleneck on the east coast interstate rail network;
- create a more efficient freight rail network connecting Australia’s three largest cities;
- reduce freight transport operating costs;
- improve passenger services on the Main North Line; and
- ease peak hour restrictions on freight services.

### 1.6 Epping To Thornleigh Third Track Project

The Epping to Thornleigh Third Track (ETTT) project is one of the four projects under the NSFC Program. The primary operational objective of the ETTT project is to enable additional paths for freight trains, reduce waiting times for freight trains and increase the reliability of both freight and passenger trains.

As shown in Figure 1, the ETTT project will build a new Down Relief track to the west of the existing Down Main line between Epping station and Thornleigh station for the slow-moving freight trains to travel up-hill along this section of track, facilitating faster-moving passenger trains to overtake.
The key scope of the Project includes:

- construction of approximately 5.8 km of a new Down Relief line
- modifications to Epping, Cheltenham, Beecroft and Pennant Hills Stations
- upgrade of a turnout south of Thornleigh Station
- construction of a new bridge crossing the M2 Motorway and Devlin's Creek
- construction of cuttings, embankments and retaining walls
- modifications to rail overbridges
- modification to a pedestrian underpass
- modifications to the existing overhead wiring and signalling system
- associated civil and structural works
- associated rail systems, including overhead wire, high voltage, low voltage, communications and control and earthing and bonding.

Clause 1.8 describes a more detailed scope of the Works.

1.6.1 Construction Contracting Strategy

The contracting strategy chosen for the delivery of the ETTT project is an Alliance contract.

The Principal has commenced on a 3-stage “Dual TOC” Alliance procurement process. Stage 3 of this process is the Project Development Phase (PDP) which will culminate in the execution of a Project Alliance Agreement with TfNSW as the “Owner Participant” and the firms from the successful proponent consortium as the “Non-Owner Participants” or “NOPs”. TfNSW will novate the TA to an alliance NOP at the time of (or soon after) execution of the
1.6.2 Engineering Service Providers

The development of the detail design of the Project will be undertaken by the following engineering service providers as described below, engaged under separate direct contracts with the Principal.

- The “Signalling Technical Advisor (STA)” will be responsible for the delivery of the signalling design including, but not limited to, the signalling plan, control tables, track insulation plan, interlocking data and circuit books and any revisions to the Signalling Functional Specification (SFS).

- The TA, to be engaged under this Services Brief is responsible for developing the detail design of all other components that form the overall scope of the Works to be delivered by the Alliance contract.

- The Principal has engaged a “Acoustic Technical Advisor” to undertake the noise and vibration impact assessment for the project which will be made available in the final environmental impact statement which will be placed on exhibition in September 2012. The TA will be required to work collaboratively with the Acoustic TA to determine the final operational, noise and vibration mitigation measures.

The Principal has also engaged a separate Planning Approval Contractor which is tasked with preparing an Environmental Impact Assessment under Part 5.1 of the EP&A Act. Further details are provided in Section 1.7 below.

1.6.3 Current Status of Design for the Project

The following phases of design have been completed for the Project:

- the Final Concept Design was agreed between TfNSW and RailCorp in July 2012 and is provided in the appendices;

- in the process of reviewing and agreeing the Final Concept Design various comments were deferred to the detailed design phase. These comments must be addressed by the TA and are included in Appendix 2 of this Services Brief;

- the Signalling Functional Specification (SFS) has been approved by RailCorp Signalling and is included in Appendix 3 of this Services Brief. Insofar as the SFS relates to the TA scope defined in this Services Brief the TA must comply with the SFS;

- the Environmental Impact Statement is under development (see Clause 1.7).

The Principal does not warrant, guarantee, represent or assume any duty of care to the TA that the Principal’s Design is accurate, adequate, suitable or complete, or is the most effective design solution or will meet the requirements of the Contract. The TA acknowledges that the process of “developing” the design from the Principal’s Design to approved for construction design documentation may result in departures from the Principal’s Design. The TA will provide, in writing, notification to the Principal of any proposed departures from the Principal’s Design during the delivery of the Services. This notice will be used by the Principal to register potential impacts to scope. No departures from the Principal’s Design shall be accepted without prior written consent from the Principal. Provided that the Principal
does accept such departures, they shall be deemed to be part of the Services. However, major scope changes to the Principal's Design that would fundamentally alter the nature of the project are excluded from the scope of this Services Brief.

The NSFC Program Safety Master Plan is included in Appendix 6. The ETTT Safety Assurance Plan and the ETTT Concept End Stage Safety Review Report are included in Appendix 7.

1.7 Planning Approval

Under the provisions of Part 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act), TfNSW is preparing an Environmental Impact Statement (EIS). This EIS will outline the project scope, identify potential environmental impacts, and identify measures to minimise environmental impacts. The EIS will be publicly exhibited to allow the community to review the proposal and make submissions to the Department of Planning and Infrastructure (DP&I).

The anticipated key dates for the Planning Approval are:
- Public exhibition period commencing September 2012; and
- Decision by the Minister for Planning and Infrastructure by February 2013.

The TA will ultimately be required to support the ETTT Alliance in complying with all conditions of planning approval, insofar as they relate to the TA scope of services. Given that details of planning approval conditions are not expected to be available until February 2013, for the purposes of this services brief a schedule of environmental impact mitigation measures has been included in Appendix 17. The TA must comply with all mitigation measures in this schedule.

1.8 Description of the Works and Temporary Works

A description of the Works is provided below. More detailed descriptions of the Works are provided in the Principal's Design Drawings contained in Appendix 1.

Track

- Construction of a new Down Relief track from Epping Station Platform 3 at ch. 23.493km to south of Thornleigh Station at ch. 29.346km including refurbishment of existing Down Refuge;
- New 102 points north of Epping Station;
- Removal of existing 50 points and associated catchpoint;
- Relocation and upgrade of 52 points; and
- 100m run off track after 52 points.

Rail Corridor Structures

- Construction of a bridge/viaduct from the Devlin’s Creek Sectioning Hut towards the M2 bus underpass;
- Construction of viaduct over Devlin’s Creek and the M2 Motorway;
• Extension of Beecroft pedestrian underpass;
• Construction of a new footbridge at a location south of Pennant Hills station to replace the existing one which will be demolished;
• Construction of deflection walls and anti-throw screens at overbridges;
• Construction of retaining walls / protection screen walls along the corridor; and
• Construction of base structures for signalling works.

Earthworks and Drainage
• Construction of all cuttings and embankments along the corridor;
• Construction of all drainage infrastructure within the works area;
• Construction of surface, subsoil and underground track drainage for the new track formation;
• Connection of new drainage systems to the existing drainage system; and
• Construction of road drainage, pits and pipes for all new car parks and roads (including access roads and road modifications).

Urban Design and Landscaping (other than at station precincts)
• Planting to earthworks adjacent to track, station precincts and other ancillary buildings and disturbed areas;
• Urban design treatments to new viaducts; and
• Works in the Rail Corridor include:
  o landscaping to new earthworks batters;
  o urban design treatments to retaining walls; and
  o urban design treatments to deflection (impact) walls.

Station Precincts and Car Parks
• Modifications to the northern end of Platform 3 of Epping Station;
• Easy access upgrade to Cheltenham Station, including platform regrading, construction of elevated concourse and facilities, stair and lift access and reconfiguration of commuter car parks. Station precinct modifications and landscaping;
• Extension of Beecroft Station pedestrian underpass, and reconfiguration of commuter car parks. Station precinct modifications and landscaping; and
• Modification of Pennant Hills Station, including extension of the elevated concourse with addition of stairs and a lift on the Down side. Station precinct modifications and landscaping.
Provision and interfacing for the proposed Electronic Ticketing System (ETS) at Cheltenham and Pennant Hills Stations.

Electrical High-Voltage Networks

- 33kV HV relocation of 773 Feeder between Devlin’s Creek Section Hut and Pole 15;
- 2kV HV relocation of NL16 Feeder between Epping North Services Substation and Pole 15;
- 33/2kV pole 30 is to be renewed in a new location;
- 2kV Pole 30A and transformer are to be removed and the Signalling Location it is supplying (N15.83) is to be relocated;
- New Pole 28A and a 15kVA 2kV / 240V pole top transformer proposed to provide RailCorp supply to the new N15.83 Location;
- New Ausgrid backup supply for the new Location N15.83 is proposed to be located on the Up corridor boundary adjacent to the proposed N15.83 Location;
- 2kV aerial feeder NL21 from Pole 66 to 66A, Pole 66A and its pole top transformer to be removed;
- New 3 core 95mm² 11kV cable between Location N17.28 and Location N17.81;
- Underground cable route and ULXs; and
- Provision of one additional direct current circuit breaker (DCCB) at Epping Substation and two (2) additional DCCBs at Devlin’s Creek Sectioning Hut and Beecroft Substation.

Electrical Low-Voltage Networks

- Modification to the LV supplies at the three station locations (1) Cheltenham Station Area between 23.915-25.200km; (2) Beecroft Station Area between 26.850-27.000km; (3) Pennant Hills Station between 28.500km-28.700km;
- Installation of LV works for Cheltenham Station Upgrade. This will include, but not be limited to: Ausgrid connection; 415/415V Isolation Transformer; Backup Supply Distribution Supply Main Switchboard (DSMSB); Earthing Grids; Installation Main Switchboard (IMSB); Sub switch boards and other works such as slabs, cable routes, pits and cable trays;
- Installation of LV works at Beecroft Station. This will include, but not be limited to: Ausgrid connection; Isolation Transformer; Backup Supply DSMSB; car park lighting DB; Lighting and other works such as slabs, cable routes, pits and cable trays;
- Installation of LV works at Pennant Hill Station Upgrade. This will include, but not be limited to: Ausgrid connection; 415/415V Isolation Transformer; Backup Supply DSMSB; earthing grids; IMSB; sub switch boards; allowance for connections to other RailCorp Equipment Rooms and other works such as slabs, cable routes, pits and cable trays; and
- Installation of LV works at new Signal Location N15.83. This will include, but not be limited to: Ausgrid connection; Isolation Transformer; Backup Supply DSMSB; allowance for future RailCorp Padmount (11kV/415V); earthing grids; Essential
Switchboards; Battery Cabinet and Emergency Changeover Panel and other works such as slabs, cable routes, pits and cable trays.

Overhead Wiring System

- New wire run to electrify the new Down Relief track between Structures H23+509 and H29+352 (approximately 5.8km);
- Modifications to existing overhead wiring system on the Up and Dn Mains between Epping and Thornleigh Stations, as a result of works associated with the construction of the ETTT. This includes re-profiling wire to suit modifications to structures and installation of new overhead bridges. Removals will also form part of the modification scope;
- New wire run to electrify the new turnout 102 points including the modifications to existing OHW Systems on the Down Main at Epping; and
- New wire run to electrify the new crossover 52 points including the modification to the existing OHW system on the Down Main at Thornleigh.

Communications and Control Systems

- Relocation and installation of new Communications Infrastructure;
- Relocation and installation of Optic Fibre Cables;
- Relocation and installation of Copper Cables; and
- Final Cable Routes (including pits, equipment rooms, bases, etc).
- CCTV Systems;
- Station System for the new Cheltenham Station Upgrade including:
  - CCTV and Help Points;
  - Public Address;
  - Station Passenger Information (SPI);
  - Telephone systems;
  - Clocks;
  - Security Alarm Panel and Access Control; and
  - Communications Equipment Rooms;
- Station System upgrade for Beecroft Station including:
  - CCTV Systems; and
  - Modifications to the backbone network design;
- Station System upgrade for Pennant Hills Station including:
  - CCTV and Help Points;
  - Public Address;
o Station Passenger Information (SPI); and
  o Telephone systems.

Earthing, Bonding and Electrolysis Protection

- OHW attachments and bonding/isolations for bridge structures and station structures;
- GST – provision of insulated joints at maximum lengths and at close proximity to HV electrodes and OHWS;
- Stations:
  o bonding of structural elements and separation of canopies and steel structures from OHWS; and
- HV/LV:
  o Earthing layouts for padmount substations (isolation and supply, Ausgrid and RailCorp); and
  o Aerial Earthing designs for undergrounding of RailCorp HV lines or for modification of existing aerial assets;
- Utility Services:
  o Maintain or provide any specific bonding or cathodic protection devices required at existing utility crossings; and
  o Provide any specific bonding or cathodic protection devices required at new utility crossings;
- Signalling and Communications:
  o Provision of earthing grids for signal / comms locations, as required by RailCorp standards; and
  o Provision of earthing grids for Train Radio Mast locations.
- Fencing:
  o Provision of compliant earthing and bonding measures to fences and gates.
- Structures:
  o Provision of electrolysis test points for structures.

Combined Services Route

- Relocation of the existing main CSR to be clear of the new infrastructure including cable containment (conduits or GST), pits, ULXs and under bores;
- Provision of additional trays to existing GST, where these do not conflict with the Works and can be utilised;
- Relocation of the existing or provision of new local signalling route(s);
• Provision of additional communication and signalling conduit(s) or use of GST along the length of the ETTT project, for the future installation of the Automatic Train Protection (ATP) system by RailCorp;

• Where required, provision of additional communication conduit for Optus fibre optic cable;

• Pit and duct cable routes, pole and overhead line cable routes, cable containment, including spatial provision and support systems for local and system wide cabling; and

• Footings, bases, supports, brackets and fixings for new GST.

External Utilities

Relocation, protection, diversion or replacement of:

• Sydney Water Corporation – watermains and associated assets;
• Sydney Water Corporation – sewers and stormwater assets;
• Ausgrid assets;
• Telstra assets;
• Optus assets;
• RMS assets; and
• Hornsby Council assets.

1.9 Standards, Regulations, and Codes

The Works and the Temporary Works must, as a minimum, be designed to comply with the standards, regulations and codes required by the Services Brief including the standards, regulations and codes which are identified and listed in Appendix 16.

References in the Services Brief to a standard, regulation or code including a RailCorp or Standards Australia publication, must, unless stated otherwise, be read as a reference to the version of the particular standard, regulation or code current at the Date of Commencement specified in the PSC.

Where specific standards, regulations and codes are nominated in the Services Brief in relation to particular areas of the Works, these are minimum requirements and do not relieve the TA’s obligation to comply with all other standards, regulations and technical notes (issued by RailCorp).

In the event of any inconsistency, ambiguity or discrepancy between a requirement of the Services Brief and any Standards, regulations and codes or among any standards, regulations and codes, the following order of precedence will apply:

1. Specific provisions of the Services Brief;
2. TfNSW Standard Requirements;
3. RailCorp standards and guidelines;
4. RMS Standards and guidelines;
5. Australian Standards and guidelines; and
6. Any international codes, standards or specifications not listed in Appendix 16.

In the event of any inconsistency, ambiguity or discrepancy, between any standards, regulations and codes listed in the Services Brief, the standard, regulation or code which specifies the greatest level of service or gives the highest standard will apply.
2 Outline Scope of Services

The TA will be responsible for providing the following services:

- support the Principal during the Project Development Phase of the Alliance procurement process (see Clause 2.1);
- develop the Principal’s Design to a detail design in accordance with the requirements of TSR T1 and the other mandatory requirements listed in Section 2.2 and the Appendices, including the development of “Approved for Construction” or “AFC” design documents and specifications (see Clause 2.2);
- carry out conversion of the existing Down Main and Up Main track alignment survey information from ISG to MGA coordinates (see Clauses 2.2 and 5.22);
- interface with the Principal’s Planning Approvals Contractor, Signalling Technical Advisor, designers for all nominated interface projects and the Acoustic Technical Advisor;
- lead and be responsible for coordinating the design of the Works required to support the signalling design developed by the STA. A Design Interface Schedule is included in Appendix 12 of this Services Brief;
- provide support to the Alliance during the construction phase of the project (see Clause 2.3); and
- production of Works-As-Executed documentation in accordance with the information provided by the Alliance, progressively and on completion of the construction phase of the Project (see Clause 2.4).

The TA’s scope of Services is described in further detail in the sub-clauses below and in Clauses 4 and 5.

2.1 Alliance Procurement Support

The procurement process for the ETTT Alliance is proceeding in parallel with the detail design work that is the subject of this Services Brief. The TA will fulfil the role of technical support for TfNSW during that procurement process.

TfNSW is procuring the Alliance partner through a competitive selection process where a shortlist of two proponent teams will each be developing a Project Proposal with a Target Outturn Cost (TOC). Each of the proponent teams will be provided with the final concept design and other relevant documentation in order to develop the TOC and both teams will have design questions and clarifications about that design.

The TA will be required to answer the design questions on behalf of TfNSW. As this will be in the context of a price competitive process, the contact between the TA and the proponent teams will be carefully managed to ensure that all contact is consistent, fair and equitable and meets probity requirements.

TfNSW has therefore proposed a series of structured meetings relating to design discussions during the Project Development Phase (PDP):

- Guidance meetings – opportunity for the Alliance proponent teams to ask questions and seek clarification. Proponent teams will be asked to send questions to TfNSW
5 days prior to each session. TfNSW will then forward the questions to the TA to provide advice to enable TfNSW to respond at the meeting with the proponent team. Over the course of the PDP, these meetings will tend to become more focussed on the proponent teams presenting proposed approaches to the Project for guidance from TfNSW – primarily to ensure that each proponent team presents a compliant proposal. The TA will not attend any of these sessions.

Note that each Alliance proponent team will meet separately with TfNSW and will generate its own list of questions and the TA must be prepared to respond to both lists. The questions will be identified with documents marked with a random title generated by TfNSW (e.g. ‘Proponent A’). TfNSW expects there to be some overlap between the issues and questions raised by the two proponent teams.

- **Alignment meeting** – session for each proponent team to separately meet with the TA team and confirm the scope of work proposed and the nature of the risks and opportunities that are present in that relationship. The same members of the TA will be required to attend both meetings.

The full scope of work (and therefore TA resources) required to answer the questions and clarifications from the Alliance proponent teams will not be known until those requests are received. TfNSW suggests that managing the responses to these requests may require input from the following members of the TA’s team:

- Project Manager
- Assistant Project Manager / Project Controls Manager
- Interface Manager
- Administrative support
- Track design lead plus potentially 2 designers
- Civil design lead plus potentially 4 designers (includes earthwork, hydrology and geotech)
- Structural design lead plus potentially 4 designers (includes bridges, station structures)
- Rail Systems design lead plus potentially 4 designers (includes LV, HV, OHW and C&CS)
- Lead architect plus potentially 1 additional architect
- CAD support (potentially 2)

The proposed schedule of meetings relevant to the TA is:
Table 1 Schedule of alliance procurement meetings

<table>
<thead>
<tr>
<th>Proposed meeting</th>
<th>Subject/purpose</th>
<th>Timing</th>
</tr>
</thead>
</table>
| Guidance meeting 1 | • Project overview  
• Confirm design scope/details  
• Compare TfNSW and Proponent risk and opportunity (R&O) assessments  
• Proponent questions | Late September 2012 |
| Guidance meeting 2 | Opportunity for the Proponent team to table key issues and concerns regarding emerging solutions / key questions of compliance; and seek input from TfNSW re both ‘conforming’ and ‘alternative’ proposals | Early October 2012 |
| Guidance meeting 3 | Opportunity for the Proponent team to table key issues and concerns regarding emerging solutions / key questions of compliance; and seek input from TfNSW re both ‘conforming’ and ‘alternative’ proposals | Late October 2012 |
| Alignment meeting with the TA | 1. Proponent team to align with Detailed Designer on:  
• approach to construction phase services  
• risks and opportunities in design management  
2. Preliminary discussions about potential designer incentive scheme | Early November 2012 |
| Draft Proposal | Opportunity for presentation / discussion by the proponent of the broad approach to the job; opportunity for comment from TPD re remaining issues of compliance etc. | Late November 2012 |

TfNSW expects that the detail design work will continue in parallel with the support for the Alliance proponent teams. It is expected that the workload in responding to the requests from Alliance proponent teams will be greatest in the first four weeks of this period and will decline towards the end of the proposal submission period. Submissions are due from the Alliance proponents in mid December 2012, with assessment expected to begin in early January 2013.

TfNSW expects to announce the successful Alliance proponent in early March 2013 and the Alliance would be established and commence work at that date. It is also expected that the TA would be novated to the Alliance partner on the establishment of the Alliance.

2.2 Detail Design Development

The TA must develop the detail design of the Works in accordance with the requirements of this Services Brief including all Appendices, which represent mandatory requirements.

The Principal shall provide information documents separately after Contract award, and from time to time, or upon request by the TA where necessary to assist the TA in developing the detail design. The Principal does not warrant, guarantee, represent or assume any duty of
care to the TA that the information documents are accurate, adequate, suitable, complete or will meet the requirements of the Contract.

The TA must also undertake the conversion of the existing track alignment survey information between Ch 24.509km and Ch 30.477km for the Down Main and between Ch 24.507 and Ch 30.473 for the Up Main from ISG to MGA coordinates in accordance with Clause 5.22.

The TA must also include an up-to-date Requirements Analysis Allocation Traceability Matrix (RAATM) of the System Requirements Specification (SRS) with each CDR and AFC design package, and must work with the Principal and the Alliance to provide a final RAATM following completion of the works. The SRS Matrix is provided in Appendix 9.

The TA may also be required to provide a RAATM for compliance with the Alliance Works Brief as part of construction phase services.

2.3 Construction Support

During the construction of the Works, the TA will be required to provide technical support to the Alliance, including, but not limited to the following:

- review of contractor work method statements;
- review of temporary works designed by others;
- responding to RFI's;
- finalisation of Safety Assurance documentation;
- reviewing suggested changes to the AFC design;
- revising and verifying agreed changes to the AFC design;
- surveillance of construction works (incl. attending Witness Points and/or Hold Points as required);
- certification that the works have been constructed in accordance with the approved AFC design documentation;
- endorsement that any construction not in accordance with the AFC design documentation meets the requirements of the services brief;
- support the alliance in resolving construction non-conformances;
- assisting with testing and commissioning.

The full extent of the TA’s responsibilities to provide construction phase support to the Alliance will be determined by mutual agreement with the Alliance partners as the works proceed.

2.4 Works-As-Executed Documentation

Further to completion of the Works (and progressively as elements of the Works are completed), the TA in liaison with the Alliance must produce a full technical record of what was constructed by preparing and submitting Works-As-Executed Drawings and other Asset
Management Information (AMI) in accordance with the requirements of TSR T1 in Appendix 8.

2.5 Three Dimensional Design Model

The TA shall for all disciplines, and to the greatest extent possible, develop the design geometry using a three-dimensional design model, rather than a two-dimensional design model. If different software is used for different disciplines, for example if a different software package is used for civil / rail systems than that used for buildings, the different software packages shall be compatible and allow transfer of information between them. The TA shall also incorporate all existing information into the three-dimensional model including survey, dial-before-you-dig and RailCorp Detailed Site Survey (DSS). The TA shall provide the Principal with the native model files (and in other formats) as and when requested from time to time, and at completion of design and construction.
3  Technical Advisor's Obligations

3.1  Document Management System

The TA must use the Principal’s “TeamBinder” Document Management System (DMS) to track, store, submit and gain approval of all TA deliverables unless otherwise agreed with the Principal.

3.2  Collaborative Audit Process

The TA and the Principal will, on a collaborative basis, develop, agree and implement, a scope and program for the Principal’s Representative to undertake audits of the TA's compliance with the requirements of the TA's quality management system as these may apply to the Services and obligations under the Agreement and:

a) the TA agrees to participate and assist in the development and completion of these audits; and

b) the TA and the Principal’s Representative shall when requested share the results of any self verification by the TA and/or any of the audits completed.

3.3  Compliance with Rail Safety Act

The Rail Safety Act 2008 requires that all who own or operate a railway in NSW must be accredited to do so. "Owners" are broadly defined to include designers and constructors. The Principal is accredited for its role in managing the design and construction of rail works. The TA will operate under the Principal's accreditation for the ETTT project in accordance with the Principal's accreditation requirements.

A 'Rail Safety Worker' is broadly defined as anyone involved in the design, management or construction of a rail related project. The Principal's policies on Drug and Alcohol Testing and Fatigue Management are applicable to all TA personnel classified as 'Rail Safety Workers' employed under this Agreement.

The TA is required to ensure that all persons classified as 'Rail Safety Workers' hold appropriate Certificates of Competency as required under the Rail Safety Act 2008 and associated Rail Safety Regulations.

The Independent Transport Safety Regulator (ITSR) may impose certain design or design process requirements that must be implemented by the TA as part of the Services. It may also wish to audit the design or the design processes. The TA must support the Principal and provide it with any information or access that the ITSR may require.

3.4  Milestone Dates

The TA must deliver the services in accordance with the milestone dates set out in the table below. The TA must develop a detailed baseline programme as part of the design management plan as defined in TSR T1. The baseline programme must include the milestones below, and must also ensure that design delivery meets the requirements of the construction staging.
<table>
<thead>
<tr>
<th>Design Package</th>
<th>Services Brief or TSR T1 Reference</th>
<th>Milestone Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Management Plan (including design program)</td>
<td>TSR T1 – 2.6.1</td>
<td>10 business days following the date of commencement of services</td>
</tr>
<tr>
<td>Interface Management Plan</td>
<td>TSR T1 – 2.6.2</td>
<td>10 business days following the date of commencement of services</td>
</tr>
<tr>
<td>Safety Assurance Plan</td>
<td>TSR T1 – 2.6.3</td>
<td>20 business days following the date of commencement of services</td>
</tr>
<tr>
<td>RAMS Management Plan</td>
<td>TSR T1 – 2.6.4</td>
<td>Initially at SDR and the progressively updated at each design stage</td>
</tr>
<tr>
<td>Interface Schedule</td>
<td>TSR T1 – 2.6.3</td>
<td>20 business days following the date of commencement of services then updated on a monthly basis</td>
</tr>
<tr>
<td>Competence for Design</td>
<td>TSR T1 – 2.4</td>
<td>10 business days following the date of commencement of services</td>
</tr>
<tr>
<td>Monthly Report</td>
<td>Services Brief – Clause 3.4</td>
<td>28th day of each month or the next consecutive working day</td>
</tr>
<tr>
<td>Weekly Earned Value and key issues report (&quot;dashboard&quot;)</td>
<td>Services Brief – Clause 3.4</td>
<td>Issued weekly</td>
</tr>
<tr>
<td>Sustainability in Design</td>
<td>TSR T1 – 2.5</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Design Drawings and Reports</td>
<td>TSR T1 – 3.1</td>
<td>Issued with every detail design package – see below</td>
</tr>
<tr>
<td>Durability Assessment Report</td>
<td>TSR T1 – 3.1.3</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Safety Assurance Report(s)</td>
<td>TSR T1 – 3.5</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Design Briefing Post-Submission minutes</td>
<td>TSR T1 Annexure A Clause 5.9</td>
<td>3 business days after the briefing session</td>
</tr>
<tr>
<td>COREAM meeting minutes</td>
<td>TSR T1 Annexure A Clause A7</td>
<td>3 business days after the meeting</td>
</tr>
<tr>
<td>Design Co-ordination Drawings</td>
<td>TSR T1 Annexure A Clause A4</td>
<td>Updated throughout stages</td>
</tr>
<tr>
<td>Fire Engineering Report for Cheltenham Station</td>
<td>Services Brief – Clause 5.13</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Fire Engineering Report for Pennant Hills Station</td>
<td>Services Brief – Clause 5.13</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Geotechnical Interpretive Report</td>
<td>Services Brief – Clause 5.1.1</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Contamination Remediation Plan</td>
<td>Services Brief – Clause 5.5.1.1</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Hydrology and Drainage Report</td>
<td>Services Brief – Clause 5.5.2.1</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Existing Building and Structures Plan</td>
<td>Services Brief – Clause 5.5.2.1</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Monitoring and Test Procedures and Plan</td>
<td>Services Brief – Clause 5.5.2.1</td>
<td>Progressively updated at each design stage</td>
</tr>
<tr>
<td>Design Package</td>
<td>Services Brief or TSR T1 Reference</td>
<td>Milestone Date</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>AFC Drawings grouped for Construction Packaging</td>
<td>TSR T1 Annexure A Clause A3</td>
<td>On completion of AFC design</td>
</tr>
<tr>
<td>BCA Design Certificate</td>
<td>TSR T1 Annexure A Clause A8</td>
<td>At submission of relevant CDR design packages</td>
</tr>
<tr>
<td>DDA Design Certificate/Statement</td>
<td>TSR T1 Annexure A Clause A8</td>
<td>At submission of relevant CDR design packages</td>
</tr>
<tr>
<td>ISG to MGA Conversion AFC approval</td>
<td></td>
<td>20 Dec 2012</td>
</tr>
<tr>
<td>Sydney Water</td>
<td></td>
<td>Mar 2013</td>
</tr>
<tr>
<td>Ausgrid</td>
<td></td>
<td>Mar 2013</td>
</tr>
<tr>
<td>Telstra</td>
<td></td>
<td>Mar 2013</td>
</tr>
<tr>
<td>Optus</td>
<td></td>
<td>Mar 2013</td>
</tr>
<tr>
<td>Signalling Infrastructure and CSR AFC approval</td>
<td></td>
<td>Feb 2013</td>
</tr>
<tr>
<td>Property</td>
<td>To suit delivery of relevant Design Package(s) AFC</td>
<td></td>
</tr>
<tr>
<td>Temporary Works – rock cutting protection fence – AFC approval</td>
<td></td>
<td>Mar 2013</td>
</tr>
<tr>
<td>Temporary Works – other – AFC approval</td>
<td></td>
<td>To suit delivery of relevant Design Package(s) AFC</td>
</tr>
<tr>
<td>Permanent Way AFC approval</td>
<td></td>
<td>Feb 2013</td>
</tr>
<tr>
<td>Earthworks, Maintenance Access and Fences AFC approval</td>
<td></td>
<td>Jun 2013</td>
</tr>
<tr>
<td>Retaining walls and other rail corridor structures (excluding bridges) AFC approval</td>
<td></td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Bridges AFC approval</td>
<td></td>
<td>Dec 2013</td>
</tr>
<tr>
<td>Hydrology and Drainage AFC approval</td>
<td></td>
<td>Jun 2013</td>
</tr>
<tr>
<td>Urban Design and Landscaping Management Plan</td>
<td>First version (pre-approval) – Jan 2013</td>
<td>Final version (post planning approval) – April 2013 and in accordance with the conditions of planning approval</td>
</tr>
<tr>
<td>Urban Design and Landscaping AFC approval</td>
<td></td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Epping Station AFC approval</td>
<td></td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Cheltenham Station AFC approval</td>
<td></td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Beecroft Station (car park) AFC approval</td>
<td></td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Pennant Hills Station AFC approval</td>
<td></td>
<td>Dec 2013</td>
</tr>
<tr>
<td></td>
<td>NOTE: structural design not to begin until the alliance is formed</td>
<td></td>
</tr>
</tbody>
</table>
### Design Package

<table>
<thead>
<tr>
<th>Services Brief or TSR T1 Reference</th>
<th>Milestone Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennant Hills Station South Footbridge</td>
<td>Dec 2013&lt;br&gt;Note: structural design not to begin until the alliance is formed</td>
</tr>
<tr>
<td>HV AFC approval</td>
<td>May 2013</td>
</tr>
<tr>
<td>LV – enabling works if required – AFC approval</td>
<td>May 2013</td>
</tr>
<tr>
<td>LV – remainder – AFC approval</td>
<td>Sep 2013</td>
</tr>
<tr>
<td>Traction power (including overhead wiring and substation) – sufficient for signalling design completion</td>
<td>May 2013</td>
</tr>
<tr>
<td>Traction power (including overhead wiring and substation) – remainder – including stage designs – AFC approval</td>
<td>Sep 2013</td>
</tr>
<tr>
<td>Communications and Control Systems – enabling works – AFC approval</td>
<td>Feb 2013</td>
</tr>
<tr>
<td>Communications and Control Systems – remainder – AFC approval</td>
<td>Aug 2013</td>
</tr>
<tr>
<td>Earthing, Bonding and Electrolysis Protection</td>
<td>Stand alone report to suit delivery of relevant Design Packages at each stage of design</td>
</tr>
</tbody>
</table>

#### Supporting Documentation

| Sustainable Design Guidelines Report (final report) | To suit delivery of relevant Design Packages and following Completion of the Works |
| Safety Assurance Report (SAR) (final report) | To suit delivery of relevant Design Packages and following Completion of the Works |
| Goal Structure Notation (GSN) (final report) | To suit delivery of relevant Design Packages and following Completion of the Works |
| Reliability, Accessibility and Maintainability (RAM) Plan (final report) | To suit delivery of relevant Design Packages and following Completion of the Works |
| System Requirements Specification (SRS) Compliance (final report) | To suit delivery of relevant Design Packages and following Completion of the Works |

### 3.5 Progress Reporting

For the Detail Design Services, the TA must prepare and submit to the Principal’s Representative a concise and succinct monthly progress report on the 28th day of each month or the next consecutive working day if the 28th day is not a working day. The monthly report should be no greater than ten (10) pages plus appendices and must address the following aspects of the Services:

- safety statistics including:
  - lost time injuries/diseases, time lost, WorkCover notices/fines and injuries to the public;
• details of safety audits (type, outcomes and non-conformances raised/closed), preventative action, accidents, occurrences and hazards; and
• results of drug and alcohol tests
• the status at the end of the previous month of the Detail Design development (stated on a percentage complete basis for each design package) as compared to the TA’s design development program (see TSR T1);
• key dates for the anticipated submission of design packages at SDR, PDR, CDR, and AFC stages for the Principal’s review;
• Key activities for the next month;
• issues affecting or likely to affect the Services, including the forecast effects on the work and progress; and
• decisions made/required affecting or likely to affect progress.

The monthly progress report must include a section on the total project costs including:
• The actual costs incurred under the Alliance Procurement Support Services (see Clause 3.6); and
• The total payment claims and payments received to date under the lump sum elements of the TA’s Services (Detail Design and Works-As-Executed Drawings) and the forecast total costs (base lump sum fee plus the cost of any approved variations).

The TA will also provide other reports on particular matters and issues as required by the Principal’s Representative and in support of particular design matters for resolution at the time.

For the Alliance Procurement Support Services, the TA must, on Tuesday of each week, prepare and present a weekly resource report to the Principal’s Representative mapping the actual resources and costs incurred against the target upper limit fee (see Clause 3.6). The weekly report must address, as a minimum, the following aspects of the Services:
• Total cost incurred to date by discipline (refer to Clause 3.6);
• Progress made in the week;
• Meetings Held;
• Top Project Risks;
• Outstanding Issues;
• Weekly Look Ahead;
• Monthly Look Ahead; and
• Other Issues.

The exact format and layout of the weekly report will be agreed with the Principal upon commencement of the Services.
3.6 Cost Management and Reporting

Alliance Procurement Support Services

The TA must prepare a Cost Plan for the Alliance Procurement Support Services to enable the Principal to monitor and review the performance of the TA’s Services against the target upper limiting fee on a weekly basis.

The TA must prepare the Cost Plan during the project inception stage based on the program for the Alliance Procurement (see Clause 2.1) and the work breakdown structure agreed with the Principal. The TA must develop a baseline resource expenditure table based on the resources, rates and forecast expenditure of hours, distributed over the timeline for this element of the TA’s Services, in a format to be agreed with the Principal.

The TA must update the resource expenditure table on a weekly basis to show the actual resources and costs incurred against the baseline resources expenditure table and the upper limiting fee. This will provide early notice of any divergences between incurred fee and work delivered, so that corrective actions may be agreed with the TA before work proceeds further. The updated resource expenditure table must be included in the weekly progress report (see Clause 3.5).

Changes to the upper limiting fee may only be made by written instruction from the Principal’s Representative, in the form of a Services Request Form (SRF). Each SRF will detail changes in scope and the associated change in the upper limiting fee.

Following the procurement of the Alliance, the Principal and the TA will agree a cost reporting procedure for the Construction Support element of the TA’s Services.

Detailed design services

The TA must provide a weekly ‘dashboard' report that includes the following information:

- Baseline percent complete
- Earned Value (percent complete)
- Key issues
- Summary of milestone dates in this services brief, versus actual dates
- Other information as agreed from time to time between the Detailed Designer and the Principal

Construction phase services

Unless instructed otherwise by the Principal, the TA must undertake cost management and reporting in respect of construction phase services, as per the requirements for alliance procurement support services.

3.7 Design Constructability and planning

The TA must on a fortnightly basis co-ordinate with the Principal on issues relating to design constructability, design co-ordination and the integration of new works into the previously constructed works. Through such co-ordination, the TA and the Principal will review topics including but not limited to:
- construction methodology;
- the staging of construction;
- stage designs for temporary configurations;
- production of designs for possession dependant activities;
- temporary works; and
- general programming of the design.

The form, duration and location of the above mentioned constructability and planning co-ordination is to be agreed between the TA and the Principal. In the event that agreement on the form, duration and location cannot be reached it will be at the sole discretion of the Principal. No reasonable offer or proposal made by the TA as to the form, duration and location of the constructability and planning co-ordination will be refused by the Principal.
4   Design and Performance Criteria

The TA must satisfy and comply with the general design and specification criteria set out in this clause in addition to specific technical criteria described in this Clause of the Services Brief.

4.1   Design Life

The design life is the period within which an element of the Works must continue to meet the performance and technical requirements and the specified limits of reliability, availability and maintainability described within this Services Brief.

The design life for the various elements must be as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>Element</th>
<th>Design Life (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inaccessible permanent structural elements including bridges, retaining and deflection walls, platforms, aerial concourses, pedestrian bridges, substructures and miscellaneous civil structures #1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Permanent ground anchors and rockbolts #1</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Maintenance buildings (offices and stores) #1</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Other structural elements #1</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Non-structural building elements #1</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>Sign support structures and other roadside furniture</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>Road pavements (asphalt)</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>Road pavements (concrete)</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>Drainage structures and inaccessible pipe systems #1</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>Drainage culverts (and other drainage under tracks) #1</td>
<td>100</td>
</tr>
<tr>
<td>11</td>
<td>Rotating equipment, gullies, accessible pipe systems, tanks and valves</td>
<td>25</td>
</tr>
<tr>
<td>12</td>
<td>Pump systems and associated electrical equipment</td>
<td>30</td>
</tr>
<tr>
<td>13</td>
<td>Pumps</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>Track support and fastening systems (including noise and vibration mitigation measures)</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td>Overhead wiring structures (OHWS)</td>
<td>50</td>
</tr>
<tr>
<td>16</td>
<td>Overhead wiring</td>
<td>30</td>
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<tr>
<td>17</td>
<td>Signalling structures</td>
<td>50</td>
</tr>
<tr>
<td>18</td>
<td>Signalling system</td>
<td>25</td>
</tr>
<tr>
<td>19</td>
<td>C&amp;CS</td>
<td>20</td>
</tr>
<tr>
<td>No.</td>
<td>Element</td>
<td>Design Life (years)</td>
</tr>
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<td>---------------------------------------------</td>
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<tr>
<td>20</td>
<td>CCTV #2</td>
<td>20</td>
</tr>
<tr>
<td>21</td>
<td>Fire systems</td>
<td>20</td>
</tr>
<tr>
<td>22</td>
<td>HV switchboards, transformers</td>
<td>30</td>
</tr>
<tr>
<td>23</td>
<td>LV switchboards, lighting and electrical systems</td>
<td>25</td>
</tr>
<tr>
<td>24</td>
<td>Cabling and support systems</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>All other systems and elements</td>
<td>25</td>
</tr>
</tbody>
</table>

#1 The Works must be designed so that they can be maintained effectively, safely, with minimum whole of life cycle costs and without adversely affecting the operation of the railway and station.

#2 To the extent of the TA scope of services

All activities involving the repair of failed items must not impact on train services. The Works must be designed so that all planned maintenance can be carried out outside of the normal operating period of the railway. All inaccessible permanent works that cannot be maintained, repaired or replaced outside of the normal railway and station operation must have a design life of 100 years.

4.2 Technical Requirements

4.2.1 Services Works

(a) The design of all new Services and all adjustments to existing Services must be in accordance with:
   (i) Australian Standards;
   (ii) Safe working procedures and requirements;
   (iii) the relevant utility or Service Authority regulations and requirements; and
   (iv) RailCorp standards including ESC 540 ‘Service Installations with in the Rail Corridor’.

(b) Protection of gas pipelines must be in accordance with AS 2885 and the asset owner’s requirements.

4.2.2 Earthworks

(a) Earthworks must be designed in accordance with the requirements of RailCorp standards, manuals and specifications including, but not limited to, those listed in Appendix 16.

(b) The design must allow for surcharge loading in accordance with Australian Standard AS 5100.2 Bridge Design.

(c) Where batter slopes cannot be used within the limits of the Asset Lands, additional support measures such as retaining walls and rock anchors/bolts must be designed.

(d) Batter slopes, which are to be landscaped, must be no steeper than 2.5H:1V to facilitate maintenance and durability, except that a maximum batter slope of 2H:1V may be utilised provided that the landscaping meets the performance criteria for planting establishment and maintenance required by the Services Brief.
(e) Earthworks must accommodate for all rail systems infrastructure including signalling equipment and substations.

(f) Materials used in fill embankments must satisfy the requirements of RailCorp standards, manuals and specifications.

(g) If the formation is to be used as access for heavy vehicles during construction, the design must make allowance for this loading.

(h) General earthworks activities associated with the road works must be in accordance with RMS QA Specification R44.

4.2.3 Maintenance Access Roads and Walkways

(a) Safe places, warning lights and other ancillary works must be included as required to provide safe working conditions in accordance with current WHS Regulations and Guidelines and RailCorp standards.

(b) Maintenance access roads must be designed in accordance with RailCorp standards including ESC 550, ESC 215 and ESC 410.

(c) Maintenance access roads must be designed for all weather conditions and allow for heavy vehicle and crane access.

(d) In areas where no vehicular access is provided, standard formation width for walkway access across bridges, culverts and underpasses must be provided as a minimum.

(e) The design of the maintenance access roads must provide for safe egress and access. Sections longer than 300 m that would require a vehicle to reverse out must provide a turnaround area at a maximum spacing of 300 m.

(f) Safety barrier protection must be provided along sections of the new maintenance access roads where there is a risk of vehicles or personnel falling over or colliding with other fixed rail infrastructure. The barriers must typically comprise of guardrail, fencing or bollards. Vehicular safety barriers are to be designed in accordance with RMS and AUSTROADS Standards, specifications and guides.

4.2.4 Local Roads

(a) Adjustment to property access road works must be designed to comply with the relevant RMS and AUSTROADS standards, specifications and guides.

(b) All road works must be designed in accordance with the relevant RailCorp and RMS Standards and Construction Specifications.

(c) Pavement design must be undertaken in accordance with AUSTROADS and RMS standards, specifications and guides. Loading of the pavement by buses and other large vehicles must be accommodated.

(d) The TA must undertake a traffic study to determine the appropriate loading criteria for the pavement design in order to design the local roads. The traffic study must consider the effect that reconstructing existing adjacent and connecting roads will have on local traffic movements and this must be taken into account in developing the pavement design criteria. Pavement design must also take into account vehicle manoeuvring travel paths.

(e) Signage and line marking to RMS Specifications R141, R142 and R143 and AS 1742 and AS 1743 and AS 2890. For both permanent and temporary works, the TA must design a system of guide, warning and regulatory signs to allow way-finding and permit enforcement of road speed, traffic movement and parking restrictions. The system of signs must include:

(i) Speed limit signs;

(ii) “Stop” signs;
(iii) “Give Way” signs;
(iv) “Roundabout” signs;
(v) “5 minute Parking” signs (for delineating the “kiss and ride” zone);
(vi) “Taxi Zone” signs;
(vii) “Bus Zone” signs;
(viii) “No Entry” signs;
(ix) “Pedestrian Crossing” signs;
(x) “No Parking” signs;
(xi) “Disabled Parking” signs;
(xii) Directional signage; and
(xiii) Warning signage.

(f) Pedestrian areas must have a maximum crossfall of 2.5%. Longitudinal fall must meet the requirements of AS 1428 along disability access routes.

(g) Where required, the local roads design must include traffic control and traffic calming measures required to maintain a safe environment for road users and pedestrians in accordance with RMS and AUSTROADS standards, specification and guides.

(h) Where required, the pedestrian crossings must be designed in accordance with Australian Standards and AUSTROADS and RMS standards, specifications and guides.

(i) Traffic barrier protection must be provided where applicable adjacent to the stations to protect errant vehicles from accessing the new Asset Lands in accordance with RMS and AUSTROADS standards, specifications and guides.

(j) Layout of the bus stop areas must meet State Transit Authority Bus Stop Guidelines.

4.2.5 Permanent Fencing and Gates

(a) New and replacement security fencing including gates and locks must be provided in accordance with RailCorp standards including ESC 510 ‘Boundary Fences’ and Specification SPC 511 ‘Boundary Fences’ and other relevant RailCorp security standards.

(b) Separation fencing must be a minimum of 1100mm in height or a “Monowills barrier fence” or equivalent in accordance with RailCorp Standard ESB 003.

(c) All gates must be lockable in accordance with RailCorp Standard ESC 510 ‘Boundary Fences’ and Specification SPC 511 ‘Boundary Fences’.

(d) All fence panels must be designed vertically and even-stepped.

(e) Security fencing must facilitate surveillance, provide adequate clearance to OHW structures and equipment, and be installed to the minimum safety and operational clearances.

(f) In accordance with earthing and bonding requirements, the detailed design must incorporate insulation panels, a minimum of 2200mm in length, in metallic fencing in the electrified area to break the fence up into short electrically isolated sections. The panels must consist of fence material with supporting posts that are non-metallic. The panels must be installed where ‘continuous’ fencing:

(i) would otherwise approach within 2.0 metres of an OHW structure (including any metallic attachments to the OHW structure such as switch handles, back anchor guy rods etc);

(ii) would otherwise approach within 2.0 metres of station fences, foot bridges, rail bridges, entrance fences and metallic buildings;
(iii) runs parallel to, and within 2.0 metres of, above ground metallic signalling / cable troughing or air lines. The insulating panels must be located directly adjacent to the insulated joint in the signalling / cable troughing or air lines;

(iv) meets any high voltage substation fence (either RailCorp or local electricity distributor). Where the substation earth mat extends outside the substation fence, ‘continuous’ fencing must not enter the area of the earth mat; and

(v) meets any pole mounted or pad mounted substation (either RailCorp or local electricity distributor). The ‘continuous’ fencing must not enter the area of the earth mat. The ‘continuous’ fencing must also not be closer than 2.0 metres from exposed substation metal fittings.

(g) Insulation panels must be designed:

(i) to ensure that persons cannot contact ‘continuous’ fencing and any other metallic service such as OHW structures, station fences (associated with the station low voltage earthing system and water pipes) and footbridges that extend outside RailCorp property; and

(ii) at approximately 300 metre intervals in the ‘continuous’ fencing (with a maximum spacing of 800m in areas away from above ground signal troughing). Locations of insulated panels are subject to Earthing & Bonding studies and simulations.

(h) The non-metallic posts must have a clearance of minimum 50 mm and maximum 100 mm from the adjacent metallic post of the ‘continuous’ fencing. Each non-metallic post must have a warning sign attached as specified in RailCorp Standard SPC 511.

(i) The bottom rail must be designed so as to remain 80 mm clear of the ground.

(j) The insulation panel must be designed in accordance with RailCorp Standard SPC511.

4.2.6 Retaining Walls

(a) All retaining wall works must be designed in accordance with the requirements of the RailCorp standards, and Australian Standards and AS 5100 ‘Bridge Design Code.

(b) All new retaining walls must support railway infrastructure and railway traffic loading in accordance with AS 5100 ‘Bridge Design’ for railway traffic loading applicable to passenger main line as specified in ESC 310 ‘Underbridges’. Design loading must accommodate 300LA train loading, as well as rolling stock and other services defined in the Services Brief.

(c) All new retaining walls must be designed for a 20kPa surcharge live load to allow for vehicle access roads, including future access roads.

(d) Reinforced concrete retaining walls must be designed with Class 2 finish. Traffic safety barriers must be provided on top of retaining walls where they support vehicle access roads, or provide handrails in all other cases, in accordance with RailCorp standards.

(e) Shotcrete is permitted within cuttings only. All anchor bolt and rock bolt heads are to be recessed so that a uniform planar finish is achieved. Finishes, colours and profiles must be designed to suit location and context. Precast concrete copings with drip grooves must be provided to the top of shotcrete walls to give a consistent line and durable capping to the walls.

(f) Keystone walls must be designed and constructed in accordance with AS5100 ‘Bridge Design’. Maximum height of keystone walls to be no greater than 1.5m.

(g) All exposed hard surfaces including concrete finishes must be coated with ‘Sure Seal Graffiti Shield’ anti-graffiti surface treatment or similar approved, to the full height of the wall. The anti-graffiti coating must match the adjacent surface and the colour and appearance of the structure to the greatest extent possible.
(h) Retaining wall materials must provide a consistent aesthetic appearance throughout the Works, and with other structural elements, to provide an integrated urban design approach to all elements.

(i) Retaining walls to embankments must be screened with vegetation to minimise visual intrusion, unless the walls are on the property boundary where access will be required for maintenance.

(j) Where retaining walls are screened with vegetation, the effects of stormwater drainage (or watering system) seepage and root incursion below the adjacent pavements, pathways and wall footings, must be considered in the design of those pavements, pathways and wall footings.

(k) Wall layouts must be simple, straight, or large radius curved alignments, sympathetic to the Rail Corridor, adjoining terrain and infrastructure. A strong vertical pattern and texture must be applied to all precast and earth reinforced walls, to form liners approved by the Principal's Representative.

(l) All retaining walls must be designed to allow future excavation at the toe to a depth of 1.5m.

(m) The design of retaining walls must not place any loads on any Service.

4.2.7 Bridges

(a) All bridge works must be designed in accordance with AS 5100 ‘Bridge Design’, RMS and RailCorp Structures Standards including ESC 310 ‘Underbridges’ and ESC 320 ‘Overbridges and Footbridges’, including train collision loading and collision protection, traffic barriers, electrical safety screens, OHW structures and signal posts where applicable.

(b) The new underbridges must support railway infrastructure and railway traffic loading in accordance with AS 5100 ‘Bridge Design’ for railway traffic loading applicable to Mixed Passenger and Freight Main Line as specified in ESC 310 ‘Underbridges’. Design loading must accommodate 300LA train loading, as well as live loads from all suburban and outer suburban passenger and freight rolling stock.

(c) The design of the M2 Motorway viaduct structure must minimise impact on the existing rail embankment and optimise the method of construction.

(d) The location of the northern and southern piers, and the construction methodology for the M2 Motorway underbridge must be agreed with Roads and Maritime Services and the motorway operator (The Hills Motorway Limited), taking into consideration impact on the operation of the M2 Motorway and planned future expansion of the motorway.

(e) The M2 Motorway viaduct must be designed to avoid the need for a rail expansion switch.

(f) The extension of the Beecroft Station pedestrian underpass must be designed to include provision for maintenance walkway access.

(g) The urban design for the extension of the Beecroft Station pedestrian underpass is to be aesthetically sympathetic with the heritage nature of the existing underpass.

(h) All primary structural elements for all underbridges must be designed to carry ballasted track.

(i) All new bridges over waterways must provide a freeboard between the 100 year ARI design storm event water level (including allowance for future climate change impacts) and the soffit of the bridge superstructure of greater than that for the existing bridge.

(j) The overbridges design must make provision for rail systems, utility services and future expansions.
(k) Parapet detail must be designed to create a continuous uninterrupted line that extends the full length of the bridge. The parapet must extend a minimum of 6m beyond the bridge structure. The parapet must be angled towards the road. The parapet is to extend below the deck soffit in order that any services or drainage and the deck soffit are screened.

(l) Bridges must be designed with reference to the RMS NSW Bridge Aesthetics Design Guidelines. Bridge approaches, embankments, retaining walls, acoustic walls and abutments must be treated as part of the bridge design process to provide a totally integrated design outcome. Abutments must incorporate high quality finishes and detailing.

(m) The vertical clearance to the underside of all underbridges over roads must be minimum 5.3m above roadway level in accordance with AS 5100 Bridge Design and RMS Bridge Technical Directions, (this includes a 100mm provision for future asphalt resurfacing.

(n) The design for the drainage and waterproofing of underbridges must comply with the requirements of:

(i) ESC 310 ‘Underbridges’;
(ii) Drainage of overbridges must comply with the requirements of ESC 320 ‘Overbridges’;
(iii) Free draining scuppers through the bridge decks are not permitted; and
(iv) All drainages structures must be readily accessible for cleaning and maintenance purposes.

(o) Safety screens/barriers for all overbridges must be provided in accordance with RailCorp Electrical Standard EP08000007SP ‘Safety Screens for Bridges over 1500 V OHW Equipment’ and ESC 320 and RMS codes for pedestrians where applicable.

(p) Bridges must be designed so as to not preclude the provision for future cathodic protection and earth bonding.

(q) Overbridges must be designed to include an embankment bench in front of the abutments to facilitate future inspection and maintenance.

(r) All hard surfaces that are accessible to vandals are to be treated to facilitate easy removal of graffiti. Hard surfaces such as walls, structural elements, noise barriers and the like are to be treated with “Sure Seal Graffiti Shield” applied in accordance with the manufacturer’s directions. Any surface requiring treatment must be treated to the entire surface to maintain colour consistency.

(s) Underbridges must be designed to provide access to a CSR and support maintenance activities.

(t) The design of the bridges must make allowance for the potential effects of stray current corrosion associated with the DC traction system, and incorporate earthing and bonding requirements in compliance with RailCorp standards.

(u) The design of all bridges and ballast guards must make allowance for future track lifting as specified by RailCorp.

(v) Bridges must be designed with reference to the RMS NSW Bridge Aesthetics Design Guidelines. Bridge approaches, embankments, retaining walls, acoustic walls and abutments must be treated as part of the bridge design process to provide a totally integrated design outcome. Abutments must incorporate high quality finishes and detailing.

(w) All new bridges are to be designed and constructed without any impact on existing bridges and structures.

(x) Scour protection must be provided to all new bridges. Scour protection must be designed for a maintenance free life of a minimum of 100 years. Scour protection for waterway areas must be designed in consultation with the relevant Authorities.
4.2.8 Miscellaneous Civil Structures

(a) The design of miscellaneous structures and footings must comply with RailCorp Engineering Specification for Structures SPC 301 and SPG 0705 Construction of Cable Routes and Signalling Civil Works, and with RailCorp Engineering Standard ESC 360 Miscellaneous Structures.

(b) The design of the signal structures and footings must minimise incursion into adjacent tracks, walkway and vehicular access areas and avoid clashes/clearance infringements with/to the drainage system and other buried Services, retaining walls, bridge abutments, OHW structures and catch points.

(c) The concrete specification for all concrete footings and piles must address the durability and design life requirements of this Services Brief.

4.2.9 Stormwater Drainage

(a) Conditions and details of existing drainage structures must be investigated to confirm size, conditions, etc.

(b) All drainage in the Asset Lands, including track drainage, must be designed in accordance with the requirements of RailCorp standards and manuals.

(c) Track drainage must be designed and constructed to prevent inundation of the track formation in a 50 year ARI storm and to prevent damage to the track formation caused by stormwater runoff.

(d) Stormwater drainage must be designed to meet Hornsby Shire Council permissible site discharge and site storage requirements.

(e) Overland flow paths to convey major flows up to 100 year ARI design storm event must be provided in accordance with the NSW Floodplain Development Manual (2005) and the relevant Council Standards or alternatively these flows can be conveyed by the trunk drainage system.

(f) Design of ballast cages is required on all pits within a distance of 2500mm from the track centreline or where the likelihood of ballast entering the system is high.

(g) An adequate system to stop litter and ballast from entering the drainage system must be provided in the stormwater drainage design.

(h) Drainage systems used in Temporary Works must be designed to the same criteria specified in the Services Brief for a minimum 2 year recurrence interval. The temporary drainage system must satisfy the requirements of all relevant Authorities.

(i) The stormwater drainage design must include scour protection in all areas susceptible to scouring, including batters and culvert outlets. Scour protection must be designed for a maintenance free life of a minimum of 50 years.

(j) The track and retaining wall drainage systems must collect subsurface water seepage and direct it away from the track and retaining walls.

(k) The drainage system must include appropriate provisions to ensure that there are no adverse impacts on development upstream and downstream of the Project.

(l) The Works must limit the effect on the groundwater regime such that there is no adverse effect on the natural or built environment beyond the project boundary.

(m) The drainage systems, including pit lids and grates, must be designed for vehicular and/or imposed loading from rolling stock where appropriate.

(n) Any existing inflows to the Asset Lands must be incorporated into the drainage system design.
All WSUD elements and water quality treatment measures must be designed and perform to relevant Council specifications.

Debris control measures and blockage provisions must be provided as required to comply with relevant Council and RailCorp standards.

4.2.10 Cross Drainage Culverts

(a) The drainage design must include hydraulic modelling of watercourses that are crossed by the Works for flooding and impacts including assessment for the 50-year and 100-year average recurrence intervals (ARI), effect of climate change and the probable maximum flood (PMF). The modelling must include existing and design scenarios.

(b) All waterway crossings and watercourse diversions (at Devlins Creek) must be designed to minimise adverse impacts on flood storage and flow behaviour in accordance with the requirements of Appendix 17.

(c) All new major cross drainage culverts must be designed for a 100-year ARI design storm event.

(d) Debris control measures and blockage provisions must be provided in the design as required to comply with relevant Council and RailCorp requirements.

(e) The stormwater drainage design must include scour protection in all areas susceptible to scouring, including culvert outlets. Scour protection must be designed for a maintenance free life of a minimum of 50 years. Scour protection for waterway areas must be designed in consultation with the relevant Authorities.

(f) All culvert works must be designed in accordance with AS 5100 'Bridge Design', RMS and RailCorp Structures Standards including ESC 310 ‘Underbridges’ and ESC 320 ‘Overbridges and Footbridges’, including train collision loading, traffic barriers, electrical safety screens, OHW structures and signal posts where applicable.

(g) All hard surfaces that are accessible to vandals are to be treated to facilitate easy removal of graffiti. Hard surfaces such as walls, structural elements and the like are to be treated with “Sure Seal Graffiti Shield” applied in accordance with the manufacturer’s directions. Any surface requiring treatment must be treated to the entire surface to maintain colour consistency.

(h) All pipework and cabling must be concealed from public view except when viewed from directly underneath.


4.2.11 Urban Design and Landscaping

(a) The urban and landscaping design must ensure that trees with a mature height of 6m or greater are not planted within 10m of the outer rail track or future proofed rail track, and a minimum clear distance equivalent to the mature tree height plus 5m.

(b) Treatment for landscaping works must consider a whole of Rail Corridor approach to all urban design elements.

(c) All landscape works within the Site must be designed in accordance with:

(i) RailCorp Revegetation Guide - EMS-09-GD-0074;
(ii) RailCorp Revegetation Technical Specification – EMS-09-TP-0066; and
(iii) RailCorp Bush Regeneration Technical Specification Template – EMS-09-TP-64.
(d) The landscape design must ensure that all materials, furniture and plants specified must be low maintenance and must maintain sightlines.
(e) All tree planting design in paving must incorporate permeable paving.
(f) The final landscape plans must show:
   (i) detailed planting proposals;
   (ii) protection of existing vegetation;
   (iii) planting schedules indicating species, densities and plant sizes;
   (iv) maintenance schedules; and
   (v) detailed descriptions as to how the proposed Works meet the sustainability requirements.

4.2.12 Stations Building Works
(a) Stations and station precincts must be designed to comply with the following objectives:
   (i) Contribute to the quality of the public domain;
   (ii) Attract patronage and encourage use of the stations;
   (iii) Provide memorable urban spaces by establishing a continuity of image and local identity for the stations using a shared palette of urban design elements;
   (iv) Create a seamless pedestrian connection across the rail alignment;
   (v) Provide clear unambiguous circulation in paid and unpaid areas;
   (vi) Facilitate good supervision of paid and unpaid areas of the stations; and
   (vii) Facilitate efficient station operations and maintenance.
(b) Station building works must be designed to comply, as a minimum, with the layouts, configurations, geometry, materials, finishes, and details shown in the Principal’s Design. The spatial geometry shown in the Principal’s Design is the minimum requirement.
(c) Station works must be designed in accordance with:
   (i) RailCorp Station Design Standard Requirements;
   (ii) RSS-001 RailCorp Security Standard – Stations;
   (iii) Australian and RailCorp standards;
   (iv) The Building Code of Australia (BCA);
   (v) Disability Standards for Accessible Public Transport (DSAPT);
   (vi) TfNSW Sustainable Design Guidelines (Appendix 15);
   (vii) the Work Health and Safety Act and Regulations; and
   (viii) WorkCover NSW Guidelines.
(d) The designs of the stations must incorporate sustainable initiatives in accordance with TfNSW Sustainable Design Guidelines and sustainability targets and Water Sensitive Urban Design (WSUD) initiatives.
(e) The platforms must be designed for level access provisions in accordance with the RailCorp Station Design Standard Requirements, AS 1428 Part 1 and Part 2 Enhanced and Additional Requirements – Buildings and Facilities, Disability Standards for Accessible Public Transport (DSAPT) and Commonwealth Disability Discrimination Act.
(f) The Works must be designed to minimise pedestrian crowding points and ensure acceptable levels of service. In normal operation ticket barriers, stairs and other critical circulation points must not operate below Fruin Level C (circulation). Platforms must not operate below Fruin Level C (queuing).

(g) The design of stations, including final spatial planning, circulation dimensions and vertical transportation capacity must maintain levels of service based on 2041 forecast station patronage given in the Systems Requirements Specification provided in Appendix 9.

(h) Tactile hazard indicators and tactile directional indicators must be provided on the platforms, concourses and station precincts in accordance with the RailCorp Station Design Standard Requirements and AS 1428 Part 4 Design for Access and Mobility (Tactile Indicators).

(i) Floor and paving surfaces must be slip resistant in all conditions and comply with BCA “Deemed-to-Satisfy” clause 10, AS 1428.2 clause 9, AS 4586 and HB 197.

(j) Paving materials must withstand the specified floor loadings and vehicle loadings from maintenance equipment, emergency vehicles and the like.

(k) The design must specify materials that are not prone to leaching or other discolouration of the finished materials.

(l) Access covers in paving and floor finishes must be designed to be ‘infill’ type with inlay to match the surrounding finish and jointing pattern. Covers must be oriented to align with paving joints where applicable.

(m) All building structures must be designed and constructed to comply with RailCorp standards relating to stray current, earthing and bonding.

(n) Concourse, stairs and lift structures must be designed in accordance with AS 5100 Bridge Design Code and relevant RailCorp standards including ESC 320 ‘Overbridges and Footbridges’, including train collision loading and electrical safety screens where applicable. Stairs must be provided with RailCorp approved stair nosings.

(o) Stairs from platform to concourse must be formed in three equal flights and have minimum clear headroom of 2.7m. Twin centre handrails must be provided.

(p) Building services must not run below the concourse slab above rail tracks.

(q) Stormwater drainage must be provided to all areas of the unpaid and paid concourses.

(r) Concrete must be designed to AS 3600 where the structural elements are not applicable to the above clause. Steelwork must be designed to AS 4100. Blockwork or masonry must be designed to AS 3700.

(s) Exposed concrete in public areas must be not less than Class 2 finish with tonal range control as per clause 3.6.3(b) of AS 3610-1995. Exposed concrete beams supporting the concourse slab which run above the platform edge must have a consistent concrete beam profile throughout their length.

(t) Columns on platforms supporting the concourse slabs must be of precast concrete design for construction.

(u) Concrete slab edges, beams etc must have drip grooves to ensure that rainwater does not track across slab and beam soffits.

(v) All glass and glazing systems must be in accordance with RSS-001 RailCorp Security Standard and all relevant AS/NZS Standards including AS/NZS 2208 and AS 1288. Glazing exposed to public areas must have clear scratch resistant film protection.

(w) Glazing within public areas must be laminated and heat strengthened. Laminate interlayer must be 1.5mm thick. Glass exposed top edges and vertical edges below 1m above floor level must be protected by a stainless steel U-channel to prevent damage from sharp impact.
(x) Glazed screens and balustrades must be continuous to floor level around voids to prevent floor cleaning water and spills draining to areas below.

(y) The design of all canopies must incorporate steel framing, lightweight metal roofing, linings and lighting.

(z) All cabling and services are to be concealed behind finishes work.

(aa) Windows to station facilities accommodation that face the unpaid concourse or station precinct must be protected by security shutters that are concealed behind architectural cladding when retracted.

(bb) Walls and ceilings to station facilities must meet Section J requirements of the BCA.

(cc) Office areas facing the unpaid concourse must have windows that can be opened with a minimum opening area not less than 5% of the office floor area.

(dd) Door hardware must be stainless steel including all fixings.

(ee) Cladding finishes must be of sufficient thickness to be rigid and free of visible surface undulations. Cladding materials less than 3m above floor level within public areas must be solid-backed to resist denting from surface impacts that can be anticipated through normal use in a heavily trafficked public transport environment.

(ff) Paving units, wall cladding panels, glazing panels and other architectural elements must have the surfaces of adjacent panels/units align to within 5mm.

(gg) Horizontal and vertical joint alignment tolerances must not exceed 5mm.

(hh) Panel fixings must be concealed or recessed within shadow gaps using vandal-resistant fixings.

(ii) Panels in public areas that require removal for access to building services installations must have captive fixings and tethers.

(jj) Movement joints with appropriate seals must be provided to allow thermal and moisture movements. Joint and seal materials must have a design life equal to the adjacent materials and finishes.

(kk) Potential bird roosting locations must be eliminated by sealing off or by the installation of prevention devices such as tensioned cables and metal spikes.

(ll) Roofs and canopies must have fall arrest systems to provide safe maintenance access.

(mm) Concourse roof canopies must have maintenance access walkways to provide access to gutters.

(nn) All routine building maintenance must be able to be conducted without traction power outage and in accordance with NSW WorkCover requirements, including canopy areas.

(oo) Station structures and building services must be designed and configured to permit all regular cleaning and maintenance to be undertaken with the use of a standard proprietary 19ft scissor lift capable of being transported in the passenger lift provided.

(pp) Glazed doors must be provided in the glazed screen separating the paid and unpaid concourse to facilitate access of boom lifts suitable to give access to areas of the roof soffit over stair voids.

(qq) Access for window cleaning must be provided. If necessary, anchor points must be provided to facilitate safe access for window cleaning.

(rr) Horizontal surfaces and ledges must be avoided to reduce cleaning requirements where not required for operational reasons.

(ss) Recessed, confined and hidden spaces must be avoided to comply with Crime Prevention Through Environmental Design (CPTED) principles.
(tt) Car markers must be provided on the island platforms to suit 4, 6 and 8 car trains and in accordance with the RailCorp requirements.

(uu) Adequate space and facilities must be provided to ensure safe maintenance, removal and replacement of plant and equipment including provision for unimpeded access under emergency conditions. Plant is to be accessible and safe to operate, maintain, clean, remove and replace.

(vv) All urban precinct landscape works must be designed in accordance with the RailCorp Station Design Guide and all relevant codes and standards including RailCorp standards.

(ww) Pedestrian footpath surfaces must be even, level and slip resistant with a maximum crossfall of 1:40. Paving surfaces between adjoining materials are to be level.

(xx) All ramps, kerb ramps, and stairs must be in accordance with AS 1428 Part 1 and Part 2 Enhanced and Additional Requirements – Buildings and Facilities and all relevant RailCorp and RMS standards.

(yy) Kerb crossings must be minimum 1200mm wide. The minimum unobstructed width of ramps and landings must be 1500mm. Ramps systems must not rise more than 2000mm.

(zz) External circulation areas must comply with the accessibility requirements of AS 1428 Parts 1&2.

(aaa) Bus stops must provide 150mm high kerbing to enable deployment of bus ramps for boarding and alighting by people who use a wheelchair.

(bbb) Access must be provided for emergency and service, and maintenance vehicles.

4.2.13 Stations – Mechanical Service

(a) Air conditioning services must be provided in the areas of staff occupancy, electrical and communications rooms or where heat sensitive equipment operates.

(b) In ancillary or other enclosed spaces, either natural or mechanical ventilation systems are required to provide and maintain airflow within the enclosure, at the same time removing any odours. All systems must be designed to comply with AS 1668.2 – The use of Ventilation and Air-conditioning in Buildings, the BCA and the RailCorp Station Design Guide.

(c) Mechanical ventilation services are required for RailCorp staff and public amenity at Cheltenham Station and Pennant Hills Station in accordance with AS 1668.2 – The Use of Ventilation and Air-Conditioning in Buildings.

(d) The design of mechanical ventilation of lift shafts must be in accordance with AS 1735.

(e) Air-conditioning must be provided to occupied building areas by means of Variable Refrigerant Volume air conditioning systems.

(f) The design of air conditioning systems for communication rooms must incorporate a backup system which will operate in a lead and lag operation in accordance with the RailCorp Station Design Guide.

(g) Outside air must be provided to spaces by means of fresh air fans and filters connected to fan coil units.

(h) Mechanical services plant must be located in areas that are easily accessible, not prone to vandalism and do not detract aesthetically from the architectural design.

(i) Wherever possible, mechanical services plant must be located in plant rooms over the rooms served to minimise the maintenance access requirements.

(j) Air pressurisation systems must be provided to prevent the ingress of dust to communications rooms.
(k) Public toilets must be provided with mechanical exhaust and with a back up fan system as redundancy in accordance with the RailCorp Station Design Guide.

(l) The mechanical services design must incorporate:
   (i) mechanical services power & control systems;
   (ii) an emergency shutoff switch to the station HVAC systems that is readily accessible to station staff in accordance with the RailCorp Station Design Guide;
   (iii) acoustic measures including insulation and silencers; and
   (iv) thermal insulation for AC ducts that run in air conditioned spaces.

4.2.14 Fire and Life Safety Systems

(a) All new buildings must be provided with the approved fire service systems in accordance with:
   (i) the Fire Engineering Report prepared by the TA;
   (ii) BCA requirements;
   (iii) NSW Fire and Rescue objectives and minimum requirements;
   (iv) RailCorp standards and guidelines including but not limited to:
      A. RailCorp Stations Design Guide;
      B. RailCorp ESC 540 Service Installations in the Rail Corridor; and
      C. RailCorp Electrical Distribution Standards – Earthing, Bonding and Electrolysis; and
      D. RailCorp EP 99 00 00 08 SP Substation Fire Protection and Detection Standard Guide.
   (v) all relevant Australian Standards.

(b) The TA must consult with Sydney Water to confirm the requirements for connection to towns mains supply, water main characteristics and grade 2 water supply if required.

(c) The design of the Fire and Life Safety systems must be coordinated with the designs of building works and electrical systems, communications systems and hydraulic and mechanical services.

(d) Where required by the FER, the design of fire and life systems must have the following attributes:
   (i) Vandal proof Fire Hydrant Valve / Fire Hose reel cabinets;
   (ii) Fire indication panel must send an alarm from the Station Manager’s office to the RailCorp Management Centre;
   (iii) Devices at high level to be accessible by scissor lift;
   (iv) Stray current isolation of fire water mains connected to Sydney Water mains in accordance with RailCorp standards; and
   (v) Fire extinguishers must not contain halons.

(e) The station design must minimise the spread of smoke to concourse level and direct smoke towards the end of the platforms through, for example, the use of natural ventilation such as: open sided platform areas; natural ventilation of the concourse; smoke curtains at platform level around the stairwells and floor voids.
f) Design of essential cabling relating to fire and life safety protection must not be contained in the same conduit enclosure as non-essential cabling (such as that supplying normal lighting and general purpose outlets).

4.2.15 Lifts

(a) Lifts and associated structures and systems must be designed in accordance to the TfNSW Vertical Transportation Lift Specification SP-01 (Appendix 19). The TA must complete SP-01 and it to the Principal’s Representative for review.

(b) Lifts must be by Liftronics in accordance with Spec E2 in RailCorp Term Contract C03282.

(c) The TA must coordinate the lift shaft design and associated systems with the design of the Liftronics lifts.

(d) The TA must balance the use of glass in lift shafts against mechanical ventilation and waterproofing requirements to ensure reliability of the lift and temperature control within lift cars.

(e) Mechanical ventilation of lift shaft must be in accordance with AS 1735.

(f) The ‘Consumer’s Mains’ cabling and cable support system design must be fire rated to the WS52 classification in accordance with AS3013 as defined in the following table.

<table>
<thead>
<tr>
<th>Source of Supply</th>
<th>Extent of “Consumer’s Mains”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Distribution Network Service</td>
<td>From Local Electricity Distributor Point of Attachment to the Isolation Transformer, From Isolation Transformer to the Supply Main Switchboard and from the supply Main Switchboard to the Installation Main Switchboard</td>
</tr>
<tr>
<td>Provider only</td>
<td></td>
</tr>
<tr>
<td>RailCorp only</td>
<td>From the distribution Supply Main Switchboard to the Installation main Switchboard</td>
</tr>
<tr>
<td>Changeover Contactor (RailCorp to Local Distribution Network)</td>
<td>From the input terminals of the changeover contactor to the Installation Main Switchboard</td>
</tr>
</tbody>
</table>

(g) All lift sub-mains cabling and Cable Support Systems from the Installation Main Switchboard to the main circuit breaker on the lift distribution board design must be fire rated to the WS52 classification in accordance with AS3013.

4.2.16 Hydraulic Services (including Water Supply and Wastewater) for Buildings

(a) All hydraulic services works must be designed to comply with the rules and regulations published and administered via Sydney Water Corporation, RailCorp Station Design Guidelines, Environmental Protection Authority, Building Code of Australia, NSW Code of Practice and the relevant Australian Standards.

(b) Sanitary Plumbing & Drainage works:

(i) at Cheltenham Station, the design must show:

   A. the extension of the sanitary plumbing and drainage to the existing Sydney Water Corporation sewer main junction;

   B. all necessary pipes, junctions, bends, pits, floor wastes, overflow gullies, vents, excavation, backfilling, testing and sundry equipment required for the installation; and
C. all required drainage mechanical and fire services such as but not limited to condensate drainage and fire test drains

(ii) all materials and structures must be approved by the local authority;

(iii) The TA must coordinate all work with Sydney Water Corporation for the application to connect to the sewer infrastructure.

(c) The Stormwater Drainage design must provide for:

(i) rainwater collection to all roof, station, concourse and platform areas including planter drainage;

(ii) a conventional stormwater system sized to accommodate a 100 year ARI rainfall event;

(iii) stormwater drainage reticulation within buildings;

(iv) connection of station rainwater storage tank overflow pipes (if required) to civil stormwater systems;

(v) all necessary pipes, junctions, bends, inspection openings, sumps, grates, pits, manholes, excavation and sundry equipment to convey discharges from the various downpipes, sumps and drainage points for systems as nominated above;

(d) Where applicable, the design of rainwater harvesting systems must comply with the following requirements:

(i) rainwater must be collected via downpipes from the roof areas (pristine catchment) of each station that reticulate to a rainwater tank for collection and reuse for all toilets and hose taps located at the station;

(ii) rainwater harvesting tanks must include first flush filtration to incoming rainwater, overflow to civil stormwater, pump set, level switches and alarms; and

(iii) captured rainwater must be: drawn from the rainwater harvesting tank; filtered to 25 micron; treated by UV lamp; and pumped to a recycled water storage tank.

(e) Where applicable, the design of recycled water systems must comply with the following requirements:

(i) each recycled water storage tank must include: an overflow to stormwater; pump out including suction pipe and foot valve; level switches; alarms; and connection to a recycled water pump set;

(ii) each recycled water storage tank must be backed-up by a Sydney Water recycled water supply;

(iii) the design must show all recycled water pipes from recycled water storage tanks and pump sets to all fixtures requiring recycled water, hose taps and irrigation points;

(iv) all pipes, pipe sleeves, identification tapes and hose tap outlets must be clearly marked with “WARNING: NOT FOR DRINKING” signage in accordance with AS 1319 & AS 1345;

(v) All Recycled water pipes, pipe sleeves, identification tapes, and outlets must be coloured lilac (P23) in accordance with AS 2700.

(f) The design of the cold water system must comply with the following requirements:

(i) all taps and fixtures deliver a minimum outlet pressure of 150 kPa or as required for the fixture being served. If mains pressure exceeds 500 kPa, provide 350 kPa pressure limiting valves to each bathroom group;

(ii) a reduced pressure zone device must be provide immediately downstream of the water meter assembly and elsewhere to satisfy AS 2845; and
(iii) water services connected to Sydney Water mains must be isolated from stray currents in accordance with RailCorp standards.

(g) The design of the hot water system must comply with the following requirements:

(i) a Thermostatic Mixing Valve (TMV) must be provided to each bathroom group. A maximum of 10 metres of reticulation downstream of the TMV is permitted. The TMV is to be designed as recessed into the wall with a lockable Stainless Steel box; and

(ii) water temperatures must not exceed the values set out in the table below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Maximum water temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public amenities</td>
<td>43°C</td>
</tr>
<tr>
<td>staff toilets and showers</td>
<td>50°C</td>
</tr>
<tr>
<td>kitchens and cleaner sinks</td>
<td>60°C</td>
</tr>
</tbody>
</table>

(h) The design of Sanitary Fixtures, Associated Equipment & Taps must comply with the following requirements.

(i) spring loaded devices, sensors or similar must be provided to taps at stations to reduce potable water loss from taps left running.

(ii) all water services reticulation and sanitary plumbing must be concealed.

4.2.17 Commuter Car Parks

(a) The design of parking facilities must meet the requirements of AS 2890.6-2009 (for disabled parking) and AS 2890.1-2004, to achieve efficient and safe parking operations. The design must comply with the requirements in AS 2890.1-2004 for Class 2 users (car space width 2500mm).

(b) All car parks must be designed in accordance with the relevant RailCorp standards and Construction Specifications, except where the infrastructure will become Council infrastructure, and will be maintained by Council, local Council standards and specifications will apply.

(c) Car space (general): 2500 mm wide minimum, 5400 mm long minimum.

(d) Disabled spaces: it is required that 2 spaces must be formed from 3 standard 2500 mm wide bays to a configuration similar to that shown in Diagram 6 of the Draft Australian Standard AS/NZS 2890.6. Alternatively a single space provided must be 5400 mm long and 2500 mm wide with a minimum vertical clearance of 2500 mm, with an adjacent shared area of the same dimensions.

(e) The TA must design car park areas to accommodate B85 vehicles and to allow access by B99 vehicles in accordance with AS 2890.1. Precise dimensions for swept paths and location of exits must be confirmed in the detailed design.

(f) The design of the parking facilities must provide for legible and safe pedestrian egress and access. The design must minimise pedestrian and vehicular conflicts and must ensure safe and legible pedestrian access to stations.

(g) The TA must design the car park works to comply with the requirements of the Australian Standards (including current Draft AS/NZS 2890 Part 6) and all statutory requirements including, but not limited to, those relevant to: car parking; signage; access ways; and tactile hazard indicators.

(h) The detailed design must incorporate the following features/elements:
(i) disability compliant access ways (to AS 1428 and DSAPT) between the disabled bays in the commuter car parking areas to station entrances;
(ii) bituminous sealed car parking areas; and
(iii) Car parks with bollards or traffic barrier protection to adjacent infrastructure that is suitable to protect against impact from heavy vehicles.

(i) Pedestrian areas must have a maximum crossfall of 2.5%. Longitudinal fall must meet the requirements of AS 1428 along disability access routes. Travel between the station and the car parks must not include ramp, step or lift access.

(j) Any new kerbs, pavements, footpath resurfacing, thresholds and other related streetscape works must be in accordance with RMS, AUSTROADS, Australian Standards (including AS 1428 where applicable), Council standards, and Department of Planning’s ‘Urban Design Guidelines with Young People in Mind’.

(k) A risk assessment in accordance with AS 4360-2004 and the associated hand-book HB23-2007 must be undertaken during the design phase for each car park, as per RailCorp Security Standards (RSS-001).

4.2.18 Signage

(a) The design of signage must comply with the following standards:
   (i) RailCorp standards;
   (ii) RailCorp Station, Interchange and Car Park Signage Standard and Station Display Standard;
   (iii) RailCorp Station Display Systems Standard;
   (iv) Department of Transport Best Practice Guidelines for Public Transport Signage and Information 2001;
   (v) NSW Ministry of Transport Introduction to Graphic Standards for Public Transport Information 2008;
   (vi) Local Council standards;
   (vii) RMS standards; and
   (viii) Relevant Australian Standards.

(b) Signage must be designed to fulfil the requirements of the RailCorp Station, Interchange and Car Park Signage Standard.

(c) Station identification totem signs must be internally illuminated and located at each entry to the stations.

(d) The design and layout of station signage must coordinate with other signage and information systems such as emergency exit signs, SPI and VMS displays, ticket gate signage and traffic control signage.

(e) All doors must have a door sign with an identifying number and name to be nominated by the Principal’s Representative. Where statutory signage is required to be mounted on a door it must be integrated to the door sign.

(f) Illuminated signs must be sealed to achieve IP66 particle and moisture resistance.

(g) Signs in public areas less than 3m above floor level must be faced with protective, scratch-resistant film as specified for glazing by RSS-001 RailCorp Security Standard – Stations.

(h) Materials and finishes used for sign faces and printing must be UV resistant.

(i) Signs in public areas must not have visible fixings on the face of the sign panel.
Dimensions and setting out of signs must be coordinated with the architectural design of the stations.

Signs must be integrated into the cladding of the architectural elements of the stations.

Lighting must be coordinated with signage locations to ensure visibility of signs in all conditions.

Advertising signs must be in accordance with RailCorp Station Design Guide and other relevant RailCorp standards and codes.

4.2.19 Building Works – Ancillary Buildings

(a) All building works must be designed in accordance with all relevant codes and standards, including RailCorp standards and the Building Code of Australia (BCA).

(b) All building structures must be designed to comply with RailCorp standards relating to stray current, earthing and bonding.

(c) A common architectural theme must be applied to the ancillary building structures employing a palette of self-finished, low maintenance materials that satisfy the requirements of design life in this Services Brief. There must be consistency between the design expression of the ancillary buildings.

(d) The design of ancillary buildings must comply with the following technical requirements:

(i) floors must be of concrete construction;

(ii) all cabling and services other than rainwater pipes must be concealed from external view;

(iii) floor and paving surfaces must be slip resistant in all conditions and comply with: BCA “Deemed to Satisfy” clause 10; AS 1428.2 clause 9; AS 4586 and HB 197;

(iv) external hard surfaces must be treated with “Sure Seal Graffiti Shield” applied in accordance with the manufacturer’s directions to a minimum height of 3m where applicable;

(v) door hardware must be stainless steel including all fixings;

(vi) smooth cladding finishes must be of sufficient thickness to be rigid and free of visible surface undulations. External cladding materials less than 3m above floor level must be solid-backed to resist denting from surface impacts that can be anticipated through normal use in a heavily trafficked industrial environment;

(vii) paving units, wall cladding panels, glazing panels and other architectural elements must have the surfaces of adjacent panels/units align to within 5mm;

(viii) horizontal and vertical joint alignment tolerances must not exceed 5mm;

(ix) panel fixings must be concealed or recessed within shadow gaps using vandal-resistant fixings;

(x) movement joints with appropriate seals must be provided to allow thermal and moisture movements (joint and seal materials must have a design life equal to the adjacent materials and finishes);

(xi) potential bird roosting locations must be eliminated either by sealing off or by the installation of prevention devices such as tensioned cables and metal spikes;

(xii) roofs and canopies must have fall arrest systems to provide safe maintenance access;

(xiii) horizontal surfaces and ledges must be avoided to reduce cleaning requirements where not required for operational reasons;
(xiv) plant is to be accessible and safe to operate, maintain, clean, remove and replace;
(xv) adequate space and facilities must be provided to ensure safe maintenance, removal and replacement of plant and equipment including provision for unimpeded access under emergency conditions;
(xvi) ventilation or air conditioning units installed inside equipment buildings must be in compliance with AS 2107 for noise level control. Emission to surrounding sensitivity receivers must be in accordance with NSW Industrial Noise Policy (INP);
(xvii) all building maintenance must be able to be conducted without traction power outage and in accordance with NSW WorkCover requirements; and
(xviii) glass and glazing systems must be in accordance with RSS-002 RailCorp Security Standard – Stabling Location and Maintenance Centre Standard and all relevant AS/NZS Standards including AS/NZS 2208 and AS 1288.

4.2.20 Combined Service Route (CSR)

(a) The design of CSR and individual cable routes must comply with the RailCorp standards including and not limited to the following:
(i) all cable routes must be located underground wherever possible;
(ii) separate pits must be provided for communications, signalling/low voltage, high voltage and 1500V DC cables to ensure adequate separation;
(iii) all HV electrical system pits must be designed in accordance with RailCorp standard EP 20 00 04 05 SP 'Cable Pits';
(iv) all signalling/low voltage electrical system and communication system pits must be designed in accordance with RailCorp Standard SPM 0123 ‘Reinforced Pre-Cast Concrete Cable Pits’ and be accessible by a walkway as a minimum;
(v) maintenance vehicle access must be provided to all HV and 1500V DC jointing pits;
(vi) pedestrian access must be provided to all other pits; and
(vii) spare conduit capacity with the main and local cable route for signal, ATP, communications and low voltage must be provided in accordance with the following RailCorp standards:
   A. SPG0705 ‘Construction of Cable Route and Associated Civil Works’;
   B. ESM102 ‘Communications Outdoor Cabling Standard’;
   C. EP 20 00 04 02 SP ‘Underground Installation Configurations for High Voltage and 1500V DC Cables’; and
   D. EP 20 00 04 05 SP ‘Cable Pits’.

(b) The CSR, including pits, must be designed to be trafficable where subject to vehicular loading;
(c) The CSR must be designed in accordance with RailCorp Specifications SPG 0705 ‘Construction of Cable Route and Associated Civil Works’, EP 20 00 04 02 SP ‘Underground Installation Configurations for High Voltage and 1500V DC Cables’ and ESM102 ‘Communications Outdoor Cabling Standard’;
(d) The CSR must be designed to RailCorp Standard EP 20 00 04 04 SP ‘Ground Entry Arrangements’ and EP 20 00 00 03 SP ‘Above Ground Cable Installation Systems – Selection guide’, where applicable.
4.2.21 Permanent Way

(a) The permanent way design must be in accordance with all relevant RailCorp standards, Manuals, Specifications and Technical Notes.

(b) The proposed Epping to Thornleigh Third Track must connect into the existing design alignment (maintenance alignment) track and formation on the Down Suburban at Epping and the Down Main Sydney side of Thornleigh Station.

(c) Track alignment must be constructed to comply with the Principal’s Design. The track alignment shown in the Principal’s Design must not be altered without the written approval of the Principal’s Representative.

(d) Rolling Stock Clearances: The design must comply with the clearance requirements of Extended Medium Electric vehicles in accordance with RailCorp Standard ESC215 and for any heritage rolling stock as directed by the Principal’s Representative.

(e) Trackwork:

(i) All design must comply with RailCorp standards and the specified ‘normal’ Design Criteria as detailed in ESC 210 unless noted otherwise on the Principal’s Design; and

(ii) The minimum horizontal clearance from the face of a new or existing structure to the centreline of the closest new or existing track must be in accordance with RailCorp Standard ESC 215 ‘Transit Space’.

(f) All new plain line trackform must be 60 kg/m Head Hardened Continuous Welded Rail on Heavy Duty concrete sleepers on a minimum depth of 300mm Standard Grade ballast throughout.

(g) The rail materials and jewellery must be in accordance with RailCorp standards including ESC 220 ‘Rail and Rail Joints’. All rails must be continuously welded by flash butt welding, or by thermit welding where flash butt welding is not possible. FastClip clips and associated resilient pads and insulators must be used to secure the rail to the sleepers.

(h) In plain track construction, rails must be installed so that they are inclined towards the centreline of the track. The design rail inclination is 2.86˚ (1:20). The acceptable range of inclination for new track construction is 3.01˚ to 2.73˚ (1:19 to 1:21). In turnout and special track construction, rails must be installed so that the rail is vertical.

(i) All special trackwork, including turnouts and catchpoints, must be provided in accordance with RailCorp Standard ESC 250 ‘Turnouts and Special Trackwork’ and include standard concrete bearers, 60kg HH rail to AS1085.1(2002) and Amendment No.1, fully cast crossing types and in-bearer points.

(j) Turnouts must be standard tangential with concrete ties constructed in accordance with SPC 251.

(k) All turnouts, crossovers, infill and catchpoints must be provided on straight co-planar track unless indicated in the Principal’s Design and agreed in writing with the Principal’s Representative.

4.2.22 Overhead Wiring (OHW)

(a) The OHW design must demonstrate the clearance between existing and proposed Overline Bridges and OHW comply with EP 08 00 00 01 SP ‘Overhead Wiring Standards for the Electrification of New Routes’ by including OHW profiles. This includes the proposed station concourse at Cheltenham and Pennant Hills.

(b) OHW must be designed in accordance with all relevant RailCorp Standards, specifications and technical notes including and not limited to RailCorp standards EP 08 00 00 01SP to EP 08 16 00 02 SP.
(c) The OHW system design to be incorporated into the Works must provide smooth spark-less current collection throughout the full range of operating temperatures. This condition must be satisfied for all possible rail vehicles and pantograph combinations.

(d) The design must use RailCorp CCALC coding which must be shown on all OHW layout design drawings.

(e) The design must use the latest RailCorp design software such as CCALC and PCLAC to provide output cantilever component and pantograph configurations.

(f) The design must use the latest RailCorp dropper software when evaluating dropper lengths.

(g) The design must use RailCorp overlap calculation tool ‘overlap.xls’ when designing overlaps, with the in-running and out-of-running wires crossing at the Sydney end of the overlap in all cases.

(h) A bonding schedule is to be provided detailing required OHW ‘Structure to Rail’ spark-gap bonds. It will include OHW structure names, identification of the traction rail to be bonded, reference to RailCorp bonding drawing to be followed, and reason why bonding is required i.e. ‘Close to/in station area’ or ‘Manual Switching Structure’ etc, in compliance with RailCorp Standard EP 12 20 00 01 SP.

(i) The design of OHW equipment must have the following attributes:

   (i) System 12 of RailCorp Standard EP 08 00 00 16 SP ‘Designation of Overhead Wiring Conductor Systems’. The system consists of twin 270mm² hard drawn copper catenary wire and twin 137mm² tin bearing copper contact wire. The catenary wire must be tensioned to a combined 40.7 kN and the contact wire tensioned to a combined 25.0 kN and must comply to Railcorp Standard EP 08 00 00 24 SP ‘Contact Wire’; and

   (ii) For crossovers, System 9 shall be a regulated system (using balance weights) and consists of a single 270mm² hard drawn copper catenary wire and a single 193mm² tin bearing copper contact wire. The catenary wire must be tensioned to 23.1 kN and the contact wire tensioned to 18.0 kN and must comply to Railcorp Standard EP 08 00 00 24 SP ‘Contact Wire’.

(j) OHW structures must be designed in accordance with RailCorp standards including but not limited to ESC 330 ‘Overhead Wiring Structures and Signal Gantries’ and ESC 215 ‘Transit Space’.

(k) The OHW structures must be based on the use of single mast PP type (which is preferred) or HP type, cantilever and portal structures and FSAM as specified in ESC330 ‘Overhead Wiring Structures and Signal Gantries’, where required.

(l) All OHWS structural integrity and adequacy to be assessed to meet the nominated design life in accordance with RailCorp Manual, TMC331 ‘Design of Overhead Wiring Structures and Signal Gantries’.

(m) OHW structures and footings must be designed in accordance with RailCorp Standard, Manual, Specifications, Technical notes and Standard Drawings. The design must include the OHW Structure footings on the Viaducts and Underline Bridges.

(n) The design and set out of the OHW structures must minimise incursion into adjacent tracks, walkway and vehicular access areas and avoid clashes/clearance infringements with/to the drainage system and other buried Services, retaining walls, bridge abutments, signalling locations and signal sighting, and catch points.

(o) Overhead wiring structures must provide independent registration of each wire run supported by the structure. Structures must allow correct registration to be maintained regardless of the order that the contact wires are attached to or detached from the structure.
The OHW structures will range from single-track cantilever, back-to-back cantilever, cantilever mast, FSAM and portal structures. All structures will typically range from 250mm to 310mm UC or SHS and will be galvanised steel. The OHW support and registration on the cantilever mast and portal structures will be of the mechanically independent type.

The OHW structures, drop verticals and other OHW equipment must be positioned to provide adequate signal sighting, electrical clearance and not to infringe on the kinematic envelope of all possible rail vehicles and pantograph combinations.

OHW structures must be located at least 2m clear of signal posts/gantries cables and trackside equipment and must be positioned so that they do not obstruct signal sighting.

OHW structure locations must be in accordance with ESC 215 ‘Transit Space’. Electrical clearances will be in accordance with EP 08 00 00 01 SP ‘Overhead Wiring Standards for the Electrification of New Routes’ and EP 08 00 00 02 SP ‘Overhead Wiring Maintenance Standards’.

The OHW structures and equipment design must avoid attachment to aerial station concourses, overbridges and over structures. Where this is not practical, bonding and electrolysis protection must be designed in accordance to the RailCorp standards.

The OHW design must avoid the use of conductive metallic horizontal safety screens on aerial station concourses, overbridges and over structures. Non-conductive vertical screens must be used wherever practical. Where it is not practical to use non-conductive screens, bonding electrolysis protection must be designed in accordance to the RailCorp standards.

The TA must comply with the design obligations set out in EP 08 00 00 15 SP ‘Overhead Wiring Construction and Commissioning’.

**4.2.23 Traction Power Supply**

Traction power design for the new trackwork must comply with the RailCorp standards including but not limited to RailCorp standards EP 20 00 00 03 SP to EP 20 10 00 02 SP ‘HV AC and Traction Cables’ and EP 99 00 00 01 SP.

Equipment and cabling design must be provided to allow the distribution of traction power to be supplied to the overhead wiring in accordance with RailCorp standards including but not limited to EP 20 10 00 01 SP.

Requirements of electrical equipment must be in accordance with the RailCorp Electrical Standards EP 00 00 00 01TI to 15SP ‘General Electrical Standards’.

The DCCBs must comply with the RailCorp Standard EP 04 01 00 01 SP.

The design must include any alterations/ additional required to the associated Supervisory Control and Data Acquisition ‘SCADA’ system due to the changes in the substations and sectioning hubs.

The capacity of existing RailCorp equipment such as batteries and Remote Terminal Unit (RTU) in substations and sectioning hubs for the new additional loads must be assessed in incorporated into the design.

The 1500 V DC links and switches must comply with the RailCorp Standard EP 04 00 00 02 SP.

Minimum provision of spare conduits must be provided in accordance with RailCorp standard EP 20 00 04 05 SP and EP 20 00 04 02 SP.

**4.2.24 High Voltage (HV) Power Supply**

All HV cabling sizes, high voltage equipment and cabling, must comply with the relevant RailCorp standards and Specifications.
(b) Supply of HV power must be designed to comply with the Proposed 2kV Operating Diagram included in the Principal’s Design and RailCorp standards.

(c) HV power design must make allowance for future upgrade from 2kV to 11kV infrastructure including, but not limited to space in buildings, conduits and infrastructure layout.

(d) The design of power equipment and cabling must provide power to signalling, and all other electrical and communications equipment to comply with the requirements of the Services Brief.

(e) The electrical equipment must be designed in accordance with the RailCorp Electrical Standards EP 00 00 00 01TI to 15 SP ‘General Electrical Standards’.

(f) The design of the HV systems pit and duct route must be securable and in accordance with RailCorp Electrical Standards EP 20 00 00 03SP to EP 20 10 00 02SP.

(g) The design of the HV aerial route must be in accordance with RailCorp Electrical Standards EP 10 00 00 04SP to EP 10 01 00 06SP.

4.2.25 Low Voltage (LV) Power Supply and Distribution

(a) The design of LV power supply and distribution works must comply with the Australian Standards and RailCorp standards.

(b) The following list of RailCorp Drawings apply to the detailed design:

<table>
<thead>
<tr>
<th>Drawing Number</th>
<th>Drawing Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL 0480481</td>
<td>11kV/415V Padmount Distribution Transformer General Arrangement</td>
</tr>
<tr>
<td>EL 0474151</td>
<td>Distribution Padmount Substation Low Voltage Switchboard (DSMSB) General Arrangement</td>
</tr>
<tr>
<td>EL 0494646</td>
<td>415V/415V Padmount Isolating transformer Schematic Diagram</td>
</tr>
<tr>
<td>EL 0480479</td>
<td>415V/415V Padmount Isolating transformer General Arrangement</td>
</tr>
<tr>
<td>EL 0474149</td>
<td>Distribution Padmount Substation Double Insulated Metering Panel General Arrangement</td>
</tr>
<tr>
<td>EL 0282072</td>
<td>Distribution Power Supplies Signals Power Room With UPS Schematic Diagram</td>
</tr>
</tbody>
</table>

(c) Provision must be made for isolation of padmount substations for Ausgrid to access the meters without entering the Rail Corridor or danger zone. The Ausgrid ‘metering’ must be housed in an insulated cabinet in the isolating transformer kiosk (with an Ausgrid ‘neutral’ connection for metering but no Ausgrid ‘earth’).

(d) Refer to EL 0282072, EL 0494646, EL 0480479 for further details on 415V/415V isolation padmount substation requirements.

(e) All cabling associated with the isolating transformer must be single core double insulated.
(f) All transformers, switchboards and distribution boards and sub mains must have capacity to supply 125% of the estimated maximum demand of their loads.

(g) Electrical systems must be selected and installed to operate in a safe and reliable manner in the course of normal operating conditions, and not cause danger from electric shock, fire, high temperature or physical injury in the event of reasonably anticipated abnormal conditions (overload, fault etc).

(h) All cable support systems must have 25% spare capacity.

(i) Dual redundant feeders to signalling power must be reticulated via physically diverse routes.

(j) Essential cabling relating to fire and life safety protection must not be contained in the same conduit enclosure as non-essential cabling (such as that supplying normal lighting and general purpose outlets).

(k) Earthing and bonding, including minimum 16mm² earth conductors linking switchboard earth bars, earth conductors with final sub-circuits, and isolation of RailCorp earthing system beyond the Rail Corridor.

(l) Earthing, bonding and electrolysis protection must be incorporated in the works in accordance with RailCorp Electrical Standards, EP 12 00 00 01 SP to EP 12 30 00 01 SP.

(m) All electrical equipment, including control equipment, must be designed to correctly operate with the levels of total harmonic voltage distortion normally found in RailCorp’s supply network in accordance to RailCorp Standard EP 03 00 00 01 TI.

(n) Typically, the Total Harmonic Voltage distortion in the RailCorp 11 kV supply network can be around 10%, with the 11th and 13th harmonics being dominant. This level of Total Harmonic Voltage distortion can lead to some electronic equipment malfunctioning, particularly devices include voltage detection and protection elements such as lifts. All electrical equipment, including control equipment, must be designed to correctly operate with the levels of total harmonic voltage Distortion normally found in RailCorp’s supply network.

(o) Design of circuits originating from separate distribution boards shall not be contained in the same conduit enclosure.

4.2.26 External and Internal Lighting

(a) The design of external and internal lighting must comply with the BCA and RailCorp Standards.

(b) All lighting levels are to comply with the requirements set out in the table below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Lighting Level (Lux)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Parks:</td>
<td></td>
</tr>
<tr>
<td>Covered areas</td>
<td>50</td>
</tr>
<tr>
<td>Open Areas</td>
<td>20</td>
</tr>
<tr>
<td>Bus-Rail Stations:</td>
<td></td>
</tr>
<tr>
<td>Covered areas</td>
<td>50</td>
</tr>
<tr>
<td>Open Areas</td>
<td>20</td>
</tr>
<tr>
<td>Pathways</td>
<td>50</td>
</tr>
<tr>
<td>External approaches</td>
<td>85</td>
</tr>
<tr>
<td>Covered areas, entrance halls &amp; verandas</td>
<td>150 – 200</td>
</tr>
<tr>
<td>Location</td>
<td>Lighting Level (Lux)</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Awnings on platforms</td>
<td>100</td>
</tr>
<tr>
<td>Platforms</td>
<td>50</td>
</tr>
<tr>
<td>Waiting rooms</td>
<td>150 – 200</td>
</tr>
<tr>
<td>Overbridges</td>
<td>150</td>
</tr>
<tr>
<td>Stairs (covered)</td>
<td>150</td>
</tr>
<tr>
<td>Stairs (uncovered)</td>
<td>150</td>
</tr>
<tr>
<td>Subways</td>
<td>100</td>
</tr>
</tbody>
</table>

The above levels are minimum average service illuminance after lamp and dirt depreciation factors (maintenance factor of 0.75) are allowed for.

The minimum illumination on open platforms shall not be less than 30 lux and the uniformity shall not be less than 0.5 (ratio of the minimum illumination level to the average illumination level).

4.2.27 Earthing and Bonding and Electrolysis Protection

(a) Earthing, bonding and electrolysis protection must be designed in accordance with the requirements, regulations, guidelines and engineering practices of RailCorp, Australian, and/or agreed International standards, including RailCorp ETN 11/02 – ‘Earthing Designs for RailCorp’s High Voltage AC system’.

(b) All metallic structures must be bonded together electrically to form an interconnected metal mass in accordance with RailCorp ‘Guideline on Earthing and Bonding’.

(c) A review of the RailCorp document “Guideline on Earthing and Bonding” must be made to determine the technically sound methodology for the bonding and electrical continuity of concrete rebar.

(d) Electrolysis protection must be incorporated in the works in accordance with RailCorp Electrical Standards, EP 12 00 00 01 SP to EP 12 30 00 01.

(e) Where existing systems are to be used, the design must ensure existing systems comply with RailCorp standards for earthing, bonding and electrolysis protection.

(f) The modified earthing system must be modelled to confirm earthing satisfies RailCorp standards. Earthing analysis and design must be carried out by a specialist earthing consultant approved by the Principal’s Representative.

(g) The TA must:

(i) produce data from computer modelling of soil resistivity. Both calculated and measured magnitudes of soil resistivity must be used to generate a multilayer soil resistivity profile;

(ii) undertake an evaluation, based on a site audit of the entire project rail length, of possible existing possible hazards associated with both transferred EPR, stray DC currents and supply aerial EMF; and

(iii) provide design and details of lightning protection. The work to include the detail design of lightning down-conductors and the detail design of lightning terminations (rods) or lightning conductor system;
(iv) produce computer simulated plots and grid profiles of step, touch and transfer potential at, and in the vicinity of substations and transformers (where required), detailing compliance to acceptable levels detailed in the Energy Supply Association (ESAA) “Substation Earthing Guide” EGI – 2006;

(v) graph earth potential rise (EPR) and maximum allowance potential rise in relation to the geographical distance from substation earth grids, ensuring compliance to Australian and recognised International Standards; and

(vi) develop a final detailed computer simulated earth system model showing all components. All input (*.INP) and output files from the final simulation must also be provided in the CDEGS computer simulation package format; and

(vii) develop commissioning and routine earth testing, maintenance and validation procedures for the Earthing System.

(h) The design must take into consideration the exact location of the signalling and communications earth stakes and power supplies which must be located, identified and recorded on the detailed design drawings.

(i) Signalling earth systems must be coordinated with other earth systems. Signalling earth systems must be designed and installed in accordance with RailCorp standards SPG 0729 ‘Signalling Power Systems’ and SPG 0712 ‘Lighting and Surge Protection Requirements’.

4.2.28 Signal Post and Maintenance Telephones

(a) Signal post and maintenance phone cabling must:

(i) comply with RailCorp Standard ESM 105 – Signalling bungalow communications cabling standard;

(ii) consist of entirely new fully compliant copper cabling;

(iii) utilise communication compartments as required at all new location cases;

(iv) provide transmission between signal post and maintenance phones and signals; and

(v) meet all requirements of the signalling design.

4.2.29 Communications – General

(a) Communications cables, conduits and pits must be segregated from HV and LV cables, conduits and pits. An exception to this requirement is that signal phone cable may share a Signals LV route for the final link from the signal building to the signal post telephone provided that the communications cable is subducted and compliant with AS/ACIF S009.

(b) Regular cable pits must be provided to access copper cables and optical fibre cables. Typical pit spacing must be as per RailCorp standard ESM102.

(c) Where cables enter the top of a cabinet, close fitting cable gland must be used to seal the cabinet from the ingress of dust. Gland sizes must conform to, the manufacturer's recommendation for each cable size and type. Gland must be either metallic (nickel plated brass or stainless steel) or must be constructed from a halogen free, flame retardant material.

(d) Cable containment must have sufficient capacity to accommodate all the cables required for the completion and commissioning of the Project plus spare capacity as per ESM 102 and ESM105.

(e) Optical fibre cables must be manufactured to RailCorp Specification 677.
4.2.30 Communications – Backbone

(a) The communications backbone must be designed to comply with the Principal’s Design and this Services Brief and must be in accordance with all relevant RailCorp standards and Australian Standards.

(b) Copper and fibre comms cables must consist of continuous runs where possible and must not introduce any additional cable joints over and above those already in place.

(c) The cables are the bearers for the RailCorp corporate LAN/WAN and telephony, security LAN/WAN, signalling post telephones, signalling, maintenance telephones, and other RailCorp systems as required.

(d) The communications backbone fibre cable design must ensure that 60% of the fibres in each optical fibre cable are unused upon commissioning of the Works.

(e) With the exception of work space office cabling, the communications backbone copper cable design must ensure that 50% of the pairs in each copper cable are unused upon commissioning of the Works.

(f) There must be no joints in telecommunications trunk optic fibre cables outside of communications equipment rooms.

(g) Regular cable pits must be provided to access copper cables and optical fibre cables. Typical pit spacing must be no more than 125m apart.

4.2.30.2 Communications Equipment Room

(a) Communications equipment room design must comply with RailCorp Standard: ESM 107 Telecommunications Equipment Rooms.

(b) The communications equipment room may be shared for all required RailCorp communications systems.

(c) Communications equipment room must be secured with a standard RailCorp keying system to be agreed at detail design stage.

(d) Communications equipment room doors must be of sufficient size to allow removal of equipment cabinets in an upright position (2200mm high x 850mm wide minimum).

(e) Equipment layout design within communications equipment rooms must be logical and optimised for short cable runs, maintenance and interface control.

(f) Communications equipment room spatial sizing and power supply must include a minimum of 50% spare capacity for future expansion. Sufficient ventilation and air-conditioning must be provided to cater for the heat load from current and future equipment. Individual racks and space must be provided for C&CS, CCTV, SPI/PA and radio.

4.2.31 Communications - Public Address (PA) Systems

(a) PA systems must be designed to comply with the Principal’s Design, this Services Brief and all relevant RailCorp standards and Australian Standards including:

   (i) RailCorp Standard: ESM 102 Communications Outdoor Cabling Standard;

   (ii) RailCorp Standard: ESM 109 Communications Earthing and Surge Suppression Standard;

   (iii) AS / ACIF S008 Requirements for Customer Cabling Products;

   (iv) AS/ACIF S009 Installation Requirements for Customer Cabling;

   (v) Industry Guideline for AS/ACIF S009;
(vi) AS 24702 Telecommunications Installations - Generic Cabling - Industrial Premises;

(vii) AS 3084 Telecommunications Installation - Telecommunications pathway and spaces for commercial buildings;

(viii) AS 3085.1 Telecommunication Installations - Administration of communications cabling systems.

(b) The PA system must consider and address the acoustic model designed by the TA.

(c) Nuisance overspill noise must be minimised.

(d) The TA must assess the background noise that will be present during full train operations and ensure that the PA system will achieve the required performance within the level of background noise.

(e) The TA must follow RailCorp's design guidelines outlined in F2010/22647 - Enhanced PA System Design & Installation Guideline.

4.2.32 Communications – Station Passenger Information System (SPI) and Precise Clocks

(a) SPI and precise clocks system must be designed to comply with the Principal’s Design, this Services Brief and all relevant RailCorp standards and Australian Standards including:

(i) RailCorp Standard: ESM 102 Communications Outdoor Cabling Standard.

(ii) RailCorp Specification: TMM 1178 Optical Fibre Termination, Patching & Equipment;

(iii) RailCorp Standard: Pre-Terminated Fibre Tails & Link Cables;

(iv) RailCorp Standard: TC 000816 01 WP Optical Fibre Cable Jointing Termination and Management (RailCorp);

(v) Optical fibre cables must be manufactured to RailCorp Specification 677;

(vi) AS / ACIF S008 Requirements for Customer Cabling Products;

(vii) AS/ ACIF S009 Installation Requirements for Customer Cabling;

(viii) Industry Guideline for AS/ACIF S009;

(ix) AS 24702 Telecommunications Installations - Generic Cabling - Industrial Premises;

(x) AS 3084 Telecommunications Installation - Telecommunications pathway and spaces for commercial buildings;

(xi) AS 3085.1 Telecommunication Installations - Administration of communications cabling systems.

(b) Precise clocks and clock systems must be compatible to interface with RailCorp's existing SPI system.

(c) Platform and concourse SPI indicators must be provided with a 240V GPO.

(d) Precise clock systems must be IP-based systems with all tale fibre cables terminated to the SPI LAN rack in a star topology.

(e) Precise clocks must be provided with a 240V GPO and an optical fibre outlet adjacent to each mounting point.

(f) Precise clocks and clock systems must be compatible to interface with RailCorp's existing Master Clock system.
4.2.33 Security Systems

(a) The TA must undertake and implement the findings of a security risk assessment to determine the security requirements for the Works. The assessment must include the provision for CCTV, intruder detection system, security doors, and associated bollards, screening and fire fencing/gating.

(b) The consultant who performs the security risk assessment must hold a Class 2A Security Licence issued under the New South Wales Security Industry Act 1997.

(c) The TA must prepare a CCTV coverage design and submit it to the Principal’s Representative for review. CCTV camera positions must be determined in coordination with other stakeholder groups including RailCorp’s security division.

(d) The TA’s security risk assessment must determine the access control and intrusion detection system requirements.

(e) All security systems, conduits and ducting must either be concealed or be vandal resistant and recessed. Confined and hidden spaces must be avoided to comply with Crime Prevention Through Environmental Design (CPTED) principles.

(f) Windows to facilities accommodation that face the public precinct areas must be protected by security shutters that are concealed when retracted.

(g) Signs in public areas less than 3m above floor level must be faced with protective, scratch-resistant film as specified for glazing by RSS-001 RailCorp Security Standard – Stations.

(h) Necessary perimeter security fencing, including gates and locks, must be provided in accordance with RailCorp standards including ESC 510 ‘Boundary Fences’ and Specification SPC 511 ‘Boundary Fences’ and other relevant RailCorp security standards.

(i) All security system racks are to be designed for the installation of RailCorp supplied equipment.

(j) The design of security systems must comply with the Principal’s Design, this Services Brief and all relevant RailCorp standards and Australian Standards including:

(i) TIS0175-92 - Standard Cabling/Containment Requirements for RailCorp Systems;
(ii) AS 4806 Closed Circuit Television;
(iii) AS 2201.1 Intruder Alarm Systems;
(iv) AS 2201.3 Internal Detection Devices;
(v) RailCorp Station Design Guide;
(vi) RailCorp Security Design Criteria;
(vii) RailCorp Standard: Security Standard RSS-001;
(viii) RailCorp Standard: ESM 102 Communications Outdoor Cabling Standard;
(ix) RailCorp Specification: TMM 1178 Optical Fibre Termination, Patching & Equipment;
(x) RailCorp Standard: Pre-Terminated Fibre Tails & Link Cables;
(xi) RailCorp Standard: TC 000816 01 WP Optical Fibre Cable Jointing Termination and Management (RailCorp);
(xii) AS / ACIF S008 Requirements for Customer Cabling Products;
(xiii) AS/ACIF S009 Installation Requirements for Customer Cabling;
(xiv) Industry Guideline for AS/ACIF S009;
(xv) AS 24702 Telecommunications Installations - Generic Cabling - Industrial Premises;
4.2.34 Telephony

(a) Telephony must be designed to comply with the Principal's Design, this Services Brief and all relevant RailCorp standards and Australian Standards including the following:

(i) RailCorp Standard: TIS0175-92 - Standard Cabling/Containment Requirements for RailCorp Systems;
(ii) RailCorp Station Design Guide;
(iii) RailCorp Security Design Criteria;
(iv) RailCorp Standard: ESM 102 Communications Outdoor Cabling Standard;
(v) RailCorp Specification: TMM 1178 Optical Fibre Termination, Patching & Equipment;
(vi) RailCorp Standard: Pre-Terminated Fibre Tails & Link Cables;
(vii) RailCorp Standard: TC 000816 01 WP Optical Fibre Cable Jointing Termination and Management (RailCorp);
(viii) RailCorp Standard: TC 000100 01 ES - Copper Cable Termination;
(ix) Optical fibre cables must be manufactured to RailCorp Specification 677;
(x) AS / ACIF S008 Requirements for Customer Cabling Products;
(xi) AS/ACIF S009 Installation Requirements for Customer Cabling;
(xii) Industry Guideline for AS/ACIF S009;
(xiii) AS 24702 Telecommunications Installations - Generic Cabling - Industrial Premises;
(xiv) AS 3084 Telecommunications Installation - Telecommunications pathway and spaces for commercial buildings;
(xv) AS 3085.1 Telecommunication Installations - Administration of communications cabling systems;
(xvi) RailCorp Standard: ESM 107 Telecommunications Equipment Rooms.

4.3 Compliance with Sustainable Design Guidelines

(a) The detail design must achieve a 'Silver sustainability in design rating' as set out in the Sustainable Design Guidelines (7TP-ST-114) and in accordance with TSR E1.

4.4 Durability Operating Environment

(a) The TA must undertake a Durability Assessment Report in accordance with the requirements of TSR T1 Annexure A.

(b) Where not specified within Australian guidelines, codes or standards or within RailCorp guidelines, codes or standards, the TA's design must ensure that all external service systems and sub-systems are able to perform their normal duties or cycles, within the following continuous external operating environmental ranges:

Table 2.1 External operating environment
<table>
<thead>
<tr>
<th>Control/environment</th>
<th>Range / Commentary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Air Temperature</td>
<td>-10°C to 50°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10% to 95% non-condensing</td>
</tr>
<tr>
<td>Rainfall Rate</td>
<td>0 to 40 mm/hour</td>
</tr>
<tr>
<td>Solar Radiation</td>
<td>0 to 1000 W/m²</td>
</tr>
<tr>
<td>Wind Speed</td>
<td>0 to 150 kph</td>
</tr>
<tr>
<td>Dust and Particulates</td>
<td>Subject to local condition investigations by the Alliance</td>
</tr>
<tr>
<td>Vibration</td>
<td>Not in excess of an acceleration rate of 0.1 G continuously, or 0.25G intermittently in the frequency range of 5 to 25 Hz</td>
</tr>
<tr>
<td>Ambient Lighting</td>
<td>10 to 100,000 lux</td>
</tr>
</tbody>
</table>

(c) All ETTT Service Systems must comply with the ‘class A electromagnetic limits’ established in:


(ii) I.S. EN 55022:2010 ‘Information Technology Equipment – Radio disturbance characteristics – Limits and method of measurement’; and

5 Scope of Detail Design

5.1 Public Utilities and Services

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Public Utilities and Services will carry out the detail design and document the Works based on the scope of services described below.

5.1.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Public Utilities and Services design, including but not limited to:

- where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works
- the relocation, protection, diversion or replacement of:
  - Sydney Water Corporation – Watermains, sewers, stormwater and associated assets
  - Ausgrid – Electrical and associated assets (refer to Appendix 10)
  - Telstra – Communications and associated assets
  - Optus – Communications and associated assets
- New connections for:
  - Sydney Water Corporation – Watermains, sewers and stormwater
  - Ausgrid – Electrical (refer to Appendix 10)
  - Telstra - Communications

The TA must:

- engage services co-ordinators (where required) and liaise with public utility owners to develop the detail design
- submit and receive approval from the public utility owners to the detail designs, including identification of any conditions
- update through detail design the Public Utilities, the current status as at concept design is included in Appendix 10 of this Services Brief
- interface with RailCorp projects including but not limited to
  - Signalling Power Supply Upgrade (SPSU – 2kV to 11kV upgrade)
  - Digital Train Radio System (DTRS)
  - Automatic Train Protection (ATP)
- Electronic Ticketing System (ETS)
- Incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.1.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - CDR only
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
- Works-As-Executed Drawings
5.2 Signalling Infrastructure & Combined Services Route (CSR)

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Signalling Infrastructure and Combined Services Route (CSR) will carry out the detail design and document the Works based on the scope of services described below.

5.2.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Signalling and CSR design, including but not limited to:

- lead and be responsible for coordinating the new CSR design with the STA
- relocation of the existing CSR to be clear of the new infrastructure including cable containment (conduits or Galvanised Steel Troughing (GST)), pits, Under Line Crossings (ULX) and under bores
- review and finalise the CSR route at Epping to avoid the Sydney Turpentine Ironbark Forest EEC (the TA to revisit the alignment)
- review and finalise the CSR route between Pennant Hills and Thornleigh (the concept design shows a CSR route along the west boundary of the rail corridor, but a GST route on the east boundary per the existing configuration can be considered which would reduce the risk of excavating near the existing buried 2kV cable)
- provision of additional trays to existing GST, where it does not conflict with the Works and can be utilised
- relocation of the existing or provision of new local signalling route(s)
- provision of additional communication and signalling conduit(s) or use of GST along the length of the ETTT project, for the future installation of the Automatic Train Protection (ATP) system by RailCorp
- pit and duct cable routes, pole and overhead line cable routes, cable containment, including spatial provision and support systems for local and system wide cabling
- footings, bases, supports, brackets and fixings for new GST
- warning lights at locations where safe place is not practical, e.g. limited clearance, insufficient sighting distance, others as specified in the signalling functional specifications. Warning light locations should be agreed with RailCorp’s district maintenance team but should also be subject to final signal sighting. Preliminary signal sighting should be set out to assist in setting the scope when the track is laid.
- Signalling equipment is not to be positioned on viaducts.
- An extension of the OHW portal off the EG44 signalling hut is required, and the existing signal and associated signalling infrastructures at this portal should not be impacted and affected in the said gantry extension work.
The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- all works will be coordinated with the Signalling Designer as per the Signalling Interface Schedule
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.2.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - SDR, PDR and CDR
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
- Works-As-Executed Drawings
5.3 Property

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Property will carry out the detail design and document the Works based on the scope of services described below.

5.3.1 Scope of Services

During the concept design a set of property Drawings were produced identifying the requirements for:

- property acquisition
- permanent land acquisition
- temporary land leases
- easements

These property Drawings depict the cadastral details, identifying the lot number(s) affected, boundary information, dimensions of the area required, width and length of the easement required and an estimate of the area required in square metres.

Further to the completion of the detail design for each design package, the TA is to review the design against these property Drawings for correctness. In the event that the Works do not fit, the TA is to produce revised property drawing(s), depicting the same information.

5.3.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - CDR only
- Works-As-Executed Drawings
5.4 Temporary Works

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Temporary Works will carry out the detail design and document the Works based on the scope of services described below.

5.4.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Temporary Works designs, including:

- **Fences / barriers for Safe Working:**
  - between the proposed Down Relief and the existing Down Main
  - include refuges in accordance with RailCorp standards
  - include access for maintenance opposite operationally critical equipment (signals, tuning units etc…)
  - include insulated panels in accordance with RailCorp standards

- **Protection Fence at cuttings:**
  - Fences for safe working shall include safety barriers / fences at cuttings for the purposes of rock fall protection during excavation

- **Define the boundary of the works with respect to the existing vegetation types as mapped by TfNSW, and minimise the extent of impact of the works on ecologically endangered communities (EEC’s) and vegetation generally**

- **Temporary propping inside the Devlin’s Creek Sectioning Hut during construction of the Works, and the temporary prop arrangement should not affect RailCorp’s operation and maintenance during construction**

- **Temporary widening or excavation of the rail embankment in the vicinity of Devlin’s Creek, including construction of piling working platforms, local excavation to accommodate construction activities, and associated ground support.**

In addition the TA must carry out temporary works design or review of temporary works design as instructed by the Principal as part of construction phase services.

The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.4.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:
• Alliance Procurement Support
• Detail Design, including:
  • CDR only
  • AFC Design
5.5 Geotechnical Investigation and Monitoring Plans

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Site Investigation and Monitoring Plans will carry out the detail design and document the Works based on the scope of services described below.

5.5.1 Scope of Services

5.5.1.1 Geotechnical/Contamination

The TA must review the following documents:

- Geotechnical Investigation Report (completed by Golder Associates Pty Ltd). Refer to information document provided by the Principal separately
- Geotechnical Interpretative Report. Refer to information document provided by the Principal separately
- Stage 2 Contamination Assessment Report (the report entitled “Phase II Environmental Site Assessment and In-situ Waste Classification” completed by Golder Associates Pty Ltd). Refer to information document provided by the Principal separately
- Groundwater Level Monitoring Report (completed by Golder Associates Pty Ltd). Refer to information document provided by the Principal separately

and:

- identify any additional geotechnical investigation (GI) work requirements for input into the detail design of the civil and structural works. It should be noted that any additional investigation work shall not be undertaken by the TA but by the Principal
- provide the necessary scoping documents for the identified additional GI work, and technical input during the geotechnical investigation works
- further to reviewing the bore logs and Geotechnical Investigation Report, prepare a Geotechnical Interpretive Report (GIR), which will cover but not be limited to:
  - review existing data and incorporation of existing information into the final Geotechnical model
  - development and graphical presentation of a Geological and Geotechnical model including long and cross sections as appropriate to adequately define constraints at critical locations
  - interpretation of relevant Geotechnical design parameters
  - recommendations relating to sub-grade preparation for fill embankments
  - recommendations relating to cut batter designs, ease of excavation and support/retention
• recommendations for foundations types, founding strata and relevant design parameters

• advice regarding unsuitable material

• recommendations regarding sub-grade preparation beneath track formation

• recommendations for construction control testing and monitoring to confirm that parameters assumed in the design have been achieved during construction

• advice regarding local hydrogeological regime

• advice regarding any other geotechnical constraints identified

• advice regarding areas of specific geotechnical risk and recommendations for further investigation or mitigation measures as appropriate

• further to reviewing the Stage 2 Contamination Assessment Report and the outputs from any additional testing prepare a contamination remediation plan

5.5.2 Hydrology and Drainage

The TA must review the following:

• Hydrology and Drainage Concept Design Report. Refer to information document provided by the Principal separately

• Groundwater Level Monitoring Report. Refer to information document provided by the Principal separately

and:

• identify any additional investigation work requirements for input into the design of the civil and structural works

• provide technical input during the investigation works

• further to reviewing the outcome of the investigation works produce a Hydrology and Drainage Report, which will cover but not be limited to:

  • undertake data collection and review existing reports against proposed route alignment, hydrological modelling, drainage impact assessments, flood and flood risk management studies and mitigation assessments as required

  • identify critical areas and possible impacts on the existing hydrological regimes, existing water courses and external connecting drainage, particularly where these may be inadequate

  • identify upstream and downstream impacts to the existing catchments

  • identify critical flood areas

  • identify and confirm overland flow paths and drainage discharge point;
• collect pre-construction baseline data sufficient for the design and monitoring of the impact of the Works (permanent and temporary) on the existing hydrological regimes
• hydraulic assessment for the proposed works and track drainage infrastructure
• confirm the hydraulic adequacy of existing culverts and notify the Principal of any non-compliances with current standards
• hydraulic capacity of proposed cross-track drainage culverts shall meet current standards even in the event that existing culverts are non-compliant
• water quality and environmental impacts and monitoring requirements
• requirements for soil and erosion control management
• seek agreement to discharge with relevant local council(s)

5.5.2.1 Existing Buildings and Structures

The TA must identify any potential for the Works to damage or have any adverse impact on the condition or performance of any infrastructure on, in, or adjacent to or in the vicinity of the Site, remote site or any other land (including but not limited to embankments, structures, roads, railways, retaining walls, bridges, services and buildings) or any existing properties adjacent to or in the vicinity of the Site, remote site or any other land including any adverse impact on:

(i) amenity;
(ii) aesthetics;
(iii) durability;
(iv) structural integrity;
(v) function;
(vi) user benefits;
(vii) safety during construction and operation;
(viii) environmental performance; and
(ix) access to such infrastructure or existing properties.

The TA must analyse and predict the effects of the Works on existing ground conditions and infrastructure including but not limited to structures, roads, railways, retaining walls, bridges, services and buildings. This analysis must be documented in the detail design documentation and include the influence of:

(i) excavation and earthworks construction
(ii) geological variations
(iii) the impact on groundwater
(iv) the effects over time
(v) stray currents (including any existing or new), including any electrolysis and touch potential issues
(vi) vibration from construction and compaction equipment
(vii) vibration impact during operating stage when the new track is up and running (this is more applicable for the case of Devlin’s Creek Sectioning Hut)
(viii) noise or vibration from the Works construction plant, equipment or facilities to be used by or constructed or installed in completing the Works

The TA must finalise an Existing Buildings and Structures (EBS) plan to assess the condition of existing buildings and structures, prior to construction works commencing, including but not limited to:

- ECRL Dive, Tunnel and Portal Structures
- Devlin’s Creek Sectioning Hut (23.76km)
- M2 Bus Underpass (24.1km)
- Signalling Building EG44 (24.1km)
- Heritage structures as per specialist report, including Devlin’s Creek culvert, Devlin’s Creek convict causeway, war memorials
- Existing rail embankments
- Existing M2 Motorway Underbridge (24.4km)
- Beecroft Substation (25.75km)
- Beecroft Scout Hall (26.38km)
- Cheltenham Station
- Beecroft Station, including the pedestrian underpass
- Telstra exchange at Pennant Hills
- Pennant Hills Station
- Cheltenham Road Overbridge
- Copeland Road Overbridge
- Chapman Avenue Overbridge
- Pennant Hills Road Overbridge
- Overhead Wiring Structures
- Track
• identify and include any additional buildings, structures, roads, utilities, natural slopes, cuttings and embankments that could be impacted by the proposed Works during construction, operation and maintenance

• design of any remedial/strengthening/monitoring works

The design of the Works shall not impact on the above existing buildings and structures unless otherwise stated in the scope of works in Clause 5.

The TA must liaise with the Principal with regard to the format and content for the EBS plan. At each of the subsequent detail design stages the EBS plan shall be submitted and progressively updated.

It should be noted that detailed condition surveys shall not be undertaken by the TA and access to private land will not be available to the TA. After obtaining and reviewing all available information and making appropriate site visits to publically accessible areas and the rail corridor, the TA shall evaluate the adequacy of the available information and if necessary make recommendations for additional detailed field investigations.

The EBS shall include an assessment of the theoretical effects of ground movements due to preferred construction methods or other influences, together with the impacts on adjacent EBS for input into the design of any remedial/strengthening works.

The EBS shall also include requirements (if any) for instrumentation, monitoring and testing and preparation of associated instrumentation, monitoring and testing procedures and plan for the Works.

5.5.3 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support

• Detail Design, including:
  • CDR
  • AFC Design

• Construction Support, including Commissioning and Operational Readiness

• Works-As-Executed Drawings
5.6 **Permanent Way**

In accordance with TSRs T1, the TA and if required any specialist sub-consultant for Perway will carry out the detail design and document the Works based on the scope of services described below.

5.6.1 **Scope of Services**

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final rail alignment and permanent way (vertical and horizontal) design including but not limited to:

- a new Down Relief track, indicatively between 23.493km and 29.346km. The Down Relief is to extent from the existing Down Suburban at Epping to join a reconditioned Down Refuge at Thornleigh;
- safeguarding a future 60km/h trailing crossover connecting to the existing ECRL Down line;
- safeguarding future passenger platforms at Cheltenham and Pennant Hills stations;
- realigning and refurbishing the existing Down Relief track between Pennant Hills station and Thornleigh station;
- The new Down Relief permanent way is to be designed for 25t axle loads. The remainder of the Works including structures are to be designed for future 30t (300LA) axle loads including clearances;
- Installation of new 102 turnout at Epping;
- Removal of existing 50 turnout and associated catchpoint (start of the existing Down Relief at north of Pennant Hills station);
- Replacement of 52 turnout (tie-in to Down Main at the city end of Thornleigh station) to a 75km/h crossover (the TA should check the turnout endthrow and centrethrow clearance at 52B point, including clearance to Well Street Overbridge piers, Down Main and between Down and Up Main, and location of the turnout to be adjusted as necessary);
- 100m (min) run off track and ballast drag (if required) after 52 crossover to protect the Down Main;
- new and refurbished tracks to include all associated ballast, sleepers, fastenings, rail ground to an appropriate profile, rail welds and Insulated Rail Joints;
- platform clearance modifications at Epping;
- establishing a track lubrication regime and provision of appropriate wayside application devices;
- provision of expansion switches as required;
- provision of key switches to divide the routes into sections of a maximum of 2.5km to allow safe access with controlled signals;
• provision of hi-rail access pads;

• miscellaneous components including guard rails, speed boards, track signage, chainage markers, survey datum plates, creep monitoring points and permanent train stops;

• the detailed design is to include a feasible and compliant arrangement for a future connection between the existing Down ECRL and proposed Down Relief with reference to the Principal’s Design documentation to demonstrate that the future construction of this connection is not precluded by the permanent works associated with the proposed Down Relief; and

• all outputs to be in MGA coordinates (also refer to existing track maintenance alignment conversion below)

The TA must:

• interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP

• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.6.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support

• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design

• Construction Support, including Commissioning and Operational Readiness

• Works-As-Executed Drawings
5.7 Earthworks, Maintenance Access Roads and Fences & Gates

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Earthworks, Maintenance Access Roads and Fences & Gates will carry out the detail design and document the Works based on the scope of services described below.

5.7.1 Scope of Services

5.7.1.1 Earthworks

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Earthworks design, including but not limited to:

- All earthworks required for:
  - embankments and cuttings for the new rail tracks;
  - service roads, access roads, walkways and footpaths;
  - all rail systems infrastructure including location cases and bungalows;
  - drainage pipes and pits, culverts and flood debris structures;
  - all structure footings and foundations including for fences and gates;
  - Earthworks for acoustic mounds, acoustic walls and landscaping;
  - retaining walls;
  - treatment of contaminated soils;
  - landscaping;
  - all buildings;
  - combined services route and any individual cable routes;
  - removal of surplus material offsite;
  - all other services and utilities; and
  - the Remote Works;

- stockpiling of surplus material for external parties where specified;

- supply and placement of all imported fill for the Works; and

- supply and placement of material to form a capping layer for the new trackwork.

The TA must:

- Create a 3D model in 12D format for the proposed design to be issued to the alliance contractor.

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.7.1.2 Maintenance Access Roads

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Maintenance Access design, including but not limited to:

• Vehicular maintenance access road along the rail alignment immediately adjacent to the rail tracks and including lay down areas;

• Vehicular maintenance access roads to culverts, bridges and associated debris collection systems;

• Vehicular maintenance access to critical infrastructures including turnouts, catchpoints, signalling huts, C&CS buildings, etc.;

• Hi-rail pads at appropriate locations for cross-track vehicular movements during maintenance and emergency;

• There is opportunity to change the maintenance access road arrangement between Pennants Hills and Thornleigh to minimise impact on the Blue Gum High Forest EEC;

• where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works

The TA must:

• interface with RailCorp projects including but not limited to TSU, SPSU, DTRS and ATP

• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.7.1.3 Fences and Gates

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Fences and Gates design, including but not limited to:

• carry out a security risk assessment in coordination with RailCorp Security and Station Operations representatives

• along the length of rail corridor, where:
  • new access roads/ramps are provided
  • new safe walking routes are provided
  • existing access roads/ramps are modified
• fencing is required to delineate land acquired and now forms part of a revised rail corridor boundary

• Cheltenham Station

• Beecroft Station (where modified)

• Pennant Hills Station (where modified)

• where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works

• Access gates shall be at locations which are in agreement with all stakeholders, including RailCorp, local councils, RMS, etc. where appropriate.

The TA must:

• interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP

• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.7.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support

• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design

• Construction Support, including Commissioning and Operational Readiness

• Works-As-Executed Drawings
5.8 Retaining Walls and Rail Corridor Structures (excluding bridges)

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Retaining Walls will carry out the detail design and document the Works based on the scope of services described below.

5.8.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Retaining Walls design, including but not limited to:

- all retaining walls and cutting treatments as detailed in the Principals Designs.
- carry out value for money review on types of retaining wall before finalising the option for detail design.
- all other retaining walls / protection screen walls required to support embankments and cuttings.
- where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works.
- station structures
- where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works.
- buildings, footings, bases, supports, brackets, fixings, access equipment, pits and other associated structures for:
  - signalling;
  - communications; and
  - electrical equipment

The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP.
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc.

5.8.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
• SDR, PDR and CDR
• AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.9 Bridges

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Rail Corridor Structures will carry out the detail design and document the Works based on the scope of services described below.

5.9.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Rail Corridor Structures design, including but not limited to:

- Bridge / viaduct between Epping Station and M2 bus underpass;
- For the section of bridge / viaduct above Devlin’s Creek Sectioning Hut, vibration isolation design should be considered to ensure there being no vibration impact of the running new track at the operating stage on the building and the equipment inside the building.
- Structure over the M2 Bus underpass;
- M2 Motorway / Devlin’s Creek underbridge;

The TA shall note that the Principal has advanced the construction of the substructure works (i.e. the piles and pile cap structures) of the central pier of the M2 Motorway underbridge in the construction works contract for the M2 upgrade works administered by Hills Motorway. The detail design of the M2 Motorway underbridge shall incorporate the AFC design of the said substructure works. The AFC design report of the said substructures is included in Appendix 1 of this services brief.

- Abutment modifications, protection / deflection wall and anti-throw screens to Cheltenham Road Overbridge;
- Abutment modifications, protection / deflection wall and anti-throw screens to Chapman Avenue Overbridge;
- Abutment modifications, protection / deflection wall and anti-throw screens to Pennant Hills Overbridge;
- Extension to Beecroft pedestrian underpass roof and walls;
- New footbridge at the south end of Pennant Hills station;

The TA must:

- Interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- Incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc
5.9.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - SDR, PDR and CDR
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
- Works-As-Executed Drawings
5.10 Hydrology and Drainage

In accordance with TSR the TA and if required any specialist sub-consultant for Drainage will carry out the detail design and document the Works based on the scope of services described below.

5.10.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Drainage design, including but not limited to:

- **Hydrology Modelling**
  - all drainage modelling required to develop the Principal’s Design;
  - The drainage design and modelling undertaken by the Contractor must include hydraulic modelling for flooding and impacts including assessment for the 50 year and 100 year average recurrence intervals (ARI), effect of climate change and the probable maximum flood (PMF). The storm adopted must be the one producing the largest peak discharge.

- **Stormwater Drainage**
  - all drainage infrastructure identified in the Principal’s Design that lies within the Asset Lands, generally in the locations shown in the Principal’s Design;
  - Surface, subsoil and underground track drainage for the new track formation including water quality treatment devices, connections into the downstream drainage system or nearest watercourses, and integration of WSUD elements;
  - connection to the existing drainage system as per the Principal’s Design;
  - Road drainage, pits and pipes for all new car parks, roads, including access roads and road modifications;
  - drainage of walkways and footpaths including all pits and pipes;
  - drainage systems for all retaining structures and buildings;
  - augmentation of the existing drainage system to suit the Works;
  - identification, protection, relocation and/or adjustment of all existing drainage services, chartered or unchartered, which may conflict with the Works or Temporary Works;
  - Bridge drainage.
  - watercourse diversions; and
  - provision of drainage at the base of each CSR pit and cable turning chamber.
• Cross Drainage Culverts:
  o those structures identified in the Principal’s Design;
  o all cross drainage culverts required along the rail alignment and associated inlet debris control and scour protection; and
  o Local waterway grading and diversion works.

• Modifications and connections to the external (eg Council) stormwater system and associated approvals

• where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works

The TA must:
• interface with RailCorp projects including but not limited to SPSU, ETS, DTRS and ATP
• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.10.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support
• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.11 Urban Design and Landscaping

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Urban Design and Landscaping will carry out the detail design and document the Works based on the scope of services described below.

5.11.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Urban Design and Landscaping design, including but not limited to:

- development of the Urban Design and Landscaping Management Plan in accordance with the planning requirements, and in consultation with the community as described below;

- Participation in a community forum to be convened by the Principal. This is to include attendance and delivering presentations at meetings; development of three options in respect of building treatments and landscaping at each station precinct; and incorporation of community feedback into the Urban Design and Landscaping Management Plan and into the design documentation;

- consultation with the Principal’s Design and Sustainability Review Panel and Station Working Group and incorporation of feedback into the design documentation;

- Development of the design in accordance with the requirements of the planning approval and the Urban Design and Landscaping Management Plan;

- planting to earthworks adjacent to track and other ancillary buildings and disturbed areas;

- landscaping in station precincts in consultation with local Council and the community as facilitated by TfNSW;

- Urban design treatments to new viaducts;

- Urban design treatments to Rail Corridor including:
  - landscaping / structural supports to new earthworks cuttings and batters;
  - urban design treatments to retaining walls
  - urban design treatments to deflection (impact) walls
  - urban design treatments, landscaping and screening to structures in the rail corridor

- appropriate landscaping to minimise maintenance within the rail corridor and to minimise risks associated with vegetation growth near the operating line

- where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works

The TA must:
• interface with RailCorp projects including but not limited to TSU, SPSU, DTRS and ATP

• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.11.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support

• Detail Design, including:
  • CDR
  • AFC Design

• Construction Support, including Commissioning and Operational Readiness

• Works-As-Executed Drawings
5.12 Epping Station Platform modification

In accordance with TSR T1, the TA and if required any specialist sub-consultant for the modifications to Epping Station Platform 3 will carry out the detail design and document the Works based on the scope of services described below.

5.12.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Epping Station Platform 3 design, including but not limited to:

- modifications to the existing platform structure;
- architectural designs to the widened platform;
- necessary strengthening of platform supporting walls;
- associated services relocations;
- where required, temporary works including but not limited to hoardings, fences, catch nets, scaffold, signage etc to protect the public and maintain use of local roads and footpaths during construction of the Works.

The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.12.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - SDR, PDR and CDR
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
- Works-As-Executed Drawings
5.13 Cheltenham Station

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Cheltenham Station precinct will carry out the detail design and document the Works based on the scope of services described below.

5.13.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Cheltenham Station precinct design, including but not limited to:

- temporary works including but not limited to hoardings, fences, catch nets, scaffold etc to protect the public and maintain rail and station operations during construction of the Works
- architectural design of the station building in coordination with the building services and station systems design
- structural design
- platform design (the design shall provide a new platform for the Down Relief track installed with removable fences at platform edge: that is, the scope of design must include a new platform on the down relief in addition to the scope shown in Appendix 1)
- low voltage power system and installations
- station systems
- CCTV
- the TA must review the Fire Engineering Report (FER) developed during the concept design stage as contained in information document provided by the Principal separately, develop and finalise the Fire Engineering Report (FER) for the detail design stage, including but not limited to:
  - description of the station and all aspects that impact on fire safety, including numbers of tracks, station dimensions, type of rolling stock, adjacent infrastructure, environmental constraints and access
  - statement of all assumptions, limitations and of the fire safety objectives
  - review of all fire hazards and mitigation and control measures
  - review of fire resistance of all materials to be used in the construction of the station and station systems
  - review of fire rating of the station and station systems
  - establishment of clear and agreed fire scenarios and design fires proposed for evaluation and a trial design concept on fire safety strategy for the station
• summary of all proposed construction, materials, components, fire safety systems and fire protection equipment and their proposed test methods and Standards for design, installation and commissioning

• results of fire engineering analysis carried out for modelling and system evaluation including station smoke development and completion of normal operation and emergency pedestrian modelling, and all assumptions, inputs, factors of safety and sensitivity analysis

• fire risk assessment, the tenability criteria and fire risk assessment criteria against which the overall level of fire safety is to be evaluated and judged to be acceptable

• statement as to how the fire safety objectives are to be met

• provide a report which analyses smoke spread into the concourse area and the natural ventilation from the platform and concourse in order to assess smoke hazard management requirements

• mechanical and fire systems,

• vertical transportation

• necessary roads, drains, marking, signage modifications to the Crescent,

• modification and reprovisioning of the commuter car park to provide car parking spaces not fewer than the existing number of car parking spaces including lighting and CCTV

• demolition/removal of existing structures where necessary

• pit and duct cable routes, pole and overhead line cable routes, cable containment, including spatial provision and support systems for local and system wide cabling

• structures for the mitigation of noise and vibration as defined in detailed assessments

• design to comply with requirements of Electronic Ticketing System (ETS) and placement of Fixed Location Reader.

• Design responsibilities for the TA and RailCorp are set out in Appendix 12 – Design Interface Schedule

The TA must:

• provide specifications that enable the Alliance to construct sample panels (for review by the Principal’s Representative) of station elements, including but not limited to:

  • stair nosing’s

  • platform edge including white coping tile, yellow line tile and tactile tile indicators

  • perforated metal panels
• interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
• establish all of the interfacing requirements with station systems such as SPI, Help Point and CCTV prior to detail design.
• interface with RailCorp contractor design for systems listed above
• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.13.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support
• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.14 Beecroft Station

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Beecroft Station precinct will carry out the detail design and document the Works based on the scope of services described below.

5.14.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Beecroft station precinct design, including but not limited to:

- temporary works including but not limited to hoardings, fences, catch nets, scaffold etc to protect the public and maintain rail and station operations during construction of the Works
- demolition of the existing brick parapet wall above the pedestrian underpass and other structures as necessary
- structural design of the pedestrian underpass portal to support the new Down Relief track
- architectural design of the extended underpass (finishes, including tiles to match the existing)
- building services design of the extended underpass
- refurbishment of the existing underpass
- modification and reprovisioning of the commuter car park to provide car parking spaces not less than the existing number of car parking spaces, including lighting and CCTV
- demolition/removal of existing structures where necessary
- pit and duct cable routes, pole and overhead line cable routes, cable containment, including spatial provision and support systems for local and system wide cabling
- Modification of the Beecroft Playground and Beecroft Station Garden to the west of Beecroft Station (The TA must note that impact on the playground and garden should be kept to the minimum given their values to the community)

The TA must:

- interface with RailCorp projects including but not limited to SPSU, ETS, DTRS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.14.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:
• Alliance Procurement Support
• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.15 **Pennant Hills Station**

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Pennant Hills Station precinct will carry out the detail design and document the Works based on the scope of services described below.

### 5.15.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Pennant Hills Station precinct design, including but not limited to:

- temporary works including but not limited to hoardings, fences, catch nets, scaffold etc to protect the public and maintain rail and station operations during construction of the Works
- architectural design of the station works in coordination with the building services and station systems design,
- structural design,
- platform design (the design shall provide a new platform for the Down Relief track installed with removable fences at platform edge: that is, the scope of design must include a new platform on the down relief in addition to the scope shown in Appendix 1)
- low voltage power system and installations
- station systems,
- CCTV (component of scope not undertaking by others)
- the TA must review the Fire Engineering Report (FER) developed during the concept design stage as contained in the Concept Design Report, develop and finalise the Fire Engineering Report (FER) for the detail design stage, including but not limited to:
  - description of the station and all aspects that impact on fire safety, including numbers of tracks, station dimensions, type of rolling stock, adjacent infrastructure, environmental constraints and access
  - statement of all assumptions, limitations and of the fire safety objectives
  - review of all fire hazards and mitigation and control measures
  - review of fire resistance of all materials to be used in the construction of the station and station systems
  - review of fire rating of the station and station systems
  - establishment of clear and agreed fire scenarios and design fires proposed for evaluation and a trial design concept on fire safety strategy for the station
• summary of all proposed construction, materials, components, fire safety systems and fire protection equipment and their proposed test methods and Standards for design, installation and commissioning

• results of fire engineering analysis carried out for modelling and system evaluation including station smoke development and completion of normal operation and emergency pedestrian modelling, and all assumptions, inputs, factors of safety and sensitivity analysis

• fire risk assessment, the tenability criteria and fire risk assessment criteria against which the overall level of fire safety is to be evaluated and judged to be acceptable

• statement as to how the fire safety objectives are to be met

• provide a report which analyses smoke spread into the concourse area and the natural ventilation from the platform and concourse in order to assess smoke hazard management requirements

• mechanical and fire systems,

• vertical transportation

• necessary roads, drains, marking, signage modifications to Yarrara Road,

• demolition/removal of existing structures where necessary

• pit and duct cable routes, pole and overhead line cable routes, cable containment, including spatial provision and support systems for local and system wide cabling

• design to comply with requirements of Electronic Ticketing System (ETS) and placement of FLR.

• Design responsibilities for the TA and RailCorp are set out in Appendix 12 – Design Interface Schedule

The TA must:

• provide specifications that enable the Contractor to construct sample panels for the review and acceptance of station elements, including but not limited to:

  • stair nosing’s

  • platform edge including white coping tile, yellow line tile and tactile tile indicators

  • perforated metal panels

• interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP

• establish all of the interfacing requirements with station systems such as SPI, Help Point and CCTV prior to detail design.
• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.15.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support
• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.16 Pennant Hills Station South Footbridge

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Pennant Hills Station South Footbridge will carry out the detail design and document the Works based on the scope of services described below.

5.16.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Pennant Hills Station South Footbridge, including but not limited to:

- Diversion of the existing services from the existing footbridge into the new footbridge or appropriate alternative
- Construction of a new footbridge over the rail corridor
- Urban design aspect of the new footbridge
- Architectural design of the new footbridge
- Fire rating for the new footbridge
- Lighting provision to the new footbridge
- Connection to existing footpaths, footbridges and public space
- Demolition and removal of the existing footbridge
- The footbridge shall be designed to allow the existing footbridge to remain open to the public until the new footbridge is in use

The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.16.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - SDR, PDR and CDR
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.17 HV and LV Electrical

In accordance with TSR T1, the TA and if required any specialist sub-consultant for HV and LV Electrical Services will carry out the detail design and document the Works based on the scope of services described below.

5.17.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final HV and LV electrical services design, including but not limited to:

- All designs necessary to complete the enabling works and permanent works for the 33kV, 2kV and low voltage systems, including external Ausgrid backup systems
- Design of enabling and permanent works cable routes.
- Production of final HV and LV single line diagrams
- Production of final (and interim) HV and LV operating diagrams
- Production of switchboard schematics for stations and signal locations
- Production of floor plans
- Design of all other HV and LV assets as necessary
- Space for the 11kV equipment in the future 2kV to 11kV Upgrade project (to be delivered by RailCorp) should be considered in the design

5.17.1.1 33kV Feeder 773 and 2kV Feeder NL16 Design

Production of enabling and permanent works design for Devlins Creek Sectioning Hut to Pole 15 and Pole 16 which includes but not be limited to:

- 33kV HV relocation of 773 Feeder between Devlins Creek Section Hut and Pole 15.
- 2kV HV relocation of NL16 Feeder between Epping North Services Substation and Pole 15.
- Temporary CSR routes (in GST) to run the new cables to connect with the aerial feeders at Pole 15 and 16 with UGOH arrangements.
- Permanent CSR routes (underground) to replace temporary CSR route.
- Production of HV operating diagrams (interim and final)
- Production of enabling works design for Pole 15 and 16 to Pole 35 which includes but not limited to:
  - 33/2kV pole 30 is to be renewed in a new location
  - 2kV Pole 30A and transformer are to be removed and the location it is supplying, N15.83 is to be relocated
• New Pole 28A and a 15kVA 2kV / 240V Pole top transformer proposed to provide RailCorp supply to the new N15.83 Location.

• New Ausgrid backup supply for the new N15.83 is proposed to be located on the Up corridor boundary adjacent to the proposed N15.83 Location.

5.17.1.2 33kV Feeder 726 and 2kV Feeder NL21 Design

Production of enabling works design for Pole 49 to Pole 66, which includes but not limited to:

• 2kV aerial from Pole 66 to 66A, Pole 66A and its pole top transformer are to be removed as pole 66A fouls the new Dn Relief Alignment.

• Replace existing backup supply to N17.81 with a new Ausgrid backup supply to be provided by RailCorp (design and install by RailCorp).

5.17.1.3 2kV Feeder NS21

Production of enabling works design for N17.28 to N17.81 which includes but not limited to:

• New 3 core 95mm² 11kV cable between N17.28 and N17.81

• Underground cable route and ULX designs

Modification to the existing 33kV cables that connect Beecroft Substation to the transmission line on the Up side of the corridor. TA to design a suitable solution if modifications are required.

5.17.1.4 Low Voltage Supplies

• Modification to the LV supplies is to be provided to the three new station locations (1) Cheltenham Station Area between 23.915-25.200km; (2) Beecroft Station Area between 26.850-27.000km; (3) Pennant Hills Station between 28.500km-28.700km.

• Production of complete LV design for Cheltenham Station Upgrade. This will include but not be limited to Ausgrid connection, 415/415V Isolation Transformer, Backup Supply Distribution Supply Main Switchboard (DSMSB), Earthing Grids, IMSB, Sub switch boards. In addition other works include, slabs, cable routes, pits, cable trays, etc.

• Production of complete LV design for Beecroft Station. This will include Ausgrid connection, Isolation Transformer, Backup Supply Distribution Supply Main Switchboard (DSMSB) and Car park Lighting DB, Lighting, etc. In addition other works include, slabs, cable routes, pits, cable trays, etc.

• Production of complete LV design for Pennant Hill Station Upgrade. This will include but not be limited to Ausgrid connection, 415/415V Isolation Transformer, Backup Supply Distribution Supply Main Switchboard (DSMSB), Earthing Grids, IMSB, Sub switch boards. Allowance for connections to other RailCorp Equipment Rooms. In addition other works include slabs, cable routes, pits, cable trays, etc.
• Production of complete LV designs for new Signal Location N15.83 (includes the Ausgrid connection, Isolation Transformer, Backup Supply Distribution Supply Main Switchboard (DSMSB), RailCorp Padmount (11kV/415V), Earthing Grids, Essential Switchboards, Battery Cabinet and Emergency Changeover Panel. In addition other works include slabs, cable routes, pits, cable trays, etc.

• Lighting designs were required for car parks, stations, and RailCorp Equipment locations.

• Complete electrical designs for fit out of new station buildings and facilities.

• Production of detailed designs, including level 3 designs for new external supplies.

• Relocation of padmount on the Dn side of Beecroft Station.

• Relocation of LV routes which are foul of the proposed ETTT infrastructure between Epping and Thornleigh.

• The requirement for lighting for M2 Overbridge will need to reviewed by the TA, as part of the detailed design. The TA is then to develop a complete design if it is determined that lighting is required.

The TA must:

• interface with RailCorp projects including but not limited to SPSU, ETS, DTRS and ATP

• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.17.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support

• Detail Design, including:
  o SDR, PDR and CDR
  o AFC Design

• Construction Support, including Commissioning and Operational Readiness

• Works-As-Executed Drawings
5.18 Overhead Wiring System

In accordance with TSR T1, the TA and if required any specialist sub-consultant for the overhead wiring and traction substation system will carry out the detail design and document the Works based on the scope of services described below.

5.18.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop a complete final traction power system design, including but not limited to:

- Traction substation modifications at Epping South Substation; Devlin’s Creek Sectioning Hut; and Beecroft Substation.
- Modifications to cabling between substations, sectioning huts and overhead wiring
- Modifications to existing overhead wiring
- Overhead wiring for the new Down Relief
- Modifications and new overhead wiring structures
- Production of CCALS coding for proposed (and modified) structures / cantilevers, wire heights and wire staggers
- Production of interim 1500V OHW Section Diagrams (to suit construction staging)
- Production of final 1500V OHW Section Diagram
- Production of tension length diagrams (final and interim to suit construction staging)
- Production of Overhead Wiring Layout Plan designs (final and interim)
- Provision and review of sectioning requirements for future electrification.
- Provision and review of 1500V DC feeding route and three position switch link locations.
- Production of detailed tension losses calculations
- Provision of sectioning to suit maintenance requirements
- Spark Gap and bonding design
- the overhead wiring system must be suitable for the DC traction power and must be compatible with the existing OHW System (Type 12) with a nominal contact height of 5.0m, comprising twin 270mm² catenary wire and twin 137mm² contact wires

The TA must incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final Overhead Wiring Structures (OHWS) design, including but not limited to:
The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

### 5.18.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

- Alliance Procurement Support
- Detail Design, including:
  - SDR, PDR and CDR
  - AFC Design
- Construction Support, including Commissioning and Operational Readiness
- Works-as-executed Drawings

### 5.19 Communications and Control Systems

In accordance with TSR T1, the TA and if required any specialist sub-consultant for the In accordance with TSR T1, the TA and if required any specialist sub-consultant for Communications and Control Systems Networks will carry out the detail design and
document the Works based on the scope of services described below. (Refer to Appendix 12 - Design Interface Schedule)

5.19.1 Scope of Services

Review the Principal's Design and Concept Design Report (completed by Parsons Brinckerhoff / GHD), identify any design review comments that need to be closed out and develop the final Communications design, including but not limited to:

5.19.1.1 Enabling Works

- Enabling Works designs as detailed in the Communications Concept Design Report (completed by Parsons Brinckerhoff). This will include the relocation of all communications and control systems cables and infrastructure which are foul of the new alignment.
- The TA is to produce all necessary design documentation and Principal's Design to support the relocation works, these include but not limited to:
  - Relocation of Optic Fibre and copper cables
  - Relocation of train radio equipment
  - Relocation of communications equipment including rooms
  - Cable route designs (to form part of CSR in most cases) including, ULX and pit design (separate to HV and Signal pits)
  - Cable running plans / cable arrangements
  - Location case designs inclusive of rack layouts
  - LV power designs
  - Footings, supports and fixings for existing RailCorp communications and control systems
  - Production of block diagrams
  - Production of schematics
  - Summary of impacts to existing services
5.19.1.2 Permanent Works

- The permanent works include all new communications and control systems infrastructure that is required as part of the ETTT works. The TA is to produce a complete communications and control systems design package for these works.

- Permanent works include all works to be undertaken in and out of the corridor and at the stations, as a result of the ETTT works. These works include but are not limited to the following:
  - Relocated and installation of new Communications Infrastructure
  - Relocation and installation of Optic Fibre and Copper Cables
  - Final Cable Routes (including pits, equipment rooms, bases, etc)
  - CCTV Systems
  - Station System for the new Cheltenham StationUpgrade.
    - Cables routes for CCTV and Help Points
    - Public Address
    - Cable routes for Station Passenger Information (SPI)
    - Telephone systems
    - Cable routes for Precise Clocks
    - Security Alarm Panel and Access Control
    - Communications Equipment Rooms and cable chambers
    - Train radio rooms / buildings
    - Relocation of MetroNet base station and MetroNet mast (As contained in information document provided by the Principal separately for the design requirement)
  - Station System upgrade for Beecroft Station
    - Car park CCTV System
    - Modifications to the backbone network design.
  - Station System upgrade for Pennant Hills Station
    - Cable routes for CCTV and Help Points
    - Public Address
    - Cable routes for Station Passenger Information (SPI)
    - Telephone systems
    - Communications Equipment Rooms and cable chambers
• Train radio rooms / buildings
• Relocation of MetroNet base station and MetroNet mast (As contained in information document provided by the Principal separately for the design requirement)

• The TA is to assess the impacts to the General Station Systems and determine the impacts as a result of the revised stations designs. These systems include:
  • DVA Terminals
  • Automatic Fare Collection Systems
  • ITP Racks
  • Personnel Duress Alarms
  • Station LANs
  • Train Location System Terminals
  • Line Information Control System Terminals
  • Booking Office Machines
  • RailCorp Telephones

• Station Security

The TA must:
  • interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
  • Interface and integrate the works with the TPD Signal Designer.
  • incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.19.2 Deliverables

• The scope of services shall be split into a number of phases and deliverables, namely:
  • Alliance Procurement Support
  • Detail Design, including:
    o SDR, PDR and CDR
    o AFC Design
  • Construction Support, including Commissioning and Operational Readiness
  • Works-As-Executed Drawings
5.20 Earthing, Bonding and Electrolysis Protection

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Earthing, Bonding and Electrolysis Protection will carry out the detail design and document the Works based on the scope of services described below.

5.20.1 Scope of Services

Review the Principal’s Design, identify any design review comments that need to be closed out and develop the final earthing, bonding and electrolysis protection design, including but not limited to:

- OHW attachments and bonding/isolation:
  - bridge structures – OHW fixing to bridge structures, provision of isolated base plates to steel handrails and protection screens in close proximity to OHWS and provision of horizontal safety screens and bond fittings.
  - Stations – continuity bonding of OHWS to rationalising a number of rail spark gaps

- Combined Services Route (CSR):
  - GST – provision of insulated joints at maximum lengths and at close proximity to HV electrodes and OHWS

- Stations:
  - bonding of structural elements and separation of canopies and steel structures from OHWS
  - Touch potential – assessment to be undertaken on stations to avoid possible touch potential issues.

- HV/LV:
  - Earthing layouts for substations 11kV/415V (Ausgrid), 415/415V (Ausgrid) supplies, 240/240V (Ausgrid), 2kV/120V (RailCorp) and 240/120V (RailCorp)
  - Aerial Earthing designs for undergrounding of RailCorp HV lines.

- Utility Services:
  - review of existing utility crossing(s) to ensure any specific bonding or cathodic protection devices are maintained or provided
  - identify any new utility crossing(s) that require any specific bonding or cathodic protection devices be provided

- Signal and Comms:
  - Provision of earthing grids for signal / comms locations, as required by the RailCorp standards
• Provision of earthing grids for Train Radio Masts locations.
• Earthing and bonding requirements in fences and gates
• Electrolysis test points in structures including bridges

The TA must:

• complete all necessary site investigations (including current injection testing) necessary to identify existing electrolysis signature for the length of the ETTT project prior to commencement of the Works
• complete all necessary site investigations (including current injection testing) necessary to identify electrolysis signature for the length of the ETTT project post completion of the Works
• interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
• incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

Not withstanding Clause 1.9 of this Services Brief, the design of the earthing, bonding and electrolysis must be developed in reference to:

• Local Supply Authority requirements
• NSW Service and Installation Rules

5.20.2 Deliverables

The scope of services shall be split into a number of phases and deliverables, namely:

• Alliance Procurement Support
• Detail Design, including:
  • SDR, PDR and CDR
  • AFC Design
• Construction Support, including Commissioning and Operational Readiness
• Works-As-Executed Drawings
5.21 Signalling Power

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Signalling Power will carry out the detail design and document the Works based on the scope of services described below.

5.21.1 Scope of Services

- The TA is required to produce a complete HV/LV design for the supply of power to all Signal Locations nominated by the Signal Design.
- All works will be coordinated with the Signalling Designer as per the Signalling Interface Schedule.

The Principal is currently planning to undertake a Signalling Power Supply Upgrade (SPSU) in the area of the ETTT project. It is anticipated that this project will be commissioned after completion of the ETTT. Therefore the detailed designer must design to facilitate and not preclude the future upgrade to 11kV.

5.21.2 Deliverables

The TA shall undertake the design in accordance with the Signalling Interface Schedule. Deliverables (see Appendix 12).
5.22 Conversion of Existing Tracks to MGA Coordinates

In accordance with TSR T1, the TA and if required any specialist sub-consultant for Pennant In accordance with TSR T1, the TA and if required any specialist sub-consultant for ISG to MGA conversion of existing tracks will carry out the detail design and document the Works based on the scope of services described below.

5.22.1 Scope of Services

The TA is to convert the existing ISG track maintenance alignment into MGA coordinates before commencing the design works. The “ISG to MGA Conversion Technical Manual” attached in Appendix 14 shall be followed in the conversion work. The TA scope will include but not be limited to:

- carry out conversion of the existing track alignment survey information between Ch 24.509km and Ch 30.477km for the Down Main and between Ch 24.507 and Ch 30.473 for the Up Main from ISG to MGA coordinates
- Issue revised documentation following completion of the conversion for RailCorp review

The TA must:

- interface with RailCorp projects including but not limited to SPSU, DTRS, ETS and ATP
- incorporate, for both existing and new infrastructure, rail systems spatial and other requirements (including those of the STA), maintenance access provisions, property boundaries, rail corridor width etc

5.22.2 Deliverables

The deliverables will include a draft report for review by RailCorp and a final report upon acceptance of the draft report.