TfNSW Standard Requirements

5TP-FT-425/1.0

Template – Applicable to Transport Projects Delivery Office

Quality Management System

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1.0	19 August 2015	4804496_1	New consolidated TSR document replacing the suite of individual TSRs (TSR C, TSR E, TSR P, TSR S, TSR T) for use with the Contract Templates. Includes revisions to TSR P elements re Planning & Scheduling

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1 Introduction

1.1 Purpose

This TfNSW Standard Requirement (TSR) describes the requirements and processes with which the Contractor and any Subcontractors must comply. This TSR must be read in conjunction with the Contract.

Unless noted otherwise in Annexure A - Additional Project Requirements, all requirements specified in this TSR apply to the Contract.

1.2 User Instructions

Unless noted otherwise, wherever used in this TSR, words and phrases have the meaning given to them in the General Conditions. In addition to these defined terms the following words or phrases have the meaning given to them below:

Asset Handover	Point in time at which the control of certain specified assets is transferred to an Operator/Maintainer and/or Asset Owner for their ongoing operation and maintenance.
Asset Owner	Organisation who will ultimately own the assets subject to the Asset Handover. In some cases this may also be the Operator/Maintainer.
Australian Network Rules and Procedures	means Australian Network Rules and Procedures as defined by the Rail Industry Safety and Standards Board.
CDR	Critical Design Review or equivalent stage of the design as developed in accordance with the Contractor's systems engineering processes.
Commissioning	Systematic process of ensuring that all infrastructure, equipment and systems installed in a project perform interactively in accordance with the design intent and the Operator/Maintainer's functional and operational needs.
Contract Management Plan (CMP)	Unless otherwise defined in the Contract means a Management Plan to be developed by the Contractor in accordance with the requirements of this TSR which acts as a framework for bringing together all the management requirements for the Contractor's Activities into a coordinated and integrated plan.
Cost Loaded Baseline Schedule	A baseline program or schedule where the Contractor's costs are distributed across activities such that a cash flow S-Curve may be created, this will also be used as the basis for measuring Earned Value.

Danger Zone	Danger Zone as defined in the Australian Network Rules and Procedures.
Earned Value	Method of measuring and reporting project cost performance based on integrated time, cost and scope elements in accordance with “TfNSW Quality Management System - Earned Value Management using Primavera P6”.
Environmental Control Map (ECM)	Document prepared to assist in the planning and delivery of construction works, specific to a work area and/or activity that identifies the physical location of physical protection measures, work method controls and monitoring requirements to minimise the impact of construction activities on the environment and community.
Environmental Management System (EMS)	A tool for managing the impacts of an organisation's activities on the environment and provides a structured approach to planning and implementing environment protection measures.
Fruin Level of Service	A level of service standard for pedestrian access created by John J Fruin PhD.
Global Possession Calender and Standard Working Calendar	Default calendars in TfNSW’s P6 database which can be made available on request.
Hierarchy of Control Measures	Hierarchy of Control Measures as defined in the “Work Health and Safety Regulations 2011 Part 3.1 Managing Risks to Health and Safety”.
Hold Point	Verification point identified in this TSR or Works Brief or Services Brief beyond which the relevant part of the Contractor’s Activities may not proceed without the verification and subsequent written authorisation of the Principal’s Representative or the relevant person nominated in the TSR.
Management Plans	Any of the Management Plans to be developed by the Contractor in accordance with the requirements of this TSR which describe how the Contractor will manage related matters and issues that arise during the term of the project.
National Counter Terrorism Alert Levels	Levels described in the Australian Government’s National Terrorism Public Alert System and referenced on the Australian National Security website
Original Equipment Manufacturer (OEM)	The company that originally manufactured the product.

Operator/Maintainer	Organisation that, post Asset Handover, will operate and maintain the assets. In some cases, this may also be the Asset Owner.
PDR	Preliminary Design Review or equivalent stage of the design as developed in accordance with the Contractor's systems engineering processes.
Planning and Environmental Compliance Monitoring System (PECOMS)	Planning and Environmental Compliance Monitoring System developed and used by the Principal to monitor compliance with the conditions of all licenses, permits and approvals of its projects.
Project Rail Safeworking Coordinator	means the Principal's position role that is accountable for monitoring the management of worksite protection and rail safety requirements for controlled and managed worksites on the programs/projects being delivered by Transport Projects Office on behalf of the NSW State government.
Property Representative (PR)	Principal's Property Representative.
Rail Safety	Rail Safety as defined in the Rail Safety National Law (NSW).
Rail Safety Act	The Rail Safety National Law (NSW).
Rail Industry Safety Induction (RISI) Identification Card	A competence card issued to demonstrate successful completion of the Rail Industry Safety Induction training course and medical examination.
Rail Safety Work	Rail Safety Work as defined in the Rail Safety Act.
Rail Safety Worker (RSW)	Rail Safety Worker as defined in the Rail Safety Act.
Rail Train Operator	An entity defined by the Rail Safety Act as a rail operator or rail transport operator.
Regulator	The holder of a public office, or a public authority, of the Commonwealth, or of a State, or member of a government regulatory agency who or which is responsible for enforcing laws, regulations, and established rules.
Regulator Notifiable Incidents	Regulator Notifiable Incidents as defined in Part 3 of the WHS Act and Rail National Safety Law National Regulations 2012.

RMS	Roads and Maritime Services, a corporation constituted by section 46(1) of the *Transport Administration Act 1988* (NSW). A reference in any of the TSR documents to the "Roads and Traffic Authority" or "RTA" is to be construed as a reference to Roads and Maritime Services.
Safe Work Method Statements (SWMS)	Documents so titled prepared in accordance with this TSR and that give specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment etc.
SDR	System Definition Review or equivalent stage of the design as developed in accordance with the Contractor's systems engineering processes.
Vehicle Registration Database	The Principal's database recording a rail vehicle's ownership and technical details to indicate that the vehicle has met the Principal's acceptance requirements and is authorised to operate on rail infrastructure managed by the Principal.
Witness Point	Point identified in the TSR or Works Brief or Services Brief where the Principal's Representative, or the relevant person nominated in the TSR, may review, witness, inspect, or undertake tests on any component, method, or process of the Contractor's Activities.
Work Breakdown Structure	Framework of discrete work elements (or tasks) used to organise and define the total project work scope, cost, and schedule control elements.
WorkCover NSW	WorkCover Authority of New South Wales.
Worksite Protection	The safety measures adopted, in relation to rail operations, to protect persons brought or invited to any part of the Site located within the Rail Corridor.
Worksite Protection Personnel	The personnel assigned to implement the required Worksite Protection for work within the Rail Corridor.
Worksite Protection Plan	The plan (provided by the Contractor) documenting the safety measures adopted, in relation to rail operations, to protect persons brought or invited to any part of the Site located within the Rail Corridor.

2 Project Administration

2.1 Requirements for the Contract Management Plan (CMP)

The CMP is the Contractor's project-specific overarching Project Management Plan and Management System that captures all other Management Plans and systems that the Contractor is required to develop under the Contract. The CMP is to provide a framework to bring together all the management requirements for the Contractor's Activities into one coordinated and integrated Management Plan.

Unless otherwise noted in Annexure A, the Contractor must have in place, maintain and consistently apply until Final Completion, a CMP to inform and direct personnel and others engaged by the Contractor about the specific work practices, resources, sequence of activities, controls and checks that are to be implemented during the performance of the Contractor's Activities. The timing and frequency for the initial and subsequent submissions of the CMP to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The CMP must:

(a) explain in a systematic, coordinated and integrated structure the management method for performing the Contractor's Activities in delivering the Works;

(b) define responsibilities, resources and processes for planning and performing the Contractor's Activities;

(c) define responsibilities, resources and processes for verifying that the Contractor's Activities meet the requirements of the Contract;

(d) cover all the project-specific management systems, Management Plans and project-specific deliverables required for the performance of the Contractor's Activities and to meet the requirements of the Contract;

(e) cross reference each Management Plan required to be developed by the Contractor, through the use of a matrix or equivalent, listing its compliance with the relevant Contract and TSR conditions and requirements;

(f) identify the responsible person for developing and updating the CMP and any other Management Plan;

(g) describe how the Contractor will interface with the Principal's Representative to enable specific knowledge and experience of the Principal to be utilised in the development of the Management Plans;

(h) describe how the Contractor will comply with all Laws, Codes and Standards and requirements, applicable to the Contractor's Activities;

(i) document the interface between the Management Plans and the Contractor's corporate systems as applicable under the Contract; and

(j) explain the alignment of the operating processes of the Contractor, Subcontractors and the Principal's Representative.

2.2 Construction and Site Management Plan

The Contractor must have in place, maintain and consistently apply until Final Completion, a Construction and Site Management Plan in accordance with the requirements of the Contract including this TSR. The Construction and Site Management Plan must describe the procedures and processes that the Contractor will undertake to plan and execute the construction of the Works.

The timing and frequency for the initial and subsequent submissions of the Construction and Site Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The Construction and Site Management Plan must:

(a) detail how the Contractor will comply with its obligations under the Contract in relation to the control, establishment, security, use and rehabilitation of the Site including the arrangements to provide access to, within and through the Site for the Principal, Other Contractors and any other person nominated by the Principal;

(b) describe procedures for the preparation and implementation of plans and work method statements before the start of related construction work;

(c) describe procedures for the management of Subcontractors and their plans and work method statements;

(d) describe procedures for the Contractor's mobilisation and demobilisation to carry out the Contractor's Activities, including mobilisation and demobilisation of personnel, Construction Plant and equipment and closeout of stakeholder communications; and

(e) address the management of interfaces with all Authorities and Other Contractors.

2.3 Risk Management Plan

The Contractor must have in place, maintain and consistently apply until Final Completion, a Risk Management Plan that is in accordance with "ISO 31000 (Risk Management Guidelines and Principles)" and addresses the management of risks applicable to the undertaking of the Contractor's Activities.

The timing and frequency for the initial and subsequent submissions of the Risk Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

2.4 Commuter and Passenger Management Plan

The Contractor must have in place, maintain and consistently apply until Final Completion, a Commuter and Passenger Management Plan that demonstrates how public movements will be accommodated during the various stages of the Contractor's Activities.

The timing and frequency for the initial and subsequent submissions of the Commuter and Passenger Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The Commuter and Passenger Management Plan must include:

(a) drawings showing, as a minimum, the layout of public areas, including facilities provided for operational staff and patrons and systems drawings at each stage of the Contractor's Activities;

(b) drawings showing the proposed arrangement of the passenger facilities clearly showing the position of hoardings and provisions for interchange. Clearances and free area of platforms and the like should be clearly documented. Fruin Level of Service diagrams shall accompany the drawings and they shall indicate the proposed level of service for the proposed arrangement;

(c) drawings showing proposed arrangement of signage covering existing signage and new temporary signage. Details must include location, size and wording of temporary and permanent way finding signage and proposed modification to any existing signage;

(d) drawings showing proposed arrangement of passenger information panels including temporary relocations and modifications;

(e) a program clearly indicating when configuration will be changed and proposed period of change;

(f) controlled Site access points;

(g) delineation lines and material to be used for delineation;

(h) access point from public modes of transport and general ingress and egress points; and

(i) identification of accommodation of level changes via ramps, stairs, and other means.

The Contractor must install signage and delineation as shown on the Commuter and Passenger Management Plan to clearly communicate to the public and others routes to safely and easily navigate around or through the Site.

The Principal's Representative may direct the Contractor to include additional or alternative signage and delineation to that documented in the Commuter and Passenger Management Plan.

2.5 Traffic Management Plan

The Contractor must have in place, maintain and consistently apply until Final Completion, a Traffic Management Plan that addresses the Contractor's obligations and responsibilities relating to the management of traffic.

The timing and frequency for the initial and subsequent submissions of the Traffic Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The Traffic Management Plan must describe the Contractor's approach to satisfying the requirements in respect of:

(a) the management of traffic on the Site;

(b) the requirements under the WHS Legislation;

(c) Authority Approvals, including any from RMS, NSW Police, State Emergency or any local councils;

(d) The "RTA Traffic Control at Work Sites Manual";

(e) "AS 1742.3-2009 Part 3 - Spoil Control Devices for Works on Roads";

(f) Roads Act 1993 (NSW) and all other Laws; and

(g) certificates, licences, consents, permits and approvals, including in respect of working hours.

The Traffic Management Plan must recognise, be consistent with and comply with the traffic configuration of the local road network as it exists at various stages during construction of the Works. The Traffic Management Plan must also describe as a minimum:

(h) detailed traffic management procedures for the Site, including those required to manage: modifications to existing roads/paths and traffic patterns; changes to public transport routes and services; impacts on residents and/or commercial enterprises; and the impact of construction traffic within the Site and outside the Site on the adjacent public road system;

(i) procedures to ensure the appropriate notification of relevant emergency services prior to implementing road and pedestrian traffic modifications such as street closures or changes to station access;

(j) safety of commuters, pedestrians, cyclists and site personnel;

(k) changes to traffic usage patterns (average, low and peak flows as well as special events or traffic embargoes);

(l) programmed commencement and completion dates;

(m) management of maintenance requirements, emergencies and incidents;

(n) requirements for traffic and occupation of, or access through, private properties;

(o) coordination of traffic management procedures and plans with the Principal's Representative, Other Contractors and other parties;

(p) procedures for obtaining relevant certificates, licences, consents, permits and approvals;

(q) expected number of truck movements each hour, based on the predicted maximum monthly spoil generation amounts and hours of operation of worksites;

(r) roles and responsibilities of the Contractor's personnel and Subcontractors;

(s) review and reporting procedures; and

(t) procedures for regular updating of the Traffic Management Plan on an "as needs" basis or at the direction of the Principal's Representative.

Where nominated in Annexure A, the Contractor must prepare a detailed Traffic Control Plan (TCP) for the Site generally in accordance with the RTA manual "Traffic Control at Work Sites 4th Ed (June 2010)". The TCP must be submitted to and approved by all relevant Authorities and submitted to the Principal's Representative for review in accordance with the requirements of the Contract prior to the commencement of any work on the Site. Thereafter, the Contractor must ensure that the approved TCP is available for inspection by the Principal's Representative or any officer of WorkCover NSW, NSW Police, the RMS or any other Authority.

2.6 Defects Management Plan

The Contractor must have in place, maintain and consistently apply until Final Completion a Defects Management Plan that addresses the Contractor's obligations and responsibilities relating to the management of Defects.

The timing and frequency for the initial and subsequent submissions of the Defects Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The Defect Management Plan must:

(a) address all contractual requirements for managing Defects;

(b) clearly specify the strategy for managing any Defects raised internally by the Contractor, raised by the Principal and raised by the Operator/Maintainer; and

(c) include a procedure for the management of Defects which must include the use of Scenario 6 software (refer Scenario – Defect Management 4TP-PR-158).

2.7 Contractor's Program

The Contractor is required to update and submit the Contractor's Program monthly to the Principal's Representative by the time specified in Annexure A and at any other times required by the Contract. The Contractor must submit an A3 size PDF copy of the Contractor's Program, with the monthly progress report.

The Contractor, unless noted otherwise in Annexure A or the Contract, shall submit a Cost Loaded Baseline Schedule within 10 days of the date of the Contract for the Principal Representative's review in accordance with the requirements of the Contract.

Without limiting the General Conditions, the Contractor's Program and other programs must comply with the following requirements:

2.7.1 Working Environment

The Contractor must provide the Contractor's Program in the latest P6 version (XER format). The Principal will import the Contractor's Program into the Principal's Primavera planning environment database. The Principal will maintain the database security and control the access to the database.

The Contractor must develop, status and maintain the Contractor's Program in Primavera P6 on the Principal's planning environment. The Contractor will be given access to the Principal's planning environment via Citrix at no extra cost to the Contractor.

The Contractor must ensure that each update to the Contractor's Program as submitted in accordance with this clause 2.7.1 is archived within the Principal's planning environment;

The Contractor will be able to export the program file (no more than once per week) via a request to the Principal's Representative. The file will be emailed to the Contractor.

The Contractor will not be provided with access to import any programs into the Principal's Primavera database.

The Principal will not make changes to the Contractor's Program without the approval of the Contractor. Generally, any changes made will be limited to the application of activity codes or addition of logic links to external Principal schedules.

2.7.2 Program Framework

As a minimum, the Contractor's Program must:

(a) be submitted monthly, on the first working day of the next month with a status date of the last calendar day of the previous month, unless noted otherwise in Annexure A;

(b) group the Contractor's activities and milestones in a Work Breakdown Structure (WBS) that is aligned to the payment schedule or other form of cost breakdown structure included in the Contract;

(c) show Earned Value in accordance with "AS 4817-2006 Project Performance Measurement using Earned Value" and "TfNSW Earned Value Management using Primavera P6 - 4TP-PR-143";

(d) include budgeted cost and actual cost, input into the relevant WBS item each month, by the Contractor;

(e) define approved Variation activities and/or additional working days in a separate WBS and cost breakdown structure item, so that cost and time of the Variation activities can be clearly distinguished from the original scope;

(f) have a separate WBS structure outlining each step of the design review process for each individual design package; and

(g) show the Principal's review periods in accordance with the requirements set out in the Contract.

2.7.3 Program Setup and Maintenance

As a minimum, the Contractor's Program must:

(a) include all key activities and deliverables detailed in this TSR and the Contract and any other activities and deliverables directed by the Principal's Representative;

(b) include requirements for the submission, review and approval of all deliverables including the Management Plans and other Documents (as applicable), in accordance with the requirements of the Contract;

(c) outline the dates when the Contractor will require information, documents, materials or instructions from the Principal's Representative and the dates when the

Contractor will provide information or documents to the Principal's Representative. These dates must be consistent with dates that the Principal could reasonably have anticipated as at the date of the Contract;

(d) provide start and finish dates for all elements of the Contractor's Activities (including design, procurement and construction activities), milestones, Track Possessions, external dependencies, Principal deliverables, Operator/Maintainer deliverables and any other significant events and contractual completion dates;

(e) show the lead times for the supply of information, selection of Subcontractors and suppliers, approvals, and the supply of equipment by the Principal, its agents or persons for whom the Contractor is not responsible. Each period must be represented in a separate activity from the Contractor's activity for the relevant items;

(f) clearly identify the access requirements and activities, including Track Possessions and any service outages;

(g) show activities for Site mobilisation, establishment and demobilisation;

(h) clearly identify the critical path activities and milestones;

(i) show codes, resources and expense activities as directed by the Principal's Representative;

(j) show quantities and rates as requested by the Principal's Representative;

(k) identify time leads and lags, resources and other constraints;

(l) show calendars identifying the working and non-working days for the Contractor's Activities. Project calendars are to be up-to-date and reflect changes to the available working periods. The calendars must reflect the Global Possession Calender and Standard Working Calendar which can be provided on request. No other allowances for wet weather or other such contingencies are to be made in the calendars;

(m) reflect the time scheduled, remaining duration and actual physical progress of the Works, and be consistent with all constraints on access, performance and coordination;

(n) show allowance for weather and other event contingencies in a single activity at the end of the critical path and prior to the completion date; and

(o) show Commissioning and Asset Handover activities, including the time allowed for testing and Commissioning of major items.

2.8 Program Quality

The quality of the Contractor's Program will be examined by the Principal's Representative upon the initial submission and again upon each subsequent submission. The Contractor shall maintain the quality of the Contractor's Program, by satisfying the criteria in the table provided below. The Contractor's Program will be rejected by the Principal's Representative if the quality does not meet the thresholds prescribed below. Further assessment criteria and thresholds may be added or modified by the Principal's Representative to the assessment of quality.

Deviations from the thresholds must be approved by the Principal's Representative.

The quality of the Contractor's Program will be assessed for all normal activities and milestones that are planned, in-progress, or complete.

Criteria	Description	Remarks	Threshold
Missing Predecessors	Total number of activities that are missing predecessors.	Activities that have missing predecessors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a program during the planning phase.	Less than 1%
Missing Successors	Total number of normal activities that are missing successors.	Activities that have missing successors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a program during the planning phase	Less than 1%
Merge Hotspot	The total number of activities with a high number of predecessor links.	Also known as merge bias, merge hotspot is an indication as to how complex the start of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question will be delayed due to the cumulative effect of all links having to complete on time in order for the activity to start on time.	Less than 2.5%
Diverge Hotspot	The total number of activities with a high number of successor links.	A diverge hotspot is an indication as to how complex the end of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question may delay a large number of successors.	Less than 2.5%
Critical	Number of critical activities	The number of critical tasks within a grouping. Typically critical activities have total finish float of zero. Primavera programs may have critical activities with more than zero float depending on the threshold set in Primavera P6.	No threshold
0 to 20 Days Float	Total number of activities with positive float of more than zero and less than or	Near critical activities should be closely monitored during execution to ensure a successful on-time project.	No threshold

Criteria	Description	Remarks	Threshold
	equal to 20 days.		
Hard Constraints (Finish on, Start on, Mandatory Finish, Mandatory Start	Number of activities with hard or two-way constraints.	Hard or two-way constraints such as Must start on or must finish on should be avoided. Consider using soft constraints if absolutely necessary. Includes normal activities and milestones that are planned, in-progress, or complete.	Zero
Soft Constraints (Start On or After, Finish On or After)	Number of activities with soft or one-way constraints.	Soft or one-way constraints such as start no earlier than or finish no later than, constrain an activity in a single direction. While not as impactful as hard constraints, soft constraints do impact critical path method calculations in a program and should be reviewed carefully.	Zero
High Float	Excessive free total float	Number of activities with total float greater than 2 months. Activities must be agreed with the Principal	Less than 5%
Negative Float	Total number of activities with total finish float less than 0 working days.	Negative float is a result of an artificially accelerated or constrained program. Negative float indicates that a program is not possible, based on the current completion dates. Compare this metric to constraint metrics to determine which activities (with negative float) are being impacted by constraints. Ideally, there should not be any negative float in the program. Includes normal activities and milestones that are planned or in-progress.	Zero
Zero Duration	Normal activities having a zero duration	Normal activities having a zero duration	Zero
Wrong Status	Activities started or completed in the future	All activities with status in the future must be corrected in order to maintain an accurate execution plan. Includes only normal activities and milestones that are in progress or complete.	Zero
High Duration	Total number of activities that have a duration longer	Total number of activities that have a duration longer than 10 days. Activities must be agreed with the Principal.	Less than 5%

Criteria	Description	Remarks	Threshold
	than 10 days. This number should not exceed 5%.		
SF Predecessors	Total number of activities with Start to Finish (SF) logic links.	Start-to-finish links are deliberately used very rarely because they have the unusual effect that the successor happens before the predecessor. Generally a poor practice when planning. Includes only normal activities and milestones that are planned, in-progress, or complete.	Zero
Leads and Lags	Lags in excess of 10 days	A lag is a duration applied to a logic link often used to represent non-working time between activities such as concrete curing. Lags tend to hide detail in programs and cannot be “statused” like normal activities. Lags should typically be replaced with activities. Includes normal activities and milestones that are planned, in-progress, or complete.	Zero
Logic on summaries		A summary is not a true activity. Logic should be tied to activities within the schedule	Zero
Reverse logic		As a result of a negative lag (lead) the successor activity starts before their predecessor	Zero

2.9 Document Management

2.9.1 General

The Contractor must control all copies of the CMP, other Management Plans and Contract deliverables in accordance with the Contract. The Contractor must provide the Principal’s Representative with electronic copies of all documents required to be submitted on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, P6, CAD in *.dwg. or *.dgn.). This requirement also applies when the Contractor is re-issuing documentation to the Principal’s Representative.

The Contractor must promptly advise the Principal’s Representative of any changes made to the submitted documents and re-submit the amended documents within 5 Business Days of the amendment, with the amendments clearly marked on the document.

2.9.2 Principal's Document Management System Tool

Where nominated in Annexure A, the Principal will administer the Contract document deliverables using the Principal's nominated electronic document management tool. The Contractor must engage and utilise the Principal's electronic document management tool, as specified or otherwise agreed to with the Principal's Representative.

The Contractor must incorporate into the CMP the Principal's administrative requirements for the acceptance, review and tracking of various Contract deliverables (including all Documents) using the Principal's electronic document management tool.

2.10 Monthly Reporting

Without limiting any other reports that may be required under the Contract, the Contractor must prepare and submit to the Principal's Representative, a progress report each month in accordance with the Contract, updating and describing as a minimum:

(a) the status at the end of the previous month of the Contractor's Activities, as compared to the current Contractor's Program and the Contractor's other programs;

(b) planned Contractor's Activities over the forthcoming month and quarter;

(c) a list and timing of Hold Points and Witness Points planned for the forthcoming two (2) months;

(d) a description, including photographs, of the progress made on all current Contractor's Activities;

(e) a summary of the financial status of the Contract, including detailed final cost forecasts, and separate lists for the cost of approved Variations, Claims and outstanding claims for Variations;

(f) the number and categories of personnel and equipment currently engaged by the Contractor to carry out the Contractor's Activities (including apprentices and those engaged in off-site functions such as engineering and specialist subcontractors). This data must also be compared with the planned resources for the Contractor's Activities;

(g) the status of Design Documentation, major procurement orders, Subcontracts, manufacture and general construction;

(h) key dates for the anticipated submission of design packages at SDR, PDR, CDR, and approved for construction stages.

(i) the status of planning activities including Authority Approvals;

(j) where Contractor's Activities involve any related Track Possession, shutdown or outage activity, the progress report must also include monthly reliability statistics listing the following:

i. Incidents in Track Possession/shutdown/outage;

ii. Incidents in non-Track Possession/shutdown/outage;

iii. actual Incidents;

iv. potential Incidents in Track Possession/shutdown/outage; and

v. potential Incidents in non-Track Possession/shutdown/outage;

(k) any noncompliances with any Authority Approvals, nonconformances of the construction of the Works with Design Documentation and construction processes, and the steps taken by the Contractor to address those noncompliances and nonconformances;

(l) any issues and noncompliances with environmental management requirements of the Contract (including this TSR and steps taken by the Contractor to address those noncompliances);

(m) any issues arising from or affecting the CMP (or the subject matter of the CMP);

(n) records of all corrective and preventative actions taken by the Contractor under the CMP (and the components thereof), and audits of such actions;

(o) cooperation, coordination, industrial relations and interface issues with Other Contractors;

(p) status of interface management with Other Contractors;

(q) summary updates relating to community issues and potential community issues;

(r) complaints received by the Contractor in relation to the Contractor's Activities;

(s) other key issues that have the potential to affect the Contractor's Activities;

(t) any other information the Principal's Representative reasonably requires;

(u) activities of the Dispute Resolution Board, where such a board is established under the Contract; and

(v) details of the status, implementation, operation and effectiveness of the Risk Management Plan. As a minimum, the Contractor must provide:

i. a report on the risks deemed 'extreme' or 'high' within the risk register;

ii. an overview of the full risk register (e.g. number of risks by category and rating, number of new risks identified and risks closed out during the previous month);

iii. the status of associated controls and tasks; and

iv. any results of risk audits.

Where the Works includes signalling system works, the progress report must also:

(w) include a one page summary of the status of signalling design packages; and

(x) provide the status of signalling inspection and test documentation such as permit to work applications, inspection and test plans, installation works packages, Commissioning test plans and Commissioning works packages.

2.11 Audits and Surveillance

Audit, surveillance and inspection of the Contractor's process and compliance with the requirements of the Contract and the Contractor's quality management system may be

conducted by the Principal's Representative at any time. The Principal's Representative may utilise independent auditors and surveillance officer(s) to assist the Principal in any such audit, surveillance or inspection. The independent auditor(s) and surveillance officer(s) will assist the Principal's Representative in recording the progress and performance of the Contractor's Activities (on site or off site). These records may be used by the Principal's Representative for any purpose.

The Contractor must be cooperative in assisting the independent auditor(s) and surveillance officer(s) in undertaking their duties. When any audit is to be undertaken by the Principal, the Contractor must:

(a) make available all records produced under the Contract;

(b) make suitable facilities available as agreed between the Principal's Representative and the Contractor, to accommodate the audit and audit team; and

(c) provide all reasonable assistance during the audit including the participation of representatives from the Contractor's organisation (and Subcontractors' organisation(s) if the scope of the audit warrants) who can efficiently locate and produce the requested information for the audit. Assistance from technical specialists will also be provided by the Contractor as required by the Principal's Representative during each audit.

The Contractor must ensure that the audit report recommendations are actioned in accordance with appropriate corrective and preventive systems in a timely and agreed manner.

The Contractor must provide the Principal's Representative with a copy of the results of any self-verification and any audit, when requested by the Principal's Representative.

2.12 Property Management

2.12.1 General Property Obligations

The Contractor is responsible for managing each Site and minimising the impact of the Contractor's Activities on adjoining owners during any investigations, early/enabling works, construction and Defects rectification activities. The Contractor must ensure it has the necessary legal rights to access the appropriate property prior to commencing the Contractor's Activities. To assist the Contractor, the Principal has developed a non-exhaustive "TfNSW Property Compliance Register - 2TP-ST-175" which lists the applicable legislation.

2.12.2 Property Ownership and Rights of Access

Prior to commencing the Contractor's Activities, the Contractor must conduct property ownership searches (if lands are not supplied by the Principal) and undertake above ground and underground property boundary surveys of every land parcel where structures are to be built and where the Contractor will occupy or access in support of the Contractor's Activities.

Contractor's Activities to be undertaken on roads e.g. RMS owned lands or Council property, require a Work Authorisation Deed (WAD), Section 138 permit or other *Roads Act* 1993 (NSW) consent or agreement with the owner or authority. If this has not been undertaken by

the Principal prior to the engagement of the Contractor, and it is not the Principal's responsibility under the Contract, the Contractor must negotiate the WAD or permit on behalf of the Principal to gain access to the lands and determine who will be the rightful owner of the new structures, and who will be responsible for the asset management liability. The Principal must approve the content of the agreement before it is formally released to any external party (e.g. RMS and Councils) for negotiation and execution.

2.12.3 Planning

With the exception of an alliance contract, the Contractor must fulfil all the conditions and requirements of the Planning Approval (including Conditions of Approval and Statement of Commitments) except to the extent that the Contract allocates responsibilities to the Principal. Where the Contractor is responsible and a submission to an approval Authority is required, the Contractor must provide a submission to the Principal's Representative for review in accordance with the requirements set out in the Contract prior to issue to the relevant approval Authority. The Contractor is to address any comments provided by the Principal's Representative and provide a final submission to the Principal with a request to forward to the relevant Authority. The Principal may provide additional comments to the Contractor should the previous comments not be adequately addressed or additional information has been received by the Principal. The Contractor is not to communicate (phone, mail, email etc.) directly with any Authority unless written consent is provided by the Principal and a communications protocol has been established.

Consistency checklists, in the format provided by the Principal unless otherwise agreed, are to be completed by the Contractor and provided to the Principal's Representative for review in accordance with the requirements of the Contract in circumstances where project works are likely to deviate from the approved project.

Should the Works be found not to be consistent with the approved project, the Contractor may request the Principal seek a project modification. Under such circumstances, it is the Contractor's responsibility to provide the necessary reports, studies and final submission to the Principal to justify the modification. Any modification must detail property impacts.

The Contractor must track compliance with Planning Approvals by using PECOMS.

2.12.3.1 Neighbouring Property

The Contractor must identify all neighbouring land owners, tenants, businesses, occupants, who may be impacted by the Works and provide the Principal with a consolidated list that includes:

(a) addresses;

(b) land use (retail, residential, garage, etc.);

(c) primary contact Name, phone number and email address;

(d) likely impact that works will have on neighbouring property; and

(e) any past correspondence.

If access to neighbouring property is required by the Contractor, and once the Contractor has discussed the necessity for such access with the Principal's Acquisitions Manager, the

Contractor must comply with clause 2.12.1 above and the *Access to Neighbouring Land Act 2000* (NSW). In this case, the Contractor must prepare an application for access, provide the application to the Property Representative for review, and, once approved, submit the application to the local court.

2.12.3.2 Pre-Construction Land Surveys

The Contractor must verify survey control for the Contractor's Activities and must:

(a) avoid, where reasonably possible, disturbance of existing survey marks and must re-establish any such marks disturbed or affected by the Contractor's Activities;

(b) carry out boundary and engineering surveys in accordance with the Surveying and Spatial Information Act 2002 (NSW) and the Surveying and Spatial Information Regulation 2012 (NSW);

(c) prior to commencing any activity which could affect existing infrastructure (including roads, railways, utility services and buildings), undertake a survey to identify and record the location of the construction site boundary in relation to existing infrastructure; and

(d) provide the Principal with reports on the location of the construction site boundary in relation to existing infrastructure prior to commencing the relevant Contractor's Activity.

2.12.3.3 Works to be Constructed Within the Boundaries

The Contractor must ensure that the Works are constructed within the property boundaries (including air or subsurface stratum) of the Site. The Contractor must:

(a) procure for itself and at its own cost the occupation or use of or relevant rights over any land or buildings in addition to the Site, including any land owned by RailCorp or other property owner, which is necessary or which it may require for the purposes of carrying out the Contractor's Activities; and

(b) at its own cost carry out all activities and procure all Services necessary to make the land or buildings suitable for use by the Contractor.

If the building is to be built over the adjoining property and no formal agreement has been reached with the adjoining property owner, the Contractor must cease work on this part of the Works and immediately notify the Principal.

Liability is solely with the Contractor if building works are illegally undertaken on adjoining property owner's land.

2.12.4 Design Requirements

Where the design of any part of the Works is part of the Contractor's Activities the Contractor must include referenced drawings at all stages of design (including but not limited to approved for construction and as built drawings), clearly identifying property boundaries relative to all components of the Works.

2.12.5 Property Representative

In the event that the Principal has engaged a Property Representative (PR) for the project, the Contractor must work with the PR and provide the PR with access to the Site and all property records requested.

The Contractor must appoint a site-based person to be the Contractor's property representative. This representative must be present during all inspections undertaken by the PR.

Any findings by the PR from site inspections or document reviews must be actioned within the timeframes reasonably required by the PR. The Contractor must provide written notification to the Principal that the findings of the PR have been closed out within the timeframes specified in the Property Management Plan or in the inspection reports.

2.12.6 Property Risk Assessment

The Contractor must undertake a comprehensive and Site-specific property risk assessment in conjunction with the Contractor's construction personnel and in consultation with the Property Representative, prior to the commencement of early works (including pre-construction works). A staged risk assessment may be utilised, upon agreement with the Principal. This risk assessment must identify the actual and potential property impacts of the Contractor's Activities and the control measures that are required to be implemented in order to provide property protection in accordance with the requirements of the Contract. With respect to the Site (and where the Site is at more than one location, for each part of the Site), this risk assessment is to include:

(a) permanent and temporary worksite access requirements and timing;

(b) access to or across adjoining properties and timing;

(c) crane swings, air rights and impacts on neighbouring properties or the Rail Corridor;

(d) access to Services;

(e) any future subdivision, easements, other title interests or divestment requirements;

(f) any future commercial impacts of resultant works; and

(g) Site investigation and contamination.

2.12.7 Property Management Plan

Unless otherwise noted in Annexure A, the Contractor must have in place, maintain and consistently apply until Final Completion a Property Management Plan which describes the procedures and processes the Contractor will implement to manage property issues.

The timing and frequency for the initial and subsequent submissions of the Property Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The Contractor must progressively review, monitor, amend, update the Property Management Plan and submit for review in accordance with the requirements of the Contract, throughout the project, in accordance with Annexure A of this TSR.

As a minimum, the content of the Property Management Plan should address the “Sections” listed in the table in this clause 2.12.7 below.

The Contractor must address each of the requirements with a high level of detail so that a reasonable person would understand how the Contractor intends to meet the Principal’s requirements. In respect of those minimum “Sections” detailed in the table below, the Contractor must explain in detail how it will:

(a) identify, manage and record risks/contingent liabilities, stakeholders, impacted adjoining land and assets;

(b) manage and mitigate those risks directly related to the potential damage of property as a consequence of the Works;

(c) identify actual damage, how it occurred and how that damage will be rectified;

(d) identify disputes in relation to damage and how each dispute will be processed, managed and resolved; and

(e) manage project relations with all adjoining owners and the Principal.

None of the requirements expressed in subclauses (a) to (e) above derogate from any other stated obligations or requirements of this TSR. The Contractor must comply with all stated requirements of the Property Management Plan.

Section	Title
1	Definitions
2	Project Description
3	Objective
4	Key Resources and Management
5	Requirements
6	Property Condition Surveys
6.1	Pre-construction Condition Surveys
6.2	Refusal or Lack of Response for Condition Surveys
6.3	Compliance Review of Condition Surveys
6.4	Distribution of Property Condition Surveys
6.5	Condition Survey Register
6.6	Post-construction Condition Surveys
7	Property Damage Management
7.1	General Overview

Section	Title
7.2	Notification Process
7.3	Assessment Process
7.4	Damage Rectification
7.5	Unresolved Claims
7.6	The role of an independent Property Damage Assessor
8	Ongoing Property Monitoring
8.1	Monitoring Frequency
8.2	Monitoring of Track and Structures
8.3	Distribution of Monitoring Data
9	Self Verification Checklist
Attachment 1	Complaint Resolution Process
Attachment 2	Property Damage Claim Process Flowchart
Attachment 3	Sample letter requesting permission to conduct a property condition survey
Attachment 4	Sample letter of introduction for property condition survey staff
Attachment 5	Sample covering letter for property condition report

2.12.7.1 Condition Surveys of Buildings

The Contractor must ensure that the processes and procedures for performing all condition surveys on buildings and / or other infrastructure facilities are based on industry best practices. Examples of acceptable standards for condition surveys of buildings include:

(a) sections 4 and 5 of the “Royal Institute of Chartered Surveyors (RICS) Guidance Note 63/2010 Building surveys and technical due diligence”; and

(b) “AS 4349 Inspection of Buildings – General Requirements”, and with specific regard to the heritage elements within the Site and Remote Sites.

The Contractor’s reports on condition surveys of buildings must as a minimum record the following features:

(c) major features of the buildings and developments including location, type, construction, age and present condition, including any defects or damage;

(d) type of foundations including columns, walls and retaining structures;

(e) an assessment of the susceptibility of the building to further movement or stress;

(f) an assessment of the effectiveness of water-proofing systems in basements to the anticipated movements caused by the Contractor’s Activities; and

(g) an assessment of the susceptibility of the building to changes in water levels resulting from the Contractor's Activities.

Existing levels of aesthetic damage are to be recorded in accordance with the assessment requirements of "Building Damage Classification", by Burland et al, 1977 and Boscardin and Cording, 1989 or another similar or equivalent assessment method to the satisfaction of the Principal's Representative.

2.12.7.2 Pre-Construction Property Condition Surveys

The property condition survey section of the PMP must describe the Contractor's proposed approach to performing condition surveys. The plan must as a minimum:

(a) set out the minimum standards of pre-construction and post-construction condition surveys;

(b) include a procedure for the use of an independent third party to ensure compliance against the minimum standard of condition surveys; and

(c) describe how the Contractor will minimise disruption to property owners and occupiers by completing single condition surveys in agreement with Other Contractors and Subcontractors.

2.12.7.3 Post-Construction Property Condition Surveys

Within one month of Completion and again at the times specified in Annexure A, the Contractor must perform a post-construction condition survey on each property previously subject to a pre-construction property condition survey and construction phase monitoring.

The Contractor must ensure that post-construction property condition surveys are performed to the same standards as the pre-construction property condition surveys. The Contractor must ensure that the same surveyor performs both the pre-construction and post construction condition surveys on a particular property.

The Contractor must submit all post-construction property condition survey reports to the Principal's Representative for review within 10 Business Days of the survey. Each report must contain a certificate from the surveyor who performed the survey certifying that the survey has been completed and is an accurate assessment of the property's condition.

The post-construction property condition survey report(s) must include a determination of the cause of any monitored change or damage identified (if any) since the pre-construction or previous construction survey(s) and the Contractor's proposed remedial works or activities. If any damage is found to have been caused by the Contractor's Activities, the Contractor must:

(a) provide the Principal's Representative with a proposal setting-out the remedial action required;

(b) obtain the property owner's acceptance, in a form agreed to by the Principal, of the compensation, repair or reinstatement work, and release from future claims and actions; and

(c) If no damage is found to have been caused by the Contractor's Activities, the Contractor must:

i. write to the property owner and provide a copy of both reports for the property owner's records; and

ii. provide the Principal's Representative with a copy of all records for its future reference.

2.12.7.4 Property Damage Management

The Property Damage Management section of the PMP must cover all property (including assets above and below ground) on and adjacent to the Site and in the sphere of influence of the Contractor's Activities including, but not limited to, premises, access roads and their surroundings, buildings, structures, utilities and services, rail assets and systems (including all property and rolling stock owned by others), roadways, footpaths, street furniture and gutters.

The plan must set out the following:

(a) the damage mechanisms, including trials of construction procedures and methods to help assess the risk of property damage;

(b) noise, vibration and settlement limits that will prevent the damage of existing property and items by the Contractor's Activities. The Contractor must transfer these criteria into method statements and inspection and test plans to ensure that any Contractor's Activities are within the above limits and minimise damage risks. The plan must include procedures for the review of, and change to, construction methodologies to minimise or prevent damage;

(c) a list of properties with the potential to be detrimentally or negatively affected by the Contractor's Activities; and

(d) a list of the properties and assets which will be subject to a condition survey by the Contractor. The Principal's Representative may direct the Contractor to include additional properties and assets if it considers they have the potential to be damaged as part of the Contractor's Activities and a Principal nominated person may attend the undertaking of condition surveys.

2.12.7.5 Construction Phase Monitoring

The Contractor must implement a monitoring and inspection regime for properties with the potential to be detrimentally or negatively affected by the Contractor's Activities. The monitoring and inspection regime must address the requirements of the Contract, the Planning Approvals and Third Party Agreements and agreements made with any Authority. The Contractor must also comply with the project-specific requirements for the construction phase monitoring set out in Annexure A and include these requirements in the Property Management Plan.

For activities in or adjacent to the Rail Corridor, the Contractor must implement specific monitoring regimes and emergency and response procedures for all Contractor's Activities close to or under, and likely to affect, live rail track in accordance with RailCorp monitoring standards.

The PMP must contain a clear statement that all Contractors' Activities causing any damage will cease until the construction methodology is reviewed and damage rectification agreed with the property owner and the Principal's Representative.

2.12.7.6 Property Compliance Checklist

The Contractor must prepare and submit to the Property Representative, the property compliance checklist contained in Annexure C, to demonstrate that all legal and contractual property related obligations have been met. The checklist must be submitted:

(a) 10 days prior to site occupation; and

(b) 10 days prior to construction commencement.

This property compliance checklist requires supporting documentation to be submitted and the Contractor must allocate sufficient time and resources to undertake the property related contractual obligations.

2.12.8 Implementation

2.12.8.1 Notification of Incidents

All property incidents and noncompliances must be reported to the PR and the Principal's Representative.

2.12.8.2 Principal Raised Nonconformity, Corrective Action and Preventative Action

The Principal may advise the Contractor of nonconformances and deficiencies in relation to property matters and the Contractor must deal with and close-out the nonconformances or deficiencies using its own compliance system. Any requirements incorporated into any such written advice must be responded to by the Contractor within 14 days, unless otherwise agreed with the Principal's Technical Director Project Property Services.

The Contractor must also comply with the requirements of "AS/NZS ISO 9001 Quality Management Systems – Requirements" in relation to the identification, management and addressing of property non-conformance, corrective action and preventative action.

2.12.9 Property Records

The contractor must provide the records described in Annexure A.

2.13 Competence, Training and Awareness

The Contractor must ensure its employees and the employees of Subcontractors engaged in carrying out the Contractor's Activities on the Site are inducted and trained in the requirements of the Contract to achieve a level of awareness and competence appropriate to their assigned activities, and required for the effective implementation of applicable management plans prior to the relevant employee carrying out any works on Site.

The Contractor must establish and maintain a register of training carried out including dates, names of people who have completed the training and details of the trainer. Training is to

include site specific training to cover all relevant property, environmental, safety and community issues.

The Contractor's Project Manager and other relevant personnel must attend any training provided by the Principal's Representative specified in Annexure A, or as otherwise directed by the Principal's Representative.

Any person who has not been inducted must not work on the site.

3 Environmental Management

3.1 Contractor's Environmental Management System

Unless otherwise noted in Annexure A, the Contractor's Environmental Management System (EMS) and Construction Environmental Management Plan (CEMP) must comply with the relevant requirements of the "NSW Government Environmental Management System Guidelines" and remain accredited under "AS/NZS ISO 14001:2004" whilst the Contractor's Activities are undertaken.

The timing and frequency for the initial and subsequent submissions of the Construction Environmental Management Plan (CEMP) to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

The EMS and CEMP utilised must be consistent with the requirements prescribed in this TSR or elsewhere in the Contract.

3.2 Management of Environmental Aspects

The Principal has developed a number of environmental management guidelines, which provide guidance on how to manage certain aspects of environmental management during construction. These guidelines are available on TfNSW's website.

3.3 Environmental Inspections and Monitoring

The Contractor must document the procedures to be implemented to verify that the Contractor's Activities relating to environmental management matters are compliant with the requirements of the Contract and all Authority Approvals.

3.4 Notification of Environmental Incidents and Non-Compliances

The Contractor must notify and manage all environmental incidents and non-compliances in accordance with the Contract and "TfNSW Environmental Incident Classification and Reporting - 9TP-PR-105".

The Principal's Representative may advise an environmental non-conformance or deficiency in writing. Upon receipt of such advice the Contractor must deal with and close-out the noncompliance or deficiency under its EMS and in accordance with the requirements of the Contract. The "TfNSW Environmental Incident/Non-Compliance Report – 9TP-FT-101" must be completed by the Contractor and returned to the Principal's Representative within 48 hours, unless otherwise agreed with the Principal's Representative.

The Contractor must ensure that any environmental non-conformances are identified, managed and addressed (including via the carrying out of corrective actions and preventative actions) in accordance with the provisions of "AS/NZS ISO 9001:2008" that relate to control of nonconforming product and improvement.

3.5 Environmental Control Maps

The Contractor must develop, implement and maintain Environmental Control Map(s) or "ECM(s)" in accordance with all Authority Approvals and the "TfNSW Guide to Environmental Control Map - 3TP-SD-015". The ECM must be specific to a work area and/or work activity and identify the sensitive environmental areas and receivers and the location of mitigation measures to minimise the impact of construction activities on the environment and community.

Each ECM must be prepared as a map, suitably enlarged (e.g. A0 size) for mounting on the wall of a site office and for use by site personnel (e.g. A3 size).

The Contractor must submit the ECM(s) to the Environmental Representative for review at least one week prior to the commencement of construction in the area covered by the ECM(s). The Contractor must incorporate any comments made by the Environmental Representative into the final ECM.

The Contractor must regularly review and update the ECM(s) to incorporate works progression and changing site characteristics, and revise or amend environmental protection measures if those identified in the ECMs are not adequate in achieving compliance with the environmental obligations under the Contract. The revised ECM(s) must be submitted to the Environmental Representative for review and approval unless otherwise agreed with the Environmental Representative.

3.6 Pre-Construction Minor Works Approval

The Contractor must submit the details of any pre-construction works to the Principal's Representative using the form "TfNSW Pre-Construction Minor Works Approval - 9TP-FT-202" for review in accordance with the requirements set out in the Contract at least 10 Business Days prior to the commencement of such works. All supporting documentation must be attached and pre-construction activities must comply with the requirements of all Authority Approvals. Pre-construction works may not commence until the review process required by the Contract is complete.

3.7 Complaints

Complaints received by the Contractor from any source in relation to environmental issues must be handled, recorded and reported in accordance with this TSR and the conditions of all Authority Approvals (if applicable). The Contractor must also notify the Principal's Representative (or nominated delegate) and the Environmental Representative of any environmental complaints received and the actions taken to resolve the complaint.

3.8 Submission of Environmental Documents

Any environmental documents required by any Authority Approval, including the planning approval, such as the CEMP(s) must be submitted to the Principal's Representative for review in accordance with the requirements set out in the Contract.

3.9 Planning and Environmental Compliance Monitoring System (PECOMS)

The Planning and Environmental Compliance Monitoring System is the system developed and used by the Principal to monitor compliance with the conditions of all licences, permits and approvals of its projects.

Where nominated in Annexure A, the Contractor is required to:

(a) use PECOMS to undertake self-regulation to confirm that all Contractor's Activities are compliant with all Authority Approvals (including the EPL); and

(b) implement a PECOMS reporting structure in addition to any other reporting requirements under Contract and follow the applicable parts of "TfNSW Guide to Compliance Monitoring and Reporting using PECOMS - 9TP-SD-012".

3.10 Control of Environmental Records

The Contractor must comply with section 4.5.4 (Control of Records) of "AS/NZS ISO 14001:2004".

The Contractor must retain all environmental records for a period of no less than 5 years from the Date of Completion.

The Contractor must provide the Principal's Representative with copies of the environmental records stated at Annexure D. Records not required to be stored on-site must be forwarded to the Principal's Representative within 3 Business Days of a request.

3.11 Sustainability Requirements

The Contractor must comply with any project-specific sustainability requirements listed in Annexure A as well as the following:

(a) Steel must be produced, designed and fabricated in an environmentally responsible method that results in efficient use of steel as a building material. Refer BFH-AUR-GN-9090004 Section 6.3 and BFH-AUR-GB-9090009 Section 5.4;

(b) Timber must be certified by either the FSC International or the PEFC forest certification schemes, from a reused source, or a combination of both;

(c) PVC must comply with the Best Practice Guidelines of PVC in the Built Environment http://www.gbca.org.au/uploads/156/2716/Best%20Practice%20Guidelines%20-%20Verification%20Guidance.pdf;

(d) Where practical, use recycled materials in the building/ facility construction such as recycled steel, recycled concrete or timber;

(e) The Contractor should consider the use of less greenhouse intensive fuels in construction vehicles and vessels; and

(f) The Contractor is to consider developing a Green Travel Plan to assist construction site workers making informed decisions about public and/or active transport options to the work site.

4 Safety Management

4.1 Managing Health and Safety

The Contractor must manage health and safety in accordance with the WHS Legislation, Codes and Standards, NSW Government Guidelines and contractual requirements. The Contactor must ensure compliance, by it and those persons it exercises control over, with relevant Laws, the Rail Safety National Law, Codes and Standards, codes of practice and contractual requirements as a minimum.

The Contractor must identify who will be fulfilling the role of Senior Management Representative responsible for implementing and maintaining the safety requirements of this TSR (including monitoring the effectiveness of the Contractor's safety management system in complying with all safety requirements) and reporting to the Principal's Representative.

The Project Work Health and Safety Management Plan, as described further in clause 4.3, must document how the safety management system will be communicated to all persons associated with the Contractor's Activities such that it is incorporated into the Contractor's Activities.

4.2 Safety Culture

The Contractor must continuously promote a safer, healthier, more productive workplace. The Contractor must establish and maintain an effective safety management system that facilitates the flow of information both within the Contractor's organisation and between the Contractor's organisation, Subcontractors and, as required, the Principal.

The Contractor must provide strong leadership and promote safety as a core value, establishing and enforcing high standards of performance and ensuring relevant expertise is available.

The Contractor must ensure open and effective consultation and further mutual trust with the Principal, providing timely response to safety issues and concerns.

The Contractor must ensure the safety management system and the safety culture supports:

(a) senior management commitment to safety;

(b) commitment to work with the Principal to develop project-specific lead and lag Key Performance Indicators;

(c) shared care and concern for hazards;

(d) workers to adapt to their changing environment where required;

(e) organisational learning through monitoring, analysis and feedback systems;

(f) methods for providing feedback and set timeframes for such provision;

(g) methods to communicate and share learning from successes and failures;

(h) the encouragement of teamwork and of worker involvement in promoting and maintaining a positive safety culture;

(i) methods to demonstrate how site safety rules will be reflected in the practice on it and how such rules will be incorporated into the Contractor's Activities; and

(j) methods to enable the ongoing development of safety improvements developed in consultation and communication with the Principal's Representative, as required.

4.3 Contractor's Project Work Health and Safety Management Plan

4.3.1 Scope

The Contractor must develop a Project Work Health and Safety Management Plan which includes any relevant site-specific work health and safety management plans. The Project Work Health and Safety Management Plan must document the Safety Management System to be applied to the delivery of the contract.

The plan must make provision for development of procedures to meet the safety management requirements stated in the contract, Law and this TSR and comply with the "NSW Government Work Health and Safety Management Systems and Auditing Guidelines". The plan must be updated to reflect any relevant changes.

The timing and frequency for the initial and subsequent submissions of the Project Work Health and Safety Management Plan to the Principal's Representative for review in accordance with the requirements of the Contract is nominated in Annexure A of this TSR.

4.3.2 Health and Safety Risk Management

The Project Work Health and Safety Management Plan must include how the Contractor will manage risks in accordance with "AS/NZS ISO 31000:2009 - Risk Management". The Contractor must:

(a) eliminate all risks to health and safety so far as is reasonably practicable; and

(b) if it is not reasonably practicable to eliminate risks to health and safety; minimise those risks so far as is reasonably practicable applying, maintaining and reviewing the prescribed Hierarchy of Control Measures.

As part of the determination of whether risks have been eliminated or minimised so far as is reasonably practicable, the Contractor shall review, and record the review of the Principal's Generic Work Health and Safety Operational Risk Register - 30-SD-101 and where the Contractor's Activities involve Rail Safety Work, the Contractor shall also review the Generic Rail Safety Risk Register - 30-SD-038.

The Contractor must maintain a register of risks which includes:

(c) a description of the risk/hazard and its likely impact;

(d) the risk level assessed for each hazard;

(e) specific control measures, including safe work methods to be implemented to eliminate or mitigate risks;

(f) the residual risks/hazards;

(g) methods to be used to monitor effectiveness of safe work methods and control measures;

(h) the person(s) responsible for monitoring implementation of the control measures;

(i) consultative processes employed by the Contractor in relation to the risk/hazard and the persons involved; and

(j) demonstrable application of the Hierarchy of Control Measures undertaken to lessen the risks so far as is reasonably practicable.

In addition the Principal has detailed a number of control measures that are expected to be deployed, unless a more robust risk control is applied through a process of risk assessment. These control measures are set out in subclauses 4.3.2.1 to 4.3.2.7 inclusive.

4.3.2.1 Construction Plant

The Contractor must ensure that all Construction Plant is properly operated and maintained in accordance with the manufacturer's instructions and in accordance with the *Work and Safety Regulation 2011* (NSW) and the associated codes of practice, so as to ensure that it poses no risk to the health and safety of any person on the Site or on land adjoining the Site.

The Contractor must also:

(a) ensure that quick hitch attachments fitted to excavators and other earth moving machinery are of the fully automatic type with a secondary locking attachment. The secondary attachment is to be capable of preventing the excavator attachment from releasing in the event of a partial or total failure of the power supply or when the operator stops operating the machine. All half-hitch, mechanical-hitch, form-lock, semi-automatic types are prohibited; and

(b) where mobile plant's operating envelope is capable of encroaching within 3m of the Danger Zone or the safe approach distance to live electrical infrastructure, implement the use of programmable zone limiting devices that limit the hoisting and/or slewing and which are designed to be "fail safe" or which meet Category 4 reliability in accordance with "AS4024.1 Safeguarding of Machinery" or a SIL of 3 under "AS 61508 Functional safety of electrical / electronic / programmable electronic safety-related systems".

4.3.2.2 Electrical Safety

The Contractor must control the risks associated with electrical safety which accords with all relevant Codes and Standards and Laws, including WHS Legislation. These controls must take into account that live work is not permitted and isolated circuits are to be treated as live until they have been proven dead by testing.

4.3.2.3 Use of Portable Earphone Equipped Music Devices

The use of portable earphone equipped music devices is prohibited.

4.3.2.4 Fires or Burning Off

Fires or burning off will not be permitted anywhere on the Site.

4.3.2.5 First Aid and Emergency Arrangements

The Contractor must manage the provision of first aid for the Contractor's Activities in accordance with the WHS Legislation.

In addition the Contractor must provide a defibrillator (and suitable training in its use for its senior first aid personnel) at each major first aid location, and must ensure persons trained in the use of the defibrillator are on Site at all times.

4.3.2.6 Reference Checks

The Principal's Representative may direct the Contractor to undertake police criminal record checks for any of the Contractor's and Subcontractor's employees. The Contractor must develop procedures on how such checks will be undertaken and how the results will be treated in confidence.

The Principal's Representative must be promptly notified of the results of these checks if any offences have been recorded. The Principal's Representative may review the results of the checks and consider whether those records pose a potential risk to the Works or any person on Site. The Principal's Representative may then liaise with the Contractor to discuss any action that should be taken. The Principal's Representative may direct the Contractor to immediately remove a person, on the basis of their criminal record, from the Site and prevent that person from continuing to undertake any of the Contractor's Activities.

4.3.2.7 National Counter Terrorism Alert Levels

The Contractor must:

(a) ensure that the security management of the Works reflects the National Counter Terrorism Alert Levels;

(b) develop procedures to communicate and respond to changes in the National Counter Terrorism Alert Levels; and

(c) document how notification of a terrorism incident will be made to the Principal's Representative and law enforcement authorities, and the roles and responsibilities of the Contractor's employees and Subcontractors in such an event.

4.4 Safe Work Method Statements

Before work commences the Contractor must provide Safe Work Method Statements (SWMS) for the proposed work. The Contractor must also ensure that work is carried out in accordance with the SWMS for the work. The Contractor must ensure that a SWMS is reviewed and, as necessary, revised if relevant control measures are revised.

All SWMS, regardless of whether they are authored by the Contractor or Subcontractors, must, unless otherwise directed by the Principal's Representative, be submitted to the

Principal's Representative at least seven days prior to the commencement of any significant construction activity. The Principal may review any submitted SWMS. All SWMS must be listed on a consolidated SWMS register that shall be proactively maintained and communicated to the Principal's Representative no less than monthly.

The Contractor acknowledges and agrees that by exercising its right under clause 4.4, the Principal is not assuming any management or control of the Site or the Works and is only receiving the SWMS information to monitor the Contractor's compliance with its obligations under this Contract and/or applicable Laws, including the WHS Legislation and/or the Rail Safety National Law.

4.5 Safety Incident Reporting, Investigation and Recording

The Contractor must notify the Principal's Representative of any Incident and comply with the requirements of the "NSW Government Work Health and Safety Management Systems and Auditing Guidelines" and clauses 4.5.1 and 4.5.2 below.

4.5.1 Recording of Incidents

The Contractor must immediately notify the Principal's Representative of any Incident and record the Incident by using the "INX InControl Incident Management System "INX". Should INX not be accessible, the Contractor must report in a manner that enables effective subsequent recording in INX.

All Regulatory Notifiable Incidents or occurrences must be reported immediately to the Principal's Representative and to the relevant Regulator/s. Where any type of notice, infringement or fine by a Regulator has been issued to the Contractor in relation to undertaking the Contractor's Activities, the Contractor must immediately notify the Principal's Representative.

4.5.2 Investigation of Incidents

The Contractor must undertake investigation of all minor and major near-miss or actual Incidents. The minor investigation must be recorded within INX utilising the minor investigation template contained therein. Minor investigations must be completed within (28) days of the incident.

The Principal's Representative may direct the Contractor to undertake a major investigation into an Incident or potential Incident, utilising the major investigation template contained within INX. Major investigations must be completed within (42) days of the incident. Terms of reference for major investigations will be issued by the Principal's Representative. If a major investigation requires the appointment of an external independent investigator, the Contractor shall bear the cost of the investigation.

The Principal's Representative may participate in any investigation being undertaken by the Contractor or initiate its own investigation. If the Principal's Representative instigates its own investigation the Contractor must provide the Principal's Representative with all assistance reasonably required for the purposes of the investigation, this includes the waiver of legal professional privilege over any investigation report prepared by, or on behalf of, the Contractor. The Parties may agree that any investigation report that is subject to legal

professional privilege may, between the Contractor and the Principal, be subject to a common interest privilege.

4.5.3 Safety Performance Rating

The Contractor must provide monthly safety statistics electronically by the 25th of the month.

4.6 Alcohol and Other Drugs

A policy of zero tolerance of alcohol and illegal drug use applies to projects carried out for or controlled or managed by the Principal. Alcohol and illegal drugs are not permitted on any Site or on premises controlled or managed by the Principal.

The Contractor must develop policies and procedures to ensure this policy of zero tolerance of alcohol and other drugs is adhered to at all times. The Contractor must develop and implement effective alcohol and drug testing procedures in line with relevant Laws.

The Contractor must ensure that all persons associated with the Contractor's Activities (including the Contractor's personnel, visitors, Subcontractor workers and agents) are aware of their obligations to comply with all alcohol and drug requirements.

The Principal prohibits any persons under the influence of alcohol or drugs from working on any projects carried out for or controlled or managed by the Principal, regardless of their work location. Prescription and over-the-counter drugs may also affect a person's ability to work safely and the Contractor, in consultation with the Principal, will determine its policy in relation to prescription and over-the-counter drugs on a case by case basis.

All of the Contractor's personnel and workers of Subcontractors may be subject to alcohol and drug testing by an authorised testing officer of the Principal at any time whilst carrying out the Contractor's Activities (including within the Contractor's Site amenities or facilities).

Testing for the presence of alcohol and other drugs may be undertaken during the following occasions:

a) before performing duties (pre-sign on, primarily alcohol test);

b) during the performance of duties (random and reasonable cause); and

c) following any Incident.

Anyone that tests positive to alcohol or drug tests or who refuses an alcohol or drug test must be removed from the Site immediately, and the Principal's Representative must be notified immediately.

The Contractor must take disciplinary action against a person associated with the Contractor's Activities who breaches the Principal's policy of zero tolerance of alcohol and illegal drug use. The nature of the disciplinary action to be taken must be communicated to the Principal's Representative.

Each individual that signs on at the commencement of each shift will be declaring themselves to be free of alcohol and drugs.

4.7 Failure to Comply

If the Principal's Representative is of the opinion that the Contractor, the Contractor's personnel or a Subcontractor have not complied, or are not complying with any health and safety requirements in the Contract, this TSR or under the Rail Safety National and/or WHS Legislation, including the requirement to eliminate or minimise the risks so far as is reasonably practicable, then the Principal's Representative may:

(a) direct the Contractor to immediately comply with the obligation; and/or

(b) if it is in the opinion there is an immediate risk to the health, safety or welfare of any persons as a result of the non-compliance, direct the Contractor to immediately suspend carrying out all or any part of the Contractor's Activities until such time as the Contractor is complying.

5 Communications and Community Liaison

5.1 General Community Liaison Obligations

The Contractor must:

(a) Ensure its employees, Subcontractors and agents comply with the requirements of the details listed below;

(b) Ensure that the Principal is provided with adequate notification of planned construction activities and milestones; and

(c) Consult the Principal prior to taking any action that may impact on stakeholders and the community.

5.2 Information to the Principal

The contractor is required to provide (and explain) accurate communications information to the Principal regarding current and upcoming Contractor's Activities (including works of subcontractors) and all associated community impacts as follows and as required:

(a) Prior to Site establishment: a program of the Contractor's Activities, scheduling, and details of the planned community impact minimisation measures; and

(b) Monthly: the works completed and upcoming Contractor's Activities, including any associated community impacts (in a format suitable for inclusion on the Principal's website).

The Contractor must be contactable on a 24-hour basis (as required).

5.3 Meetings with Stakeholders

The Contractor must not meet stakeholders without seeking approval from the Principal. The Contractor must provide the Principal with a minimum of 3 Business Days' notice prior to any meeting with the community or stakeholders.

The contractor must also support any meetings with stakeholders by providing relevant materials for presentation and/or distribution at such meetings. The Contractor must ensure that suitable persons are available to attend such meetings (including after-hours). Such persons must be adequately informed and suitably qualified to participate and be able to take the lead during meetings where requested by the Principal.

5.4 Public Communication Materials

The Contractor must promptly provide all information as reasonably required or directed by the Principal. All public communication material produced by the Contractor must meet *Web Accessibility Guidelines 2.0 (WCAG 2.0) and be* consistent with and comply with the "TfNSW Transport Projects Style Guide for Contractors and Consultants" and the "TfNSW Editorial Style Guidelines". The Contractor must not release any public communication material until it is approved by the Principal's Representative.

5.5 Media Releases and Enquiries

The Principal wishes to exercise control over the release of any information regarding the work. This includes any promotional material that the Contractor seeks to publish, or any press releases or responses to enquiries from the media. The Contractor must refer the information to the Principal for written consent prior to the release. These constraints also apply to the Contractor's consultants and subcontractors.

5.6 Community Notifications

The Contractor must issue written notifications to stakeholders and the community at least 5 Business Days before commencing any activity that incorporate any aspect of a Planning Approval such as planning conditions of consent, that will impact stakeholders and the community. The written notification must first be reviewed and approved by the Principal. The Principal will require a minimum of 5 Business Days to review and approve any written notification before being issued to stakeholders and the community.

5.7 Complaints and Enquiries Management

The Contractor is responsible for responding to complaints and enquiries received regarding the Contractor's Activities and impacts associated with the Contractor's Activities. Complaints and enquiries may be received through a variety of avenues including the Principal's 24-hour construction response line or project info line, in writing (letter or email), direct to the Principal via telephone, or direct to the Contractor or Subcontractors.

In responding to complaints the Contractor must:

(a) record details of every complaint received and how it was managed and closed out;

(b) investigate and determine the source of the complaint immediately, including an immediate call to the complainant where the complaint was received by telephone. Should the Contractor determine that the complaint does not relate to the Contractor's Activities, the Contractor must immediately notify the Principal;

(c) provide at least an oral response to the complainant regarding what action is proposed as soon as possible and within a maximum of 2 hours from the time of the

complaint during standard construction hours as outlined in the Planning Approval, or on the next Business Day during all other times (unless the complainant requests otherwise). If no phone number was provided, the complaint must be responded to within a maximum of 24 hours for emails and one week for letters from time of receipt;

(d) forward information on any complaints received, including response times and details of any actions undertaken or proposed or investigations occurring, to the Principal in writing each Business Day to meet the project's reporting requirements.

(e) provide the Principal with details in writing of complaint close out actions and the date action was implemented.

In responding to enquiries the Contractor must:

(f) record details of enquiries;

(g) provide at least an oral response to the enquirer within a maximum of 2 hours from the time of the enquiry during standard construction hours as outlined in the Planning Approval, or on the next Business Day during all other times (unless the enquirer requests otherwise); and

(h) forward information on any enquiries received and response given, to the Principal in writing each Business Day.

6 Working In and Adjacent to the Rail Corridor and Rail Environment

The following requirements shall apply to the Contractor, except where indicated as "Not required" in Annexure A.

6.1 Operating Railway System

The Contractor acknowledges and agrees that:

(a) it is aware that Sydney Trains or another Operator/Maintainer may continue to use areas adjacent to the Site as part of normal operations of the railway system on a commercial basis during the undertaking of the Contractor's Activities;

(b) the continuance of normal operations of the railway system, including within the Rail Corridor, the Site, adjoining areas and railway stations, on a commercial basis by Sydney Trains or another Operator/Maintainer during the performance of the Contractor's Activities must be maintained to the satisfaction of the Operator/Maintainer as notified by the Principal's Representative. The Contractor must ensure that the railway system operations and infrastructure are not impeded or interfered with by reason of the performance of the Contractor's Activities, except where this is approved in writing beforehand by the Principal's Representative;

(c) it must maintain and coordinate sufficient access to the railway system, for users and operators, so as not to hinder main traffic routes, including access to and from operating railway station platforms, ticketing areas and the Rail Corridor, and the

flow of traffic, including on or accessing the Site and the adjoining areas, except where this is approved in writing beforehand by the Principal's Representative;

(d) it must, in performing the Contractor's Activities, do everything that could be reasonably expected of the Contractor to avoid Sydney Trains or another Operator/Maintainer breaching any obligation it may have arising out of or in connection with the continuing operation of the railway system on a commercial basis;

(e) it must ensure:

i. access and egress for Sydney Trains or another Operator/Maintainer and its contractors to the Site to undertake regular inspections and to complete maintenance and repairs of the operator's infrastructure where required;

ii. access and egress to those parts of the Site required by Other Contractor(s) are made available and coordinated so as to minimise any interference with or disruption to the Contractor's Activities; and

iii. emergency egress routes (including routes to the Rail Corridor and its support system) are maintained at all times and that emergency systems (including the Sydney Trains emergency warning intercommunication system and fire alarm panels) remain operational throughout the duration of the Contract;

(f) it must provide a safe place for persons carrying out Rail Track inspections and/or maintenance work, for example, refuges in any hoarding/fencing constructed adjacent to the Rail Track;

(g) it must comply with any Sydney Trains or other Operator/Maintainer standards applicable to the Works including for work that is adjacent to an operating rail line and to live overhead wires;

(h) it must ensure that whilst undertaking the Contractor's Activities, no employees or Construction Plant (including, for example, by the slewing of cranes) of the Contractor, Subcontractors or consultants enter an operating Rail Corridor, except as permitted by Sydney Trains "RailSafe Network Rules"; and

(i) it must at all times, and to the satisfaction of the Principal's Representative, carry out the Contractor's Activities in a manner that will ensure the safety of all property and persons, including the general public, travelling public, station lessees, railway traffic, railway system personnel, road traffic and any person associated or engaged in connection with the Contractor's Activities.

6.2 Arrangements for Track Possessions

The Track Possessions available to the Contractor are set out in the Contract.

Where power isolation is required, the Contractor must specify what power is required to be shut down and the time and duration required for the power isolation. This information must be submitted to the Principal's Representative for review at least 16 weeks prior to each Track Possession.

For each Track Possession to be utilised by the Contractor, the Contractor must attend and incorporate the requirements from:

(a) the "Tier 6 Possession Coordination Meeting" with Sydney Trains held approximately 12 weeks prior to the Track Possession. This meeting will decide the coordination of all activities in the Track Possession, working hours, movements of equipment and work trains in the Track Possession area;

(b) the "Possession Coordination Meeting" with Sydney Trains held approximately two (2) weeks prior to the Track Possession to discuss train movements and safe working; and

(c) the "Pre-Possession Meeting" with Sydney Trains, usually held prior to the Track Possession to confirm the detailed arrangements for the Track Possession and coordinate the activities of each party working in the Track Possession.

If a Track Possession involves an asset or partial asset being handed over to the Asset Owner or Operator/Maintainer (even if only for maintenance prior to it being commissioned), a Commissioning event and formal Asset Handover will be required. In these circumstances, the following documents appertaining to the assets being handed over are required to be submitted to the Principal's Representative for review in accordance with the Contract at least six (6) weeks prior to the Track Possession:

(d) Safe Work Method Statements;

(e) residual risk assessments;

(f) configuration materials including O&M manuals, drawings etc.

(g) Design Documentation; and

(h) any other documents required as directed by the Principal.

6.3 Additional Possessions

It is unlikely that, in addition to those specified in the Contract, weekend Track Possessions, the Operator/Maintainer's resources and/or Track Possessions (with or without power) in overnight periods when trains are not running, will be available for the Contractor's Activities. If the Contractor requires additional Track Possessions, power isolation and/or the Operator/Maintainer's resources, they are to be arranged by the Contractor at the Contractor's own cost. This includes reimbursing the Principal for any costs that it incurs in respect of granting the additional Track Possessions and procuring the Operator/Maintainer's resources. In the case of an alliance contract, the allocation of these additional costs will be in accordance with the commercial framework of the agreement.

The Contractor must provide a written request for additional Track Possessions or power isolation of overhead and transmission lines with a notice period as specified in the Contract.

Upon a written request by the Contractor, the Principal's Representative will seek to facilitate obtaining additional Track Possessions, power isolations and/or the Operator/Maintainer's resources for the Contractor by arranging a meeting between the Contractor and the Operator/Maintainer. At this meeting or subsequent meetings, possible dates for Track Possessions, power isolations and/or additional Operator/Maintainer's resources may be identified.

The Principal does not guarantee the granting of, and is not obliged to arrange additional Track Possessions, power isolations or Operator/Maintainer resources on any particular date, or at all.

6.4 Arrangements during Track Possessions

The Contractor may not have exclusive access to any Rail Tracks or areas within the vicinity of Rail Tracks during a Track Possession. The Contractor must coordinate the Contractor's Activities with those sharing the Track Possession, including parties involved in the operation or maintenance of the rail system and Other Contractors.

This includes, where required, the Contractor allowing for Operator/Maintainers' contractors and Other Contractors to pass through the worksite(s) during the Track Possessions. The extent of Operator/Maintainers' contractors' and Other Contractors' activities on or within the vicinity of the Rail Track during Track Possessions will be determined at the "Tier 6 Possession Coordination Meeting" referred to in clause 6.2.

The Contractor must ensure that all persons invited or brought onto the Site by the Contractor or Other Contractors, and those who enter an area within the Rail Corridor undertake all necessary Site inductions and obey all directions given by the Worksite Protection Personnel.

Prior to the end of the Track Possession, an appropriately qualified inspector holding the appropriate competencies must approve Completion of the relevant Works and sign off on "Sydney Trains Certificate of Practical Completion/Certification (W42F01)".

Any defects listed on W42F01 must be rectified by the Contractor to the satisfaction of the Principal within 5 Business Days of the issue of the relevant W42F01.

The Contractor must immediately comply with any instructions by the Principal's Representative to vary the program described in clause 6.5(b), or curtail the Contractor's Activities if the Principal's Representative considers that continuing with intended Contractor's Activities will result in a delay to returning the Track Possession and/or delay to trains.

The Principal may alter, cancel or curtail any Track Possession at any time.

If assets are being handed over to the Operator/Maintainer under a formal Asset Handover, then the Contractor must assist the Principal.

6.5 Planning and Managing Track Possessions

To ensure that Track Possessions are managed effectively and safely, the Contractor must:

(a) prepare, maintain and update policies and procedures for planning and managing Track Possession work in accordance with the Sydney Trains Possession Manual; and

(b) prepare and submit to the Principal's Representative for review for conformance with the "Sydney Trains Possession Manual", six (6) weeks prior to each Track Possession:

i. a consolidated plan comprising all information required in advance of the Track Possession including that detailed in the Sydney Trains Possession Manual; and

ii. a program including:

A. the elements of the Contractor's Activities to be completed prior to the Track Possession;

B. an hour by hour breakdown of the elements of the Contractor's Activities to be carried out during the Track Possession;

C. milestones and the time and date by which they must be achieved so as to ensure that the rail infrastructure can be reinstated within the allocated time and which, if not achieved by the nominated time, would result in the Contractor bringing work to an end and commencing reinstatement of the rail infrastructure and other works to avoid a delay in returning the Track Possession and/or delays to trains;

D. adequate allowance of time at the beginning and end of the Track Possession to safely remove and reinstate the affected rail infrastructure to operational condition and for providing and removing safeworking protection and the Operator/Maintainer inspections and certifications;

E. the specific risks to be managed during the Track Possession and the procedures to be followed in managing these risks;

F. any potential interface issue in any way connected with work carried out by an Other Contractor or involving the Operator/Maintainer's operational and maintenance activities; and

G. progress/program review meetings scheduled during the Track Possession as requested by the Principal's Representative and/or the Operator/Maintainer.

6.6 Certification of Work in Track Possessions

Before handover of an area at the end of any Track Possession the Contractor must provide to the Principal's Representative and, if required by the Principal's Representative, to the Operator/Maintainer; the following:

(a) for any form of civil or structural works that will support operating Rail Track, written certification by the Contractor's designers (including design Subcontractors) that the relevant works are safely able to support the operating rail infrastructure;

(b) for any adjustments to or interruptions of service to signalling, track, overhead wiring or high voltage infrastructure, written certification from the Contractor's designers (including design Subcontractors) that such infrastructure is suitable for operations and complies with the approved design;

(c) for any adjustments to or interruptions of service to signalling, overhead wiring or high voltage infrastructure, written certification from a Sydney Trains' (or other

relevant Operator/Maintainer's) representative that such infrastructure is suitable for operations; and

(d) all other infrastructure certification required by Sydney Trains or the relevant Operator/Maintainer and/or Asset Owner.

6.7 Rail Safety

The Contractor must ensure that where the Contractor's Activities involve work in or adjacent to the Rail Corridor or the rail environment, the Project Work Health and Safety Management Plan required in clause 4.3 includes provision for rail safeworking arrangements, based upon (without limitation) compliance with the Australian Network Rules and Procedures.

6.7.1 Project Work Notification and Work Activity Advice

The Contractor must complete and submit the relevant Operator/Maintainer's Project Work Notification or other applicable document to the Principal's Representative at least six (6) weeks prior to the planned works, including any works in a Track Possession. The Contractor must comply with the requirements of the "TfNSW/Rail Transport Operator Safety Interface Agreement".

A Work Activity Advice (WAA) must be produced by the Contractor using the form TfNSW Work Activity Advice - 4TP-FT-105. Each WAA must cover a particular part of the Works and includes the SWMS applicable to that part of the Works.

The Contractor must conduct a pre-work briefing with all personnel involved, including the Protection Officer, prior to commencing the work.

6.7.2 Competencies

The Contractor must provide the Principal's Representative with a list of position descriptions which identifies whether each position is a Rail Safety Worker. The Principal's Representative may require alteration of the designation of Rail Safety Workers as nominated by the Contractor.

Any person supervising or setting up safe work arrangements for the Contractor's Activities on or in the vicinity of the Rail Corridor must hold the qualifications required by the Rail Transport Operator and the Principal.

The Contractor must ensure that no person undertakes Rail Safety Work unless they have been issued with a certificate of competency under the Rail Safety National Law.

The Contractor must consult with the Principal's Representative to obtain a determination as to when the Rail Industry Safety Induction (RISI) Identification Card is required for the Contractor's Activities. The Contractor must ensure that any visitors required to enter the Rail Corridor complete a Rail Industry Safety Induction.

6.7.3 Fatigue Management, Medical and Health Management

For workers carrying out Rail Safety Work the Contractor must apply the following fatigue, medical and health minimisation controls:

(a) implement a fatigue management program that:

(i) addresses the requirements of the Rail Safety National Law and this TSR;

(ii) restricts workers to no more than 12 hours worked at a time not including travel time to and from work, unless there is a declared Incident in which case work can be performed up to a maximum of 16 hours at a time, as long as workers are not required to drive a motor vehicle or operate heavy plant or equipment after the 12th hour;

(iii) restricts workers that have worked more than 12 hours from driving after finishing work;

(iv) includes periods of 11 hours rest away from work;

(v) restricts the maximum number of work days to 12 work days in 14 consecutive days;

(vi) minimises to five consecutive occasions where eight (8) hours are worked at night (i.e. after normal office hours) or four (4) consecutive occasions where 10 hours are worked at night or three (3) consecutive occasions where 12 hours are worked at night without a 48 hour rest break;

(vii) ensures employees receive a minimum of 48 consecutive hours free of work in a 14-day period; and

(viii) has the capacity to replace or relieve workers where unplanned or unavoidable extended hours have created a risk to employee health and safety;

(b) inform such persons that they are subject to medicals and health assessments in accordance with the “National Standard for Health Assessments of Rail Safety Workers”;

(c) ensure that the “National Standard for Health Assessments of Rail Safety Workers” are undertaken and documented including re-examinations. The documented records must be maintained according to the State Records Act 1998 (NSW); and

(d) inform such persons that additional medical and health assessments may be required to be undertaken where they are involved in a safety accident or where there is reasonable cause for concern that person may be unable to perform work safely (such as upon return from a long illness).

6.7.4 Alcohol and Other Drugs

In addition to the requirements set out in clause 4.6, if the Contractor’s Activities involves work in or adjacent to the Rail Corridor and the rail environment, the alcohol and other drugs procedures must be in line with the Rail Safety National Law, and the testing regime must include prestart testing prior to Track Possessions.

6.7.5 Work on Track Methods for Working Safely

Unless specified by the issue of a safeworking notice by the Principal's Representative, the primary work on track methods for working safely are summarised as follows:

Construction Site: A site under construction without any rail traffic movements, or traction power systems being installed. Worksite Protection and RISI Identification are not required.

TfNSW Rail Site: A Principal managed and controlled rail site which has no interface access with other rail sites or rail systems. Work within or potential to impact the Danger Zone requires Local Possession Authority (LPA) in accordance with the Australian Network Rules and Procedures.

Should a TfNSW Rail Site encroach on the Danger Zone of any other adjoining Rail Transport Operator rail sites:

(a) adjacent line protection must be implemented and managed in accordance with the rules of the adjoining Rail Transport Operator; and

(b) an access interface is considered removed if points that allow entry and exit to the site are secured and a physical barrier is established at the limits of the TfNSW Rail Site.

Other Rail Transport Operator Rail Sites: Where the contracted work is undertaken within a rail site managed and controlled by another accredited Rail Transport Operator, the other Rail Transport Operator's Network Rules and Procedures apply.

6.7.6 Arrangements for Track Possessions

For each Track Possession to be utilised by the Contractor, the Contractor must conform to the requirements of the relevant Rail Transport Operator.

The Contractor may not have exclusive access to any Rail Tracks or areas within the vicinity of Rail Tracks during a Track Possession. The Contractor must coordinate the Contractor's Activities with those sharing the Track Possession, including parties involved in the operation or maintenance of the rail system and Other Contractors.

6.7.7 Worksite Protection Personnel

Worksite Protection is required for carrying out the Contractor's Activities within the Rail Corridor in accordance with the Australian Network Rules and Procedures and/or the requirements of the Rail Transport Operator.

The Worksite Protection Personnel are required to hold a minimum of Worksite Protection Personnel level 2 accreditation (PO2).

The Worksite Protection Personnel must brief all personnel undertaking the Contractor's Activities on the Worksite Protection arrangements at the Site at the start of each shift or as is required by the Contractor's Activities (and agreed by the Principal's Representative).

Where the Principal is to provide the Worksite Protection Personnel, the Contractor must provide 10 Business Days' notice in writing to the Principal requesting the number of Worksite Protection Personnel required.

6.7.8 Use of Rolling Stock, Hi-Rail Vehicles and Work Trains

Rolling stock and rail traffic are not permitted to travel or operate on the Site without the approval of the Contractor.

The Principal's Representative may also impose requirements, limitations and constraints on rail traffic travelling or operating on the Site.

To the extent that any part of the Contractor's Activities requires the use of hi-rail vehicles or work trains the Contractor must:

(a) ensure that such vehicles are only operated by persons with appropriate competencies and by an organisation which holds accreditation as a "Rolling Stock Operator" (as that term is defined under the Rail Safety National Law);

(b) ensure that hi-rail vehicles are duly checked and certified as being fit for their intended use at the start of each shift;

(c) ensure the hi-rail vehicle has been certified as compliant and safe to use with the hi-rail modifications by the Original Equipment Manufacturer (OEM) or an independent competent engineer, including from a WHS and rail safety perspective;

(d) ensure that the utilisation of hi-rail vehicles or work trains is appropriately addressed in the Contractor's procedures to ensure safe operations, to prevent injury and damage to infrastructure and to ensure that responsibilities are identified and documented;

(e) assess the past record of potential Subcontractors to ensure that they comply with the Rail Safety National Law and relevant rail accreditation requirements. The results of these assessments must be made available to the Principal upon request;

(f) set out and carry out regular reviews of the performance of train and hi-rail operators engaged for the undertaking of the Contractor's Activities (including at least one review after each major Track Possession or Incident, or in any event every three months). The results of these reviews must be made available to the Principal upon request; and

(g) only use rolling stock, hi-rail vehicles and work trains authorised on the Vehicle Registration Database.

6.7.9 Swing Arm Plant – Rail Environment

The Contractor must ensure the use of restrictors for swing arm plant.

The Contractor's construction planning process must include the validation of the proposed method of work to be carried out on the day. This validation process must include the completion of a site specific risk assessment and development of a plant working diagram by the Contractor in conjunction with the Project Rail Safeworking Coordinator and any other required project personnel.

The Contractor's pre-work briefing must include the following items:

(a) description of swing arm plant and equipment being used, including the type of restrictor(s) being used;

(b) details of the “line in the sand” for the positioning of the chassis of the swing arm plant or equipment being used (including consideration of the size and reach of the swing arm plant or equipment);

(c) arrangements for the provision of a spotter;

(d) reference to the details included in the Worksite Protection Plan prepared by the Protection Officer that includes swing arm plant considerations; and

(e) in the case of operations involving the use of a crane, details of the lifting plan developed for the Contractor’s Activities.

Annexure A - Additional Project Requirements

A1 - N/A

A2 Traffic Control Plan clause 2.5

Requirement	Applies?	Reference
Is a Traffic Control Plan required?	[Yes]	Clause 2.5

A3 Contractor's Program clause 2.7

Clause	Item	Requirement	Add Insertion
2.7	Contractor's' Program	Monthly updates required commencing from a specified date	[20th Day of each calendar month]
		Baseline schedule requirement	Is base line schedule required? [Yes]
		Baseline schedule submission	[10 days after Contract Award]

A4 Management Plans clause 2

Clause	Management Plans	Is Management Plan Required?	Timing for Initial Submission for Review	Frequency of Update
2.1	Contract Management Plan	[Yes]	[T2]	[6 Months]
2.2	Construction and Site Management Plan	[Yes]	[T7]	[6 Months]
2.3	Risk Management Plan	[Yes]	[T4]	[6 Months]
2.4	Commuter and Passenger Management Plan	[Yes]	[T5]	[6 Months]
2.5	Traffic Management Plan	[Yes]	[T7]	[6 Months]
2.6	Defects Management Plan	[Yes]	[T8]	[6 Months]
2.12.7	Property Management Plan	[Yes]	[T2]	[6 Months]
4.3.1	Project Work Health and Safety Management Plan	[Yes]	[T2]	[6 Months]

Legend

T1	15 Business Days after the date of the Contract Award Date
T2	30 Business Days after the date of the Contract Award Date
T3	10 Business Days prior to the commencement of investigations
T4	15 Business Days prior to the commencement of design. If the Works/Services do not involve any design activities prior to the commencement of construction then these plans are to be submitted under T3 timing requirements.
T5	Concurrent with the first PDR (or equivalent) design package submission
T6	Concurrent with the first CDR (or equivalent) design package submission
T7	30 Business Days prior to the commencement of Site mobilisation.
T8	10 Business Days prior to the commencement of construction

T9	9 months prior to the planned commencement of the first commissioning event, or 30 Business Days following the date of the Contract if the Date for Completion is less than or equal to 9 months after the date of the Contract Date.
T10	10 Business Days prior to the commencement of construction in the Rail Corridor.
T11	21 Business Days after the date of the Contract Date.

A5 Principal's Document Management Tool clause 2.9.2

Clause	Requirement
2.9.2	[Yes], the Principal [will] administer the Contract document deliverables using the Principal's electronic document management tool.
	The nominated electronic document management tool is [to be confirmed prior to contract award (PM web/ teambinder)]

A6 Property Management clause 2.12

All Clauses shall apply

A7 Post-construction Property Condition Surveys clause 2.12.7.3

Requirement	Interval Frequency
Within one month of Completion and again at times specified in Annexure A, the Contractor must perform a post-construction condition survey on each property previously subject to a pre-construction property condition survey and construction phase monitoring.	[No additional requirements]

A8 Construction Phase Monitoring clause 2.12.7.5

General Requirement	Project Specific Requirement
The Contractor must comply with the following project-specific requirements for the construction phase monitoring set out in Annexure A and include these requirements in the Property Management Plan.	[No additional requirements]

A9 Submission of the Property Records clause 2.12.9

The Contractor must provide the following records to the Property Representative:

Required Record or Reference	Record Required?
Property Management Plan	[Yes]
List of who holds issued documents on a register of current document issue/revisions	[Yes]
Index of all property records (prior to Completion)	[Yes]
Personnel and provider qualifications/skills and competency records	[Yes]
Induction and training records	[Yes]

Required Record or Reference	Record Required?
Property Control and Constraints Maps (Worksite maps)	[Yes]
Identified property stakeholders within the complaints list as identified by the Principal	[Yes]
List of all adjoining property owners and details of all interaction / communications	[Yes]
Evidence of property inputs/outputs within the design development process including any sustainability initiatives	[Yes]
Surveillance, audit of subcontractors property performance and controls	[Yes]
Contractor's non-conformance reports and register	[Yes]
Transport Projects property non-compliance reports	[Yes]

A10 Principal Provided Training clause 2.13

- INX (If required)
- Document Control – PM Web / Teambinder training
- Other training as required

A11 Contractor's Environmental Management System clause 3.1

Requirement	Applies?
(i) Is a Contractor's Environmental Management System accredited under ISO 14001:2004 required.	[Yes]
(ii) If No in (i) above, is a contractor's Environmental Management System required.	[N/A]

A12 CEMP clause 3.1

Clause	Management Plans	Is Management Plan Required?	Timing for Initial Review	Frequency of update
3.1	CEMP	[Yes]	30 Business Days prior to commencement of site mobilisation	[Reviewed at Monthly Project Meetings]

A13 Planning and Environmental Compliance System (PECOMS) clause 3.9

	Applies?	Reference
Use PECOMS to undertake self-regulation to confirm that all Contractors' Activities are compliant with all Authority Approvals (including the Environment Protection License).	[Yes]	Clause 3.9 (a)
Implement a PECOMS reporting structure in addition to any other reporting requirements for the Contract and follow the applicable parts of TfNSW Guide to Compliance Monitoring and Reporting using PECOMS - 9TP-SD-012.	[Yes]	Clause 3.9 (b)

A14 Project-specific Sustainability Requirements clause 3.11

Please refer to Exhibit B – Works Brief for additional sustainability requirements

A15 Principal Contractor clause 4.7

	Applies?
Does Clause 4.7 apply?	[Yes]
If Yes. The principal contractor under the WHS legislation is	[Contractor]
If Yes. The period of appointment is	[Contract Duration]

A16 Working In or Adjacent to the Rail Corridor clause 6

	Applies?
Does Clause 6 apply?	[Yes]

A17 Project Specific Amendments to Standard Requirements

Nil

ANNEXURE B – List of Reference Documents

List of Reference Documents

- ISO 31000 (Risk Management Guidelines and Principles)
- RTA Traffic Control at Worksites Manual
- AS 1742.3-2009 Part 3 - Spoil Control Devices for Works on Roads
- RTA Guideline Traffic Control at Worksites 4th Ed (June 2010)
- AS 4817-2006 - Project Performance Measurement using Earned Value
- TfNSW Earned Value Management using Primavera P6 - 4TP-PR-143
- Royal Institute of Chartered Surveyors (RICS) Guidance Note 63/2010 Building surveys and technical due diligence
- AS 4349 Inspection of Buildings – General Requirements
- Building Damage Classification, by Burland et al, 1977 and Boscardin and Cording,
- 1989AS/NZS ISO 9001:2004 Quality Management Systems – Requirements
- TfNSW Property Compliance Register - 2TP-ST-175
- AS/NZS ISO 14001:2004 – Environmental Management Systems – Requirements
- with Guidance for Use
- TfNSW Environmental Incident Classification and Reporting - 9TP-PR-105
- TfNSW Environmental Incident/Non-Compliance Report - 9TP-FT-101
- TfNSW Guide to Environmental Control Map - 3TP-SD-015
- TfNSW Pre-Construction Minor Works Approval - 9TP-FT-202
- TfNSW Guide to Compliance Monitoring and Reporting using PECOMS - 9TP-SD-012
- TfNSW Generic Work Health and Safety Operational Risk Register - 30-SD-101
- TfNSW Generic Rail Safety Risk Register - 30-SD-038
- AS 4024.1 Safeguarding of Machinery
- AS 61508 Functional safety of electrical / electronic / programmable electronic safety-related systems
- NSW Government Work Health and Safety Management Systems and Auditing Guidelines
- Transport Projects Style Guide for Contractors and Consultants - 8TP-ST-100
- Transport for NSW Editorial Style Guidelines
- TfNSW Work Activity Advice - 4TP-FT-105

ANNEXURE C – Property Compliance Checklist

Property Compliance Checklist Pre Site Occupation/Pre Construction Commencement

Compiled by: _____

On behalf of: _____

Contract #: _____

Date: _____

#	Issue	Circle relevant answer and add comment	Attachment
1	Has the Contractor been liaising with the Principal's Property Manager?	Y N NA Comment: [insert text here]	
2	Have all properties affected by the project been identified?	Y N NA Comment: [insert text here]	
3	Has a list of all affected properties been issued to the Principal?	Y N NA Comment: [insert text here]	
4	Are all properties owned by the Principal?	Y N NA Comment: [insert text here]	
5	Is access required to properties owned by other parties?	Y N NA Comment: [insert text here]	
6	Are all agreements in place with other landowners to permit the contractor to undertake the works?	Y N NA Comment: [insert text here]	
7	Have all surveys been conducted?	Y N NA Comment: [insert text here]	
8	Have all surveys been cross-checked with the designs?	Y N NA Comment: [insert text here]	
9	Do any of the proposed works fall outside the property / site boundaries?	Y N NA Comment: [insert text here]	
10	If so, has the Contractor got agreements to build on the adjoining	Y N NA Comment: [insert text here]	

#	Issue	Circle relevant answer and add comment	Attachment
	land?		
11	Are new easements, stratums, MOU's or WAD's with stakeholders required for the project?	Y N NA Comment: [insert text here]	
12	Have any new easement, stratums, MOU's or WAD's been drafted and issued to the Principal for review?	Y N NA Comment: [insert text here]	
13	Have all property Pre-Condition Surveys been conducted and submitted?	Y N NA Comment: [insert text here]	
14	Has the Asset Management Plan been considered in design?	Y N NA Comment: [insert text here]	
15	Are there any other property risks?	Y N NA Comment: [insert text here]	

RECEIVED by TfNSW

Signed: _____

Received by: _____

Date: _____

REVIEWED by Property Representative

Signed: _____

Name: _____

Date: _____

Acceptable? (Conforms to contract requirements): Y/N provide reasons:

Comments provided: Y/N (attach comments)

No Comments or no further Comments: Y/N

ANNEXURE D – Environmental Records

Environmental Records

The following lists the environmental records required by this TSR. All records must be made available to the Principal's Representative. The Contractor must ensure that the Principal's Representative has the latest version of the records at all times.

Where the Contractor is required to forward records to the Principal's Representative, the Contractor must submit one original and three copies (one of which is unbound) of each document (including draft and final reports, specifications, drawings, plans, etc.) for the Principal's review. In addition the Contractor must also submit an electronic copy on CD/DVD in PDF and native formats (such as Microsoft Word, Microsoft Excel, CAD in *.dwg or *.dgn) of documents.

Required Record or Reference
Copies of all completed forms, templates required under any of the documents/guidelines referenced in Annexure B
Contractor's noncompliance, incident, near miss, non-conformance reports and register
Preventive and corrective action reports and register
Environmental audit reports
Environmental Control Maps
Index of all environmental records (prior to Final Completion)
Induction and training records
Records/checklists of inspection and testing
Records of environmental management reviews for the project
Register of equipment, calibration frequency and certificates
Surveillance, audit of subcontractors environmental performance and controls

EXHIBIT B – WORKS BRIEF

The Works Brief comprises the following documents:

Description	Document Reference
Works Brief	4825166_10
Appendix A - Station Specific Requirements	4821111_7
Appendix B - Document Delivery	4959376_1
Appendix C - Life Cycle Costs	4821452_3
Appendix D - Technical Specification	4896629_2
Appendix E - Interface Schedule	4827081_4
Appendix F - Finishes Schedule	4828695_1
Appendix G – Engineering Safety Assurance	3879947
Appendix H - AFILS	4959365_1
Appendix I - Wayfinding Requirements	4959366_1
Appendix J - Lift Specification	4820788_2
Appendix K - Standard Cabling and Containment Works Instructions for Sydney Trains	4820793_3
Appendix L - Minimum Security Requirements and Design Criteria for Stations	4959369_1
Appendix M – Electronic Ticketing Systems Technical Requirements	4959370_1
Appendix N – Digital Public Address Specification	4959371_1
Appendix O – TfNSW Standard Risk Matrix	4959372_1
Appendix P – NSW Sustainable Design Guidelines and Checklist	4959374_1

Exhibit B - Works Brief
TAP Easy Access Station Upgrade
ISD-15-4742 Easy Access Station Upgrade – Managing Contractor Contracts

Transport Access Program

Status:	**Final**
Version:	**10**
Date of issue:	**14/09/2016**
Document:	**4825166_10**

Table of Contents

1. Introduction

1.1. Works Brief Overview

This Works Brief describes the scope of work, minimum performance criteria, general requirements and technical requirements for the Contractor's Activities including the design, construction, testing, Commissioning, system integration, acceptance and Asset Handover of the Works.

1.2. Overview of the Easy Access Station Upgrade Projects

(a) TfNSW's Transport Access Program is an initiative to provide a better experience for public transport customers by delivering accessible, modern, secure and integrated transport infrastructure. Within this program, the Easy Access Station Upgrade Projects encompasses upgrades at various train stations. Further details are provided in Appendix A Station Specific Requirements of the Works Brief for the various locations, plus any other stations to be added as the TAP releases them, will improve the public ease of access and usage at each station.

(b) The operational purpose for each Easy Access Station Upgrade Project is to:

(i) provide facilities:

A. that are inviting and safe for customers to use;

B. compliant with the intent and requirements of the Disability Discrimination Act 1992 (DDA), and current standards of safety, access and amenity; and

C. which are easy to operate and cost effective to maintain.

(ii) provide safe, direct and accessible access paths and connectivity to, from and within each relevant station and related transport interchange.

(c) In delivering each Easy Access Station Upgrade Project, the Contractor is to:

(i) deliver the Works safely;

(ii) minimise the impact of the Contractor's Activities on the community, the environment and applicable heritage structures;

(iii) ensure there are no unplanned impacts on existing infrastructure and the operations of stakeholders (including Sydney Trains and station retailers);

(iv) maintain a safe and operational station at all times;

(v) maintain an effective flow path for pedestrians, including effective vertical transportation links between concourse and platform, during the various stages of construction;

(vi) achieve delivery dates; and

(vii) without limiting the Contract provide a comprehensive design and construction methodology applicable to the TfNSW technical requirements for the Works required at each station location which is to be optimised for whole of life costs and relevant service life.

1.3. Definitions and Interpretations

Unless stated otherwise:

(a) any reference to a 'Section' in this Works Brief is a reference to a section of this Works Brief;

(b) any reference to an 'Appendix' in this Works Brief is a reference to an Appendix of this Works Brief;

(c) wherever used in this Works Brief, the words and phrases have the meaning given to them in the General Conditions. In addition to these defined terms, the following words or phrases have the meaning given to them below:

"Asset Handover" means the point in time at which the control of certain specified assets is transferred to an Operator/Maintainer and/or Asset Owner for their ongoing operation and maintenance.

"Asset Owner" means an organisation who will ultimately own the asset subject to the Asset Handover.

"Commissioning" means a systematic process of ensuring that all infrastructure, equipment and systems installed as part of the Works perform interactively in accordance with the design intent and the Operator/Maintainer's functional and operational needs.

"Early Works" means activities on-site undertaken prior to release of AFC for main works and as identified by the Contractor.

"Easy Access Station Upgrade Project" means the project which the Contractor must complete as part of the Contractor's Activities.

Hold Point" means a verification point beyond which the relevant part of the Contractor's scope may not proceed without the verification and subsequent written authorisation of the Principal's Representative or other relevant person nominated.

"Life Cost" means the sum of RM and MPM over the economic life of the asset.

"Local Council" means the applicable local council(s) for each station as identified in Appendix A.

"Operational Readiness" means a process which ensures that the Works or a defined part of the Works is ready to operate, with all necessary operational plans and approvals in place, fully trained operating staff, all external Works and related Works completed and with the Operator/Maintainer ready to accept the responsibility for ongoing operation and maintenance of the facility or assets generated by the Works.

"Operator/Maintainer" means the organisation/s that post Asset Handover, will operate and maintain the assets.

"Service" includes any service facility or item of public or private infrastructure, including railway systems, pedestrian and vehicular corridors, water, electricity, gas, fuel, telephone, existing drainage, sewerage, industrial waste disposal and electronic communications service.

"Technical Specification" means the TfNSW Technical Specification for Easy Access Station Upgrade Projects, included in Appendix D.

"Witness Point" means the point where the Principal's Representative, or other person nominated, may review, witness, inspect, or undertake tests on any component, method or process of the Works.

1.4. Abbreviations

Table 1 - Abbreviations

Term	Description
AFC	Approved for Construction
AEO	Authorised Engineering Organization
SFAIRP	So far as is reasonably practicable
AS	Australian Standard
ASA	Asset Standards Authority
BCA	Building Code of Australia
BIM	Building Information Modelling
BRS	Business Requirement Specification
CAD	Computer-Aided Design
CCB	I&S Configuration Change Board
CCTV	Closed Circuit Television
CEMP	Construction Environment Management Plan
CPTED	Crime Prevention Through Environmental Design
CDR	Critical Design Review
CoNO	Certificate of No Objection
CSR	Combined Services Route
DDA	Disability Discrimination Act 1992
DBYD	Dial Before You Dig
DSS	Detailed Site Survey
DSAPT	Disability Standards for Accessible Public Transport
DTRS	Digital Train Radio System
EASU	Easy Access Station Upgrade
EMS	Environmental Management System
EPA	Environmental Protection Authority
ESS	Electronic Security System
FER	Fire Engineering Report
FMECA	Failure Modes, Effects and Criticality Analysis
I&S	Infrastructure & Services of TfNSW
ISG	Integrated Survey Grid

Term	Description
ISS	Internal Services Search
ITP	Inspection and Test Plan
LAN/WAN	Local Area Network/Wide Area Network
OHW	Overhead Wiring
OHWS	Overhead Wiring Structures
PDR	Preliminary Design Review
PO	Protection Officer
RAATM	Requirements Analysis, Allocation and Traceability Matrix
RAMS	Reliability, Availability, Maintainability and Safety
REF	Review of Environmental Factors
RISI	Rail Industry Safety Induction
RMS	Roads and Maritime Services
RSW	Rail Safety Worker
SCLG	Station Construction Liaison Group
SDR	System Definition Review
SHA	System Hazard Analysis
SRS	System Requirements Specification
ST	Sydney Trains
SWG	Station Working Group – Sydney Trains
TGSI	Tactile Ground Surface Indicator
TAP	Transport Access Program
TfNSW	Transport for NSW
TSR	TfNSW Standard Requirements
UPS	Uninterruptible Power Supply
ULX	A service crossing under the rail line

2. Scope of Works

2.1. Overview

The scope of works for delivery of the easy access project generally comprises the Design Work, procurement, supply, construction, testing, commissioning, integration, Operational Readiness and the Asset Handover including but not limited to the following elements:

(a) new lifts and foyers for station access from the respective external public domain frontages and associated canopies;

(b) new lift and foyers for platform access;

(c) works to the existing transport interchange and parking within each station precinct;

(d) station entrances and public areas comprising footbridge or subway with associated access ramps or stairs compliant to BCA and Disability Standard for Accessible Public Transport 2002;

(e) new wayfinding and signage including removal and replacing existing signs with the current TfNSW standard for wayfinding;

(f) new street entry and lighting; and

(g) new canopies with roof drainage connected to controlled discharge, lighting, and associated platform seating.

2.1.1. Contractor's General Responsibilities

Without limiting the Contractor's responsibilities and obligations under the Contract, the Contractor must:

(a) procure and engage an experienced team of designers and consultants, all with suitable and relevant station systems design experience, who are demonstrably competent and capable of providing the design and technical services to enable the successful management, design, supervision and delivery of the Works;

(b) engage with all relevant stakeholders and address their comments and observations to the satisfaction of the Principal;

(c) allow for all required materials and associated lead times, labour, specialist resources, plant equipment, site accommodation, management, training, authority approvals, licences, fees, stakeholder consultation throughout the project, testing, Commissioning, Operational Readiness and Asset Handover activities required to successfully complete the Works; and

(d) consult with the Operator/Maintainer to gain an appreciation of tools, materials and methodology currently employed in equivalent facilities and to deliver wherever possible new or changed infrastructure that may be operated and maintained cost effectively by the same or improved means.

2.2. The Works and Temporary Works

2.2.1. Contractor's Activities

Without limiting the Contractor's other obligations under the Contract, the Contractor's scope includes all things necessary to:

(a) develop the Design Documentation up to AFC for the Works and Temporary Works as per Deliverables Schedule Section 2.3;

(b) undertake surveys, tests and investigations necessary to support the design development;

(c) coordinate the development of the Design Documentation with Other Contractors, and in accordance with the Interface Schedule included in Appendix E;

(d) manage all interfaces, including those with existing retailers and Sydney Trains, and undertake activities identified as the Contractor's responsibility as set out in the Interface Schedule included in Appendix E;

(e) identify, protect and relocate as necessary Services affected by the Works and Temporary Works;

(f) remediate the Site, as required by this Works Brief;

(g) construct the Works and Temporary Works in accordance with the Design Documentation, Preliminary Design and this Works Brief;

(h) produce documentation defining the Commissioning and Asset Handover requirements;

(i) undertake testing, Commissioning and Operational Readiness;

(j) progressively handover elements of the Works to the Principal so as to maintain the safety, cleanliness and reliability of the passenger rail network throughout the Site, including the safe operation, crewing and maintenance of passenger trains and stations while minimising disruption to the community, adjacent retail tenants, residents, property owners and transport users, and other members of the public;

(k) terminate, demolish, remove and rehabilitate all existing infrastructure, structures, services and buildings that are made redundant by the Works or Temporary Works;

(l) develop and address the findings of the Safety and Reliability Hazards Inspection Report during the design and construction of the Works and Temporary Works. This report is to be developed in accordance with TfNSW Reliability Management Procedure (4TP-PR-252/4.0);

(m) develop and implement the sustainability initiatives included in Appendix P;

(n) accommodate the heritage requirements of the relevant authorities in regards to the obligations under the Contract; and

(o) secure, maintain, repair, reinstate and hand back (in the specified condition) areas occupied or affected by the Works including any Temporary Works.

2.2.2. Contractor's General Responsibilities

(a) The Works include the following:

(i) the elements of permanent infrastructure as described in Appendix A (See Appendix A – Station Specific Requirements for Contractor's scope) ;

(ii) the items, and the configurations and locations of those items, contained in the Preliminary Design, excluding the infrastructure associated with the Temporary Works;

(iii) demolition and relocation of existing infrastructure and buildings;

(iv) necessary remediation of contamination;

(v) the provision of all Services necessary to operate and maintain the Works;

(vi) all environmental safeguards and measures necessary to mitigate environmental impacts during operation of the Works, including those identified in this Works Brief, TfNSW Standard Requirements and the Planning Approval;

(vii) all measures necessary to mitigate noise and vibration during operation of the completed Works;

(viii) all Works required as a consequence of the community liaison process; and

(ix) all equipment necessary to monitor the environmental performance of the Works, and assess the durability of all elements.

(b) the Temporary Works include all works necessary to complete the Contractor's Activities in accordance with the Contract but not forming part of the Works, including:

(i) temporary facilities as may be required to maintain station operations including temporary ticket, booking and station managers offices, station services such as lighting, CCTV, passenger information, public address systems and signalling and public facilities such as toilets, seating and access;

(ii) temporary measures required to meet the needs of the affected public (including passengers and road users) and to provide public amenity, security and safety during all stages of design and construction of the Works;

(iii) temporary fencing, hoarding (including overhead protection), barricades, entrances or exits, gates, lighting, and the like to provide a safe and secure Site at all stages of the Works, including protection of existing infrastructure and Services and to define the areas of the Works within and outside the Rail Corridor;

(iv) construction safety delineation fencing between operational track and construction areas to demarcate safe construction zones;

(v) site access provisions during construction of the Works, including:

A. temporary sealed roads for vehicular access;

B. erection of temporary signage; and

C. emergency vehicle access.

(vi) all vehicle and pedestrian traffic management and coordination, as necessary, including:

A. pedestrian access adjacent to or through the Site and Remote Sites to maintain access routes;

B. on roads affected by construction of the Works, including temporary diversions. The road works are inclusive of drainage,

pavement markings, signage, traffic signals, lighting, roadside fencing, safety barriers and furniture.

(vii) site establishment, including:

A. all amenities for the Contractor's and Subcontractors' construction personnel, and provision of site office facilities for the Principal, including temporary Services;

B. compounds, lay-down areas (for storage of materials, plant and equipment, rubbish and site debris), spillages, and fabrication areas; and

C. storage containers and lockable purpose-design storage cages for flammable items with appropriate signage.

(viii) scaffolding, staging, formwork, falsework and temporary access facilities;

(ix) temporary excavations, shoring and ground support for the erection, installation and construction of the permanent civil works and structures;

(x) all environmental safeguards and controls to mitigate environmental effects, including temporary protection of watercourses, noise and dust control, temporary protection of fauna, and temporary fencing to protect trees and other vegetation to be retained on the Site;

(xi) temporary protection and relocation of Services to allow the erection, modification, installation and construction of the Works;

(xii) temporary power, communications, water, sewer and other utilities supporting the Works, including all utility permits;

(xiii) temporary operational, regulatory, directional, warning, wayfinding, safety and information signage;

(xiv) removal, relocation or disposal of surplus materials and equipment from the Site;

(xv) temporary protection of completed assets through to completion of the Works to prevent damage;

(xvi) temporary site facilities required for the design and construction of the Works;

(xvii) maintaining all Temporary Works for the duration of the Contractor's Activities; and

(xviii) decommissioning of all Temporary Works including cleaning, maintenance, repair, replacement and reinstatement of all areas occupied by the Contractor to undertake the Works and the Temporary Works.

2.3. Deliverables Schedule

The Contractor must prepare and provide without limiting the submissions to be made as per the Contract, the following documentation and reports:

Item #	Deliverable Description

1.0	**General**				
1.1	Project Management Plan (PMP)				
1.2	Project Schedule (Primavera P6 version 7 soft copy format)				
1.3	Input into TPD's Communications Management System (CMS) as required by TfNSW Comms				
1.4	Authorised Engineering Organisation (AEO) Application				
1.5	Contractor's Program				
1.6	Project Monthly Report				
1.7	Contract Security				
1.8	Contractor's Project Team Org. structure including their RSW Competency Matrix (allow for TfNSW's review and acceptance prior to the key team members engagement on the project)				
1.9	The contractor to update TfNSW's Safety Management System INX Portal every month. TfNSW will provide access to the system with login and password details to the contractor. The data to include monthly labor hours, incidents, drug tests, alcohol tests, near misses, LTI				
1.10	Not Used				
2.0	**Design Phase**				
2.1	**Preliminaries**				
2.1.1	Design Management Plan (DMP)				
2.1.2	Weekly Design Meetings with TfNSW during Project Design Phase (to be attended by the Contractor's Project Manager, Design Manager and discipline specific design team leaders as a minimum)				
2.2	**Design Submissions**	**SDR**	**PDR**	**CDR**	**AFC**
2.2.1	Value Management Workshop	No	Yes	No	No
2.2.2	Security Risk Workshop	No	Yes	No	No
2.2.3	CHAIR Workshop (risk and hazard identification)	No	Yes	Update	No
2.2.4	Design Briefing Pre-Submission (inc. Architectural Finishes Boards)	No	Yes	Yes	No
2.2.5	Design drawings	Yes	Yes	Yes	Yes
2.2.6	*Design Reports that include:*	Yes	Yes	Yes	Yes
2.2.6.1	*Indicative Construction Methodology (& Staging Plans)*	Yes	Yes	Yes	No
2.2.6.2	*Existing Building, Structures & Services (EBSS) Report*	Yes	Update	Update	No
2.2.6.3	*Detailed Site Survey (DSS) including pot holing results*	Yes	Yes	Yes	No
2.2.6.4	*Survey Plans (topographic, boundary, services)*	Yes	Yes	Yes	No
2.2.6.5	*Technical Specifications for all trades*	No	Draft	Yes	Yes
2.2.6.6	*Geotechnical Investigations Report*	Yes	Update	Update	No
2.2.6.7	*Contamination Investigations Report*	If req'd	No	Update	No
2.2.6.8	*Architectural Design Report (inc Landscaping & Wayfinding) and inc:l*	Yes	Yes	Yes	No
	BCA Compliance Assessment Report	Yes	Yes	Yes	No
	DDA Compliance Assessment Report	Yes	Yes	Yes	No
2.2.6.9	*Civil Design Report Incorporating the following discipline reports:*	Yes	Yes	Yes	No
	Structural Design Report	Yes	Yes	Yes	No
	Hydraulic Design Report (inc Water, Sewer, Gas & Storm water)	Yes	Yes	Yes	No
	Mechanical Services Report	Yes	Yes	Yes	No
	Fire Engineering Report	Yes	Yes	Yes	No
	Electrical LV Design Report (inc Lighting) incorporating the following:	Yes	Yes	Yes	No
	Power Authority Applications & Level 3 Designs	Yes	Yes	Yes	No
	Earthing, Electrolysis and Bonding Report	No	No	Yes	No
	Signalling Design Report (if required)	If required	If required	If required	No
2.2.6.10	*Communication Design report (inc CCTV, SPI, TVM, Opal, C&CS, PA, HIIL, HP, Telco, Fibre)*	Yes	Yes	Yes	No

Item #	Deliverable Description				
2.2.6.11	*No Objection to Construction (NOTC) Certificate by the AEO including BCA Certification in accordance with the EP&A Act*	No	No	Yes	Update if any change to CDR
2.2.6.12	*Traffic Transport & Access Report (inc Modeling & Road Safety Audit)*	Yes	No	Yes	No
2.2.6.13	*Compliance Matrix showing if and how the Scope Requirement set out in the Works Brief are met (RAATM)*	Yes	Yes	Yes	No
2.2.6.14	*Safety Assurance Plan (SAP) and Safety Risk Summary Report (SRSR)*	SAP	SRSR	SAP+ approved SRSR	No
2.2.6.15	*Project Specific Risk Register (formerly referred to as Hazard Log)*	Yes	Yes	Yes	No
2.2.6.16	*System Verification Reviews*	Yes	Yes	Yes	No
2.2.6.17	*Environmental Sustainability Reports (inc Greenhouse Gas, Carbon Footprint and Climate Change Impact Assessments) and incorporating:*	No	No	Yes	No
2.2.6.18	*Ecology Report (inc Arborist assessment)*	Yes	Update if required	Update if required	No
	Heritage Report	If applicable	If applicable	If applicable	No
	Noise & Vibration Report	No	Yes	Update	No
	Visual Impact Report	No	Yes	Update	No
	Stakeholder Comments Register	Yes	Yes	Yes	No
2.2.6.19	*Statement of Compliance against Conditions of Planning Approval (REF or EIA)*	No	Yes	Yes	No
2.2.6.20	*Asset Operations and Maintenance Plan*	No	Strategy	Plan	No
2.2.6.21	*Architectural Finishes Boards*	No	Yes	Yes	No
2.2.7	Preparation & Presentation to Sydney Trains Station Working Group (SWG)	Yes	No	No	No
2.2.8	Preparation of Configuration Change Request (CCR) including all supporting documents & Presentation to I&S CCB	No	No	Yes	No
3.0	**Construction Phase**				
3.1	**Pre-Construction**				
3.1.1	Project Work Interface Agreement (PWIA)				
3.1.1(a)	Project Safety Interface Agreement (PSIA)				
3.1.2	Physical Configuration Audit				
3.1.3	Project Safety Management Plan (PSMP)				
3.1.4	Site-specific Safety Management Plan (SSMP)				
3.1.5	Safe Work Method Statements (SWMS)				
3.1.6	Environmental Management Plan (EMP)				
3.1.7	Construction Environmental Management Plans (CEMP)				
3.1.8	Construction Traffic Management Plans (can be included as an attachment to CEMP above)				
3.1.9	Dilapidation Survey – same as covered under item 2.2.6.2 previous				
3.1.10	Quality Management Plan including draft IPTs at least 15 business days prior to construction				
3.1.11	Community Liaison Management Plan (CLMP)				
3.1.12	Shop Drawings				
3.1.13	Weekly meetings with TfNSW				
3.1.14	Inspection and Test Plans (ITPs)				
3.2.1	Possession Meetings with Sydney Trains as necessary (By Contractors PM or higher and Protection Officer) PACT				
3.2.2	Possession Management Plans which include:				
3.2.2.1	*Possession Scope of Works*				
3.2.2.2	*Worksite Protection Plan*				

Item #	Deliverable Description
3.2.2.3	*SSMP & SWMS, CEMP, PSIA, WAA, PSA, SOW, plus ARTC Requirements*
3.2.2.4	*DSS - for construction issue*
3.2.2.5	*Possession Layout Plan, detailing significant possession locations*
3.2.2.6	*Staging and Methodology diagrams*
3.2.2.7	*Hour-By-Hour Program*
3.2.2.8	*Resource Register of work personnel proposed to work on the possession with contact details and evidence of RISI certification or other Safe Working Qualification (for each shift)*
3.2.2.9	*Contact details for sub-contractors management*
3.2.2.10	*Noise & Vibration Study / Assessment*
3.2.2.11	*Contingency planning*
3.2.2.12	*Plant Movements and Locations Mud map*
3.2.2.13	*Possession plant list*
3.2.2.14	*Contact details for plant hire, and confirmation there is back up/replacement equipment in the event of break down or works acceleration requirements*
3.2.2.15	*Traffic control plan (for various scenarios - if applicable)*
3.2.2.16	*Barrier Layout for Station Staff & Pedestrian Movements*
3.2.2.17	*Environmental control map & Conditions of Approval*
3.2.2.18	*Temporary closure car park signage (if applicable)*
3.2.2.19	*Out of Hours Work Permit & Community Notification (if applicable)*
3.2.2.20	*Proposed Signage*
3.2.2.21	*Train stop suppressions*
3.2.2.22	*Possession train movements*
3.2.2.23	*Structural/Civil/electrical etc engineer advice (if applicable)*
3.2.2.24	*Working at Heights Rescue Methodology (if applicable)*
3.2.2.25	*Works advice as provided to the Possession coordinator*
3.2.2.26	*Community Notifications draft to TfNSW for review and then distribution to the community*
3.2.2.27	*Alternative Accommodation Letters (if applicable)*
3.3	**Construction Work**
3.3.1	Construction of ISEAU, in accordance with the contract and including all construction and related activities, labour, materials, equipment, licenses, fees, security, site storage/accommodation and critical resources for:
3.3.2	Periodic (2-week and 4-week) look ahead working program
3.3.3	Weekly site construction meetings with TfNSW, including Contractor's Project Manager, Design Manager, Site Manager and Safety Manager.
3.3.4	Worksite Protection Plan
3.3.5	Destructive Hazardous Material Report for structures to be modified or demolished
3.4	**Completion**
3.4.1	Designer's Construction Completion Letter
3.4.2	Structural Construction Certification
3.4.3	Mechanical Ventilation & Air Conditioning Construction Certification
3.4.4	Electrical Services Construction Certification
3.4.5	Communication Services Construction Certification
3.4.6	Mechanical Transportation Services Construction Certification
3.4.7	Life & Fire Services Certificate
3.4.8	Fire Services Construction Certification
3.4.9	Glazing (including support structures) Construction Certification
3.4.10	Rail Infrastructure Works Construction Certification
3.4.11	Surveyors Certificates for Completion of the Works
3.4.12	Drainage (with supporting survey) Construction Certification
3.4.13	Other Requirements of Works Brief for Construction Certification (e.g. Building works, Roofing, doors, walls, joinery,

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Item #	Deliverable Description
	landscaping etc)
3.4.14	Other components as deemed necessary for Construction Certification
3.4.15	CCTV Certificate of Completion
3.4.16	Architects Construction Certification
3.4.17	Factory Acceptance Tests (FATs)
3.4.18	Site Acceptance Tests (SATs)
3.4.19	System Integration Tests and Commissioning (ITCs)
3.4.20	Maintenance Schedule of Essential Fire Safety Measures
3.4.21	Final Fire Safety Certificate
3.4.22	DDA Compliance Certificate - Certificate of As-Built Compliance for Access Requirements provided by Access Subcontractor
3.4.23	BCA Compliance Certificate for the completed works
3.4.24	WorkCover Registration for Lifts
3.4.25	Electrical - Sydney Trains Power Approval & Acceptance of Modifications
3.4.26	Electrical – Endeavour/ Ausgrid Energy Approval of Design
3.4.27	Storm water - Local Authority Approval & Acceptance of Modifications
3.4.28	Gas - Local Authority Approval & Acceptance of Modifications
3.4.29	Telecommunications - Approval & Acceptance of Modifications
3.4.30	Not used
3.4.31	Not used
3.4.32	Not used
3.4.33	Other Services - Approval & Acceptance of Modifications
3.4.34	Warranties that expire within defects liability period
3.4.35	Works As Executed Drawings (hand mark-up whilst CAD files are updated)
3.4.36	Handover of Keys - Letter to Station Manager and/or TfNSW
3.4.37	Training (including Program for training session of Operations & Maintenance staff and Training Manual)
3.4.38	Handwritten or Electronic Drawings for Services Updates
3.4.39	Commissioning & Operational Readiness Activity Schedule (CORAS) for key commissioning events
3.4.40	Road Safety Audit following completion (during operations but within 4 weeks of Completion)
3.5	**Documentation Required by the Principal**
3.5.1	Asset Management Information (AMI) Delivery Plan
3.5.2	Schedule of Contact Details for all the designers, contractors, subcontractors & major suppliers
3.5.3	Update the Detailed Site Survey (DSS) CAD Files, in accordance with Sydney Trains requirements
3.5.4	Final Works As Executed Drawings in CAD format
3.5.5	Technical Maintenance Plan(s)
3.5.6	Operations and Maintenance (O&M) Manuals
3.5.7	Operational Environmental Management Plan
3.5.8	Final Safety Hazard Log (Including residual hazards and risks)
3.5.9	Close out of Defects Register by Sydney Trains, TfNSW and LocalCouncil
3.5.10	Operation and Maintenance agreements involving third parties
3.5.11	Manufacturer's Manuals and Brochures
3.5.12	Operating Guides
3.5.13	Warranties valid past end of defects liability period
3.5.14	TfNSW & Sydney Trains Comments Log for Handover Documentation
3.5.15	Update TfNSW, Sydney Trains and Council Equipment & Asset Register
3.5.16	Final boundary survey drawings (including encroachments if not fully on RailCorp land)
3.5.17	Suppliers Shop Drawings

Item #	Deliverable Description
3.5.18	Schedule of Materials and Finishes (internal and external architecture)
3.5.19	Any Software for the new assets
3.5.20	Asset Register
3.5.21	Schedule of Special Tools, Facilities and Equipment
3.5.22	Spare Parts List
3.5.23	Attendance at a Lessons Learnt workshop if requested by TfNSW

2.4. Demolition Works

The Scope of Works for demolition includes:

(a) protection of rail infrastructure, and temporary works to facilitate demolition;

(b) demolishing, removing, relocating and altering all existing infrastructure, other structures and natural features necessary to complete the Contractor's scope;

(c) completely removing and disposal of all redundant footings, pile caps and slabs unless agreed otherwise with the Principal;

(d) making good all areas adjacent to demolition works affected by the Contractor's scope;

(e) completing the demolition and repairs in accordance with the Planning Approval and in particular the requirements of all heritage related conditions where these relate to a Section 60 heritage approval, Sydney Trains or the Local Council's heritage requirement, and consideration of S65A and S57 requirements; and

(f) disposal or return of all redundant Sydney Trains equipment and assets as advised by the Principal to Sydney Trains depot at Chullora.

2.5. Utility Services

The Principal has not undertaken consultation with utility providers for newly planned services or proposed adjustments which may affect the Easy Access Station Upgrade Works.

The scope of works to be arranged by the Contractor for utility services (hereinafter referred to as "Services") includes:

(a) identification through services searches (including undertaking all necessary non-destructive pot-holing), protection, structural support, relocation and/or adjustment of all existing Services, charted or uncharted, which may be affected by the Works or the Temporary Works;

(b) identification, protection, adjustment and enabling/provisional work of all proposed Services which may conflict, interface and/or require integration with the Works or the Temporary Works;

(c) protection of existing Services and their protective coatings from any construction, operational and/or rail loading surcharge, vibration, corrosion and/or stray current;

(d) installation of new Services and connection to existing Services required by the Works, including all equipment, cabling, isolations, ground works (including reinstatement), containment, pits and civil works;

(e) coordination with Authorities/owners of the Services and property owners whose land contains Services affected by the Works, inclusive of all license and easement agreements, permits, approvals, and certifications necessary to permit completion of the Contractor's scope of work;

(f) disconnecting and removal of all redundant Services, including removal of all redundant equipment, foundations, pits, slabs, cables, containment associated with redundant Services. Where the redundant Services are located under platform surfaces and the adjustment or replacement of the platform surface in that area does not form part of the Contractor's scope of works, the redundant Services and containment may be left in place provided:

(i) the ends of the Service and containment are capped immediately adjacent to the edge of the platform surface which does not form part of the Contractor's scope; and

(ii) the entire length of all cables is withdrawn from any buried containment and pit.

(g) disconnecting and removal of all redundant lighting and power systems including cables, containment, light fittings and switches; and

(h) maintaining continual connection of all existing Services, unless otherwise agreed by the Asset Owner(s), to be protected, relocated, adjusted, diverted and/or which may conflict with the Works or Temporary Works during construction.

2.6. Civil

The scope of the civil works where required by the project specific requirements (Appendix A) include:

(a) providing any new or upgraded under line crossings (ULX) to permit new or upgraded Services to cross the Rail Corridor;

(b) clearing and grubbing all areas required to complete the Contractor's works;

(c) completing all bulk excavation, detailed excavation and fill works as required to complete the Contractor's scope;

(d) managing all fill and excavated material, stockpiles and materials to be removed from the Site, in accordance with the requirements of the Contract, including:

(i) sampling, validating, and classifying all excavated material for offsite disposal; and

(ii) disposing of excavated material in accordance with the relevant waste classification(s).

(e) miscellaneous civil structures and footings including retaining walls;

(f) roadwork, paving, kerbs, gutters, footpaths, shared paths and cycle ways;

(g) drainage system including:

(i) construction of new drainage inclusive of on-site detention management (to be determined during design development);

(ii) connection to the existing drainage system;

(iii) augmentation of the existing drainage system to suit the project; and

(iv) identification, protection, relocation and/or adjustment of all existing drainage services, chartered or unchartered, which may conflict with the project.

(h) commuter car parks, street parking, Kiss and Ride spaces, taxi stands, bus stands, accessible parking spaces and loading zones in accordance with the Preliminary Design and the requirements of the Authorities' (including Local Council's) requirements.

2.7. Architectural & Building Works

2.7.1. General

The Contractor must:

(a) provide protection of any specified heritage items before the commencement of any significant demolition works;

(b) reinstate all furniture and features of heritage significance upon completion of the Contractor's works if these have been removed and stored to allow for the Works;

(c) complete all of the Contractor's works in accordance with all applicable Codes and Standards; and

(d) complete all associated structural support, mechanical, electrical, communications, hydraulic services including sewer and water connections and air-conditioning and fire detection systems for the new concourse, underpass and platform areas.

2.7.2. Station Works

The architectural and building works at each station generally includes, but are not limited to:

(a) provision of new footbridge or subway or improvements to the existing footbridge or existing subway to connect with new lift foyers, ramps, stairs and associated Works. For existing footbridge or subway, reinstate floor finish and include grading floor in compliance with DSAPT 2002 and directing falls to a collection for discharge to local public drainage system or as approved;

(b) new lift foyer for access from the respective external public road frontages over new or existing stairs and footpath providing all weather covered access. Works include the structure, masonry walls and screens to the foyer, steel structure, windows, panelised wall cladding, roof sheeting, rainwater goods, soffit linings to the awnings and associated services;

(c) new lift foyer at the underpass if applicable (refer Appendix A) to allow connection between underpass tunnel and new lift structure. Linings to the new foyers to match the panelised cladding with concealed fixings on the lift structure;

(d) new lift structure for access from the external public domain to the existing cross-corridor overbridge or subway underpass including capping and roof to the lift shaft with guttering and drainage connection. Lift shaft to be fitted with panelised cladding with concealed fixings, ventilation louvres, lift door reveals complete for lift car by Interface Contractor;

(e) works to existing interchange and car park adjacent to each station precinct to provide DDA compliant accessibility and accessible car parking spaces (2 off);

(f) new or existing ramp & stairs are to be provided with handrails, contrasting tactile indicators, contrasting nosing and slip resistant finish compliant with Disability Standard for Accessible Public Transport 2002. Only the structures and walls that are impacted by the project scope of works are to be repainted and finished with anti-graffiti treatment. The remaining existing station structures or walls which are not impacted by the Works are not required to be provided with painting and anti-graffiti treatment unless instructed by the PM in order to present a coherent appearance to the finished works and environs;

(g) wayfinding and signage to the extent of the Works and adjustment to existing signage to incorporate the new Works are part of the Works (refer Section 2.8);

(h) new street furniture including seating and lighting;

(i) new weather protection shelters as per ASA Standards to commuter areas comprising footbridge and concourse, stairs, ramps and platforms; and

(j) fitting the shelters with an access system compliant to NSW OH&S Regulations and Codes of practice to allow for inspection and maintenance activities and are to be resistant to unauthorised access.

2.7.3. Graffiti Protection

The Contractor must:

(a) treat all new hard and existing surfaces affected by the Works such as walls, structural elements that are accessible to graffitists are to be treated to facilitate easy removal of graffiti. Surfaces are to be treated with anti-graffiti surface treatment up to a height of 3m above finished ground level and to a designed dado line. The anti-graffiti coating must match the adjacent surface and the colour and appearance of the structure to the greatest extent possible. Selected treatment is to be capable of being cleaned by easy and inexpensive methods without detriment or abrasion to the surface paintwork/coating; and

(b) protect new glazed surfaces including lift car walls, screens and balustrades, with approved product, applied in accordance with the manufacturer's directions.

2.7.4. Staging of the Works

Specific works will require possessions due to the use of cranes, movement of materials, adjacency of the Works to the public, interruption to services and proximity to the rail. The Contractor is required to program and manage the Works, making allowances in program and methodologies to align the Works with the planned possessions.

The Contractor must show all staging of the Works in his program and address them in the Design Management Plan, Configuration Management Plan, and secure the approval of Sydney Trains for possession timing.

2.8. Signage and Wayfinding Work

2.8.1. General

The Contractor's Activities include but are not limited to the design and construction of signage for the areas of each station affected by the Contractor's Activities including:

(a) permanent wayfinding signage as required as per Appendix I;

(b) directions to entries / exits;

(c) removal and replacing existing signs with the current TfNSW standard for wayfinding;

(d) statutory signage, to be determined; and

(e) all temporary signs.

2.8.2. Wayfinding Design

The Contractor must engage a designer from the panel of TfNSW pre-qualified Wayfinding Design Services providers for the design of Wayfinding and signage, refer Appendix I for current panel list. Select from the design stream B, in consultation with TfNSW CSD Wayfinding:

- Stream B – Sign Planning and Site Documentation Services.

2.8.3. Wayfinding Supply & Install

The Contractor must develop Wayfinding signage for each station and interchange areas included in the Works in consultation with TfNSW and the wayfinding stakeholders. Wayfinding and signage design is to be included in the SDR, PDR and CDR submissions for TfNSW review. CDR submission must include a Draft Production Order in the prescribed format. TfNSW will provide the Contractor with asset numbers for each sign shown in the Draft Production Order and the asset number is to be shown on the sign as per the Wayfinding Design Manual.

The Contractor must engage a manufacturer and installer of Wayfinding signage from the Wayfinding manufacturing services providers as follows:

- Central Signs
- A W Signs
- Singleton Moore Signs
- Cunneen Signs
- SignCraft

The Contractor will develop Wayfinding signage for each station and interchange areas included in the Scope of Works in consultation with TfNSW and Wayfinding stakeholders. Wayfinding and signage design is to be included in all the staged design submissions (e.g. PDR, CDR) for TfNSW's review. Upon approval of the design, CSD will develop a production order (a schedule of all signs, with asset codes required to meet the design) and prepare all artwork. Upon receipt of the production order from CSD, the Contractor is to procure the signage manufacture, supply and installation of Wayfinding signage.

Samples and shop drawings for signage must be provided for TfNSW review and assessment prior to initiating the final production run for any signage package.

2.8.4. Temporary Wayfinding and Information Signage

The Contractor must provide all necessary temporary wayfinding and information signage during the construction of the Works to ensure passengers, pedestrians and road users have clear directions to all transport facilities and are appropriately advised of all construction works.

All temporary wayfinding and information signage, emergency signage and statutory signage, required to support normal station operations, special events where higher than normal passenger flows are expected, site management, staging and other construction activities, must comply with the same Standards that apply for the permanent Works.

2.9. Fire Protection, Detection and Egress System

2.9.1. General

The Contractor is required to design and construct the fire protection system as an extension of the existing system and make adjustment to the existing systems so that the entire station is protected by a single system at all times.

The Contractor must:

(a) design and construct the fire protection, detection and egress system in accordance with applicable Codes and Standards including BCA, Sydney Trains Design Guidelines and Australian Standards;

(b) submit all designs and applications to each relevant Authority and pay all fees required by the Authority for design reviews, inspections, testing and provision of all certificates as required;

(c) provide a fire and life safety engineering report to the Principal's Representative for review and complete the fire protection, detection and egress system in accordance with the agreed report;

(d) provide certification for fire protection, detection and egress systems as required; and

(e) ensure that the appropriate fire rating is applied to all new, modified or altered structures that are affected by the Works.

2.9.2. Fire and Life Safety

The Contractor's works include but are not limited to:

(a) demonstrating that the modifications to each station as part of the Project, maintain the existing level of fire safety;

(b) engaging a qualified fire safety engineer to provide a performance based justification of the proposed arrangement to the satisfaction of the Contractor's independent verifier; and

(c) ensuring that the fire safety engineer engaged by the Contractor prepares the documentation as per the International Fire Engineering Guidelines. This will need to describe how the fire safety strategy for the modifications associated with these Works.

2.9.3. Fire Egress

Where the Works interrupt current fire egress paths, alternate paths of egress must be proposed by the Contractor and approved by Sydney Trains and TfNSW prior to Works commencing.

2.10. Interface Contractors

2.10.1. General

(a) Liftronics Pty Ltd is the Interface Contractor for lift design, provision and installation. shutdown and start-up of the lift and lift phone including all testing, commissioning and certification activities, refer to Appendix A; and

(b) Indra is the Interface Contractor for the lift CCTV, including testing and commissioning of lift CCTV cameras, refer to Appendix A.

The Contractor must coordinate the Interface Contractor's works and provide reasonable attendance and facilities to allow them to complete their works.

2.10.2. Vertical Transportation – Liftronics Lift Works

Lift cars and associated equipment will be supplied and installed by an Interface Contractor engaged by the Principal. The Contractor's Activities include but are not limited to the following:

(a) provide designated quantity of lift shafts with finishes cladding all complete with lift pit and overrun to suit Liftronic requirements for 17 person through lifts;

(b) provide power to the lift shaft comprising a new 2 hour fire rated sub-main and cable route and containment to the lift – Liftronic will distribute the power from this point to the motors, car, and any other relevant equipment provided by them;

(c) completion of all "builders work" required to complete the Works;

(d) obtain 'Safe to Operate' documentation for the lift, submitting documentation to WorkCover for registration of the lift and providing original copies of the registration of each lift to the Principal's Representative including making all payments as required to complete commissioning and registration; and

(e) arrange with Sydney Trains for a nominated Sydney Trains Engineer to attend, inspect, commission and formally accept the lift at the time of testing and commissioning.

Refer to Appendix J for TfNSW Lift Specification.

2.10.3. Closed Circuit TV – Indra for Sydney Trains

The design, supply and installation of Closed Circuit Television (CCTV) system must be treated as a Provisional Sum Work item under the Contract. Where the Principal's Representative directs the Contractor to proceed with this item subject to the recommendations of the security risk assessment, the Contractor must carry out the following:

(a) design the CCTV system including but not limited to general layout, cabinets, conduits, power source, poles, cabling and pits in accordance to Appendix K of this Works Brief;

(b) consult with Sydney Trains and Other Contractor(s) nominated by the Principal during the design of the CCTV system; and

(c) the supply and install of the system within the Site excluding CCTV camera device(s), CCTV rack, the connection, testing and commissioning.

The supply, installation, connection and commissioning of CCTV camera device(s), racks, uninterrupted power supply is to be carried out by Other Contractor. The Contractor must coordinate with the Other Contractor to ensure the Other Contractor Works are completed without impacting the program.

2.11. Station Electrical Works

2.11.1. General

The Contractor is required to design, construct, test and commission the required station electrical works as described in Appendix A - Station Specific Requirements and as follows:

(a) design, construct, test and commission the new electrical works in accordance with all relevant Codes and Standards;

(b) identify all existing non-compliant electrical equipment, cabling or systems interfacing with the Works and notify the Principal immediately;

(c) maintain any existing station dual supply where existing, it is not required to upgrade or provide a new dual/backup power supply;

(d) provide Accredited Service Provider (ASP) Level 3 design services as necessary for all contestable works required on any Ausgrid/Endeavour Energy asset modifications, including all fees and charges as applicable; and

(e) ensure all Ausgrid/Endeavour Energy asset modifications construction works are undertaken by an appropriate ASP.

3. Specific Requirements

3.1. Standards, Regulations and Codes

3.1.1. Introduction

The Contractor is to design and construct the Works in accordance with all relevant Laws, Codes and Standards and the Planning Approval as required by the Contract, this Works Brief, and Appendices including the Technical Specification.

3.1.2. Concessions

If the Contractor seeks any relief from any Code or Standard, such as an ASA or Sydney Trains Code or Standard the Contractor will be responsible for gaining that relief and for all risks associated with gaining or not gaining that relief.

In respect to a concession the Contractor is to:

(a) notify the Principal's Representative at the earliest opportunity that a concession will be required;

(b) ensure that the concession application is prepared in compliance with the ASA guidelines;

(c) ensure that the concession application is comprehensive and complete when submitted to the ASA for approval;

(d) notify the Principal's Representative no later than 10 days before the concession is proposed to be submitted for approval; and

(e) ensure that the application for a concession does not impact on the Contractor's ability to achieve milestones.

3.2. Design Requirements

3.2.1. Design Management Plan

The Contractor is to provide an initial submission of the Design Management Plan to the Principal's Representative in accordance with the requirements of the Contract, and requirements of the TSR.

The Contractor is to progressively review, monitor, amend and update the Design Management Plan as appropriate.

3.2.2. Design Reports

The Contractor is to submit design reports as part of any design package.

The report may refer to other separate deliverables where applicable or simply contain a section in the report that addresses the requirements listed below:

(a) a description of the scope of work covered;

(b) the relationship between design packages and external interfaces;

(c) a schedule of reference information and reports providing input into the design (e.g. geotechnical data, cadastral survey, topographical survey, utilities and services data), loads, load combinations, factors, safety requirements (during construction, operation and maintenance), environmental considerations and input from others particularly other contractors;

(d) design assumptions, constraints and limitations;

(e) identification of relevant and applicable Standards, Codes and guidelines (including document versions) and the identification of specific provisions, criteria and classifications within such Standards and Codes;

(f) the design philosophy and the specific design methodology adopted;

(g) a full set of drawings including:

(i) site plans;

(ii) general arrangements;

(iii) elevations, plans and sections;

(iv) drawings for all design/construction packages;

(v) interface drawings; and

(vi) staging and sequencing drawings.

(h) verifier certification (where applicable);

(i) safety in design demonstration (including compliance with the Safety Assurance Plan, identification of the hazards addressed by the design and identification of hazards that will be transferred to the eventual Asset Owner);

(j) a RAMS analysis and how the design addresses RAMS, including identification of required spares, operating and maintenance manuals and any special equipment or skills required for maintenance or operation;

(k) sustainability in design demonstration, including how the sustainability initiatives as identified in the Contract have been addressed;

(l) where applicable to the design package, room data sheets, room schedule and design requirements including sizing and specific weight requirements for equipment rooms. The room data sheets is to specify detailed requirements for all new buildings including room sizes, services, furniture and equipment, provisions for equipment and finishes etc.;

(m) a construction review, including construction methodology and operations staging (including identification of track possessions required for the Works);

(n) a schedule of any approved ASA concessions to published standards;

(o) demonstration of compliance with environmental management requirements and the Planning Approval;

(p) demonstration of compliance with the requirements of the Project Definition Documents. Any non-compliances is to be identified;

(q) demonstration of workmanship, material, product and equipment specifications (including certification of type approval for new materials, products or equipment);

(r) design calculations;

(s) documentation of outstanding issues that may affect the design;

(t) certification obtained by the Contractor from the BCA consultant that the design is in accordance with the fire and life safety requirements of the Building Code of Australia, the Environmental Planning and Assessment Act 1979 NSW, and the Environmental Planning and Assessment Regulation 2000 NSW;

(u) certification obtained by the Contractor from the Disability Discrimination Act 1992 consultant that the design is in accordance with the requirements of Disability Discrimination Act 1992 and Disability Standards for Accessible Public Transport 2000;

(v) demonstration of compliance with any conditions of approval from Office of Environment and Heritage;

(w) an asset maintenance strategy;

(x) an asset operations strategy;

(y) outline any requirements for inspection and test plans, Hold Points and Witness Points, together with the criteria for acceptance/release; and

(z) a decommissioning review, including decommissioning methodology and staging which sets out any restrictions on the asset's capability to be modified, decommissioned, dismantled, demolished and/or disposed of. Any residual hazards which remain after completion of the Works and transferred to the final Asset Owner is to be identified in the relevant safety assurance report.

3.2.3. Design Review Stages

(a) The Contractor is to prepare and submit designs for each package to the Principal's Representative for review in accordance with the Contract at the following stages of design development:

(i) System Definition Review (SDR)

The purpose of an SDR is for the Contractor to demonstrate that the system and interface specifications are complete and unambiguous and consistent with the requirements of the Contract. The Principal must be assured that the requirements for the system or interface are fully defined in the system and interface specification and that any inconsistencies or omissions in relation to contract requirements are identified and resolved.

(ii) Preliminary Design Review (PDR)

PDRs must be carried out at the completion of the "engineering" in the detailed design development phase for each system and/or interface between systems to ensure that the proposed solution is consistent with the functional and performance requirements of the engineering specification. The Principal must be satisfied that the proposed design solution complies with the intent of the specification and the Contract.

(iii) Critical Design Review (CDR)

CDRs must follow completion of the detailed design for each system and/or interface between systems in the detailed design development phase. The purpose of the CDRs is for the Contractor to demonstrate that the detailed design is to be suitable in all respects to proceed with construction/fabrication of physical items or

coding of software. CDRs should contain all test and acceptance criteria that the Contractor will need to satisfy to demonstrate that the constructed works meet the design intent of the design reports;

(b) The Contractor should also consider the requirements for design of early or staged Works. Early works that include elements of the Works are subject to I&S CCB approval and may require to be submitted separately to the main body of works. The Contractor must allow adequate time for the production of AFC drawings prior to commencement of the early works in question;

(c) The Contractor is to attend meetings with the Principal and make engineering diligence presentations for critical design packages agreed with the Principal;

(d) The Contractor may only commence a construction activity once all conditions precedent to the commencement of construction activities have been met and AFC Design Documentation exists for the relevant package or element of work; and

(e) Further development of Design after the final Stage Gate 3 is received is not permitted. Post-AFC design changes must be submitted for review in accordance with Clause 9.8 of the Contract.

3.2.4. Design and Sustainability Review Panel

As per the requirements set out in NSW Sustainable Design Guidelines and Checklist (provided in Appendix P), the Contractor is to submit the Design Documentation for urban, architecture and landscape designs to the Design and Sustainability Review Panel at the following times:

(a) Present the SDR submission, or such other submission as may be appropriate to allow an appreciation of the urban design impact of the works, and participate in a workshop to review and guide the urban, architecture and landscape designs;

(b) After consultation with all stakeholders, including the Sydney Trains Station Working Group, and prior to submission of the PDR Design present the amended SDR and participate in a second workshop with the Design and Sustainability Review Panel to review and guide the final urban, architecture and landscape designs. This submission is to incorporate and address:

(i) the comments of the Design and Sustainability Review Panel received during or after the workshop referred to in Section 3.2.4(a) ; and

(ii) comments of the stakeholders as agreed with the Principal.

(c) At other times after acceptance of the urban design in response to changes necessitated during the course of the Contractor's works.

3.2.5. Design Review and Comments Register

(a) All stakeholder consultation and Principal review comments are to be recorded on a 'Design review Comment Register' (DCR), or similar, that is version controlled and is to be stored on the document control system;

(b) All stakeholder DCRs are to be copied to the Principal; and

(c) In the event a comment is related to scope creep the Contractor is to escalate the comment to the Principal's Representative for resolution.

3.3. Safety Assurance

3.3.1. Safety Assurance Plan (SAP)

The Contractor is to have in place, maintain and consistently apply until Final Completion a Safety Assurance Plan (SAP) that defines the engineering safety assurance activities, evidence, deliverables and management arrangements. The SAP is to be submitted to the Principal's Representative in accordance with the requirements of the Contract.

The Contractor is to progressively review, monitor, amend and update the SAP, and submit for review as required throughout the project in accordance with the Contract.

The SAP is to demonstrate how the Contractor will comply with the requirements of ASA Standard TS 20001.

ASA Standard TS 20001 references the use of the TfNSW risk matrix where applicable. This risk matrix has been provided in Appendix O.

The SAP is to also include the delivery milestones for the safety assurance evidence documents and reports.

3.3.2. Safety Impact Assessment

For the purposes of engineering safety assurance, the Principal has undertaken an Initial Safety Change Assessment (ISCA) and determined that a "minor project" classification is applicable to the changed infrastructure. As a minimum, the Contractor is to meet the requirements of a minor project, as per ASA Standard TS 20001:2013 'System Safety Standard for New and Altered Assets'.

3.3.3. Safety Risk Summary Report (SRSR)

(a) The Contractor is to prepare one or more Safety Risk Summary Reports (SRSRs) that respond to the requirements set out in the Contractors SAP, refer Appendix G;.

(b) SRSRs are to be updated and submitted to the Principal's Representative as required to support the development and progress of either specific parts of, or full Design Documentation;

(c) SRSRs corresponding to submitted partial or complete designs is to be submitted:

  (i) with each design stage submission; and

  (ii) to support the Principal's submission to the I&S CCB. Submissions include those for all enabling, early, temporary and other works that potentially impact on the infrastructure configuration or operations, or safety of staff, customers or the public, that differ from the final design or are submitted before completion of the final design.

(d) If more than one SRSR is to be produced for the Works, the Contractor is to ensure that all SRSRs when read together demonstrate the safety of the whole of the Works.

3.3.4. Risk Assessment Workshops and Project Specific Safety Risk Register

(a) The Contractor is to conduct a workshop with the purpose of identification of initial and system hazards and assessment of risks to the operation and maintenance of the new or changed provisions, including consideration of CHAIR and Safety in Design, complete with initial consideration of mitigation and allocation of

responsibility for further mitigation. The TfNSW Standard Risk Matrix included in Appendix O is to be used in the assessment of risks;

(b) The Contractor is to develop a Project Specific Safety Risk Register (PSSRR) (or project hazard log), using the template provided by the Principal. The PSSRR is to be maintained as a live document which incorporates the risks identified during the design and construction, construction, testing and commissioning of Works and Temporary Works (including from any project hazard workshops). The PSSRR is to identify the responsible party for each risk identified and the mitigation measures in place to manage each identified risk; and

(c) On completion of the Works, the Contractor is to hand over a PSSRR that displays how all risks have been mitigated and identifying the agreed owners of any residual risks, complete with evidence of such agreement.

3.4. Requirements Management

(a) The Contractor is to adopt a formalised requirements management process to manage the requirements for the Contractor's works in accordance with ISO 15288 "Systems Engineering Lifecycle Processes", including the preparation of a Systems Engineering Management Plan (SEMP);

(b) The Contractor is to apply an engineering change management process, including formal approval from the Principal, to manage any changes to the Works;

(c) The Contractor is to develop and update a system requirements specification (SRS) which details the system requirements for the Contractor's works, including incorporating the additional site specific station requirements which can be found in Appendix A.

The Contractor is to demonstrate traceability between the business requirements (as described in each station Specific Requirements included in Appendix A) and the system requirements, between the system requirements and the detailed design and between the system requirements and the verification and validation procedures. The Contractor is to provide a requirements analysis allocation and traceability matrix (RAATM) (as described in IEE1220, ANSI/EIA632 or a similar standard);.

(d) The Contractor is to develop and provide assumptions, dependencies and constraints log (ADC Log) and is to keep the log current so the Contractor can, at Completion, demonstrate that all issues in the log are closed including the provision of any required evidence. The Contractor is to ensure where appropriate that any risk related items which require mitigation are transferred to the PSSRR and/or transferred to the RAATM to ensure traceability. As a minimum the content of the ADC Log is to include the following information for each assumption, dependency or constraint:

(i) Type (A = Assumption, D = Dependency or C = Constraint)

(ii) PUID (Project Unique ID)

(iii) Details/description of the assumption, dependency or constraint

(iv) Consequences if unresolved; and

(v) Status (Open/Resolved).

(e) The Contractor is to submit an up-to-date RAATM and ADC Log:

(i) with each design package submission to the Principal's Representative; and

(ii) on Completion.

3.5. Planning and Heritage Approvals

(a) The Planning Approval for any part of the Contractor's works not requiring a Section 60 Application to the Heritage Division of the Office of Environment and Heritage will be assessed and obtained by the Principal based on the Preliminary Design;

(b) The Planning Approval for any part of the Contractor's works requiring a Section 60 Application to the Heritage Division of the Office of Environment and Heritage will be assessed and obtained by the Principal based on the concept design to be developed by the Contractor;

(c) The Principal will appoint a heritage consultant to assist the Principal to submit and negotiate the Section 60 heritage application with the Heritage Division of the Office of Environment and Heritage and to obtain the subsequent approval. The Principal will arrange for a Statement of Heritage Impact (SOHI) to be prepared;

(d) The Principal's heritage consultant will provide information and advice received from the Heritage Division of the Office of Environment and Heritage to the Contractor for the Contractor's design team to interpret and use in the development of the Design Documentation and in particular the preparation of the information and materials required for the Section 60 heritage application if applicable;

(e) If any Section 60 heritage approvals are required, the Contractor is to engage a suitably qualified heritage architect (selection to be agreed upon between Contractor and Principal) to liaise and collaborate with the Principal's heritage consultant and to assist with:

(i) the preparation of the Concept and Detailed Designs; and

(ii) the preparation of any supporting information and materials required for the Section 60 heritage application.

(f) The Contractor is to retain the services of the heritage architect to consider and manage any conditions or recommendations forming part of the Section 60 approval if applicable, in addition to those conditions forming part of the Planning Approval.

3.6. Compliance with National Rail Safety Law 2012

The Contractor is responsible for the identification of all works which can be classed as rail safety works under the National Rail Safety Law 2012. Where the Contractors works fall under the National Rail Safety Law the Contractor must ensure that all personnel utilised for the delivery of those works must have Rail Safety Worker Competency certification.

3.7. Road Safety Audit

The Contractor must engage the services of a suitably qualified Road Safety Auditor to carry out road safety audits on all aspects of the Works and Contractor's Activities which affect the public roads or access lanes prior to any construction Works commencing. The audit is to be conducted as per RMS/RTA Technical Direction for Road Safety Practitioners (TD 2003/RS03) and RMS Road Accident Reduction Guide, Part 2: Road Safety Audits.

In addition the contractor is to undertake a RSA in accordance with the Work Activity Deed for any traffic light relocation works. In this case the RSA is to be carried out by an independent Road Safety Auditor who cannot be from the same organisation that carried out the detail design.

Audits are to be conducted but not limited to:

(a) the SDR design submission;

(b) any alteration to design following SDR review;

(c) immediately prior to the opening to traffic of any part of the Works; and

(d) immediately prior to the diversion or alteration to an existing diversion to any public roads or access lanes.

4. Document Deliverable Requirements

4.1. Programme

Within ten (10) days of the date of this Contract, the Contractor is to prepare a Cost Loaded Baseline "Services Programme" that fully details the delivery of the Services. The submitted programme is to be agreed with the Principal's Representative prior to Commencement. Program updates will be submitted by the Contractor on the 20th day of each month until the end of the Contract period.

The Contractor's Programme is to be no wider than one A3 sheet and submitted in the form of a Gantt chart.

The Contractor's Programme must comply with the following requirements:

(a) Calculate the duration using all available work days;

(b) Show all non-work days including weekends (2 days), proposed Christmas shut downs (maximum 14 calendar days), public holidays, industry non-work days etc;

(c) Show preparation period and submission date of all management plans as well as the Principal's review period;

(d) Align with the Work Breakdown Structure (WBS) provided by the Principal's Representative;

(e) Meet the standard of program quality as outlined in the TSR;

(f) Clearly display activities that are on the Critical Path;

(g) Identify proposed out-of-hours works, including possession weekends and station closures; and

(h) Make due allowance for improvement of submitted documents following Principal's review prior to submission to the I&S CCB, allow for a six working day minimum period between submission to the CCB and endorsement by the Panel, and due allowance for closure of conditions of approval before subject Works may commence.

4.2. Milestones and Key Dates

The following Key Dates are to be contained within the Contractor's programme:

(a) Contract Award Date;

(b) Joint Contractor and Principal's Representative inception meeting;

(c) Site Surveys (if required);

(d) Commencement and Completion Dates for the Design Phase;

(e) Commencement of Early Works (if any);

(f) Commencement of Main Works;

(g) Completion of Main Works, Commissioning events and Asset Handover; and

(h) Date for completion of Services.

The Programme is to include, but not be limited to, the following activities:

(a) Key activities as outlined in the TSR;

(b) Demonstration of the engagement of all sub-consultants / Contractor's, including mobilisation periods and commencement of services; and

(c) Separate activities for each planned site survey.

4.3. Document Control

The Contractor is to implement a document management and control system to be used by its team, including sub-consultants. The Contractor submissions to TfNSW are to conform to the following procedures:

(a) TAP Instructions for Preparing and Delivering Drawings for the project are contained within Appendix B of the Works Brief; and

(b) Instructions for Document Numbering and Transmittal Delivery for Transport Access Program (TAP) Projects as contained within Appendix B of this Works Brief.

The Contractor's responsibilities also include:

(c) Establishing and implementing a document register for the documents received from and sent to the Principal's Representative, other Principal's advisors, authorities and other stakeholders;

(d) Receipt, management and distribution of documents, and the responses to these documents, including Requests For Information (RFIs); and

(e) Establish and maintain an issue register/database for management of all key issues, including receipt, response, follow up and close out.

All documentation, reports, submissions, plans, issue registers etc. is to be provided by the Contractor to the Principal's Representative in the format specified, including in an editable format (i.e. Microsoft word, excel or power) where requested. Design drawings and plans must be submitted in both .pdf and .dwg formats.

TeamBinder is an Electronic Document Management System designed to support centralised document storage and collaboration between stakeholder on major infrastructure design and construction projects. TeamBinder is being used by the Principal to support a single process for the review of engineering designs.

The Contractor will be provided access to TeamBinder under the Principal's licence for the purpose of submitting the following for review:

(a) Design Documentation; and

(b) Any other documentation advised in Appendix A – Portion Specific Requirements

The Contractor must load all required documentation into Teambinder in accordance with the Principal's requirements. Any non-conformances or observations made by the Principal arising from any review of the submitted documentation, the Contractor's responses and any closure dialogue must be communicated and managed within the Teambinder environment. TeamBinder is a new process being progressively adopted by the Principal. Interim arrangements may be made by agreement between the Principal and the Contractor to initially manage this process using spreadsheets. Such agreement will not affect the Contractor's requirement to load documents into TeamBinder as soon as TeamBinder is adopted for the Contract.

5. General Requirements

5.1. Life Cycle Costing

The Contractor must demonstrate that Life Cost can be achieved within the limits defined for each station. Evidence of compliance is to be submitted for review with SDR and CDR submissions.

The contractor must demonstrate compliance with this requirement using a Life Cost Model provided by the Principal. The Life Cost Model for each station consists of the following elements:

(a) The Life Cost Model Spreadsheet: An active spreadsheet in MS Excel format with all the formulas will be provided to the Contractor so that the materials selected can be entered in accordance with the Life Cost Equipment, Materials and Finishes Schedule. A blank template of the spreadsheet is provided for review in Appendix C;

(b) Life Cost Equipment, Materials and Finishes Schedule: A schedule of equipment, materials and finishes used on Sydney Trains stations and Interchanges. The schedule lists the best practice RM costs and frequency and MPM costs and frequency for each element. These values must be used in the model when preparing a station specific model to demonstrate that life cost is being kept within the defined limits. Where materials are proposed which are not listed in the schedule, the contractor must demonstrate that the departure is warranted, that durability claims have been demonstrated to the appropriate industry standards and that Sydney Trains have accepted the proposed materials;

(c) Life Cost Base for the existing facility: The Life Cost Model has been applied to the existing, unimproved facility to establish a baseline. This is the theoretical cost of maintaining the existing facility using the frequency of maintenance shown in the Life Cost Model Spreadsheet and the values provided in the Life Cost Equipment, Materials and Finishes Schedule;

(d) Preliminary design Life Cost: The preliminary design life cost is derived by the Principal by applying the Life Cost Model to the preliminary design provided with the tender documents. This is the theoretical cost of maintaining the improved facility as described in the tender documents using the Life Cost Model Spreadsheet and the Life Cost Equipment, Materials and Finishes Schedule. This value can be less than or greater than the Life Cost Base, depending on whether the preliminary design

delivered a facility that costs more or less to maintain than the existing, unimproved facility; ; and

(e) Station specific Life Cost Ceiling: The Life Cost Ceiling for each station is derived by subtracting the value of the Life Cost Base from the preliminary design Life Cost for each station. This value can be positive or negative, depending on whether the preliminary design delivered a facility that costs more or less than the existing, unimproved facility to maintain.

The Contractor must demonstrate that the developed design at SDR stage has been kept under the Life Cost Ceiling for each station using the model and the tools provided by the Principal. A follow up assessment is to be completed and submitted for review at CDR stage to demonstrate life costs have been managed within the given parameters before construction is to commence.

5.2. Architects, Landscape Architects, Urban Designers

TfNSW relies upon the Contractor to engage Architects, Landscape Architects and Urban Designers who are capable of design excellence.

Each project presents unique challenges arising from its existing built context, existing circulation, operational requirements, and the proposed upgrade works. The projects are diverse; accordingly different consultants will offer varying expertise appropriate to specific requirements.

The Contractor should consider the particular urban design requirements of the project before they select urban design consultants:

A. Urban Design Requirements of a Project

The essential urban design requirements should be understood in terms of the following, at a minimum:

(a) Whether the project site is urban, suburban, rural or industrial;

(b) Whether heritage buildings or curtilages are involved;

(c) The extent of design of hard and soft landscape, and public domain work; and

(d) The likely visual prominence of the new architecture and landscape within its context.

B. Essential Requirement of a Consultant

Contractors must engage a competent consultant Architect/s, landscape architects and urban designers, including, at a minimum, the lead Architect for the project who, being the leader must:

(a) Be a Registered Architect in NSW, or another Australian State, and have current membership with the Australian Institute of Architects or Landscape Architects;

(b) Hold a leadership role within their own practice to ensure that project priorities are upheld; and

(c) Demonstrate a good fit between the consultant's ability and the urban design requirements of the project (A) above.

5.3. ASA Authorisation

(a) All engineering tasks undertaken as part of the Contractor's works are to be undertaken under the authority of an Authorised Engineering Organisation in accordance with ASA Requirements. This authorisation may be held by a Subcontractor and evidence of this authorisation is to be provided by the Contractor if requested by the Principal's Representative.

(b) The Contractor is to prepare and submit for the Principal's review an Assurance Plan, which is to include:

(i) Details of the Contractor's Assurance Argument and the means by which it will be delivered;

(ii) the AEO model agreed with the ASA that identifies which party in the Contractor's team has AEO competence for delivery of each element of the scope and responsibility for the production/assurance of design and/or construction services, identifying the relevant authorised signatories;

(iii) a detailed description of the Contractor's processes:

A. that have been assessed by the ASA in providing AEO Authorisation;

B. that will be used by the AEO in providing assurance of the delivered services; and

C. against which the AEO may be audited during the delivery of the services.

(iv) the identification and assessment of any risks in the performance of the Contractor's works for which ASA authorisation is required, and for each of the risks identified specify the controls (including audits, expertise, resources, and staff) to manage the risks; and

(v) procedures for monitoring, reviewing and revising the adequacy of the controls identified to manage the risks.

5.4. Community Liaison Management Plan (CLMP)

A CLMP must be prepared by the Contractor. The CLMP must develop, implement and maintain a clear framework, including policies, processes and procedures, for proactive communications management.

The CLMP must be submitted to the Principal's Representative for review and approval prior to construction commencing. The Contractor must review and update the CLMP every six months.

The CLMP must include the following:

(a) details of the community relations resources, including personnel, to be employed by the Contractor whilst carrying out the Contractor's Activities;

(b) a project-specific analysis of issues to be managed prior to and during construction of the works, including proposed strategies and tools to manage these issues;

(c) a stakeholder list, highlighting issues/interests and strategies for dealing with each audience;

(d) an indicative program for the implementation of community liaison activities. This program should include key dates for the commencement and conclusion of construction activities, associated impacts to the community and the Contractor's proposed strategies for minimising impacts and informing the community;

(e) details of requirements of the project environmental assessment and the conditions of the Planning Approval for community and stakeholder consultation and proposed methodologies and timeframes for undertaking this consultation;

(f) policies and procedures for handling community complaints and enquiries;

(g) details of the Contractor's nominated 24 hour contact for management of complaints and enquiries;

(h) policies and procedures for incident management and reporting;

(i) policies and procedures for ensuring Subcontractors comply with the TSR; and

(j) details of activities which will be undertaken to monitor and evaluate the effectiveness of the community liaison program.

5.5. Investigations and Survey

(a) the Contractor is to undertake all necessary site investigations and surveys including geotechnical and site investigations, property and land surveys, topographic survey and complete rail systems survey, groundwater and building/infrastructure/utility condition surveys required for the Contractor's works and for the design, construction, testing, Commissioning and Asset Handover of the Works and the Temporary Works, where they have not been provided to the Contactor by the Principal. Where the Principal has provided some or no survey and/or investigations data, the Contractor must take all necessary action to verify, adopt, and assure the accuracy of this information, or may carry out his own surveys and investigations;

(b) All designs, setting out, surveys, control marks and final work-as-executed drawings are to utilise the Map Grid of Australia (MGA) survey coordinate system. The Contractor is to convert any of the Principal's Design provided in Integrated Survey Grid (ISG) coordinates into MGA survey coordinate system;

(c) Where any of the Works interface with track related survey data, including the platform edge and rail systems and support infrastructure, survey data that is to be returned to the Sydney Trains' Plan Room is to remain compatible with the adjacent track geometry coordinate system to allow clearance and other calculations to be undertaken that ensures safe passage of rail traffic. In such circumstances the Contractor is to contact Sydney Trains' Principal Surveyor to clarify or confirm any requirements regarding specific locations;

(d) The Contractor is to assess the adequacy of any survey information provided and if necessary engage the services of a surveyor selected from the Rail Panel having NSW suburban Rail Corridor experience for the completion of all surveys, field work

and setting out which will form part of the Design Documentation and the delivery of the Contractor's works.

(e) Prior to the commencement of any detailed design activities, the Contractor is to provide a survey to the Principal which:

(i) utilises the MGA94 survey coordination system (noting item (d) above);

(ii) has been completed in accordance with the *Surveying and Spatial information Act 2002* (NSW) and the *Surveying and Spatial Information Regulations 2012* (NSW) for all boundary and engineering surveys;

(iii) identifies and accurately locates:

A. all property boundaries including encroachments and the location of the Site in relation to the property boundaries all Authority and private Services;

B. the position of all built infrastructure and natural features;

C. the position and level of all Tracks prior to the commencement of any design or construction activities and highlight any differences between these positions and levels and the current Sydney Trains design positions and levels;

D. the position and level of all catenaries and contact wires prior to the commencement of any design or construction activities;

E. the position and type of all OHWS and foundations where determined to be effected by the works; and

F. the existing position and level of all platform / coping edges prior to the commencement of any design or construction activities;

(iv) includes any additional property, land and engineering survey (identification survey) for the Site and surrounds to enable the design and construction of the Contractor's works. This survey is to clearly identify any non-compliance with Codes and Standards and the clearances between:

A. all structures and the Sydney Trains property boundary; and

B. critical rail infrastructure and other structures.

(f) Prior to the commencement of any detailed design activities, and in accordance with Clause 3.12 (b) of the Contract the Contractor is to provide a separate survey report to the Principal which identifies:

(i) all property owners, their lots and boundaries; and

(ii) the differences between existing levels and Sydney Trains design records for layout and levels for Tracks, catenaries, contact wires, OHWS and coping / platform edges where relevant to Project Specific Requirements.

(g) The Contractor is to provide as-built survey drawings showing all property boundaries and the positions and levels of all infrastructure on the Site including Services, Tracks, OHWS, OHW and platform / coping edge. This survey is in addition to the required Sydney Trains' detailed site survey (DSS) and is to clearly

identify any non-compliance with Codes and Standards and the clearances between:

(i) all structures and the Sydney Trains' property boundary; and

(ii) critical rail infrastructure and other structures.

(h) The Contractor will be the primary controller for Sydney Trains' detailed site survey (DSS) drawings and is to:

(i) as primary controller, manage and administer any secondary control as required by the obligations of a primary controller;

(ii) engage the services of a registered surveyor from the Sydney Trains Surveyor Panel who has undertaken Sydney Trains' DSS training to undertake all survey activities;

(iii) progressively update the Sydney Trains' services search data in accordance with Sydney Trains' requirements to show installed / amended / removed Services; and

(iv) prepare new or updated final as-built DSS showing the final position and levels of all buried or hidden services in accordance with Sydney Trains DSS requirements.

(i) The Contractor is to review the bore logs and/or other investigation outputs, where provided by the Principal, and produce a Geotechnical Investigation Report, and should further investigation work be required to satisfy its obligation to produce Design Documentation to AFC status, the Contractor is to carry-out such investigation work for input into the detailed design of the civil and structural works. For any additional geotechnical investigation work for the Geotechnical Factual Report, the Contractor is to include:

(i) a review of existing data and incorporation of existing information into the final geotechnical model;

(ii) development and graphical presentation of a geological and geotechnical model including long and cross sections as appropriate to adequately define constraints at critical locations;

(iii) interpretation of relevant geotechnical design parameters;

(iv) recommendations relating to sub-grade preparation for fill embankments;

(v) recommendations relating to cut batter designs, ease of excavation and support/retention;

(vi) recommendations for foundations types, founding strata and relevant design parameters;

(vii) advice regarding unsuitable material;

(viii) recommendations regarding sub-grade preparation beneath track formation;

(ix) recommendations for construction control testing and monitoring to confirm that parameters assumed in the design have been achieved during construction;

(x) advice regarding local hydrogeological regime;

(xi) advice regarding any other geotechnical constraints identified; and

(xii) advice regarding areas of specific geotechnical risk and recommendations for mitigation measures if no additional investigations are applicable.

(j) The Contractor is to review the Preliminary Site Investigation Contamination Assessment, where provided by the Principal, and assess the need for a Detailed Site Investigation Contamination Assessment and for contamination remediation for the Works and Temporary Works to satisfy its regulatory obligation. Should contamination remediation be required, the Contractor is to prepare a Contamination Remediation Plan and submit to the Principal's Representative for approval. The Contractor is to carry out all necessary contamination remediation work as defined in the approved Contamination Remediation Plan.

5.6. Stakeholders and Interface Management

(a) The Contractor is to interface and liaise with all stakeholders, including the following organisations:

(i) TfNSW Transport Infrastructure and Services Division;

(ii) Roads & Maritime Services;

(iii) Sydney Trains, other than in its role as an Interface Contractor;

(iv) Transport Management Centre;

(v) Sydney Buses;

(vi) Local Councils;

(vii) NSW Taxi Council;

(viii) local bus companies;

(ix) Urban Growth NSW;

(x) Heritage Council of NSW;

(xi) Authorities;

(xii) Any other stakeholders listed in Appendix E – Interface Schedule;

(xiii) community and neighbourhood associations; and

(xiv) local residents, businesses, communities and public transport users.

(b) Interfaces between the Contractor, the Principal and Other Contractors are identified in the Interface Schedule in Appendix E. The Contractor is to maintain the Interface Schedule as a live document for the duration of the Contract to demonstrate progress in interfacing actions, and is to attach the Interface Schedule with each design submission to the Principal's Representative for review in accordance with the requirements set-out in the General Conditions.

5.7. Effect of the Works

(a) The Contractor is to ensure that the Works and the Temporary Works and the Contractor's Activities do not 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 (including but not limited to structures, roads, railways, retaining walls, bridges, services and buildings) or any existing properties adjacent to the Site 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

(ix) access to such infrastructure or existing properties.

(b) The Contractor is to undertake a detailed engineering analysis to confirm the suitability of the design and construction methodology. This analysis is to predict the effects of the Contractor's works on existing ground conditions and infrastructure (including but not limited to structures, roads, railways, retaining walls, bridges, services and buildings). The analysis is to also ensure that the predicted movements, vibration and stray current effects will satisfy the requirements of Section 5.6(a) or Section 5.6(b). This analysis is to be documented in a report and submitted with the Design Documentation ; and

(c) The analysis is to include the influence of:

(i) excavation and earthworks construction

(ii) geological variations

(iii) the impact on groundwater and existing civil structures i.e. drainage culverts

(iv) the effects over time

(v) stray current

(vi) vibration from construction and compaction equipment; and

(vii) wheel/rail noise.

5.8. Configuration Management

5.8.1. Configuration Control Board Submissions

(a) The Contractor is to submit to the Principal's Representative the documents required to support each submission to I&S's Configuration Control Board (CCB), as detailed in TfNSW Configuration Change Request (4TP-FT-256), for the following staged gateways:

(i) CCB Stage Gate 3 which applies before production of AFC documentation and confirms that:

A. stakeholders have been consulted and their comments have been appropriately addressed by the AEO and incorporated into the Design Documentation as appropriate

B. the Contractor's Design Documentation is in compliance with the requirements of the Contract, the Law, ASA Requirements and all applicable Codes and Standards, is coordinated, constructible, and represents accepted good engineering practice; and

C. the Contractor's Design Documentation has been produced by a process that has considered the configuration of the infrastructure such that it is safe for the infrastructure depicted by the Design Documentation to be built;

(ii) CCB Stage Gate 4 which applies on completion of construction and is required as a condition precedent to commissioning the Works; and

(iii) CCB Stage Gate 5 which applies after successful commissioning of the Works and is a condition precedent to the Works being put into service.

(b) The Contractor must not commence any new project phase until I&S's CCB has issued a configuration change approval number and after any conditions imposed by I&S's CCB have been satisfactorily addressed or as directed by the Principal's Representative.

5.8.2. Configuration Materials

The Contractor is to have in place, maintain and consistently apply, until Completion, systems and processes to ensure the timely collection, production, validation, compilation and submission of the configuration materials by the Contractor to ensure the effective handover of the Works in accordance with the requirements of the Contract.

5.9. Operational Readiness

The Contractor must:

(a) have in place systems, plans and processes to ensure that the programming, coordinating, documenting and executing of all Operational Readiness activities for the Works are managed in accordance with the requirements of the Contract. This includes activities which may be carried out by third parties, to enable the effective operation of the Works and the Asset Handover of the to the Operator/Maintainer

(b) participate in an Operational Readiness risk workshops, if required, and identify risks

(c) develop and provide an appropriate training and/or familiarisation program as required for the Operator/Maintainer's personnel;

(d) ensure the timely collection, production, validation, compilation and submission of the Asset Management Information to the Principal;

(e) supply spares and any special tools, facilities and equipment required for Operational Readiness; and

(f) assist the Principal in each formal Asset Handover involving acceptance and sign-off of the systems and services with the Asset Owner's and/or the Operator/Maintainer's representatives.

5.10. Commissioning

5.10.1. Commissioning Management Planning

The Contractor must:

(a) have in place, maintain and consistently apply, until Completion, systems and processes to ensure that the programming and coordinating of all commissioning activities, including activities which may be carried out by third parties, are defined in a Commissioning Management Plan (CMP) and managed in accordance with that plan and submitted to the Principal's Representative for review in accordance with the requirements of the Contract.

(b) provide an initial submission of the CMP to the Principal's Representative for review, at least 18 weeks prior to the first Commissioning Event; and

(c) include in the CMP, detail appropriate to the size and complexity of the works including as a minimum:

(i) A Commissioning approach;

(ii) A summary of the Contractor's Activities;

(iii) Project Staging Plan (commissioning requirements during planning, design, construction and post construction stages);

(iv) Identification of the necessary resources required to successfully commission all works associated with each Commissioning Event ; and

(v) a Schedule of Commissioning Events (SoCE) – this schedule must identify individual commissioning events including:

A. the date of each commissioning event;

B. a brief scope of works;

C. the operational changes as a result of the Asset Handover;

D. the maintenance changes as a result of the Asset Handover; and

E. whether the Commissioning Event will be possession dependent.

5.10.2. Commissioning Event Planning

The Contractor must:

(a) develop and maintain a Commissioning Event Plan (CEP) for each commissioning event, providing an initial submission at least 12 weeks prior to each Commissioning Event; and

(b) include in the CEP, sufficient detail to demonstrate that the commissioning event has been planned and managed appropriately, including as a minimum:

(i) a commissioning event summary;

(ii) stakeholder identification and responsibilities;

(iii) required commissioning activities;

(iv) required certifications;

(v) Inspection and Test Plan (ITP) approvals;

(vi) TfNSW and third party inspection plans;

(vii) risk management requirements;

(viii) training requirements for operator/maintainers;

(ix) a list of applicable Asset Handover documentation and when it will be delivered for review by the Principal; and

(x) contingency measures to address unplanned circumstances.

5.11. Asset Handover Planning

The Contractor must:

(a) appoint a Contractor's Asset Handover Team (AHT) Representative;

(b) attend all scheduled AHT meetings for the duration of the Contractor's Activities;

(c) provide information to the Principal in a suitable format for inclusion in the Asset Handover Plan (AHP);

(d) report progress to the AHT on the activities assigned to the Contractor to facilitate Commissioning, Operational Readiness and Asset Handover;

(e) identify Contractor's Activities that may delay Commissioning, Operational Readiness or Asset Handover events;

(f) undertake activities identified in the Principal's Commissioning and Operational Readiness Activity Schedule (CORAS) tool within given timeframes that are required to enable Operational Readiness to be achieved for each Commissioning and Asset Handover event;

(g) work collaboratively with the Principal, the Operator/Maintainer and other third parties to assist all activities to proceed as planned; and

(h) undertake all relevant training before handover.

5.12. Asset Management Information

The Contractor must:

(a) identify and gain acceptance of the Asset Management Information (AMI) documents required by the Operators/Maintainers, for management of the assets, in accordance with the Asset Owner's systems and processes;

(b) progressively submit the AMI items within sufficient time to allow review and acceptance by the Principal prior to the Asset Handover, unless agreed;

(c) formally transmit the AMI to the Principal in the specified format, including provision of different documents as separate electronic files with the necessary coding requirements to allow efficient document management and revision control; and

(d) include within the completed AMI package, as a minimum:

(i) operation and maintenance manuals covering all aspects of the Works

(ii) work-as-executed drawings;

(iii) systems assurance and safety assurance records;

(iv) registers for assets, materials/finishes and life cycle costings;

(v) schedules of spares, special tools, consumables and equipment;

(vi) technical maintenance plans and service schedules for assets that are not part of the Asset Owners existing network;

(vii) statutory certifications (e.g. BCA, DDA, Fire, Road Safety etc);

(viii) testing, commissioning and compliance certificates; and

(ix) warranties for works and assets.

Appendix A – Station Specific Requirements

Station Specific Requirements for Victoria Street Station
Appendix A to Exhibit B – Works Brief

ISD-15-4742-5 Victoria Street TAP Easy Access Upgrade

Transport Access Program

Status:	Final
Version:	8
Date of issue:	January 2017

Table of Contents

1. Introduction

This document sets out specific requirements for the Contractor's Activities for the Victoria Street Station Easy Access Station Upgrade works and must be read in conjunction with the TAP Easy Access Works Brief.

2. Station Details

2.1. Location

Victoria Street Railway Station precinct is located approximately 170km north of Sydney and 30km northwest of Newcastle. Victoria Street Railway Station is currently serviced by the Hunter Line providing train services between Scone/Dungog in the west and Newcastle in the east. The Hunter Line also carries a significant amount of rail freight between coal mining areas west of Maitland to the Port of Newcastle.

2.2. Description of Existing Station

The station is located between Waller Street to the North and Victoria Street to the South. Victoria Street Station consist of one island platform (P1/2) connected to the adjacent streets by a footbridge and stairs. Stairs also provide access to the platform.

2.3. Existing Non Compliances and/or deficiencies

Preliminary evaluation of the site has identified a number of non-compliances and/or facility deficiencies which include but are not limited to:

i. non-compliant access to the platform from the public domain via footbridge and stairways.
ii. existing footbridge and stairs are uncovered.
iii. the existing footbridge structure does not achieve required fire rating/regulation standards.
iv. existing bridge does not meet modern clearances (height from tracks) or clearance from the tracks (structural setbacks).
v. existing structure of bridge not capable of supporting throw-screens and required resistance.
vi. the existing number of risers exceeds BCA requirements (Victoria Street and platform stairs).
vii. handrails and luminance nosing to stairs non- compliant.
viii. existing Services within the station building are currently non-compliant.
ix. existing power supply insufficient for the proposed Works.
x. clearances around station building non-compliant due to platform furniture and public phone.
xi. no Family Accessible Toilet (FAT).
xii. no covered entrance to existing male toilet (proposed FAT).
xiii. sill height of the existing information counter.
xiv. staff areas not currently accessible.
xv. inadequate taxi and kiss & ride areas serving the station.
xvi. inadequate covered waiting area for existing bus stop on Victoria Street.
xvii. no accessible parking spaces on either side of the station.
xviii. no bicycle racks located adjacent to station entry.
xix. Waller Street forecourt is very constrained, given the limited space available set by structural clearances from tracks and existing street.
xx. rail boundary gate off Victoria Street to be retained in current position which may affect location for lifts to be placed on the southern side.
xxi. accessibility solutions will need to be accommodated within the current platform as design modification to the platform width is outside the scope of this study.
xxii. platform height is non-compliant however raising the entire platform is outside the scope of this study.

2.4. Local Council

Victoria Street Railway Station and Interchange precinct is located within the Maitland Local Government Area (LGA).

2.5. Spatial and Pedestrian Planning

The station should be designed and constructed to meet patronage at 2036+15% capacity.

Year	AM Peak Entries	AM Peak Exits	24 hour Entry/Exit
	2036	2036	2036
Trips	254	127	1242

2.6. Materials, Finishes, Fixtures and Fittings

Provide all materials, finishes and fittings in accordance with the Easy Access Upgrade Technical Specification and the Schedule of Materials & Finishes included in the main Works Brief.

2.7. Heritage Status

Victoria Street Railway Station is listed on the NSW Heritage Inventory Database S170 listing as #4806252 as well as on the NSW State Heritage Register Listing as #5012254.

The Victoria Street Railway Station precinct is significant for its historical values as a tangible link to the development of the Main North Line as the original terminus of the line from Newcastle from 1857-8.

The station building has aesthetic significance for the simple platform building which demonstrates typical railway architecture of the early 20th Century.

Prior to the contract award, TfNSW will secure land owner's consent from RailCorp and agree if any heritage related conditions are required to be met under NSW State Heritage Act, 1977.

Any planning conditions imposed as part of the planning approval process will be provided to the Contractor under Exhibit D – Planning Approval Conditions. All design development and construction must comply with planning conditions, including compliance with the relevant heritage requirements provided in Exhibit D for this site.

3. Project Scope

The project scope elements are provided in the following spread sheet. All the scope elements covered below are to be read in conjunction with the main Works Brief (Exhibit B) and Initial Design Drawings (Exhibit I) to the Contract.

	Element	Sub-Elem	Location	Location/Description	Control Account
	Bridges				
		Footbridge			
			Footbridge		014-BR-2078-IF1.FTB-130
1				Fire rating to underside of footbridge in accordance with applicable Standards	
2				No works required on the existing footbridge.	
3				New aluminium ceiling panel	
4				New canopies	
5					
6				Install trafficable surface of footbridge extensions equivalent to existing recently resurfaced footbridge.	
	Buildings				
		Building Structure			
			Platform		014-BU-2027-IF1.PTF-130
7				Refurbishment of station building including new ambulent staff toilet, kitchenette, cleaners room and Station Service Equipment Room (SSER) inclusive of all joinery, furniture and equipment.	
8				New balustrade understair area	
9				New composite aluminium ceiling panel to canopy (throughout platform and stairs)	
10				New FAT	
11				Modify doors and windows (to NSW Hertiage branch requirements). Install accessible customer information window to DDA requirements.	
			Platform Lift		014-BU-2027-IF1.LFS-130
12				Lift: 1 x passenger lift; inside rail corridor	
13				Lift: Reinforced concrete piles inside rail corridor	
14				Lift: Automatic glazed doors to lift	
15				Lift: Cantilevered slab to lift lobby	
16				Lift: Glazed window to lift shaft	
17				Lift:General Solid Waste removal	
18				Lift: Pad footings	
19				Lift: Restricted Solid Waste removal	
20				Lift: Reinforced concrete structure with zinc cladding	
21				Refurbish existing staircase including new nosings and modifications to handrail	
22				Stair canopies	
			Victoria St Entrance		014-BU-2027-IF1.IN1-130
23				Lift: 1 x passenger lift; inside rail corridor	
24				Lift: Reinforced concrete piles outside rail corridor	
25				Lift: Automatic glazed doors to lift	
26				Lift: Cantilevered slab to lift lobby	
27				Lift: Glazed window to lift shaft	
28				Lift: General Solid Waste removal	
29				Lift: Pad footings	
30				Lift: Restricted Solid Waste removal	
31				Lift: Reinforced concrete structure with zinc cladding	
32				New balustrade understair area	
33				Refurbish existing staircase including new nosings and modifications to handrails	
34				Stair canopies	
			Waller St Entrance		014-BU-2027-IF1.IN2-130
35				Bin Storage compound	
36				Lift: 1 x passenger lift; inside rail corridor	
37				Lift: Reinforced concrete piles outside rail corridor	
38				Lift: Automatic glazed doors to lift	
39				Lift: Cantilevered slab to lift lobby	
40				Lift: Glazed window to lift shaft	
41				Lift: General Solid Waste removal	
42				Lift: Pad footings	
43				Lift: Restricted Solid Waste removal	
44				Lift: Reinforced concrete structure with zinc cladding	
45				New balustrade understair area	
46				Refurbish (clean and paint) existing sound barrier wall	

47				Refurbish existing staircase including new nosings and modifications to handrail	
48				Stair canopies	
	Communications Systems				
		Passenger info system			
			Platform		014-ST-2116-IF1.PTF-130
49				Install a Platform Indicator on each platform	
50				Install compliant PA system as required	
51				Install hearing loop platform 1/2 in location where platform is regraded	
52				Install help point on new concourse	
53				Install PID at entrances	
54				SPI	
		Passenger security system			
			Victoria St Entrance		014-ST-2117-IF1.IN1-130
55				CCTV cameras across whole site: station, entrances, new car park Victoria Street, bus shelter	
	Demolition & Site Preperation				
		Buildings			
			Footbridge		014-DEM-2028-IF1.FTB-130
56				Retain existing footbridge slab	
			Victoria St Entrance		014-DEM-2028-IF1.IN1-130
57				Demolish and cart away existing bus shelter and make good	
		Demolition - General			
			Platform		014-DEM-2059-IF1.PTF-130
58				Disconnect existing services	
59				Remove non-compliant seating on platform	
			Victoria St Entrance		014-DEM-2059-IF1.IN1-130
60				Remove and cart away existing asphalt to commuter carpark on Victoria Street. Remove and dispose of redundant sections of track in the location of the lift on Victoria Street	
			Waller St Entrance		014-DEM-2059-IF1.IN2-130
60					
		Early works			
			Platform		014-DEM-2067-IF1.PTF-130
61				Temporary hoardings	
	Drainage				
		Surface and Sub-surface Drains			
			Victoria St Entrance		014-DR-2158-IF1.IN1-130
62				Modification of existing station stormwater system to accommodate new canopies and lifts - note if the existing stormwater system drains to track that the entire station storm water system will need to be modified so that it connects to the relevant local Authority drainage system.	
63				Modification of existing stormwater system and connection to Victoria Street carpark	
			Waller St Entrance		014-DR-2158-IF1.IN2-130
64				Modification of existing station stormwater system to accommodate new canopies and lifts - note if the existing stormwater system drains to track that the entire station storm water system will need to be modified so that it connects to the relevant local Authority drainage system	
65				Relocation of existing stormwater system to Waller Street carpark drainage system, to enable the installation of the new lift	
	Fencing and Barriers				
		Boundary fencing and gates			
			Victoria St Entrance		014-FN-2023-IF1.IN1-130
66				Palisade fence around commuter car park not required	

67				2400mm high palisade security fence allow for the full length of the platform and 50 lineal metres beyond each end of the platform on Victoria Street. Bin storage compound including bin washout area.	
			Waller St Entrance		014-FN-2023-IF1.IN2-130
68				2400mm high palisade security fence allow for the full length of the platform and 50 lineal metres beyond each end of the platform on Waller Street	
	Furniture and Fixtures				
		Bike rack			
			Victoria St Entrance		014-FF-2017-IF1.IN1-130
69				Bike racks (10 per side)	
			Waller St Entrance		014-FF-2017-IF1.IN2-130
70				Bike racks (10 per side)	
		Seats			
			Platform		014-FF-2143-IF1.PTF-130
71				New compliant seating	
			Victoria St Entrance		014-FF-2143-IF1.IN1-130
72				New compliant seating	
			Waller St Entrance		014-FF-2143-IF1.IN2-130
73				New compliant seating	
	Landscaping				
		Hard landscaping			
			Victoria St Entrance		014-LG-2080-IF1.IN1-130
74				Hardstand surface to Victoria Street forecourt. Finishes to be coordinated with proposed council works.	
75				New larger bus shelter on Victoria Street in compliance with DDA requirements	
76				New information panel to Victoria Street forecourt	
			Waller St Entrance		014-LG-2080-IF1.IN2-130
77				Hardstand surface to Waller Street forecourt. Finishes to be in accordance with council specifications.	
78				New information panel to Waller Street forecourt	
		Lighting to landscape / Streetscape			
			Victoria St Entrance		014-LG-2096-IF1.IN1-130
79				Lighting poles	
			Waller St Entrance		014-LG-2096-IF1.IN2-130
80				Lighting poles	
		Soft Landscaping			
			Victoria St Entrance		014-LG-2150-IF1.IN1-130
81				Landscaping to Victoria Street forecourt, behind kiss & ride, within car park and along rail corridor	
			Waller St Entrance		014-LG-2150-IF1.IN2-130
82				Landscaping to Waller Street forecourt and behind car spaces	
	Misc Structures				
		Canopy			
			Platform		014-MS-2035-IF1.PTF-130
83				New canopies to platform (city side of station building)	
84				New canopy above FAT (to NSW Hertiage branch requirements eg. glazed, aluminium, etc.)	
85				New canopy (city side of station building to NSW Hertiage branch requirements)	
			Victoria St Entrance		014-MS-2035-IF1.IN1-130
86				New entrance canopy	
			Waller St Entrance		014-MS-2035-IF1.IN2-130
87				New entrance canopy	
		Carparking			
			Victoria St Entrance		014-MS-2037-IF1.IN1-130
88				Bollards	
89				Chevrons (DDA spaces and generally)	
90				Disposal of existing asphalt surface	
91				Retain kerbs to perimiter of commuter car park and clear vegitation	

92				Lighting to Victoria Street commuter car park	
93				Line marking (Directional arrows, DDA signage and Taxi signage)	
94				Line marking (linemarking for car spaces)	
95				Landscaping to commuter car parks including planting of mature trees	
96				New spray seal surface throughout commuter car park	
97				Prepare subbase and base for spray and seal	
98				Wheel stops to car spaces	
			Waller St Entrance		014-MS-2037-IF1.IN2-130
99				Lighting to Waller Street DDA parking spaces	
		Platform			
			Platform		014-MS-2120-IF1.PTF-130
				Platform regrading to entire platform. Platform gradient not to exceed 1:40. New paint to coping edge including	
100				temporary yellow line for full length of platform. Install 25% spare conduits for future use.	
101				Tactile ground surface indicators platform 1/2	
		Walkway and Footpath			
			Victoria St Entrance		014-MS-2191-IF1.IN1-130
102				Modifications to Victoria Street for one kiss & ride bay	
103				Retain existing entrance and exit to Victoria Street car park	
104				Pedestrain access to commuter car park on Victoria Street	
			Waller St Entrance		014-MS-2191-IF1.IN2-130
105				Modifications to Waller Street for kiss & ride and taxi spaces	
106					
107				New pram ramps to DDA parking, taxi and kiss & ride spaces on Waller Street	
	Services and Utilities				
		Building Services			
			Footbridge		014-SV-2026-IF1.FTB-130
108				Feature lighting to new footbridge canopy ceiling between lift cores	
109				Lighting to footbridge	
			Platform		014-SV-2026-IF1.PTF-130
110				Lighting, generally to station	
111				Relocation of rail services within the station building to new Station Service Equipment Room (SSER)	
112				Relocation of telephone booth	
113				Modifications to potable water supply including booster valve assemblies as required	
			Victoria St Entrance		014-SV-2026-IF1.IN1-130
114				Lighting to canopies (entrances)	
			Waller St Entrance		014-SV-2026-IF1.IN2-130
115				Lighting to canopies (entrances)	
		Utility mains (Non-rail)			
			Waller St Entrance		014-SV-2186-IF1.IN2-130
116				Power supply upgrade	
	Ticketing system & Equipment				
		Ticketing machine			
			Platform		014-TI-2197-IF1.PTF-130
117				Ticket vending machine not required	
118					
	Wayfinding & Signage				
		Tactile			
			Platform Lift		014-WS-2161-IF1.LFS-130
119				Tactile indicators to stairs	
			Victoria St Entrance		014-WS-2161-IF1.IN1-130
120				Tactile indicators to stairs	

			Waller St Entrance		014-WS-2161-IF1.IN2-130
121				Tactile indicators to stairs	
		Wayfinding & Signage			
			Victoria St Entrance		014-WS-2194-IF1.IN1-130
122				Wayfinding, generally across the site	

Appendix B – Document Delivery

Appendix B – Document Delivery

(Reference # 4959376_1)

Document No.	Name	Version
1	Instruction for Delivering Handover Documentation for Transport Access Program (TAP) Projects	Version 2, 28 Nov 2014
2	Instruction for Document Numbering & Transmittal Delivery for TAP Projects	Version 4, 28 Nov 2014
3	Instructions for Preparing and Delivering Drawings for TAP Projects	Version 7, 28 Nov 2014

Transport Projects Division (TPD)

Instructions for Delivering Handover Documentation for Transport Access Program (TAP) Projects

Date	**28 Nov 2014**
Revision	**2**
Author	**Julia Breit**
Desksite Ref	**3448135**

TABLE OF CONTENTS

1. Introduction

Once work is complete, new or amended assets related to projects are 'handed over' to the asset operators/maintainers (e.g. Sydney Trains) for them to operate and maintain.

At this time, Transport Projects Division (TPD) is required to provide appropriate operation and maintenance documentation. Often, an operator will not accept ongoing responsibility for the asset until these documents are supplied. The documentation is collated by the TAP Project Team from multiple sources.

To this end, TPD need to follow certain standards and present the documentation in a way that can be easily integrated into the asset operator's documentation system(s).

This document has been prepared by the Transport Access Program (TAP) to:

1. Educate the Contractor regarding the process used by TAP to transfer the documents;
2. Provide guidance to assist the Project Manager and Contractor to supply the required documents quickly and with minimal effort. It describes in detail what documentation is required as well as when and how it is to be supplied.

If you have any questions regarding these instructions, please call Julia Breit on (02) 9200-0952 or email on Julia.Breit@transport.nsw.gov.au.

2. Summary

A summary of the main points of this document is:

1. The number and types of documents to be provided varies by project, but a generic list is provided in Appendix A;
2. The Contractor is responsible for the timely delivery of the documents. Expected timings for each document type are also provided in Appendix A;
3. The work required to compile and deliver the Handover Documentation is often underestimated. Appropriately skilled resources and sufficient time must be allowed for in the program;
4. All documents are to be submitted electronically;
5. All documents need to be uniquely numbered to a standard format, revision tracked and submitted via formal transmittals to TAP;
6. Some contracts will mandate the use of the Teambinder electronic document management portal for submission of documents;
7. TAP will provide a standard numbering format which must be applied to all documents;
8. Two of the documents (O&M Manual and Asset register) are required to contain cross-references to other documents using the numbers allocated;
9. The Asset Register is required to be started early in the project to allow required supplier manuals, certificates and warranties be agreed between the Contractor and TAP;
10. TAP will provide document type templates and examples where possible;
11. The Contractor is responsible for the document quality, both for themselves and all sub-contractors.
12. A separate document titled "*Instructions for Document Numbering and Transmittal Delivery for TAP Projects*" provides additional information.

3. What Document Types are Required for Handover?

Different 'types' of documents (e.g. manuals, certificates, drawings, registers etc) are required. These are collectively known as

'Asset Management Information (AMI)' or

'Handover Documents' or

'Configuration Materials'.

The content is different for each document type and there are specific standards to be followed for some document types (see ***Appendix A***).

Where the contractor is not clear about what should be provided, they should ask. In many cases examples can be provided.

4. How does the Asset Owner find what they need?

The Handover Documentation for all TAP projects is structured in a common way to allow the asset operator to locate the required documents.

This is achieved through 2 'core' document types that include indexes to the remaining documents as follows:

1. **The Operation and Maintenance Manuals**

   These are created specifically for the project. As agreed with the TAP Project Manager, either <u>one or multiple</u> manuals may be prepared (as appropriate for the project scope)

   For example, a separate manual detailing the operation and maintenance requirements may be produced for each engineering discipline (electrical, hydraulic etc).

   References to other relevant documents (e.g. drawings, certificates, supplier manuals, warranties etc) are included in the back of each of these manuals.

2. **The Asset Register**

   A list of all assets is provided in <u>one</u> register. This includes supplier and installer details as well as cross-references to all manuals, warranties and certificates etc that are available for each of the listed assets.

See ***Appendix B*** for more details of the two core document types.

5. When are the Documents Required?

The work required to compile and deliver the Handover Documentation is often underestimated. Due to the large number of documents required, preparation and delivery of them should start early (ideally well before practical completion) to allow sufficient time for reviews and potential updates.

A generic list of document types required is provided in ***Appendix A***, along with some approximate required delivery timings.

The Contractor is responsible for the timely delivery of the documentation and should allow for this in the overall program, as well as allow adequately skilled resources to collect, produce and submit all necessary items.

Where handovers are 'staged', specific attention should be given to the timing of each asset (and its documentation) being delivered.

In summary, the Contractor is required to:

(a) Progressively submit the Handover Documentation as soon as possible, with all documents not related to completion activities (e.g. manuals, warranties), delivered at least 4 weeks prior to Stage Completion or a related asset becoming operational, whichever is earlier;

(b) Deliver prior to Stage Completion, any completion-related certificates or other documents, required for any asset to become operational; and

(c) Submit the remaining documents, including Work-As-Executed drawings, within 2 weeks of Stage Completion or operation of assets, whichever is earlier.

6. What about Document Quality?

The Contractor is responsible for the quality of all documents submitted by them and their sub-contractors, and therefore should review all documents before passing them to TAP.

The TAP Project Manager (or delegate) will review documents and request updates as required.

7. How are the Documents to be Identified?

A. Document Numbering

All documents are to be delivered electronically (see Section 8) and all documents provided to the asset operator(s) by TAP must be uniquely numbered and catalogued for ease of identification and tracking of updates.

The numbering of all individual documents is required so that:

1. Electronic files can be easily identified without opening them;
2. Specific documents can easily be referenced when communicating issues;
3. When new revisions of documents are submitted, TAP will immediately know which previous document is being replaced;
4. The numbers can be used as references between documents (e.g. '*see drawing number TAP-1234-001*')

B. Standard Document Number Formats

In order to ensure that the numbers used by the Contractor are unique within TfNSW, TAP will provide the Contractor with a **prefix** to be included on the front of every document.

All projects are required to use structured document numbers as detailed in a separate document entitled '***Instructions for Document Numbering and Transmittal Delivery for TAP Projects'.***

A typical number structure may look like this: **TAP-XXXX-XX-0001**

Where 'TAP' is the constant program abbreviation (Transport Access Program), '**XXXX**' is the project identifier allocated by TPD, 'XX' is an optional technical discipline code and '0001' is a sequential number to ensure uniqueness.

The contractor is required to agree with TAP the range of sequential numbers that they will use, to prevent any overlap with numbers being allocated by TAP for the project.

These document numbers will be referenced from other drawings and documents such as O&M manuals and the Asset Register.

The Contractor will need to keep track of the document numbers allocated, by keeping a register of the numbers, titles and latest revisions. It is also essential to keep a record of which documents/revisions have been delivered to TAP. The same revision of any document must only be submitted once.

C. Adding Numbers to Document Content

When submitting documents in native format (e.g. Word or Excel) the document and revision numbers can be included in the document header or first line. The exact location is unimportant as long as it is of a reasonable size (e.g. 16 font) and easily visible.

When submitting documents in PDF format (e.g. manufacturer's documents) numbers MUST be added. ***Appendix D*** shows how to append a number to all pages using **Adobe Writer software.** Other software can be used, but it is helpful if TAP can also use the same software in order to make minor adjustments, without needing to return documents to the Contractor for revision.

D. Revision Numbers

Each document number is also to be allocated a revision number from A to Z and 0 to 99, with no decimal places. The revision number must be incremented each time the document is delivered.

E. Document Naming

Document names are required on the front page of each document to clearly describe their content. The same titles must be included on the transmittals.

An example of a full title is "*Project Name – Supplier/Manufacturer Documentation - 22AWG Signal Cable (Belden 5500F1)*"

F. Electronic File Naming

(Not applicable for Teambinder use)

When transmittals are received by TAP, it is important to be able to match up the items listed on the transmittal with their corresponding electronic files.

To achieve this, each electronic file must include the exact document number and revision at the start of the file name (e.g. TAP-1234-EL-1000[2]).

Characters after the document number and revision are allowable, but will be ignored by TAP.

.

8. How are the Documents to be Delivered ?

A. Electronic Delivery

No Handover Documentation is required in hardcopy format as TAP will provide the asset operator with an electronic package of all the documents which have been prepared by the Contractor and other involved parties (e.g. the Designer).

The major advantages of an electronic approach are that:

1. Documents can be provided progressively as they become available;
2. There is an improved ability to track document deliveries;
3. A higher level of confidence exists that everyone is accessing the latest version of the material;
4. Documents are delivered individually and updated without impact to other documents in the set;
5. Electronic documents can be copied quickly, easily and with 100% accuracy;
6. Final documents only need to be delivered once;
7. Production costs are generally lower than for equivalent hardcopy documents.

Requirements for delivering documents electronically are:

1. Some contracts will mandate the use of the Teambinder electronic document management portal for submission of controlled documents, this will replace the manual transmittal process. Each Contractor will be provided with all necessary training and reference materials for using the Teambinder system.
2. Documents for delivery to TAP are to be formally sent with a transmittal;
3. Each document is to be provided as a separate electronic file (i.e. multiple certificates, warranties, drawings etc are not to be combined into one document);
4. All required data is to be provided in the designated file, with no electronic links to other documents as these links are not transferable to other document management systems.
5. Each document is to be allocated a unique number (see Section 7) with the number and revision clearly marked, both within the document content and in the electronic file name;
6. The file must include the document number and revision number at the start of the file name. The file name can also include a description of the content but this is not essential and will be ignored by TAP.
7. Documents of multiple pages should include page numbers (using a format of ‘page x of y’).
8. See separate document ‘***Instructions for Document Numbering and Transmittal Delivery for TAP Projects’*** which must be followed.

B. Document Transmittals

(Not applicable for Teambinder use)

Each transmittal must be uniquely numbered and must include a list of the document number, revision number and full title for every document being transmitted.

The transmittal document itself must be also be provided in its native format (i.e. Word or Excel), so that the information can be easily copied into TPD systems.

When submitting a document transmittal for handover purposes, it would also be useful if the Contractor could identify the Document Type of each document being supplied (see column 4 below).

The content of the transmittal might therefore look something like the table below.

TRANSMITTAL NUMBER:		**ABC-1234-001**	**5 Mar 2013**
Document No.	**Rev**	**Document Title**	**Document Type**
TAP-1234-EL-1000	1	Project Name – Electrical Operations and Maintenance Manual	Manual
TAP-1234-VT-1000	2	Project Name – Vertical Transport (Lifts) – Workcover Certificate	Certificate
TAP-1234-VT-1000	A	Project Name – Hydraulic Vertical Transport - Supplier/Manufacturer Documentation - Sematic 2000 Door Series 701-000-000	Manual

IN THE ABOVE EXAMPLE THE TRANSMITTAL NUMBER IS ABC-1234-001 WHERE:

- 'ABC' should be replaced with an abbreviation suitable to represent the contractor.
- '1234' should be replaced with the unique project code for the project.
- '001' is a sequential number incremented by 1 for each separate transmittal

NOTE: The document title contained within the transmittal (shown in column 3 above) must be as descriptive as possible, as these are the words that TAP will use to identify the document in their systems.

Appendix A – List of Handover Documents Required

The table shown on the following pages provides a list of those document types that may be required from the Contractor, dependent upon the project scope. This list should be reviewed so that documents not applicable to the project or contract type can be deleted.

The draft and final timings shown in the right-hand columns are indicative of the timing that the documents are required. They allow sufficient time for review by TfNSW and updates if necessary. An explanation of each timing number is shown in the box below.

Any document that does not require amendment is considered to be final.

For some document types (e.g. manufacturer's manuals) multiple documents are to be delivered

Some of the documents are required in a specific format and templates will be provided by TAP as well as examples if required.

DELIVERY TIMING NO.	TIMING DESCRIPTION
0	Prior to completion of design
1	Prior to construction
2	Two to three months prior to handover of related assets
3	At least four weeks prior to completion (to allow for familiarisation and training)
4	On or prior to date of completion, but prior to handover of the asset(s)
5	Within 2 weeks of completion

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
0210	Safety Assurance Plan			0	1
0240	Independent Design Verification Confirmation	D&C Contracts Only		0	1
0250	Designers Certificate of Design Compliance with Australian Standards and Business Requirements	D&C Contracts Only		0	1
0410	Final Detail Design Report (100%) including relevant components such as Traffic Assessment, Sustainability Measures, Security Review, Geotechnical, Contamination Investigation etc	D&C Contracts Only		0	1
0540	Life Cycle Analysis	D&C Contracts Only		1	3
0710	Dilapidation Survey Reports (Pre and Post Construction)			1	5
1020	Contractor's Certificates of Construction Compliance	Verification that works were completed in accordance with the contract, requirements, drawings, standards etc and that the certificates from sub-contractors cover the full extent of the works.	YES	3	4
1050	Contaminated site - Site clearance certificate(s)			1	2
1140	Surveyors Certificates and/or Drawings (including encroachments if not fully on owners land)			3	4
1200	Records of Commissioning, Inspection and Testing			3	4
1215	Designer's Construction Completion Letter		YES	4	5
1285	Heritage Application and Approval Documents			2	3
1500	Safety Assurance Report or similar as required		YES	3	4

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
1520 – 1630	Sub-Contractors Construction Certificates (in accordance with design) …….for all aspects of the works including Structural work, Drainage, Electrical Services, Glazing, Lifts/Escalators, Ventilation, Communications, Rail Infrastructure work, CCTV etc (see detailed items below)	References to other documents within the certificates must only include documents that are being provided to TAP as Handover Documents. e.g. It is not adequate to say "works were installed in compliance with drawings submitted in Schedule 123", if the schedule is not provided. In these cases the drawing numbers should be listed.		3	4
1520	Structural Construction Certification			3	4
1530	Mechanical Ventilation & Air Conditioning Construction Certification			3	4
1540	Electrical Services Construction Certification	To include all CCEWs		3	4
1550	Communication Services Construction Certification			3	4
1560	Mechanical Transportation Services Construction Certification			3	4
1570	Fire Services Construction Certification			3	4
1580	Glazing (including support structures) Construction Certification			3	4
1590	Rail Infrastructure Works Construction Certification			3	4
1600	Hydraulic (Drainage) Construction Certification			3	4
1610	Other Requirements of Works Brief for Construction Certification	(e.g. Building works, Roofing, doors, walls, joinery, waterproofing, landscaping etc)		3	4
1630	CCTV Certificate of Completion			3	4

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
1730	Maintenance Schedule of Essential Fire Safety Measures	The information in this schedule must be included in the maintenance section of the relevant O&M manual. If there are additional documents, these can be added as references in the O&M manual.		3	4
1740	Final Fire and Life Safety Certificate	To be provided by a Fire Safety Engineer		3	4
1750	DDA Compliance Certificate for the completed works			3	4
1760	BCA Compliance Certificate for the completed works			3	4
1770	Workcover Registration - Lifts	Each lift must be registered with Workcover in the Asset Owner's name (e.g. RailCorp). This is so they can get sent the annual renewal reminders. The certificates are displayed in the lifts.		N/A	4
1960	Road Safety Audit at Completion			3	4
1970	Lux (Lighting) Levels Testing Report at completion			3	4
1980	RMS and/or Council acceptance of road works			1	2
2010	Operations and Maintenance (O&M) Manuals for project (including document numbering references to other project documents)	Manuals are required written specifically for the project works using the template provided and must be provided in Word format. See ***Appendix B*** for more details.	YES	2	3
2020	Technical Maintenance Plans and Services Schedules	Required for Assets that are new to the Asset Owner's environment.		2	3
2025	Evacuation Procedures			2	3

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
2030	Schedule of Contact Details (for all the designers, contractors, subcontractors & major suppliers)	Identify areas of responsibility, address, tel/fax no, email address and contact name. (Can be included in the O&M Manual)	YES	2	3
2040	Asset Register (including supplier details, installer details and document numbering links to related manuals, certificate and warranties)	Document required in EXCEL format only. Check that the required manuals, certificates & warranties have been supplied as shown in this document. **THIS DOCUMENT IS REQUIRED TO BE PREPARED AT THE START OF THE PROJECT AND CONTINUALLY UPDATED** See ***Appendix B*** for more details.	YES	2	3
2060	Schedule of Materials and Finishes (internal and external architecture)	Document required in EXCEL format only	YES	2	3
2080	Warranties (valid past the end of the Contractor's Defect Liability Period and redeemable by the Asset Owner)	To be supplied in the format specified by the contract. Ensure that list matches the details given in the Asset Register.	YES	2	3

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
2090	Manufacturer's Manuals and Brochures (Used in conjunction with the O&M Manuals to help describe the equipment covered and its operation and maintenance needs).	Ensure that all appropriate documents have been handed over for assets listed in the Asset Register. Each manual/brochure to be a separate electronic document.		2	3
2100	Spare Parts List of items that the asset owner should keep in stock			2	3
2125	Bus Plinth management information			2	3
2130	Suppliers Drawings			2	3
2140	Updated Detailed Site Survey (DSS) plans showing As-Built information for Services and infrastructure and any site survey information discovered during the execution of the Contractor's Activities. To be delivered either hand-marked or electronically as requested by the Principal.			2	3
2155	Handwritten or electronic drawings for services			2	3
2160	Latest Construction drawings with hand or electronic markups showing 'As Built' features for electronic updating by the Designer	Required for 'Construct Only' contracts. Document numbers do not need to be added since they are already on the drawings.		3	4
2180 2200	Final Works As Executed Drawings in PDF and CAD format	Drawings are required to be prepared using the TfNSW drawing title block.	YES	4	5
2190	Certification of As-Built Drawings by Contractor			N/A	4
2200	Final Works As Executed Drawings in CAD format	D&C Contracts Only. Drawings are required to be prepared using the TfNSW drawing title block.	YES	5	5
2210	Schedule of Special Tools, Facilities and Equipment			2	3
2220	Software			2	3
2230	Training Plans, Aids and Materials			2	3
2280	Final Project Specific Risk Register (Safety Hazard Log) including residual hazards and risks		YES	2	3

Ref No. (TfNSW Use Only)	DOCUMENT TYPE	COMMENTS	TEMPLATE TO BE USED ?	DELIVERY TIMING NO.	
				DRAFT	FINAL
2340	Letter accompanying Handover of Keys	Requires an acceptance signature		3	4
2360	Operation and Maintenance Agreements including Third Parties			2	3
2440	Operational Environmental Management Plan			2	3

Appendix B – 'Core' Documents

The following document types are critical to the asset operator's usage of the overall documentation, as they include cross-references to other useful information.

Asset Register

This document provides a list of each specific asset, and related information about asset owners, suppliers, manufacturers, certificates, warranties and other reference documents.

It is an essential 'quick reference' guide for the asset operator, especially when projects are large.

TAP provide a template in EXCEL format which must not be altered.

This document should be drafted very early in the project. The agreed list (continually updated) will provide a road map for many of the other required documents (e.g. which assets need special instructions or require warranties).

O&M Manuals

These manuals are NOT generic ones, but rather manuals written specifically for the project and related to the particular site.

The purpose of these manuals is as reference document(s) for the asset operator, regarding how to operate and maintain their assets. It is especially important to reference unusual issues for the site.

Generic details that are provided in manufacturer's manuals do not need to be retyped, but only need to be referenced by their document number.

TAP provide a template for the O&M Manuals to ensure consistency across projects. The template must not be altered. Where details are not applicable, only N/A should be added. TAP will make final adjustments to the documents prior to handover to the asset operator. The final document is required to be provided in WORD format.

The manual template is structured in a way that shows general information in the main document with references to other documents (by number) listed in the back.

Where appropriate for the works, all disciplines below must be covered either as separate manuals or as separate sections within combined manuals (where applicable):

- Hydraulics – including Stormwater, Sewer and Potable Water
- Electrical (LV & HV) – to include Communications
- Mechanical – to include ventilation and air conditioning
- Vertical Transport (Lifts);
- Buildings - to include Structural Steel, Façade, Glazing, Roofing, Linings, Doors, Hardware, Metalwork Painting, Signage, Road works & Landscaping;
- Security & CCTV;
- Fire Detection & Protection

Appendix C – Document Numbering Rules and Example

Please note the following points re document numbering:

1. Every number must be unique
2. All documents for the same project have the same project prefix.
3. Document numbers should only contain letters, numbers and hyphens. No special characters, spaces or dots should be used.
4. Where sequential numbers are used, leading zeros (shown in blue below) should be included on lower numbers so that file names sort correctly.

   e.g. **0**1, **0**2, **0**3…….10, 11
5. 'XX" can represent any discipline code. (GN = General)
6. Suffixes on the end of document numbers can assist to group similar documents together
7. Document numbers must be clearly visible (appropriate size and colour) on every page of the document

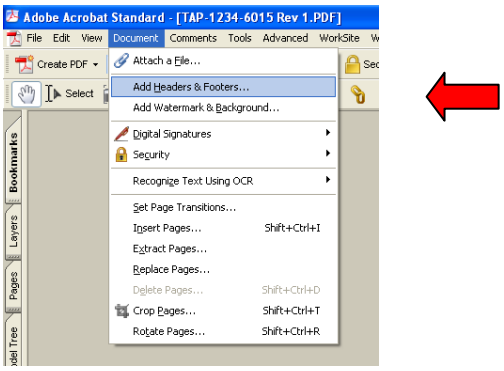
The table below is a sample of a possible numbering structure. In this example, the '4000' range has been used for sequential numbering and certain document types have been given a common number (e.g. warranties are all 4002, shop drawings are 4004) with trailing sequential numbers to ensure uniqueness.

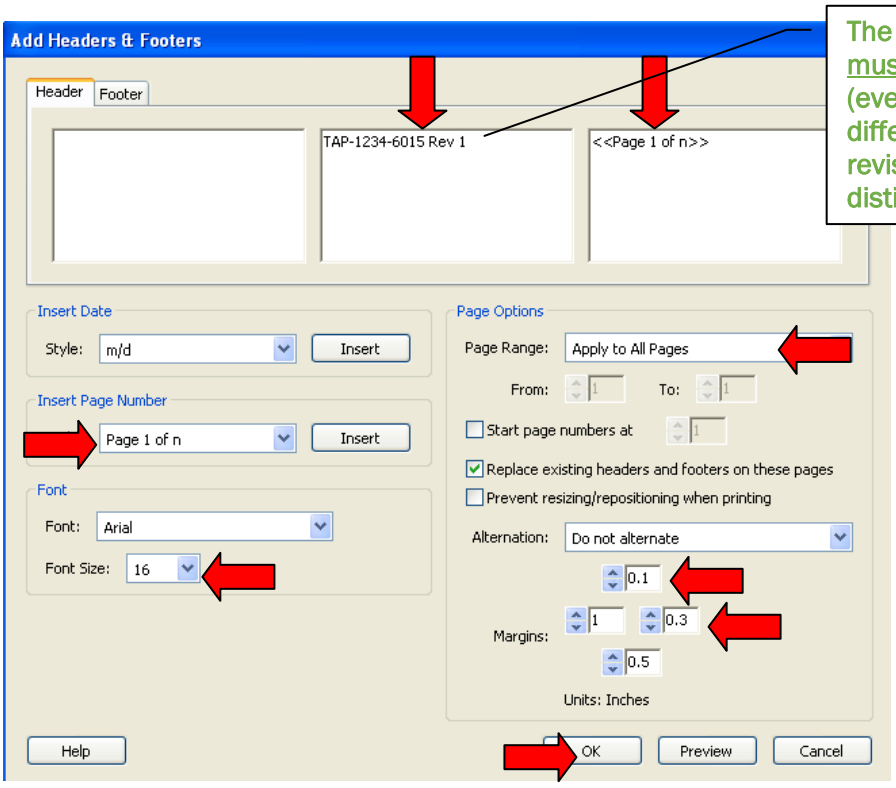
Document Type	Example Document Number
DISCIPLINE RELATED DOCUMENTS	
Operations and Maintenance (O&M) Manuals	TAP-1234-XX-4000
Contractor's Certificates of Construction Compliance	TAP-1234-XX-4001
Warranties	TAP-1234-XX-4002-01, 02, 03 etc
Manufacturer's Manuals and Brochures	TAP-1234-XX-4003-01, 02, 03 etc
Suppliers Shop Drawings	TAP-1234-XX-4004-01, 02, 03 etc
Authority Acceptance of Modifications	TAP-1234-XX-4005-01, 02, 03 etc
Maintenance Schedule of Essential Fire Safety Measures	TAP-1234-FP-4006-01
Final Fire Safety Certificate	TAP-1234-FP-4006-02
Lux (Lighting) Levels Testing Report at completion	TAP-1234-EL-4001
Workcover Registration - Lifts	TAP-1234-VT-4006-01, 02, 03 etc
MULTI-DISCIPLINE DOCUMENTS	
Contaminated site - Site clearance certificate	TAP-1234-SE-4501
Site Geotechnical Testing Report	TAP-1234-GE-4502
DDA Compliance Certificate	TAP-1234-SE-4503
Surveyors Certificates	TAP-1234-SU-4504
BCA Compliance Certificate for the completed works	TAP-1234-SE-4505
Schedule of Contact Details for all the designers, contractors, subcontractors & major suppliers	TAP-1234-OP-4506
Asset Register	TAP-1234-OP-4507
Schedule of Materials and Finishes (internal and external architecture)	TAP-1234-OP-4508
Spare Parts List	TAP-1234-OP-4509

Appendix D – Adding numbers to PDF documents using Adobe Writer software

When submitting documents in PDF format numbers MUST be added using **Adobe Writer software.** This is the software used by TAP and it will allow minor adjustments to be made

Open document and select 'Document' and 'Add Headers and Footers'





The REVISION number must always be included (even if Rev 1) so that different document revisions can easily be distinguished.

FINAL RESULT….

Appendix X – Revision History

Revision	Date	Author	Comments
1	12 July 2014	Julia Breit	First issue of this document. Replaces information previously issued in the TfNSW Standard Requirement (TSR) document for Asset Management Information (now decommissioned)
2	28 Nov 2014	Julia Breit	Addition of references to Teambinder electronic document submission portal which is mandated for some projects. (Changes marked in red)

Transport Projects Division (TPD)

Instructions for Document Numbering and Transmittal Delivery for Transport Access Program (TAP) Projects

Date	**28th November 2014**
Revision	**4**
Author	**Julia Breit**
Reviewed By	**TPD Records**
Desksite Ref	**2535018**

TABLE OF CONTENTS

1 Introduction to this Document

The Transport Access Program (TAP) manages a large number of projects which are delivered by technical advisers and construction contractors. In this document, all transmittal senders are referred to as 'Contractors'.

The following instructions have been prepared to convey the requirements of TAP when accepting document transmittals. These are necessary to allow standard processes to be followed for all projects.

Incorrect transmittals cause rework and project delays, therefore TAP reserve the right to reject any transmittals that do not follow these procedures.

A checklist for transmittals has been provided in Appendix B of these instructions for convenience.

2 Use of Teambinder Electronic Document Portal

From January 2015, some TAP projects will require the Contractor to utilise the Teambinder electronic document management portal for submitting all controlled documents. This will replace the manual transmittal process that is described in Section 11 of this document. Each Contractor will be provided with all necessary training and reference materials for using the Teambinder system.

3 Questions ?

Questions related to these instructions should be referred to Julia Breit on (02) 9200-0952 or at Julia.Breit@transport.nsw.gov.au

See Appendix X for the revision tracking history of this document.

4 When are Document Transmittals Required ?

Document transmittals are used to accompany the delivery of any 'controlled' documents.

A transmittal is required even when only 1 controlled document is being submitted.

A 'controlled' document is defined as one that is numbered and subjected to revision tracking, due to the possibility of it being updated after the first issue.

Note that it is also allowable to include un-controlled/un-numbered documents on a transmittal.

5 Controlled Document Numbering Requirements

The numbering of all individual documents is required so that:

- New revisions of documents are easily recognised;
- Electronic files can be easily identified without opening them;
- Specific documents can easily be referenced from within other documents;

It is essential the document numbers submitted are unique within TPD. To assist in achieving the uniqueness, the Transport Access Program has determined a document numbering structure, which includes the project number.

A typical format for TAP document numbering is: **TAP-9999-LL-XX-0001-99**

Where:

- 'TAP' is the program abbreviation (Transport Access Program);
- '9999' is the project identifier (Note this is provided by TAP. It may be more than 4 characters and it is NOT the same as the contract number); and
- 'LL' is an optional location ID and
- 'XX' is an optional engineering discipline code from the list shown below; and
- '0001' is a sequential number and
- '99' is an optional suffix (see point C below)

DISCIPLINE CODE	DISCIPLINE	DISCIPLINE CODE	DISCIPLINE	DISCIPLINE CODE	DISCIPLINE
AL	Alignment Drawings	**LA**	Landscaping	**SI**	Signage & Wayfinding
AR	Architecture	**LI**	Lighting	**SS**	Substation
CI	Civil	**LV**	Electrical Low Voltage	**ST**	Structures
CO	Telecommunication & Controls	**ME**	Mechanical Services	**SU**	Survey
DM	Demolition Plans	**OH**	Overhead wiring	**TU**	Tunnels
DR	Drainage	**OP**	Operations	**TW**	Temporary Works
EB	Earthing and Bonding	**PA**	Public Art	**UD**	Urban Design
FE	Fire Engineering & Protection	**PL**	Plumbing	**UT**	Utilities
GE	Geotechnical	**RA**	Rail (Permanent Way)	**VE**	Ventilation
HV	Electrical High Voltage	**RE**	Road Engineering	**VT**	Vertical Transportation
HY	Hydraulics	**SE**	System Engineering & Safety Assurance	**WT**	Water Treatment
IM	Instrumentation & Monitoring	**SG**	Train Signalling		

It is essential that the Contractor has confirmed the document numbers to be used with TAP, to ensure uniqueness is maintained.

Other points to note re document numbers are:

A. The same number is used as a constant reference throughout the project (i.e. no indication of the project stage such as 'CDR' should be included in the number).

B. Document numbers should only contain letters, numbers and hyphens. No special characters, spaces or dots should be used.

C. When related documents exist in separate electronic files (e.g. multiple volumes of the same report) a common document number could be used for them, with various suffixes appended to demonstrate that they are all part of a set (e.g. TAP-0810-AR-0005-**A**, TAP-0810-AR-0005-**B** or TAP-0810-AR-0005-**01**, TAP-0810-AR-0005-**02** etc).

D. Where sequential numbers are used, leading zeros (shown in blue below) should be included on lower numbers so that file names sort correctly.

e.g. **0**1, **0**2, **0**3…….10, 11

E. A separate document titled "*Instructions for Preparing and Delivering Drawings for TAP Projects"* provides specific requirements for the numbering of drawings.

6 Numbering of Imbedded Documents

Some documents include other documents within them. For example a Design Report might include Appendices of the Geotechnical report, Security Review etc

If imbedded reports are likely to be updated independently, then they must be allocated their own document number.

If imbedded documents do not include their own document numbers, then the entire parent document must be uprev'd (see next section) whenever any of the imbedded documents change.

7 Document Revision Requirements

Historical changes to documents (with the above numbers) are tracked by the allocation of revision codes.

Each time a document is changed in ANY way, the revision code must be updated (aka 'uprev'd) to the next code in the sequence.

Allowable revision codes are:

- Letters (A, B, C etc) followed by
- Numbers (0,1,2,3 etc)

Documents produced with a numerical revision cannot revert back to an alpha character revision.

On receipt of the documents, the TPD Records Group (Document Controller) will check to ensure that this sequence is being maintained.

The Contractor must implement their own Document Control procedures to keep track of the document numbers and revisions transmitted to TPD under each transmittal.

The same document revision cannot be transmitted more than once, without specific permission from TPD.

8 Un-Controlled Documents

(Not applicable for Teambinder use)

It is allowable to also submit un-controlled (un-numbered) documents on the transmittal, but these must:

- Represent documents that will only ever have 1 revision;
- Be fully titled on the transmittal;
- Have an electronic file name that matches the document title in the transmittal.

Examples of un-controlled documents are:

- Letters;
- Reference documents;
- Zipped folders of CAD files as at a specific date.

9 Document Titling

Document titles are required on the first page of each document to clearly describe their content. ***The same (full) titles must be included on the transmittals.***

Good examples of full titles are:

- Newtown Station Upgrade – Supplier/Manufacturer Documentation - 22AWG Signal Cable (Belden 5500F1)
- Newtown Station – Main South Line 3.1000 KM – Architectural – Cover Sheet, Location Plan and Drawing List

Note that every document title must start with the project and/or location name.

10 Document Orientation

All electronic document files must open showing the document in the correct orientation. That is, the reader will not need to rotate the document to read it.

11 Document Transmittal Requirements

(Not applicable for Teambinder use)

On receipt of the transmittal, the TPD Records Group (Document Controller) utilises an automated process to load the documents to the TPD system. This automation is used to reduce re-keying errors.

TPD understand that Contractors also have systems, which may produce transmittals automatically. For this reason the layout of the transmittal has not been fully standardized. However, to allow the TPD automated processing, the following requirements must be met.

A. Native Transmittal Format

The software used to present the transmittal must allow the data to be extracted using a 'cut and paste' method into TPD systems. Suitable formats include Microsoft Word and Excel.

B. Unique Transmittal Numbering

In order to trace the delivery of any document to its specific submission, each transmittal must be allocated a unique transmittal number.

To ensure uniqueness within TPD, the transmittal number should include:

- The Contractors company abbreviation (e.g. ABC)
- The same TAP project number as is used for the document numbers (e.g. 9999)
- A sequence number increased by one for each transmittal submitted (e.g. 001). This is required so that TPD can recognise when a previous transmittal has not yet been processed.

In this example, the full transmittal number is **ABC-9999-001**

C. Document Listings on the Transmittal Form

Each transmittal form must include a list of all the documents being submitted which shows:

- The unique document number and revision number (for controlled documents);
- The FULL title of the document as shown on the document (for all documents);
- The document type.

Examples of document types include Certificate, Drawing, Letter, Manual, Plan, Register, Report and Schedule.

Apart from the actual transmittal form itself, all documents being provided to TPD must be included on the transmittal form.

The number of transmittals being submitted should be kept to a minimum, NOT split up into separate engineering discipline types.

D. Electronic Files Provided with the Transmittal

Electronic documents provided with the transmittal will include:

- The transmittal form in native format (and PDF if required);
- All Controlled documents;
- All Un-controlled documents;
- A covering letter.

The number of electronic files provided with the transmittal must equal the number listed on the transmittal form *(plus the transmittal forms).*

In some cases, a controlled document will be provided in PDF format, but also in 'native' format which could include multiple documents in a folder structure. In this case, the native format must be zipped together and titled in the same way as the PDF document. Both versions should be listed on the transmittal.

e.g.

File Type	File Name and Transmittal Description
PDF File	TAP-5678-DR-0001 Rev C – Central Station Upgrade Design
Native Files	TAP-5678-DR-0001 Rev C – Central Station Upgrade Design – Zipped folder of native files

E. Covering Letter

Each transmittal requires a covering letter to be provided which identifies:

- The sender's details;
- The recipient's name;
- An overview of what is being transmitted and why;
- Anything else of note, such as contractual requirements.

F. Electronic File Presentation

The files on the transmittal are to be provided with ***no folder structure***. That is, on opening the transmittal content using Microsoft Explorer, all documents being transmitted should be able to be viewed on the same screen.

Each document is to be provided in ONE separate electronic file.

For Controlled Documents: Each electronic file is to be named with the document number and revision code/number (e.g. TAP-0824-CI-1234_1 or TAP-0824-CI-1234[1]).

For Un-Controlled Documents: The file name must match the document title listed inside the document and on the transmittal.

The numbers, revisions and names used in the file names, must exactly match those listed on the transmittal.

G. Electronic Delivery Methods (Formal and Informal)

Informal Submissions

TPD recognise that the Contractor and the TAP Project Manager may agree to an 'informal' delivery of controlled documents for checking, prior to the issue of a formal transmittal. In these cases, the documents should be sent to the agreed TAP team member by email or link. A formal transmittal document is not required and the document revisions will not be logged in the TPD Records system.

Formal Submissions (Transmittals)

Formal electronic transmittals are to be submitted to TPD either:

- By electronic link which incorporates all the documents being transmitted; or
- By CD/DVD (2 copies required); or
- By email where ALL the related documents can be attached in ONE email (TPD current email file size limit is 6MB).

NOTE – All formal transmittals sent by email or link MUST be addressed to:

TAP_DOC_Controller@projects.transport.nsw.gov.au

Appendix A – Sample Transmittal Formats

(Not applicable for Teambinder use)

Two alternate methods of listing the documents being transmitted are provided below.

This format of transmittal only shows those documents being transmitted.

TRANSMITTAL NO: ABC-9999-001		DATE 5 March 2013	
Document No.	**Rev**	**Document Title**	**Document Type**
TAP-1234-EL-6001	1	Newtown Station Upgrade - Electrical Certificate for Main Switchboard from PJ O'Connor	Certificate
TAP-1234-VT-6000	2	Newtown Station Upgrade - Vertical Transport (Lifts) - Operations and Maintenance Manual	Manual
TAP-1234-VT-6003	A	Newtown Station Upgrade - Vertical Transport - Supplier/Manufacturer Documentation - Sematic 2000 Door Series 701-000-000	Manual
		Newtown Station Upgrade – Covering letter for transmittal number ABC-9999-001	Letter

This format of transmittal lists all the documents relevant for the project and the transmittal history over a period of time. The rightmost column indicates the documents being transmitted on this occasion.

		Day >	18	31	16	5	
		Mth >	3	5	2	3	
TRANSMITTAL NO: ABC-9999-001	DATE 5 March 2013	Year >	12	12	13	13	
Document No.	**Document Title**	**Document Type**	**Revision**				
TAP-1234-AR-1000	Newtown Station – Main South Line 3.1000 KM – Architectural – Cover Sheet, Location Plan and Drawing List	Drawing	A	0	1		
TAP-1234-EL-6001	Newtown Station Upgrade - Electrical Certificate for Main Switchboard from PJ O'Connor	Certificate	A		0	1	
TAP-1234-VT-6000	Newtown Station Upgrade - Vertical Transport (Lifts) - Operations and Maintenance Manual	Manual		1		2	
TAP-1234-VT-6003	Newtown Station Upgrade - Vertical Transport - Supplier/Manufacturer Documentation - Sematic 2000 Door Series 701-000-000	Manual				A	
	Newtown Station Upgrade – Covering letter for transmittal number ABC-9999-001	Letter				-	

Other information items that might be included on the transmittal are:

- Sender company contact details
- Reason for submission / Actions required
- Delivery method (e.g. Courier, Email, Post etc)
- Delivery media (e.g. CD, Hardcopy, Link etc)
- Number of hard / soft copies provided
- Notes

Appendix B – Transmittal Checklist

(Not applicable for Teambinder use)

SECTION REFERENCE IN THIS DOCUMENT	REQUIREMENT	MET ?
DOCUMENTS		
4	Document numbers are correctly structured (e.g. TAP-9999-XX-0001) using TAP project code as the prefix (not contract number)	
4	Every Document number is unique	
5	Independent imbedded documents have been allocated their own document numbers	
6	Document revisions are only A to Z and 0 to 99	
6	Document revisions have not been previously submitted (unless agreed with TPD and reason explained in the covering letter)	
7	The uncontrolled documents will never be revised	
8	Documents are all fully titled in line with the standards for the document type (e.g. drawings)	
9	All documents open in their correct orientation	
TRANSMITTAL DOCUMENT		
10A	Transmittal software allows TPD to 'cut and paste' content	
10B	Transmittal number is correctly structured and includes the project code for uniqueness (e.g. ABC-9999-001)	
10C	All documents (controlled and un-controlled) are listed in the transmittal	
10C	Document titles on the transmittal are in full as shown on the document cover page	
10C	The document type of each document is listed on the transmittal	
10C	The transmittals are not separated into discipline types	
10E	A covering letter accompanies the transmittal	
ELECTRONIC SUBMISSION		
10D	The number of files submitted on the transmittal equals the number listed on the transmittal document (except where the same file has been submitted in 2 formats)	
10F	The file names of the controlled documents are prefixed by the document number and revision	
10F	The file names of the un-controlled documents include the full document title	
10F	The numbers, revisions and names used in the file names, exactly match those listed on the transmittal	
10F	Electronic files are presented in ONE folder (no sub-folders)	
10G	Transmittals sent by email or link are addressed to the TAP Document Controller	

Appendix X – Revision History

REVISION NUMBER	REVISION DESCRIPTION	AUTHOR	DATE
1	First Issue	Julia Breit	12 July 2013
2	Added instructions regarding how to submit a controlled document as a folder of native files	Julia Breit	13 Feb 2014
3	Transmittals should be kept to a minimum – not separated by disciplines All electronic transmittals must be addressed to the TAP Document Controller (Changes marked in green)	Julia Breit	16 July 2014
4	• Addition of location code to typical document number format • Some changes to valid discipline codes in line with TPD CAD Protocols • Addition of references to Teambinder electronic document submission portal which is mandated for some projects. (Changes marked in red)	Julia Breit	28 Nov 2014

Transport Projects Division (TPD)

Instructions for Preparing and Delivering Drawings for Transport Access Program (TAP) Projects

Date	**28 November 2014**
Revision	**7**
Author	**Julia Breit**
Desksite Ref	**1815491**

TABLE OF CONTENTS

1. Introduction

The following instructions have been prepared to assist in the creation, updating and delivery of drawings for Transport Access Program (TAP) projects. These instructions only cover drawings, not Sketches or Figures.

Questions related to these instructions should be referred to Julia Breit on (02) 9200-0952 or at Julia.Breit@projects.transport.nsw.gov.au.

See Appendix D for the revision tracking history for this document.

NOTE: Revision 6 of this document was prepared in March 2014 in conjunction with the issue of a new TfNSW title block which includes smart processing. Contractors who created drawings prior to March 2014 should reference Revision 5 of this document.

2. Technical Drawing Standards

A. Drawing Quality

The Professional Services Contractor or Design and Construct Contractor (collectively "Contractor") must ensure drawings are thoroughly checked and proof read prior to submission.

B. Protocols and Standards

Drawings are to be prepared in accordance with latest TfNSW title block (see Appendix B) and these instructions.

In addition to these instructions, requirements stated in Computer Aided Design (CAD) Manuals belonging to Asset Owners may apply, although where conflicts occur these instructions take precedence.

The TfNSW title block is suitable for use with rail-related projects. In addition the ASA CAD Manual (TMD0001) should be accessed for detailed information. It is available on the Asset Standards Authority (ASA) website at:
http://www.asa.transport.nsw.gov.au/ts/railcorp-engineering-standards/all-disciplines/cad-manual-and-resources

Examples of other CAD manuals that may be available are:

- Roads and Maritime Services (RMS)
- Utility Provider's (e.g. Sydney Water)
- Local Councils

If required, TAP will provide any alternate drawing templates and standards.

C. Supporting Templates / Formats

The following templates are referenced in these instructions and will be provided by TAP as required.

- AutoCAD format TfNSW drawing title block;
- Alternate format title block where applicable;
- Transport for New South Wales (TfNSW) Logo;

D. Project Specific Information provided by TAP

The following information will be provided by TAP for each project:

At project initiation:

- Which title block formats are to be used for each drawing (usually the TfNSW title block);
- The prefix to be applied to all drawings numbers (e.g. “TAP-0834-“)
- More prescriptive numbering requirements if required for the project (e.g. for multiple designers/contractors or early works).
- The words to be used in the drawing title fields “tbLocality” and “tbLine”
- Whether the project or program name is to be included as part of the titles;

Ongoing throughout project:

- When hard copies of the drawings are required to be submitted.
- Required CCAN and CMWeb identifiers and Gate Numbers to be included on the drawings (see Appendix A section I)
- Exact wording to use for the drawing STATUS (e.g. CDR, AS BUILT etc).
- At what stages the native CAD format files are required to be provided.
- The range of Sydney Trains EDMS codes to be added to drawings (For rail-related projects only);
- Instructions for each drawing as to when the Sydney Trains EDMS Code revision is to be increased.

E. Drawing Delivery to Asset Owner by TAP

TAP will remain responsible for delivery of the drawings to the Asset Owner (including the Sydney Trains Plan Room).

The detailed instructions provided in this document will enable these deliveries to occur efficiently and without cause for complaint.

3. Drawing Tracking

A. TPD Drawing Numbers

NOTE: Full instructions related to the TAP requirements for document numbering can be found in document *"Instructions for Document Numbering and Transmittal Delivery for Transport Access Program".*

Every drawing must be allocated a unique 'TAP' drawing number. The same number is used as a constant reference throughout the project (i.e. the project stage is not part of the number).

The TAP Technical Manager will provide Contractors with standard prefixes and/or formats to be used for these numbers, so that drawings for a common project can be easily recognised.

On receipt of the drawings, the TPD Records Group (Document Controller) will store them for use by the Project team.

These drawing numbers are used as references to/from other drawings/documents (e.g. "refer to drawing TAP-1234-CI-0001 for more details"). (Note: The Sydney Trains EDMS Code should not be used as the reference between drawings).

A typical number structure may look like this: **TAP-9999-XX-0001**

Where 'TAP' is the program abbreviation (Transport Access Program), '9999' is the project identifier (e.g. 2014=Cardiff Station Upgrade), 'XX' is an optional discipline code and '0001' is a sequential number to ensure uniqueness. Some projects require more prescriptive document numbering patterns (see below).

Consideration needs to be given to drawing numbering in certain circumstances to ensure that drawing numbers remain unique and that sets of drawings can be easily identified. Examples of these are:

- Where 'early works' drawings need to be kept separate from others, TAP may require additional identifiers to be included such as TAP-9999-EW-XX-0001, TAP-9999E-XX-0001 or TAP-9999-XX-9001
- Where multiple Contractors are used (e.g. for reference and detailed design) and the earlier drawing set is not to be revised, the later drawings may be allocated a numerical range to prevent overlaps. For example, one Contractor might have the range 0-1999 and another might have 3000-4999.

Each project is different and the appropriate structure will vary.

B. TPD Drawing Number Revisions

This standard applies to both 'Construct Only' and 'Design & Construct' contracts.

Progressive updates to drawings (with the above numbers) are tracked by the allocation of revision codes (placed to the right of the TfNSW drawing number). Each time a drawing is changed in ANY way, the revision code must be updated to the next code in the sequence.

- Letters (A, B, C etc) are to be used for design drawings.
- Zero (0) is to be used for the first Construction (FC) drawing.
- Numbers (1,2,3 etc) are to be used for any updates after the first 'Approved for Construction' drawing, including the 'As Built' drawings and subsequent changes (e.g. due to defect rectification).

Drawings produced with a numerical revision cannot revert back to an alpha character revision.

On receipt of the drawings, the TPD Records Group (Document Controller) will check to ensure that this sequence is being maintained.

When updating the drawing revision:

- Increase the drawing revision code to the next sequential Revision Code;
- Highlight the revised areas of the drawing (e.g. using clouds and/or red lines that do not conceal drawing information) and tag them with the revision number. Remove all existing highlights created for previous revisions.
- Ensure the current drawing revisions listed on any other drawings (e.g. Drawing Index) are updated. (Ideally revision numbers should not be on these indexes).
- Update the Revision History (bottom left-hand corner).

C. Sydney Trains EDMS Codes

At various stages of a rail-related project, any relevant drawings will be sent to the Sydney Trains Plan Room (drawing storage location) by TPD.

To allow Sydney Trains to add these drawings to their Plan Room system, unique 'EDMS' codes need to be allocated to each drawing in the designated title block space.

- Valid EDMS codes are provided by TAP (having obtained them from Sydney Trains) - no other numbers are to be used.
- The codes consist of a 2 letter prefix followed by 7 numbers with no spaces (e.g. CV1234567).

Valid prefixes are:

EL	Applied to all "electrical" drawings, including drawings showing high voltage, low voltage and traction cabling and installations, overhead wiring layouts and overhead wiring componentry but not applied to drawings of overhead wiring structures.
SG	Applied to all "Signalling" and "Communications" drawings including CCTV, Public Address Systems, Train Monitors, Station Passenger Information Systems and Cable Routes.
FL	Applied to all "Rolling Stock Fleet" drawings.
CV	Applied to all other drawings, including drawings of overhead wiring structures, track, civil works, structures and all other asset types that do not fall into the "EL", "SG" or "FL" category.

D. Sydney Trains EDMS Code Revisions

When drawings are sent to the Sydney Trains Plan Room, the Amendment Status (revision) is to be updated.

The Contractor should add an 'A' into the EDMS code revision box (bottom right-hand corner) for the first instance of the drawing.

Subsequently, for each drawing, TPD will advise the Contractor when the revision is to be updated (to B, C etc). This is required due to the Contractor not being aware of which drawings have been sent to the Sydney Trains Plan Room or when.

E. Drawings no longer required

During the course of a project, some of the drawings may become 'no longer applicable'.

Examples of this are when the drawings represent:

- A design approach which is discarded
- Works such as 'cut and fill' which are early stage works
- Lay down areas which are for staging of works
- Temporary works which are built and then removed
- Demolition works or Tree Removal
- Structural Notes for construction purposes

On these occasions the following approach should be taken.

If prior to AFC Stage:

1. Remove the drawing from the set along with any associated references (e.g. on individual drawings or the cover sheets).

If after AFC Stage:

1. Leave the drawing as part of the set.
2. Update the drawing revision to final 'AS BUILT' status.
3. Leave the drawing content in place, but add a large diagonal watermark stamp across the centre containing the word 'REMOVED' or 'COMMENTS REMOVED' where the drawing only contained written notes.
4. In the revision history, indicate why the drawing has been removed (e.g. Removed - Temporary works completed). This part is very important.
5. Where a separate drawing contains a drawing list. Leave the drawing in the list but put a line through the information.
6. For rail projects, allocate an EDMS code as for all other drawings.

4. Drawing Formats for the TfNSW Title Block

A. Native Formats

Drawings must be electronically created using AutoCAD, Microstation or other software, based on the latest TfNSW project title block template supplied in AutoCAD format.

Delivery of the native drawing files must only occur in AutoCAD V2007 or Microstation V8 format. Where other software packages have been used to create the drawings, they must be converted to one of the two allowable formats before delivery, to ensure that the Asset Owners can read the drawings, including the smart tags.

B. Title Block Overview

A new title block for TfNSW drawings (including rail projects) was issued in March 2014. The accompanying electronic AutoCAD template provided should be utilised to ensure compliance.

The TfNSW Drawing Sheet Title Block comprises:

a) A series of data entry fields with required sizes, formats and fonts;

b) Grouping of the data entry fields into nine main component boxes as shown below. These are highlighted on a diagram in Appendix B and completion instructions are provided in Appendix A.

   A. Drawing Details Box
   B. Sign-off Box
   C. Client Details Box
   D. Spare Area Box
   E. Constructor Details Box
   F. Scale Bar Box
   G. Revision Box
   H. Multidisciplinary Sign-off Box
   I. Configuration Control Board (CCB) Approval Box

c) Smart Tags on most (but not all) of the data entry fields, which are grouped in Text Blocks as defined in Appendix C. The use of Smart Tags will allow data to be extracted automatically from the native CAD files. TfNSW and the Asset Owner may use this facility to populate data in electronic document management systems such as the Sydney Trains Virtual Plan Room (VPR).

The title block is to be utilised for drawings of all engineering disciplines (e.g. Architectural, Electrical, Structural etc).

A sample of the TfNSW title block and full instructions for its completion are provided in Appendix A of this document. The external grid outside the title block (e.g. 1, 2, 3 & A, B, C etc) should remain visible on the printed drawings.

C. Sheet Sizes

All drawings and document sheet sizes must be in accordance with AS 1100, as shown below. The general preference is for drawing sheet size is **A1 in landscape orientation**.

Drawing presentation shall be such that drawings are clearly legible when reduced to A3 size. A3 reductions of A1 drawings shall be printed so that the A3 drawing is exactly half scale.

Dimensions Of Standard Drawing Sheets	
Standard Designation	**Cut Sheet and Drawing Sheet Dimensions (mm)**
A0	1189 x 841
A1	841 x 594
A2	594 x 420
A3	420 x 297
A4	297 x 210

Details on the sheet size are provided in the Drawing Details Box. Refer to Section 5.3.1.1 for details.

D. Scales

Scales typically vary based on the level of detail and/or the overall size of the objects being drawn.

All views must be drawn to scale where possible. Distorted scales should be used only in special cases, where the required detail cannot be shown effectively on an undistorted scale. Scales should be indicated under each heading on the drawing. Views not drawn to scale are to be noted “NTS”.

Drawing Scales				
Full size & enlargement ratios	**2:1**	**4:1**	**5:1**	**10:1** **1:1**
Reduction ratios	**1:2** **1:20** **1:200** **1:2 000**	**1:2.5** **1:25** **1:250** **1:2 500** **1:25 000**	**1:5** **1:50** **1:500** **1:5 000** **1:50 000**	**1:10** **1:100** **1:1 000** **1:10 000** **1:100 000**

Details on scale size are provided in both the Scale Bar Box and the Revision Box.

Drawings may be presented in one or more scales. The Scale section should include a written scale notation (e.g. 1:100). A scale bar is to be included in the Scale Bar Box adjacent from which measurements can be taken when the drawing is printed in actual size.

Where different scales are used for horizontal and vertical dimensions, such as transmission line, OHW & bridge profiles, each scale shall be clearly indicated on the drawing sheet.

e.g. HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:100

The number of different scales used on any one drawing should be kept to a minimum. Scales shall be large enough to permit clear interpretation of the information and ensure clarity of prints on reduced copies, especially A3 copies of A1 originals.

E. Drawing Geographical Presentation

Plans and longitudinal sections (except structural details) shall be orientated so that the chainages run left to right when in paper space. For railway projects showing track, the Sydney end of the railway line is to be on the left side of the drawing.

Plans required for the detailing of individual elements of the project, such as tunnel portals and floor layouts need not be drawn to 'World' coordinates but shall have coordinates clearly shown on the drawing to allow positioning of the element onto the 'World' model.

Drawings shall include the following:

- A pointer for geographical North on the plan view;
- All cross sections relating to railway project track alignment are to be drawn looking in the direction of increasing chainage (looking left to right);
- When coordinates of a point are quoted, they shall be quoted showing Easting first and Northing second and prefixed E or N as applicable. E.g. E325990.020 N6256400.056;
- Survey control mark location, type, coordinates, and reduced level shall be shown;
- When required the rail boundary (or its approximate location) shall be shown and labelled appropriately;
- All adjacent structures relevant to the horizontal alignment shall be shown;
- Centreline clearances to structures shall be shown where required.

F. Use of Colour

All drawings are to be created in BLACK AND WHITE unless colour is needed for the benefit of understanding the content of the drawing (e.g. electrical line diagrams), or it would be extremely difficult to interpret the information on the drawing if printed in black and white or greyscale. Where colour is used on the drawing, the following requirements are to be met:

a) Colour shall not be used for text, dimension lines and other thin line styles;
b) Light shades of colour such as light blue and yellow shall not be used;
c) Red and shades of red shall only be used for warning signs and notices or when it is the actual colour of the object drawn;
d) A legend identifying the colour representations should be included;
e) A box containing the following note shall be added to the drawing located near the bottom middle of the drawing (see sample in Appendix B).

DRAWING COLOUR CODED – PRINT ALL COPIES IN COLOUR

The logos in the title blocks will remain in colour to distinguish black & white and colour prints.

G. Disclaimers

Disclaimers and certifications are not to be added to the drawings. Where required by the drafting company, disclaimers and certifications should be provided as a separate document referencing the drawing numbers and revisions.

H. Drawing Lists

Where lists of drawing numbers are included on other drawings (for index purposes), it is recommended NOT to include the drawing revision numbers. This is so that the index does not need updating each time the associated drawings are updated.

I. Text

I.1. Fonts

Text used in TfNSW drawings must be presented in either INTL_ISO or INTL_ISO_EQUAL font, with the exception of those set up in the template for the title block.

These fonts are readily available within AutoCAD or MicroStation.

Where the Contractor is not using either AutoCAD or MicroStation, it is allowable to use the closest available font.

I.2. Height and Line Weight of Text

The height of the characters, related to the size of the drawing sheet used, must be in accordance with AS1100.101, as indicated in the table 6 below.

Height Of Text Characters (mm)			
Character Use	**Sheet Size**		
	A1	**A2**	**A3**
Title block - Location	7	7	5
Titles, headings, view & section designation, drawing numbers, revision/amendment nos.	5	5	5
General notes, major dimensions, etc.	3.5	3.5	3.5
Minor labels & notes, amendments, general dimensions	2.5	2.5	2.5

Note: Due to the fact that most drawings are to be read as A3 size, text must not be smaller than 2.5mm at A1 size, with 3.5mm being the preferred minimum size for design information.

Where other text fonts are considered necessary to differentiate from the normal, use only common standard AutoCAD and MicroStation fonts.

J. Dimensioning

Dimensions are required to completely detail all relevant drawing features. All dimensions for a particular feature must be expressed on a single view only. Duplication of dimensions on a particular feature should be avoided. Scaling off a drawing to determine a dimension should not be necessary.

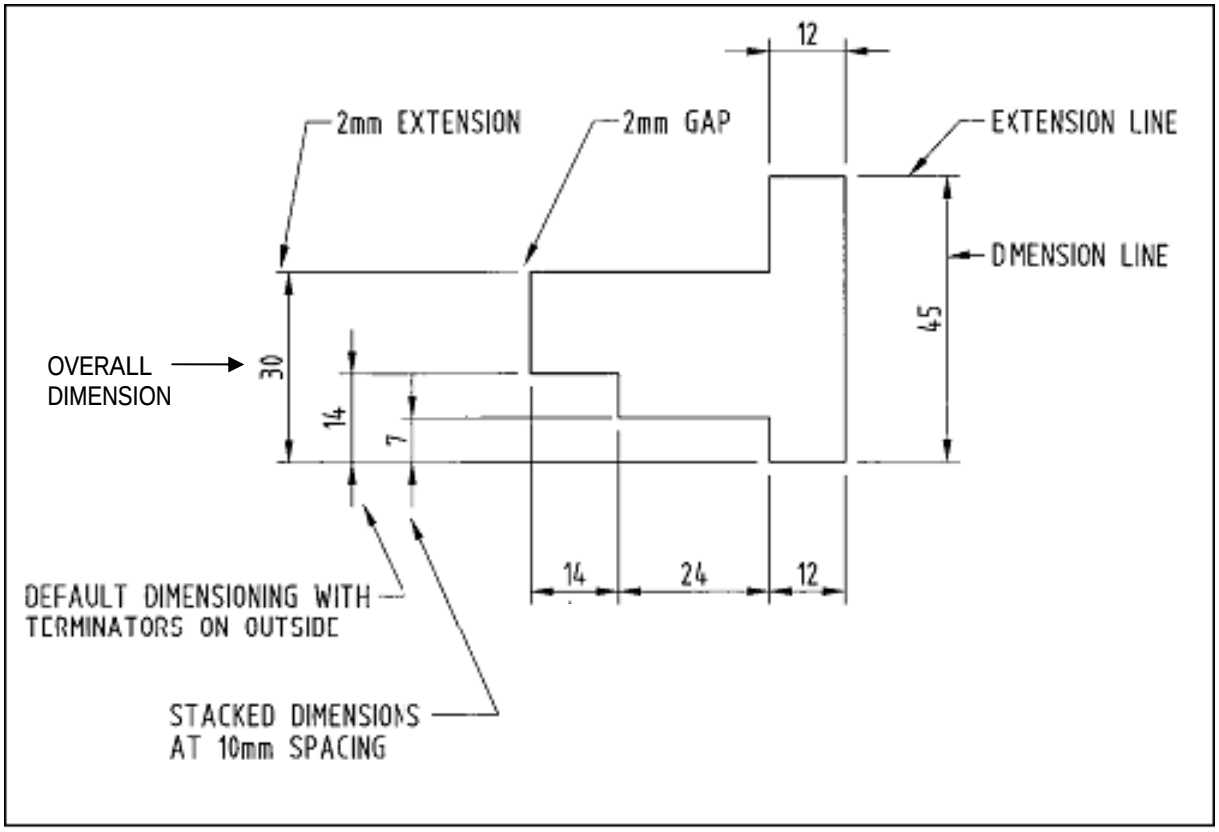
J.1. Dimension Lines

All dimension and extension lines should be thin, nominally 0.18mm thick on printout (equivalent to MicroStation line weight 0).

Extension lines should extend half of the text height beyond the dimension line and start the same distance clear of the outline of the feature. Extension lines should extend half of the text height past intersection points (IPs) and points on surfaces.

Dimension lines wherever practicable should be placed outside the outline of the object. Dimensions should be placed above the dimension line, not below or interrupting the dimension line. Dimension lines should terminate with easily readable standard filled arrowheads, normally 1.0 to 1.5 text heights long and 0.5 text heights wide. An exception to this is where dimensions are so tightly grouped that arrowheads would overlap or where the application calls for a stroke or dot.

A centreline or a line which is an extension of a centreline, or a part of an outline, should not be used as a dimension line. The diagram below illustrates these characteristics of extension lines and dimension lines. Stacked dimension lines should be spaced at 10mm intervals.



If the overall dimension of a chain of dimensions is a critical value then one of the dimensions in the chain should be omitted.

Leaders for notes etc should terminate in arrowheads or filled circles and should originate at either the beginning or end of a note (not above or below). Arrowheads should always terminate on a line. Dots should be within the outline of the object.

Leaders should be as near as possible to perpendicular to other lines which they touch or cross. They should not be parallel to adjacent dimension or projection lines. The use of long leaders should be avoided.

J.2. Dimension Text

Dimensions must be placed so that they may be read either from the bottom of the drawing (for horizontal text) or the right-hand side of the drawing (for vertical text).

Where it is necessary to indicate that a particular dimension is not to scale, the abbreviation NTS should be added.

Radii should be dimensioned by a dimension line which passes through, or is in line with, the centre of the arc. The dimension line should have one arrowhead only and the abbreviation 'R' should always lead the dimension.

K. Units

All survey design and set out for new projects shall be in the Map Grid of Australia (MGA) coordinate system in metre units.

Use of ISG coordinates is sometime permissible but must be agreed with TfNSW prior to commencing design work for the project. Such circumstances might be:

- Where the project largely involves alterations to the rail asset owner's existing network and the survey for that network is only available in Integrated Survey Grid (ISG) coordinates;
- Where the project is small, only ISG information is available and it is not cost effective to convert to MGA.

In these circumstances the CAD Template can be modified to change the Co-ordinate System note to ISG.

All levels (elevations) shall be to Australian Height Datum (AHD) in metre units.

Alignment plans shall be dimensioned in metres shown to 3 decimal places (i.e. to the nearest millimetre). Cant shall be dimensioned in millimetres.

Decimal numbers shall generally indicate metres, whole numbers shall indicate millimetres. Dimensions in millimetres requiring accuracy to a number of decimal places shall be expressed with the millimetre suffix, i.e. 12.5mm.

The position of the decimal point shall be the same as for a full stop and no space shall be left between the number and its units, i.e. 9.010m.

All angles and bearings are to be shown to the nearest second in the form DD°MM'SS".

L. Base Drawings

Base drawings such as cadastral, alignment or aerial surveys supplied by TfNSW have a common insertion point of 0,0 and a scale of 1=1. This will place them in their correct position in relationship to each other and to 'World' coordinates.

Base drawings shall be drawn such that 1 unit = 1 metre.

Alignment plans, worksite areas, station plans etc. must be produced in 'World' coordinates with an insertion point of 0,0 and a scale of 1 unit = 1 metre to allow positioning of this data onto railway alignment plans.

Entities on base drawings shall be properly levelled and with colour and line type control set to 'By Level' to enable control by different drawings.

Base drawings shall be attached as unbound reference files in the Paper Space.

M. Paper Space and Model Space

Drawings produced as a Model Space shall have all related text, dimensions and descriptions placed in the Model.

Non-position related annotations should be placed in the Paper Space (e.g. General Notes, Legends).

The project drawing sheet can be inserted in paper space as either an unbound reference or a cell with insertion point 0,0 and a scale 1=1.

Paper Space line type scale PSLTSCALE shall be set to (1) to control the display of correct line type proportions for the scale of the drawing.

5. Updating Drawings to As-Built Status

A. **As Built Status Indicators** are to be added to the drawing as follows:

a. Status wording in the title block to be 'AS BUILT'

b. Description under revision history to include 'AS BUILT' (plus other wording as required). (Note the Revision History is to remain in place, NOT be removed).

c. Where a Contractor is making changes supplied by another party, an example of the wording used is "As Built created by XXX from builder instructions". Note this would only apply if the Contractor making the changes was not required to visit the site for verification purposes.

B. **'AS BUILT' Drawing Presentation**

'AS BUILT' drawings are required to reflect the final situation that was built and NOT the changes that have occurred during the design or construction stages. Therefore, the following updates are required to be completed by an authorised engineer:

a. Application of any required changes to the drawings to represent works completed.

b. Remove any markings showing previous drawing changes (e.g. clouds or red lines) and ensure that the drawing reflects the final status.

c. Change any use of future tense to current or neutral tense. Examples of this are to change 'proposed fence' to 'fence' and to remove the words 'new/existing'.

d. Ensure notes and cross-references are still correct.

e. Remove instructions and notes specifically related to the construction process but please note that completely blank drawings are not acceptable. Refer to "Section 3E – Drawings No Longer Required" to determine a course of action. Contact TAP if advice is required.

f. Where numbered notes are no longer relevant, replace the wording with 'REMOVED' to leave other referenced numbers unchanged.

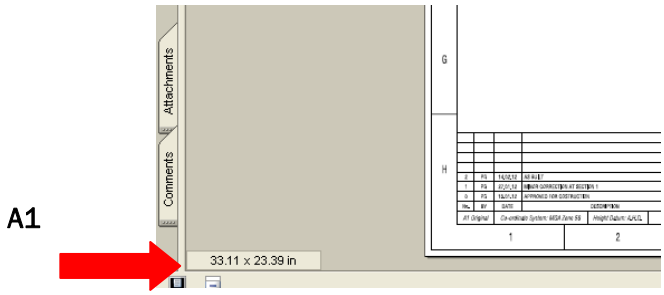
6. Drawing Delivery

A. Drawing Hard Copy Format

Hard copies of drawings are to be supplied as required by the Contract or as otherwise advised by TAP. Generally hard copies are required by TAP during the Design Stage only.

B. Electronic View File Format Drawings

a. Each drawing is to be provided in ONE separate electronic file (i.e. no files are to contain multiple drawings).
b. The electronic file is to be in PDF format or TIF (min 300dpi) format.
c. The electronic file is to be named with the drawing number and revision number (e.g. TAP-0824-CI-1234_1 or TAP-0824-CI-1234[1]).
d. The drawings should open in the correct orientation to be viewed on a screen without further rotation (i.e. landscape when the drawing is landscape). The only exception is for long plot drawings, which are to be presented with portrait orientation.
e. PDFs must be created as size 1:1 (e.g. A1 drawings should print legibly at A1 size). When this is done, the correct size will display in the bottom left-and corner of the PDF drawing when viewed electronically.



C. Electronic CAD File Format Drawings

TAP will advise when CAD files are required to be provided.

a. CAD files must be delivered in AutoCAD V2007 or Microstation V8 format. Where other software packages have been used to create the drawings, they must be converted to one of the two allowable formats before delivery, to ensure that the Asset Owners can read the drawings including the smart tags.
b. One CAD drawing is to be provided for each PDF drawing above. This CAD format drawing should be named the same way as the PDF file (e.g. TAP-0824-CI-1234_1 or TAP-0824-CI-1234[1]).
c. Drawings are to be provided in unbound form and all associated cross reference (xref) files or attachments are to be provided with their pre-existing names and sub-folder locations, so they will be automatically linked to the drawing file when it is opened. This includes all company logos for TfNSW, Technical Advisors or Builders.
d. The entire set of CAD files (i.e. drawings and linked files) is to be provided in a folder which is then to be ZIPPED and presented as one file. On unzipping this folder the recipient must be able to open and view each complete drawing (i.e. including all external links). The external links may be presented in the same folder as the drawings or in separate sub-folders as required.

D. Transmittal of Drawings

From January 2015, some TAP projects will require the Contractor to utilise the Teambinder electronic document management portal for submitting all controlled documents. This will replace the manual transmittal process that is described in this Section. Each Contractor will be provided with all necessary training and reference materials for using the Teambinder system.

NOTE: Full instructions related to the TAP requirements for transmitting documents and drawings can be found in document *"Instructions for Document Numbering and Transmittal Delivery for Transport Access Program".* A summary of the keys points are listed below.

a. All transmittals must be allocated a unique structured transmittal number, including the project number and a sequence number, so that missing transmittals can be easily identified.

b. A Drawing transmittal register must be supplied in native format (e.g. Word or Excel) and as a minimum must include:

- Drawing Number
- Drawing Revision
- Full Drawing Title as shown on the drawing

One transmittal is required showing all drawings being delivered on the same date. Separate transmittals for each discipline are not acceptable.

All drawings must be delivered to TAP by post on a CD/DVD (2 copies clearly labelled). This is to ensure that revision tracking is recorded correctly by the Transport Projects Division (TPD) Records Group. Exemptions to a postal delivery (e.g. by email or link) must be obtained in writing by email with a copy to the TAP Document Controller at TAP_DOC_Controller@projects.transport.nsw.gov.au

c. The number of documents listed as being delivered on the transmittal must equal the number of files submitted. Therefore, where additional files are included with the drawings (such as Design Reports, certificates or zip files) they must also be listed on the transmittal. The only exception to this rule is where multiple copies of the same documents are provided in different files formats (e.g. in PDF and also in Word or Zipped).

d. The electronic files provided with the transmittal must be provided in ONE folder and no sub-folders, so that they can all clearly be seen together and be easily reconciled against the transmittal content.

e. The checklist provided in Appendix E must be completed by the Contractor and provided with every full drawing submission (i.e. it is not required when a sub-set of drawings is being updated).

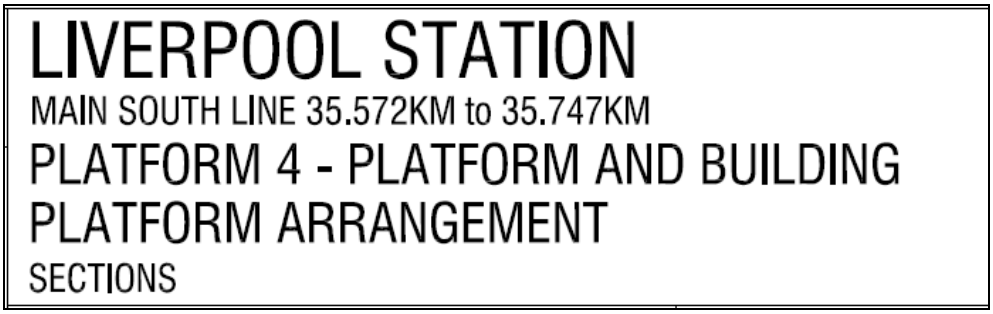
f. The Contractor must implement their own Document Control procedures to record the date of all document revisions provided to TAP.

Appendix A – TfNSW Title Block Completion

The following instructions are for completion of the title block generally from right to left. The full title block is shown in Appendix B.

1. Drawing Details Box

Title (Subject Matter)



Drawing titles must comply with the following requirements:

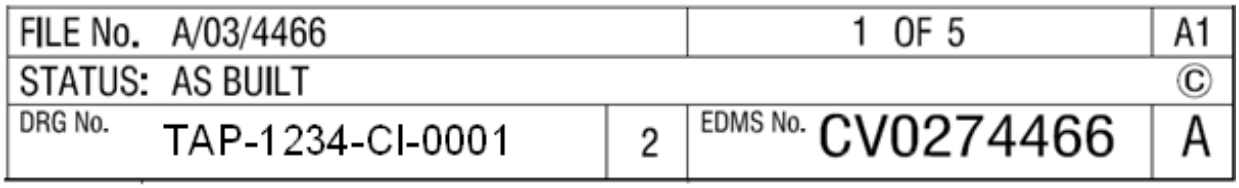
- Drawing titles must be correct, comprehensive and compliant with the formatting standards as shown below.
- Abbreviations should be avoided but common construction abbreviations are allowable (e.g. LV, OHW, DRG, ULX etc) or ones explained on the drawing.
- The drawing title is made up of the 5 lines (Location, Line and Kilometrage, Job Description Detail 1 & 2 and Drawing Type) which are to contain specific information about the content of the drawing.
- The drawing title is to reflect the ongoing Operation and Maintenance requirements and must NOT include:
  - The project stage (e.g. Tender, Concept Design etc)
  - Actions required for the drawing (e.g. proposal, for review, future use, design stage etc)
- In addition, it is preferred that the project/program name such as ‘Clearways’ or ‘Station Upgrade’ is not included in the drawing title, however there may be instances (e.g. project drawing cover sheets/lists) where this is acceptable. Guidance should be sought from the Principal’s Representative at commencement of a new project as to the acceptable title structures. Where this does not occur, TAP reserves the right to amend the titles later in the project.

Line No.	Field Name	Content Requirements
1	**tbLocality**	The main LOCATION of the drawing. e.g. Station, Building, Tunnel, Dive, Bridge, River, Permanent Way, Service Facility, Water Treatment Plant etc
2	**tbLine**	The formal Rail line name, followed by the 'from' and 'to' kilometre positions shown in the drawing. Where no rail line is relevant, details of the location can be included (e.g. A street address or Room location). This entire line is omitted for non-rail drawings.
3	**tbDetail1**	Lines tbDetail1 and tbDetail2 are used flexibly to include maximum details of the Discipline (e.g. Electrical) and Sub-Discipline (e.g. Low Voltage) plus a full description of the drawing content. Sets of drawings should be labelled similarly. The Project/Program name MAY be included here if advised by TAP.
4	**tbDetail2**	See above.
5	**tbDetail3**	The type of drawing e.g. Alignment, Cover Sheet, Survey, Plan, Sections, Note, Schematic Diagram etc

Examples of titles that meet the above requirements are as follows:

Line No.	CAD Field Name	Example 1	Example 2	Example 3
1	**tbLocality**	LADY GAME DRIVE SERVICE FACILITY	LIVERPOOL STATION	ST MARY'S MULTI-STOREY COMMUTER CAR PARK
2	**tbLine**	LEVEL 2 – CONTROL ROOM	MAIN SOUTH LINE 35.572KM TO 35.747KM	WESTERN LINE 47.42KM
3	**tbDetail1**	ELECTRICAL	PLATFORM 4 – PLATFORM AND BUILDING	LANDSCAPING
4	**tbDetail2**	MAIN SWITCH BOARD	PLATFORM ARRANGEMENT	MASS PLANTING
5	**tbDetail3**	SCHEMATIC	SECTIONS	PLAN

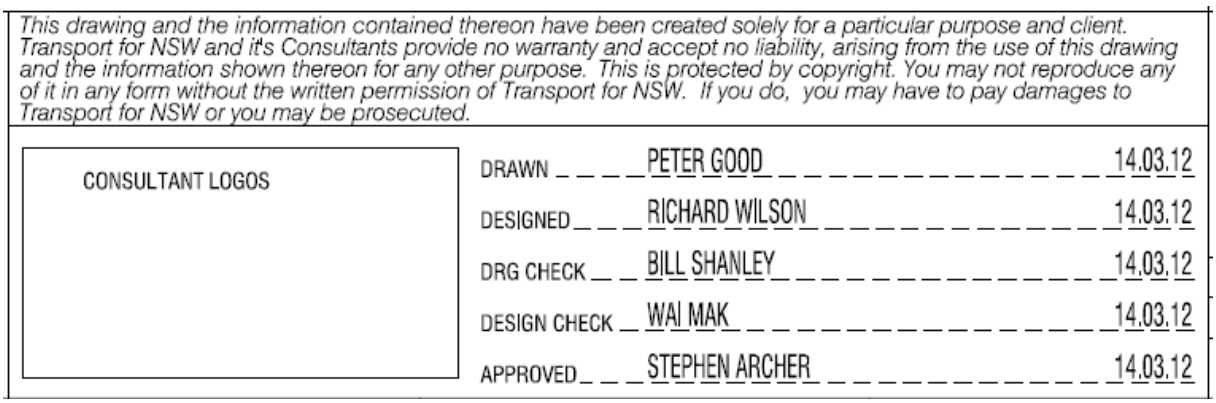
Drawing Numbering and Information



Description	Field Name	Above Example	Completion Instructions
File Number	**tbFileNo**	A/03/4466	Optional entry to be used by the drawing design company to assist the tracking of drawings within their own system. Not utilised by TfNSW.
Drawing Position within Set of Drawings	**tbSheetNo**	1	This is the sheet number of this drawing in a set of drawings. Where there are no other drawings in the set, this is '1'

Description	Field Name	Above Example	Completion Instructions
Number of Drawings in Set	**tbOfSheets**	5	Where this drawing is part of a set of multiple drawings, then this describes its order in the set. When there is no set, the default is 1 of 1. NOTE: The 'of' is fixed in the template.
Sheet Size	**tbSheetSize**	A1	Size of the drawing – A1
Drawing Status	**tbStatus**	AS BUILT	Status of this revision of the drawing. Allowable values are: TENDER, CONTRACT, CONCEPT DESIGN, REFERENCE DESIGN, DESIGN, APROVED FOR CONSTRUCTION & AS BUILT. Other values need to be agreed with TAP. Note that the status is not required to be additionally stamped elsewhere on the drawing.
TfNSW Drawing Number	**TPDDRAWINGNO**	TAP-1234-CI-0001	Structured document number as defined by TAP. This will include a prefix to identify the program/project name to which this drawing belongs. It is this number that is used to make references between drawings and other documents.
TfNSW Drawing Number Revision	**TPDREVNO**	2	Revision related to the TfNSW drawing number (e.g. A or 1)
Sydney Trains Plan Room Drawing Number (EDMS Number)	**tbDrawingNo**	CV0274466	Sydney Trains Plan Room drawing code (2 letters and 7 numbers). Provided to the Contractor by TPD. Unique for each drawing. This box remains blank for drawings not being delivered to the Sydney Trains Plan Room.
Sydney Trains Plan Room Amendment Status (EDMS Revision)	**tbRevisionNo**	A	The first instance of the drawing will always show an 'A' in this box. TPD will advise the Contractor when the letter is to be increased. The timing of this will be variable for each drawing. This box remains blank for drawings not being delivered to the Sydney Trains Plan Room.

2. Sign off Box



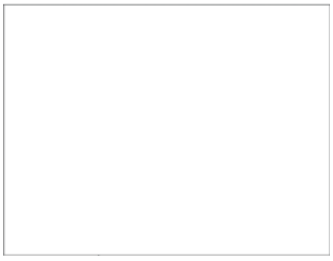
- The consultant (design) company responsible for the drawing must include their logo in the left-hand side of the above block. Where there are multiple Contractor companies, or an alliance, all logos should be included, scaled to fit.
- When the drawing is created, the authorisation panel on the right-hand side must contain the full names (not initials) of the draftsperson, designer, both checkers and final authoriser. The dates of the activities must also be included.
- These details reflect the people responsible for the Design are they are not to be updated when the drawing is further revised after the Design Stage is completed.
- No wet signatures are required.

3. Client Details Box

The colour TfNSW logo is located in the Client Details Box and must remain there for all submissions.

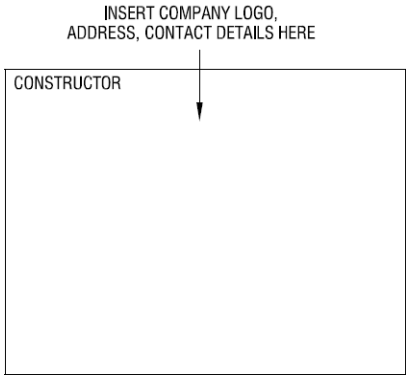
4. Spare Area Box

The Spare Area Box is a blank space provided for future additions of information to the title block. This area may be utilised for Contractor's own purposes. e.g. For 'check print' stamps of draft drawings that are used between officially issued revision updates.



5. Constructor Details Box

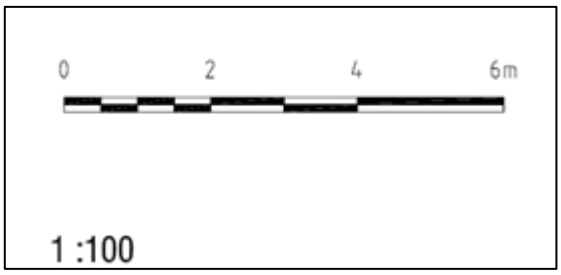
The Constructor Details Box is provided for the details of the builder once they have been engaged.



6. Scale Bar Box

Scale bars are required in the Scale Bar Box from which, measurements can be derived when the drawing is printed in actual size.

Multiple scale bars may be provided, dependant on the number of different scales used on the drawing.



7. Revision Box

2	PG	14.03.12	AS BUILT	SA
1	PG	27.02.12	MINOR CORRECTION AT SECTION 1	SA
0	PG	15.02.12	APPROVED FOR CONSTRUCTION	SA
B	PG	17.12.11	GENERAL REVISION	SA
A	PG	07.11.11	TENDER ISSUE	SA
REV	BY	DATE	DESCRIPTION	APPD.
A1 Original	*Co-ordinate System: MGA Zone 56*	*Height Datum: A.H.D.*	Scale: 1:00	

For each drawing revision, the Revision History Table (bottom left-hand corner of the title block) is to be updated to record the revision code, the initials of the person making the change, the date and a brief but informative description of the changes made. (During design development where many things are updated a simple explanation such as ‘General Update’ or ‘Issued for Comment’ is acceptable).

The initials of the person approving the revision are to be placed in the “APPD.” column of the revision block. Where possible, these are to be at least three letters to minimise the possibility of mis-identification of approvers with common first and last initials.

The oldest revision entries are displayed at the bottom of the list. Revision History items should only be removed when all available lines have been used. In this case the oldest revision information is removed and the remainder of the entries are moved downwards to create room for the new one.

The first three cells of data on the bottom line (A1 original …etc) are part of the standard template and do not normally require changing unless the default details have changed.

The bottom right-hand cell of the Revision Box is for the Scale Notation (tbScale) of the drawing. The drawing may have one scale or many scales. Valid Scale Notation entries are:

- ‘1:10’, ‘1:25’ ‘1:500’ etc
- ‘1 to 10’, ‘1 to 25’, 1 to 500’ etc
- ‘NTS’ – Not to Scale
- ‘VARIOUS’ – Multiple scales apply
- ‘UNKNOWN’ – Scale is not known

8. Multidisciplinary Sign-off Box (Not Used for TAP projects)

The Multidisciplinary Sign-off Box is not utilised for TAP projects and should be deleted from the drawing.

It enables identification of multiple designers and disciplines as required. The relevant discipline and components are entered into the top section of the box.

Like the Sign-Off box, the Multidisciplinary Sign-off Box must contain the first name and printed surname of the persons who had performed the design and drawing tasks. The dates of the activities must also be included.

These details reflect the people responsible for the Design are they are not to be updated when the drawing is further revised after the Design Stage is completed.

DISCIPLINE		
COMPONENT(S)		
	NAME DATE	NAME DATE
DESIGNED		
DESIGN CHECK		
COMPANY		

9. CCB Approval Box

The CCB Approval Box is positioned just above the Drawing Details Box and is used to capture relevant details of approval by the TfNSW Configuration Change Board (CCB).

Drawings must document CCB approval for the following design stages:

- Reference Design – Control Gate Stage 2
- Approved For Construction – Control Gate Stage 3

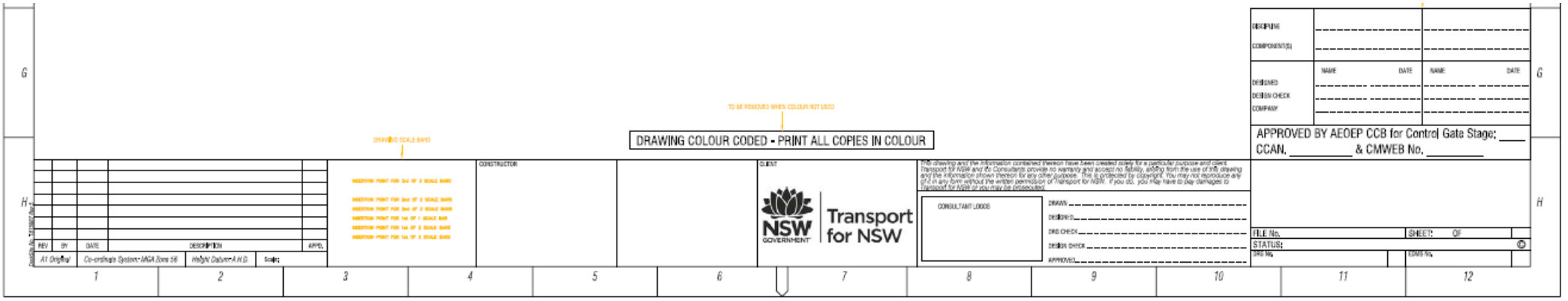
The CCB Approval Box must be completed for submissions at these two design stages. All subsequent drawing revisions beyond 'Approved For Construction' (e.g. As Built) must also provide details of the Control Gate Stage 3 approval.

NOTE: The wording included in the title block reflects the current TfNSW CCB approval process agreed with ASA and the TfNSW Authorised Engineering Organisation - Existing Projects (AEOEP). Whilst AEO's are already providing their services, they are still required to submit applications to the TfNSW Configuration Control Board (CCB) which is known as the 'AEOEP CCB'. If in future independent AEO CCBs are in operation, the text in the CCB Approval Box may be modified to reflect this development.

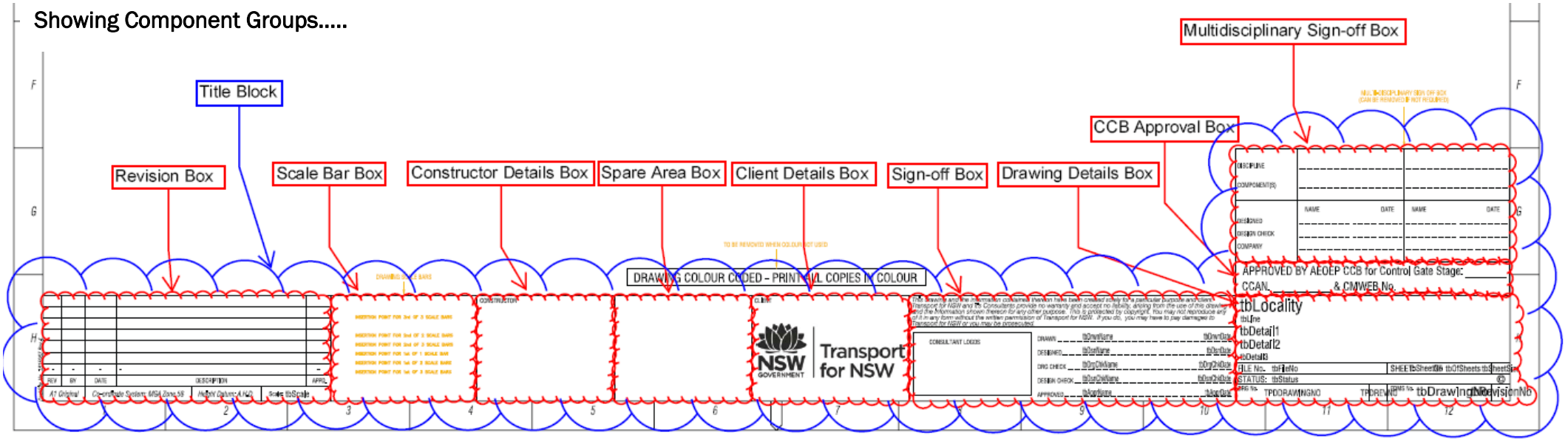
APPROVED BY AEOEP CCB for Control Gate Stage: _____
CCAN. _____ & CMWEB No. _____

TAP will provide the appropriate Configuration Change Approval Number (CCAN) and CMWeb identifiers and Gate numbers applicable to the drawings. The CMWeb identifier may sometimes be blank.

Appendix B – Full TfNSW Title Block Display



Showing Component Groups.....



Appendix C – TfNSW Title Block Smart Tags

The TfNSW title block contains a number of Smart Tags which will allow data to be extracted automatically from the native CAD files. TfNSW and the Asset Owner may use this facility to populate data in electronic document management systems such as the Sydney Trains Virtual Plan Room (VPR).

The Smart Tags are groups into 3 text blocks named 'TitleBlock', 'EX_PR' and 'TPD Text' which must not be renamed, exploded or manipulated in any way. Further details are shown in the table below.

Field Name	Tag	Description	Format	List/Example
Text Block – 'TitleBlock' - contains 23 data entry fields and forms the majority of the text contained in the main section of the title block.				
Location	**tbLocality**	This is the main LOCATION of the drawing. For Rail assets a list of locations and kilometres can be provided from the TPD CAD Draftsman or Principal Engineering Manager Systems. For non-Rail assets, this is to be the name of the asset, e.g. Building, Tunnel, Bridge, Facility etc.	Free Text – 40 Characters (Alphanumeric – Upper Case)	E.G: JANNALI STATION
Line and Kilometrage	**tbLine**	This is the formal Rail line name followed by the kilometres. The kilometres can be a single kilometre location or a range designated as a starting kilometres to an ending kilometres which is applicable to that drawing. Where no rail line is relevant, or for non-Rail assts, details of the location can be included (e.g. A street address, Room location etc).	Free Text – 40 Characters (Alphanumeric – Upper Case)	E.G: ILLAWARRA LINE 22.617 KM

Field Name	Tag	Description	Format	List/Example
Job Description Detail 1	**tbDetail1**	Lines tbDetail1 and tbDetail2 are used flexibly to include the Discipline (e.g. Electrical) and Sub-Discipline (e.g. Low Voltage) plus a full description of the drawing content. Sets of drawings should be labelled similarly.	Free Text – 40 Characters (Alphanumeric – Upper Case)	E.G: ARCHITECTURAL or ELECTRICAL SERVICES or CIVIL
Job Description Detail 2	**tbDetail2**	See above	Free Text – 40 Characters (Alphanumeric – Upper Case)	E.G: LIGHTING AND CONDUIT or LANDSCAPING or DRAINAGE CATCHMENT PLAN
Drawing Type	**tbDetail3**	The type of drawing e.g. Alignment, Cover Sheet, Survey, Plan, Sections, Note, Schematic Diagram etc.	Free Text – 40 Characters (Alphanumeric – Upper Case)	E.G: ALIGNMENT or COVER SHEET or SURVEY or PLAN or SECTIONS or SCHEMATIC DIAGRAM or DETAILS
File No.	**tbFileNo**	Optional entry based on the design company to assist the tracking of drawings within their own system.	Free Text – 20 Characters (Alphanumeric)	E.G: ABC34143
Drawing Status	**tbStatus**	The status of the revision of the drawing. NOTE – The status must not be additionally stamped on the drawing.	Free Text – 30 Characters (Alphanumeric – Upper Case)	Allowable values are: TENDER, CONTRACT, CONCEPT DESIGN, REFERENCE DESIGN, DESIGN, APROVED FOR CONSTRUCTION & AS BUILT. Other values need to be agreed with TAP.
Sheet Number in the Set	**tbSheetNo**	This is the sheet number of this drawing in a set of drawings. Where there are no other drawings in the set, this is sheet 1.	Free Text – 2 Characters (Integer)	E.G: 2

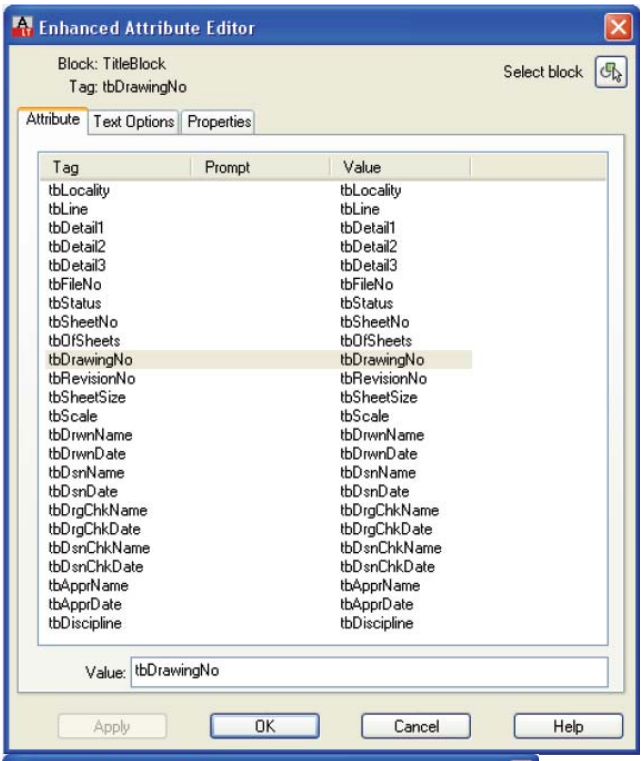
Field Name	Tag	Description	Format	List/Example
Total Number of Sheets in the Set	**tbOfSheets**	This is the total number of sheets in the set, of which this drawing forms part. Where there are no other drawings in the set, this is 1.	Free Text – 2 Characters (Integer)	E.G: 14
EDMS No.	**tbDrawingNo**	This is the Sydney Trains Drawing Code (2 letters and 7 numbers), aka 'EDMS Number' provided to the Contractor by TfNSW (in consultation with the Planroom), unique for each drawing. For non rail-related projects, this may remain blank.	Free Text – 9 Characters (Alphanumeric – 2 letters and 7 integers)	E.G: CV0001234 or EL0456122 or SG0510324 For non rail-related projects this may remain blank.
EDMS Amendment Status (Revision Associated with EDMS No.)	**tbRevisionNo**	This is the revision related to the Sydney Trains Drawing Code (EDMS No.). The first instance of the drawing will always show an 'A' in this box. TfNSW will advise the Contractor when the letter is to be increased. The timing of this will be variable for each drawing. For non rail-related projects, this may remain blank.	Free Text – Up to 3 Characters (Alphanumeric – Upper Case)	E.G: A or B or C
Sheet Size	**tbSheetSize**	Size of the drawing , which is typically A1 Note: Long Plot drawings must be labelled A1R	Only certain values allowed	There are many allowable values but the most likely ones to be used are A1 and A3. The Contractor should ask TAP if they feel other values are appropriate.
Scale Notation	**tbScale**	The primary scale of the drawing or other allowable annotation.	Free Text – 8 Characters (Alphanumeric)	E.G: 1 to 500 or 1:500 or NTS or VARIOUS or UNKNOWN
Drawn By (Name)	**tbDrwnName**	First name and surname of the person who has drafted the drawing.	Free Text – 20 Characters (Alphanumeric – Upper Case)	E.G: JOSEPH BLOGGS
Drawn Date	**tbDrwnDate**	Date of sign-off by draftsperson.	Date (dd/mm/yyyy)	E.G: 15/10/2006

Field Name	Tag	Description	Format	List/Example
Designed By (Name)	**tbDsnName**	First name and surname of the person who has created the design contents of the drawing.	Free Text – 20 Characters (Alphanumeric – Upper Case)	E.G: STEPHEN DOE
Designed Date	**tbDsnDate**	Date of sign-off by designer.	Date (dd/mm/yyyy)	E.G: 14/09/2006
Drawing Checked By (Name)	**tbDrgChkName**	First name and surname of the person who has checked the drafting of the drawing.	Free Text – 20 Characters (Alphanumeric – Upper Case)	E.G: KAREN DAY
Drawing Checked Date	**tbDrgChkDate**	Date of sign-off by drafting checker.	Date (dd/mm/yyyy)	E.G: 5/11/2006
Design Checked By (Name)	**tbDsnChkName**	First name and surname of the person who has checked the design contents of the drawing.	Free Text – 20 Characters (Alphanumeric – Upper Case)	E.G: ANDREW HARVEY
Design Checked Date	**tbDsnChkDate**	Date of sign-off by design checker.	Date (dd/mm/yyyy)	E.G: 10/11/2006
Approver (Name)	**tbApprName**	First name and surname of the person who has approved the design to be released.	Free Text – 20 Characters (Alphanumeric – Upper Case)	E.G: PETER STONE
Approved Date	**tbApprDate**	Date of sign-off by Design Approver.	Date (dd/mm/yyyy)	E.G: 3/12/2006

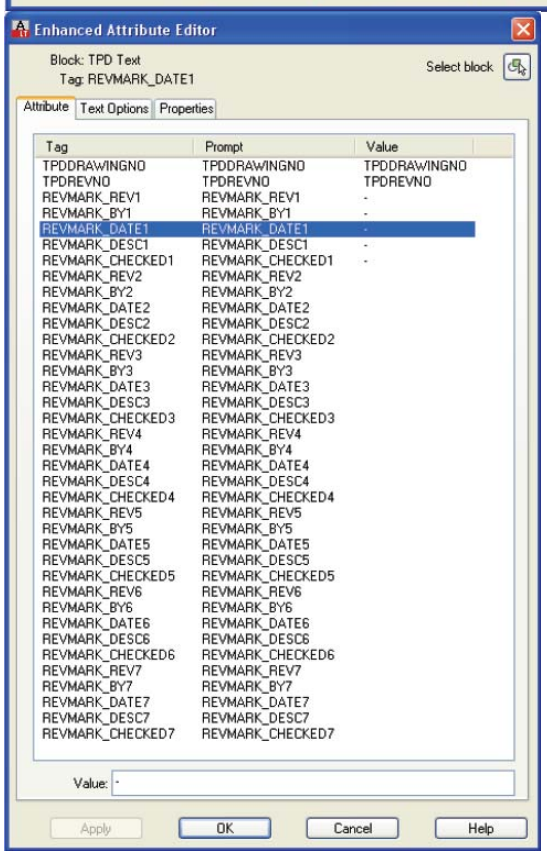
Text Block – 'EX_PR' - contains text information that is NOT VISIBLE within the printable area of drawing title block.				
Document Purpose	**tbDocPurpose**	The purpose for which the document is prepared.	Only certain values allowed	Allowable values are: PROPOSAL, TENDER, CONTRACT, DESIGN, CONSTRUCTION, COMMISSION, INCIDENT, OTHER, ASBUILT. It is recommended that to avoid needing to update this field too often, only the values DESIGN, CONSTRUCTION and ASBUILT as used.
Document Type	**tbDocType**	The current physical format of the document. e.g. Drawing, Photograph, Parts List etc	Always 'DRAWING'	I.E. DRAWING
Document Set Name	**tbSetNo**	If the drawing is part of a set (e.g. Sheet 2 of 5) the Document Set Name is the EDMS No. of Sheet 1 of the set. If the drawing is not part of a set, this field is left blank.	Free Text – 9 Characters (Alphanumeric – 2 letters and 7 integers)	E.G: CV0001234 or EL4561222 or SG5210324 No spaces or hyphens should exist. For non rail-related projects, this may remain blank.
Text Block – 'TPD Text' - contains the reference to the Supplier's drawing number and revision in the main section of the title block.				
TfNSW Drawing No.	**TPDDRAWINGNO**	Structured document number as defined by TAP. This will include a prefix to identify the program/project name to which this drawing belongs. It is this number that is used to make references between drawings and other documents.	Free Text – Up to 20 Characters (Alphanumeric – Upper Case)	E.G: TAP-0853-GN-0001
TfNSW Revision No.	**TPDREVNO**	Revision related to TPDDRAWINGNO. The first instance of the drawing will always show an 'A' in this box.	Free Text – Up to 3 Characters (Alphanumeric – Upper Case)	E.G: A, D, 0, 1, 2, 3

Smart Tag Technical Details

Users of AutoCAD are required to use the AutoCAD EATTEDIT command and pick from the visible text of the TitleBlock and TPD Text blocks. Invoking the EATTEDIT command or double clicking any of the visible tags displays a dialog box for editing the text as shown in the screen shots below.

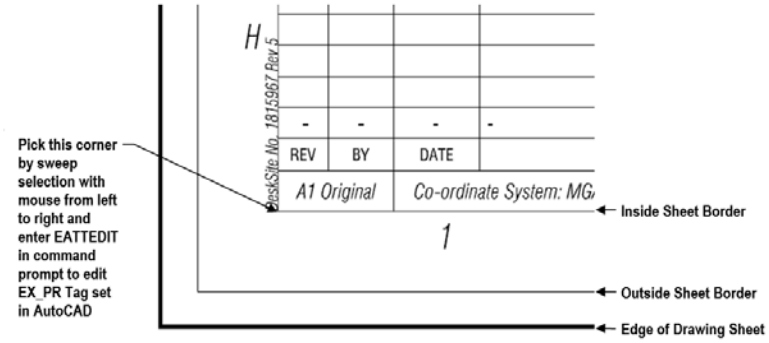


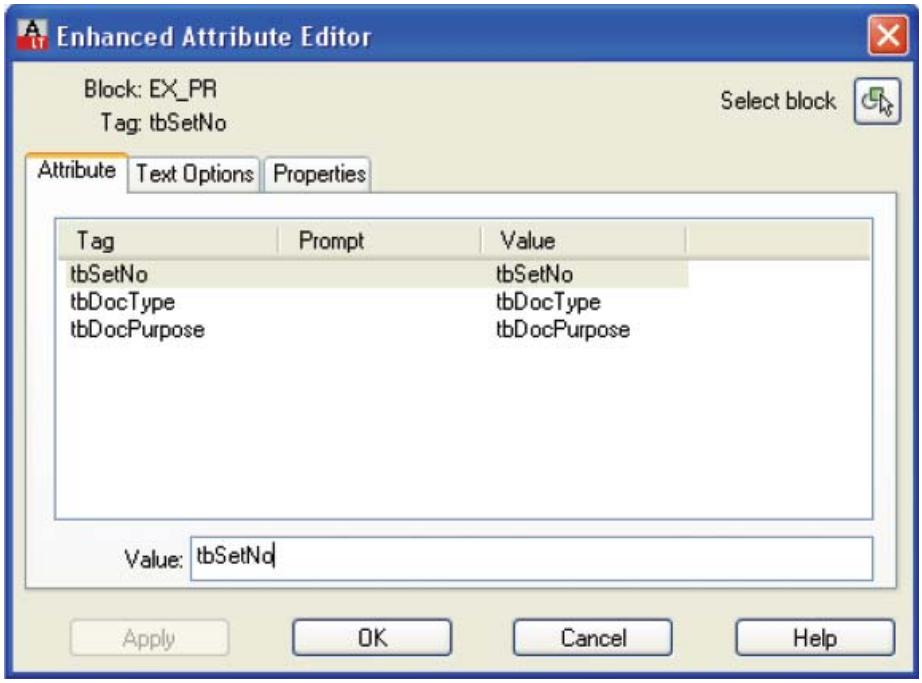
Enhanced Attribute Editor (TitleBlock) dialog box in AutoCAD



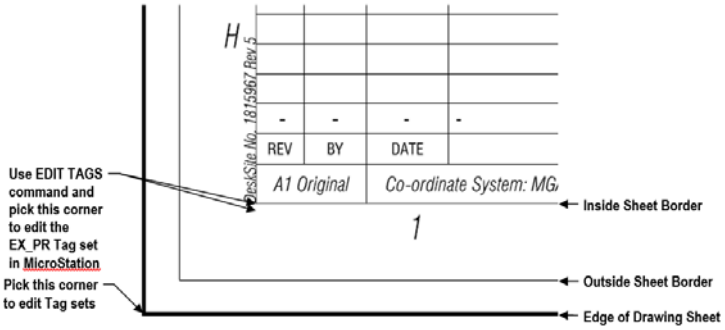
Enhanced Attribute Editor (TPD Text) dialog box in AutoCAD

The EX-PR block contains invisible information required by the Planroom. To edit these attributes select the left bottom corner of the inside sheet border using the sweeping selection of the mouse from left to right and invoke the EATTEDIT command. This will display a dialog box.





Users of MicroStation are required to use the MicroStation EDIT TAGS command and pick from the visible text of the TitleBlock and TPD Text blocks. Invoking the EDIT TAGS command or double clicking any of the visible tags displays a dialog box for editing the text within the blocks. The EX-PR block contains invisible information required by the Planroom. To edit these attributes invoke the EDIT TAGS command and pick the left bottom corner of the inside sheet border as shown below.



Appendix D – Revision History

REVISION NUMBER	REVISION DESCRIPTION	AUTHOR	DATE
1	First Issue.	Julia Breit	27 Mar 2012
6	Major update to reflect updated title block. The document must be re-read in its entirety. The major changes are: • Introduction of new title block with new positions for some data items • Mandatory use of smart tags/attributes • 'SG' prefix required on EDMS codes for Communications drawings • Completed checklist to be provided with every full drawing submission	Julia Breit	21 Mar 2014
7	Changes are highlighted in red (where possible) as follows: • Allowable use of ISG coordinates in some circumstances • Removal of North Pointer from scale bar box • Addition of technical details for Smart Tags (as included in TPD CAD Protocols) • Reference to alternate document for document numbering and transmittal instructions • Drawing 'removed' stamp changed to a watermark • Addition of references to Teambinder electronic document submission portal which is mandated for some projects.	Julia Breit	29 November 2014

Appendix E – Drawing Submission Checklists

The following checklist has been provided to assist the Contractor to check the main drawing formatting and transmittal requirements before submission.

This form must be provided with every FULL SET of drawings.

Drawings or transmittals not meeting the requirements will need to be revised.

Transport Access Program (TAP)
Checklist for Submission of Complete Drawing Set

To eliminate project delays due to the need for the need for rework, the Contractor is required to complete this form and submit it with all full sets of drawings. TfNSW reserves the right to reject non-compliant drawings and transmittals.

Project Name			
Transmittal Number		**Company Name**	
Contact Name & Number		**Date**	

Stage Applicable	References in this document	Description of Requirement for Drawings	Yes, No, N/A or Comment
TITLE BLOCK CONTENT			
Design	2.B 4.B	The TfNSW provided title block template has been used, including use of smart tag processing (unless alternate title block provided).	
Design	3.A App A.1	Drawing numbering structures and ranges have been agreed with TAP.	
Design	App A.1	The five lines of the drawing title have been confirmed with TAP, including locality title, line, kilometrage, disciplines, drawing contents and type.	
Design	App A.1	Page numbers (e.g. 1 of 5 etc) are included.	
Design	App A.1	Sheet size (A1) is included.	
Design	App A.2	The Signoff Box has been completed showing full names and dates.	
Design	App A.3	The TfNSW logo is included.	
Design	4D App A.7 App.A.6	The scale is shown in the revision box with a scale bar also in the Scale Bar Box (NTS, UNKNOWN and VARIOUS are allowed).	
Design	App.A.8	The multi-disciplinary sign-off box is NOT shown.	
All Stages	App A.5	The Constructor logo has been included when known.	
All Stages	App A.1	A status is included and is valid (e.g. AS BUILT).	
All Stages	3.B & App A.1 App A.7	Revisions (A thru 99) have been updated since the last issue, including description, date and initials (with no history removed).	
All Stages	3.C App.A.1	Where TAP has provided a range of EDMS Codes, these have been uniquely allocated to the drawings (7 numbers required).	
All Stages	3.C App.A.1	All EDMS Codes have a prefix of EL (Electrical), SG (Signalling and Communications) and CV (Other) with no spaces/hyphens.	
All Stages	3.D	EDMS Code Revision is 'A' unless advised by TAP.	
All Stages	App A.1	A status is included and is valid (e.g. AS BUILT).	
All Stages	App.A.9	The CCB Approval box has been completed using the numbers provided by TAP.	

Stage Applicable	References in this document	Description of Requirement for Drawings	Yes, No, N/A or Comment
DRAWING CONTENT FORMATS			
Design	4.C	Drawings are A1 size and landscape orientation.	
Design	4.E	Geographical presentation requirements are met.	
Design	4.F	Drawings are black and white (with colour logos) Coloured drawings include the 'print in colour' box.	
Design	4.G	No disclaimers are included on the drawings.	
Design	4.H	Drawing lists do not include Revisions or EDMS codes.	
Design	4.I	Text fonts, heights and line weights are to standard.	
Design	4.J	Dimension Lines and Text are to standard.	
Design	4.K	Units for survey, levels, alignment etc are to standard.	
Design	4.L	Base drawings requirements are to standard.	
Design	4.M	Paper and model space requirements are to standard.	
As Built	5	As Built drawings are updated to required standards.	
All Stages	3.E	Drawings no longer required have been updated appropriately (different process for before and after AFC stage).	
DRAWING DELIVERY			
All Stages	4.A 6.C.a	Drawings are delivered in AutoCAD V2007 or MicroStation V8 format including smart tags (even where created using other software).	
All Stages	6.A 6.D.c	Hard copies have been provided as requested by TAP.	
All Stages	6.C.c 6.C.d	Where required, a zipped folder of CAD files includes all the drawings and supporting files in unbound form.	
All Stages	6.B.a 6.C.b	Each PDF/TIF and CAD drawing (where required) is provided in a separate file.	
All Stages	6.B.c 6.C.b	Each view file and CAD file (where required) is named with the drawing number and revision number.	
All Stages	6.B.d	PDF/TIF opens in the correct orientation (landscape).	
All Stages	6.B.e	PDF/TIF opens in 1:1 state (i.e. A1 can be printed legibly as A1).	
All Stages	6.C.b	The drawing numbers and revisions for the CAD and PDF files are the same.	
TRANSMITTAL PACKAGING			
All Stages	6.D.a	Transmittal number is correctly structured (e.g. ABC-9999-001).	
All Stages	6.D.b	Transmittal document is supplied in native format.	
All Stages	6.D.c	Transmittal is supplied by post on CD/DVD unless written exemption given.	
All Stages	6.D.d	The number of files submitted on the transmittal equals the number listed on the transmittal document (see allowed exemptions) with matching identifiers.	
All Stages	6.D.e	The electronic files are presented in one folder only (no sub-folders).	
All Stages	6.D.f	Document revisions have not been previously submitted (unless agreed with TAP and reason. explained in a covering letter).	

Appendix C – Life Cycle Cost Model

Appendix C – Life Cycle Costs

(Reference # 4821452_3)

Section 5.1 of the Works Brief, sets out the requirements under Contract for addressing Life Cost considerations:

1. The Contractor must demonstrate that the required Life Cost can be achieved within the limits defined for each station for the reference concept design.
2. The Contractor must use the Life Cost Model provided by the Principal.
3. Life Cost Model provided by the Principal consists of:
    a The Life Cost Model Spreadsheet (refer to the following tabs in the provided spreadsheet: WoL Summary, LC Model)
    b Existing Life Cost Equipment, Materials and Finishes Schedule (refer to tabs titled: “Audit Remaining Lives”, “Condition Ratings”, “Inclusions & Exclusions and “Design Lives TfNSW”)
    c Baseline existing Life Cost Base for the existing facility (refer Tab “Introduction” shown under TfNSW Parameters”)
    d Concept Upgraded facility cost (shown under “TfNSW Parameters” as “Baseline Life Cost (NPV)” within the introduction sheet which represents the remaining facility + upgraded facility total cost based on the concept design.
4. The Contractor must demonstrate that the developed design at various stages has been kept under the Life Cost Ceiling for each station - using the model and the tools provided by the Principal. This ensures like-for-like comparisons.

“Life Cost Ceiling” is the target range where the upper and lower values cannot be exceeded when calculating life cost over 30 years. Life Cost Ceiling is the figure derived using the TfNSW Life Cost Model on the reference concept design.

The Contractor is required to consider choices of materials and finishes throughout design development that will provide the optimal balance between capital expenditure and life cost impact, and this balance is achieved when the life cost NPV is demonstrated to be in the range defined by the Baseline Life Cost NPV and the Life Cost Ceiling NPV while the capital costs are demonstrated to be within the approved budget. The Contractor should use the design lives, % replacement and maint rates where possible to ensure a like for like comparison. Where new materials or assets are introduced into the design and no cost parameters have been established, the Contractor should adopt a similar approach and demonstrate its assessments on a case by case basis.

The Life Cost Model uses a 30 year range to benchmark life cost outcomes. Replacement costs for lifts and lift equipment 25 years after project handover are excluded from Life Cost calculations because these are major replacement cost which, due to the figures being the same across all projects, would add little to the analysis. Excluding these cost also serves to avoid unnecessary distortion in outcomes. Refer to the inclusions and exclusions tab for other elements which are excluded from calculations.

MODEL DISCLAIMER

This Model is licenced to Transport for NSW (TfNSW) for use by the Managing Contractor on the following terms:

· The financial model has been developed for the purposes of evaluating whole of life cost aspects of concept design options for railway stations included in the Transport Access Program and is WTP's intepretation of the intial requirements provided by TfNSW

· The Model is to be used for preliminay design evaluation only and will form the basis of a dynamic model for future updates and improvements both in terms of assumptions, completeness and reasonableness as required by TfNSW

· It is acknowledged that these assumptions may not reflect current practices or costs for undertaking RM and MPM as this detail was not available at the time for use

· It is acknowledged that the model has not been audited

· Parties use this model entirely at their own risk and are responsible for performing their own due diligence procedures. WTP (or their affiliates, related entities, directors, officers, partners, employees, agents or advisors) disclaim all liability for all costs, loss, damage and liability which may result, directly or indirectly, from the use of the model in its current or future form, including any relating to computer viruses.

· The Model and the information contained in it are strictly confidential.

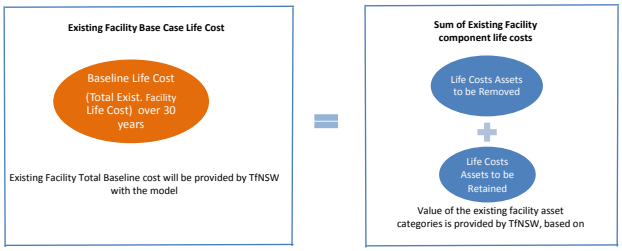
· The Model has been developed for the Transport Access Program Project only and is not to be used or reconfigured for any other purpose or provided to, used or relied upon by any other party without written consent from TfNSW.

"Life Cost" means the sum of RM and MPM over the economic life of the asset.

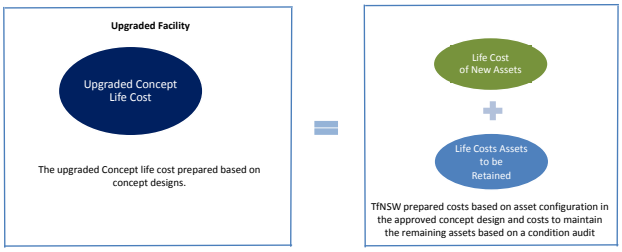
There are three categories of life cost to be considered when assessing the life cost on completion of a project upgrade:

- Life Cost of New Assets
- Life Cost of existing Assets to be Retained
- Life Cost of existing Assets to be Removed

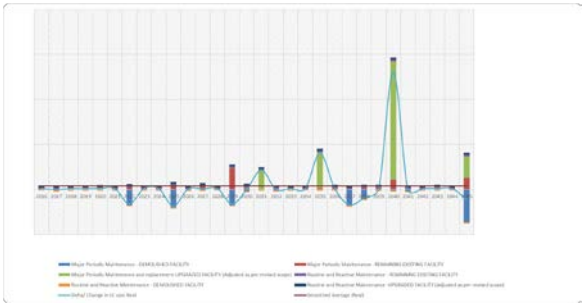
Life Cost Base Case - Prepared by TfNSW based on an on-site asset audit



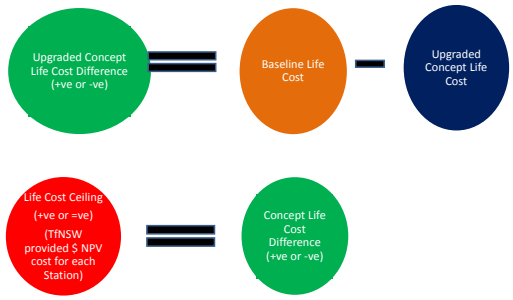
Design Life Cost - Prepared by TfNSW based on concept design



Example of typical WoL cost profile for existing facilties, new facilities and retained facilities



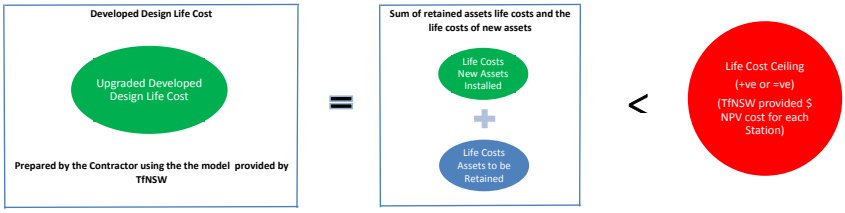
Determined Contractor Life Cost Ceiling



Life Cost Target Outcome Range

The Contractor must demonstrate through meeting the design brief that the developed design delivers better value for money (vfm) than the LIfe Cost Ceiling figure, or as a minimum, provide the same vfm as the Life Cost Ceiling figure. Life Cost Ceiling is the highest deviation from the Baseline Life Cost and will be determined for each Station.
In essence the Contractors design must have a whole of life cost less than the concept design using the same WoL cost assumptions

Upgraded Developed Design Life Cost - Prepared by Contractor



TFNSW parameters

- Concept Upgraded facility total cc	$8,908,991
- Baseline Existing Life Cost (NPV)	$6,794,843
- CPI rate	2.75%
- Discount rate	6.64%

Maintenance Cost Model

EXISTING FACILITY

1.0 Major Periodic Maintenance - REMAINING EXISTING FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Repaintl or replace																														
Building Interior	Re-painting and Replacement																														
Elevator	Replacement of motors & major																														
HVAC System	Replacement of motors & major																														
Electrical System	Replacement of major components																														
Security	Replacement of major components																														
Hydraulics	Replacement of major components																														
Fire Protection System	Replacement of major components																														
Specialist Equipment	Replacement of major components																														
Soft Landscaping	Re-planting																														
Hard Landscaping	Replacement																														
Site Utilities	Replacement of major components																														
Car Parks	Resurfacing, line marking, kerb painting,																														
Systems	Replacement/renewal of major elements																														
Other	Replacement/renewal of major elements																														
	REMAINING EXISTING FACILITY MPM TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	REMAINING EXISTING FACILITY MPM TOTAL INCLUDING 10% CONTINGENCY	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

2.0 Routine and Reactive Maintenance - REMAINING EXISTING FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Preventative measures and upkeep																														
Building Interior	Preventative measures and upkeep																														
Elevator	Lubricating mechanical parts, routine																														
HVAC System	Lubricating mechanical parts, filter cleaning,																														
Electrical System	Cleaning of fittings, replacing light globes,																														
Security	inspections, repairs																														
Hydraulics	cleaning and routine inspections																														
Fire Protection System	Testing, certifying, upkeep																														
Specialist Equipment	Per manufacturer's recommendations																														
Soft Landscaping	Preventative measures and upkeep																														
Hard Landscaping	Preventative measures and upkeep																														
Site Utilities	Preventative measures and upkeep																														
Car Parks	General cleaning, gutter cleaning																														
Systems	inspections, repairs																														
Other	Replacement/renewal of major elements																														
	REMAINING EXISTING FACILITY RM TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	REMAINING EXISTING FACILITY RM TOTAL TOTAL INCLUDING 10% CONTINGENCY	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL FOR REMAINING EXISTING FACILITY		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

3.0 Major Periodic Maintenance - DEMOLISHED FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Repaintl or replace																														
Building Interior	Re-painting and Replacement																														
Elevator	Replacement of motors & major																														
HVAC System	Replacement of motors & major																														
Electrical System	Replacement of major components																														
Security	Replacement of major components																														
Hydraulics	Replacement of major components																														
Fire Protection System	Replacement of major components																														
Specialist Equipment	Replacement of major components																														
Soft Landscaping	Re-planting																														
Hard Landscaping	Replacement																														
Site Utilities	Replacement of major components																														
Car Parks	Resurfacing, line marking, kerb painting,																														
Systems	Replacement/renewal of major elements																														
Other	Replacement/renewal of major elements																														
	MPM TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	MPM TOTAL INCLUDING 10% CONTINGENCY	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

4.0 Routine and Reactive Maintenance - DEMOLISHED FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Preventative measures and upkeep																														
Building Interior	Preventative measures and upkeep																														
Elevator	Lubricating mechanical parts, routine																														
HVAC System	Lubricating mechanical parts, filter cleaning,																														
Electrical System	Cleaning of fittings, replacing light globes,																														
Security	inspections, repairs																														
Hydraulics	cleaning and routine inspections																														
Fire Protection System	Testing, certifying, upkeep																														
Specialist Equipment	Per manufacturer's recommendations																														
Soft Landscaping	Preventative measures and upkeep																														
Hard Landscaping	Preventative measures and upkeep																														
Site Utilities	Preventative measures and upkeep																														
Car Parks	General cleaning, gutter cleaning																														
Systems	inspections, repairs																														
Other	Replacement/renewal of major elements																														
	DEMOLISHED FACILITY RM TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	DEMOLISHED FACILITY RM TOTAL INCLUDING 10% CONTINGENCY	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL FOR DEMOLISHED FACILITY		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

UPGRADED FACILITY (Preferred Option)

5.0 Major Periodic Maintenance and replacement-UPGRADED FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Re-coat and/or grafitti removal or replace																														
Building Interior	Re-painting and Replacement																														
Elevators and Conveying Systems	Replacement of motors & major																														
HVAC System	Replacement of motors & major																														
Electrical System	Replacement of major components																														
Security	Replacement of major components																														
Hydraulics	Replacement of major components																														
Fire Protection System	Replacement of major components																														
Specialist Equipment	Replacement of major components																														
Soft Landscaping	re-planting																														
Hard Landscaping	Re-surfacing																														
Site Utilities	Replacement of major components																														
Car Parks	Resurfacing, line marking, kerb painting,																														
Ticketing	Replacement/renewal of major elements																														
Other	Replacement/renewal of major elements																														
	UPGRADED FACILITY MPM TOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	UPGRADED FACILITY MPM TOTAL (Inc 10% contingency)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

6.0 Routine and Reactive Maintenance -UPGRADED FACILITY

Group	Maintenance Activity	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Building Exterior	Preventative measures and upkeep																														
Building Interior	Preventative measures and upkeep																														
Elevators and Conveying Systems	Lubricating mechanical parts, routine																														
HVAC System	Lubricating mechanical parts, filter cleaning,																														
Electrical System	Cleaning of fittings, replacing light globes,																														
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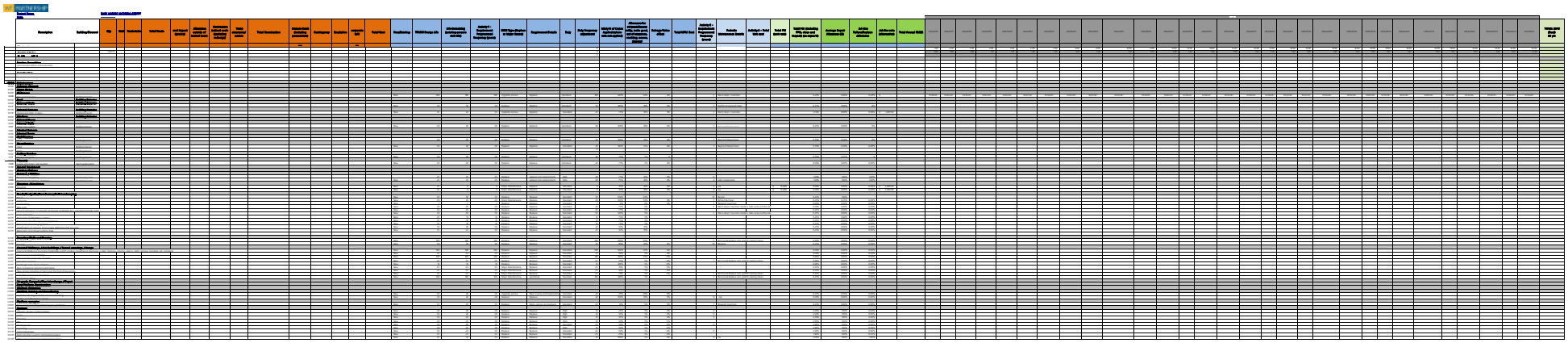
Soft Landscaping	Preventative measures and upkeep																														
Hard Landscaping	Preventative measures and upkeep																														
Site Utilities	Preventative measures and upkeep																														
Car Parks	General cleaning, gutter cleaning																														
Ticketing	inspections, repairs																														
Other	Replacement/renewal of major elements																														
	UPGRADED FACILITY RM TOTAL :	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	UPGRADED FACILITY RM TOTAL (Incl 10% contingency)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
7.0	**TOTAL FOR UPGRADED FACILITY**		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Nominal Value	0.0275	1.03	1.06	1.08	1.11	1.15	1.18	1.21	1.24	1.28	1.31	1.35	1.38	1.42	1.46	1.50	1.54	1.59	1.63	1.67	1.72	1.77	1.82	1.87	1.92	1.97	2.02	2.08	2.14	2.20	2.26
	Net Present Value	0.0664	0.94	0.88	0.82	0.77	0.73	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.34	0.31	0.29	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.17	0.15	0.15
	Combined		0.96	0.92	0.89	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.65	0.62	0.60	0.57	0.55	0.53	0.51	0.49	0.47	0.45	0.43	0.42	0.40	0.39	0.37	0.36	0.34	0.33	0.32	0.30
7.0	**TOTAL NPV FOR UPGRADED FACILITY**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7.0	**TOTAL FOR EXISTING FACILITY**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7.0	**TOTAL NPV FOR EXISTING FACILITY**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
8.0	**Delta/ Change in LC cost Real**																															
			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
8.0	**Delta/ Change in LC cost NPV**																															
		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Delta/ Change in LC cost (+ve = increase)																															



IPWEA _ NAMS - Condition Matrix

	CONDITION				
	1	2	3	4	5
	Excellent	**Good**	**Fair**	**Poor**	**Defective/Unserviceable**
Estimated Proportion of life consumed - all assets	Up to 45%	Between 45% to 90%. Potentially some serviceability loss			Up to 90%; opr unserviceable
Structure	Sound structure.	Functionally sound structure.	Adequate structure, some evidence of foundation movement, minor cracking.	Structure functioning but with problems due foundation movement, Some significant cracking.	Structure has serious problems and concern is held for the integrity of the structure.
External	Fabric constructed with sound materials, true to line and level. No evidence of deterioration or discolouration.	Showing minor wear and tear and minor deterioration of surfaces.	Appearance affected by minor cracking, staining, or minor leakage. Indications of breaches of weatherproofing. Minor damage to coatings.	Fabric damaged, weakened or displaced. Appearance affected by cracking, staining, overflows, or breakages. Breaches of weatherproofing evident. Coatings in need of heavy maintenance or renewal.	Fabric is badly damaged or weakened. Appearance affected by cracking, staining, overflows, leakage, or wilful damage. Breaches of waterproofing. Coatings badly damaged or non-existent.
Internal			Appearance affected by minor cracking, staining, or minor leakage, some dampness or mildew. Minor damage to wall/ceiling finishes	Fabric damaged, weakened or displaced. Appearance affected by cracking, staining, dampness, leakage, or breakages. Breaches of waterproofing evident. Finishes of poor quality and in need of replacement.	Fabric badly damaged or weakened. Appearance affected by cracking, staining, leakage, or wilful damage. Breaches of waterproofing. Finishes badly damaged, marked and in need of replacement.
Building Services	All components operable and well maintained and FFP.	All components operable	Some visual wear and tear. Occasional outages, breakdowns could occur. Increased maintenance may be required	Failure of components more common place.	Failure of components are unsafe or inoperable
On site Generator	Less than five year old (Low)		More than five years old, but in good condition		Needs replacing within five years, probability of failure high
Main Switchboard	Less than five year old		More than five years old, and in good condition, no action required		More than fifteen years old and non-compliant or probability of failure high
Distribution Board	Less than five year old		More than five years old, and in good condition, no action required		More than fifteen years old and non-compliant or probability of failure high
Exterior and Interior Lighting	Lighting is well distributed and under five years old	Lighting is well distributed	Lights are generally ok, but in need of cleaning and relamping	Evidence of varying colour temperatures or dark spots	Poor condition, obvious state of disrepair
Access Control Systems	Less than 5 years old	5 - 10 years old	Over ten years old, but adequate and supported		Over ten years old and difficult to maintain or expand (i.e. costly)
CCTV system	Less than 5 years old		Over ten years old, but adequate and supported		Over ten years old and difficult to maintain or expand (i.e. costly)
Chiller condition	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer	Needs replacing within five years	Needs replacing immediately
Chiller Water pumps	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer	Needs replacing within five years	Needs replacing immediately
Valves	Valves are in good working order		Visual evidence of corrosion or there are maintenance reports of difficult operation		Need replacing immediately
Cooling Towers condition	Less than three years old	Less than seven years old	Within five years of its expected life, but maintained well and could last longer or within seven years of its expected life	Needs replacing within five years	Need replacing immediately
Water Condenser pumps	Less than five years old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Outdoor Air filtration	Filtration is in good condition		Filter mounting is poor and will need some attention within the year to ensure air quality		Need replacing immediately
Central Plant fans	Less than five year old	Less than 10 years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within 5 years	Need replacing immediately
On floor plant - Water cooled units	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
DX Air conditioning Plant	Less than two years old	Less than five years old	Within three years of their expected life, but maintained well and could last longer or within five years of their expected life	Needs replacing within three years	Need replacing immediately
Heating Plant	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Water Pump	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Controllers	Controls are under two years old	Controls are under five years old	Controls are under ten years old	Controls are over ten years old but fit for purpose and not presenting a maintenance issue	Controls are over ten years old or in a poor state
Diffusers	Diffusers are under two years old	Diffusers are under five years old	Diffusers are under ten years old	Diffusers are over ten years old but fit for purpose and not presenting a maintenance issue	Diffusers are over ten years old or in a poor state
Exhaust fans	Less than five year old	Less than ten years old	Within five years of their expected life, but maintained well and could last longer or within ten years of their expected life	Needs replacing within five years	Need replacing immediately
Supply fans	Less than five year old	Less than ten years old	Within five years of their expected life, but maintained well and could last longer or within ten years of their expected life	Needs replacing within five years	Need replacing immediately
Lift Motors	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Lift Controls	Less than five year old		Less than ten years old	Old technology, more than ten years	Need replacing immediately, i.e. constant failings
Water Pump	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Hot Water Plant	Less than two years old	Less than five years old	Within five years of its expected life, but maintained well and could last longer	Needs replacing within five years	Need replacing immediately
Pumps Condition	Less than five year old	Less than ten years old	Within five years of its expected life, but maintained well and could last longer or within ten years of its expected life	Needs replacing within five years	Need replacing immediately
Tanks (fuel/ gas)	In a new condition	High overall quality or condition; no scratches, marks, chips or damage and have been recently updated	Finishes are showing no signs of wear and tear and there is no safety issues	Average quality - The finishes are showing minor signs of wear and tear but there is no safety issues	Poor quality and require immediate replacement
Fittings	Well secured and operational, sound of function and appearance	Operational and functional, minor wear and tear	Generally operational. Minor breakage	Fittings of poor quality and appearance, often inoperable and damaged.	Most are inoperable or damaged
Maintenance	Well maintained and clean	Increased maintenance inspection required	Regular and programmed maintenance inspections essential	Frequent maintenance inspections essential. Short term element replacement rehabilitation.	Minimum life expectancy, requiring urgent rehabilitation or replacement
Customers	No customer concerns	Deterioration causes minimal influence on occupational uses. Occasional customer concerns	Some deterioration beginning to be reflected in minor restrictions on operational uses. Customer concerns.	Regular customer complaints.	Generally not suitable for use by customers

Inclusions and Exclusions

The life cycle costing (MPM and planned/unplanned maintenance) has been prepared based on the cost CAPEX cost plans developed within this report. The life cycle costs associated with the existing components to be removed of the station have been incorporated based on benchmark industry rates and not current expenditure to ensure a like for like comparison.

1.1 Key Notes

A 10% contingency has been included (on top of the capex contingencies) to allow for risk in maintenance unit pricing

The Life cycle costs have been developed for operational budgetary purposes only should not be compared on a like for like basis with existing operational expenditures as the standards, quality and approach to maintenance identified is the target TFNSW is trying to achieve to avoid future maintenance backlog and risk and to ensure ongoing asset performance.

1.2 Scope of Services

The Life cycle (MPM) and RM&R costs developed for this report apply to the following assets where nominated in the cost plan:

- FF&E
- Security
- Building structure and superstructure
- Building Services (mechanical, electrical, security, hydraulic, gases, fire, communications, BMS)
- Treatment plant
- Vertical transportation
- Landscape areas and pavement

Routine Maintenance and Repair (RM&R) tasks costed include:

- planned inspections
- preventative maintenance
- maintenance cleaning to meet warranty obligations (not daily cleans)
- corrective / unscheduled maintenance allowance (normal hours)and replacements allowances

Life Cycle and Renewal Tasks costed include:

- Replacement on a like for like in terms of performance and quality
- Programmed maintenance activities not seen as recurrent and occurring annually (eg's asphalt re-seal, anti-graffiti coatings etc)
- Renewal tasks such as an overhaul or upgrade to extend design life

1.3 Approach to Pricing

1.3.1 Overview

In developing the costs, WT Partnership has reviewed the following aspects of the project requirements:
The anticipated time based activities

- Core hours of operation and subsequent duty/use of key plant and equipment anticipated;
- Quality of finishes, durability and performance requirements anticipated;
- Design Life Requirements specified by TfNSW but taking into account the level of duty expected of each asset;
- The realistic expectations that some assets may not be replaced in full at the end of its design life (eg. Pathways) due to the fact that it is segmented.
- Cost associated with undertaking works outside of standard working hours and gaining access to the assets for replacement works (assuming possession allowances are in the CAPEX costs)

Outsourced contracts anticipated including a managing maintenance contractors supported by specialist sub-contractors

The applied replacement sinking fund costs assume:

- Asset design lives will be achieved even though component life and degradation will vary according to location, prevailing weather, duty and usage and satisfactory maintenance
- Materials are assumed to be fair merchantable quality
- Installation is assumed to be in accordance with relevant codes, to manufacturer's recommendations or accepted practice
- Maintenance is assumed to be carried out in accordance with relevant codes or accepted practice and adequate to optimise the service life of the asset
- Natural disasters and not considered in the asset life cycles

In some cases assets are not replaced but renewed to provide extended design life

1.3.2 Exclusions

The following costs have not been included

- Mobilisation and transitioning costs
- Soft FM services such as cleaning (except maintenance cleans), routine litter, collection, routine window cleans, catering, waste management
- MPM costs associated with lifts and major components as these are provided under a separate transport contract and subject to the agencies programming and budgeting requirements which may not align with the assumptions herein
- Any trade waste disposal
- Vandalism (only minor vandalism allowances are included due to the specific nature of each station that needs to be examined)
- Pest services
- Insurance
- Utility usage costs
- GST
- Currency fluctuations and financing costs that would affect plant and equipment procuremenet costs
- Asbestos and/or hazardous materials removal
- Unknown or adverse site conditions
- Redesign for MPM works
- Contamination removal/remediation

1.3.3 MPM and replacement cost model development

The life cycle replacement model has been developed using:

- Standard renewal and replacement cycles from TfNSW guidance material, knowledge libraries and industry good practice processes
- Adjusted benchmarks from similar rail projects
- Where not available, life cycles identified in CIBSE guidance material

The renewal and replacement cycles identified assume:

- Asset design lives will be achieved through sufficient routine maintenance activities to reflect prevailing weather, duty and usage of components
- Materials are assumed to be fair merchantable quality
- Spares are easily available
- Maintenance is assumed to be carried out in accordance with relevant codes or accepted practice and adequate to optimise the service life of the asset.

It has been assumed that Contractors will be used to undertake all major replacement activities. In-house staff will be used to undertake minor programmed maintenance where possible

1.3.4 Routine Maintenance and Repair

Generally, annual maintenance costs have been developed using the following methods:

Programmed

- benchmark maintenance cycles and rates from other rail projects pro-rated to reflect actual measured units in the cost plans

Annual

- a % of capital cost benchmarked against knowledge libraries to reflect a reasonable level of planned and unplanned maintenance needs (including routine inspections)
- unit rates (where individual assets are easily identified eg. Lifts)

1.3.5 Assumptions

The following has been assumed:

- Costs include as per the CAPEX cost plan:
  - Contractors direct and indirect costs
  - Owners project costs relating to any possessions
  - Total outturn contingency allowance
  - Exclude redesign (included as design in indirect costs)
- There are no replacement of items due to technical obscolesence
- Although CCTV services are usually provided under a lease agreement an assumption for life cycle costs have been included for budgetary purposes
- Replacing of items will be on a like for like basis in terms of performance standards to meet the design life requirements;
- No warrant benefits have been considered as the extent of these vary significantly between products and services;
- No depreciation or tax implications have been assessed that may require an item to be replaced earlier than recommended;
- No software upgrades are provided for building services elements (such as BMS)
- Works are assumed to be fit for purpose and as a result assume no ground movements (including settlement or vibration) or failure, cracking or spalling to structural elements that would give rise to premature renewal or replacement tasks
- The upkeep of grounds and gardens areas outside of the Station precincts (including viaduct and road culverts) to be provided by others, and are excluded from our life cycle cost model

The following Design life must be achieved for each item

	Element	Design Life
General		
#	civil and structural elements including foundations retaining structures, culverts, tunnel portals, tunnel elements, building transfer systems and other structural load bearing elements	100 years
#	station access shaft external lining, waterproofing and internal structural elements including pre cast and cast in place concrete and load bearing masonry and structural steel	100 years
#	station cavern internal structures including pre cast and cast in place concrete and load bearing masonry and structural steel	100 years
#	retaining structures, rock bolts, rock anchors and sprayed concrete	100 years
#	permanent and inaccessible elements of fire protection, mechanical and electrical control systems.	50 years
#	drainage structures, tanks and inaccessible pipe systems	50 years
#	earthing, bonding and electrolysis protection systems (inaccessible)	100 years
#	earthing, bonding and electrolysis protection systems (accessible)	30 years
#	non-load bearing masonry building elements	50 years
#	fire systems – fixed parts including: suppression, hydrant and hose reel systems	30 years
#	foundation structures and any permanent connections for all artwork, signage and way finding systems, flood and scour protection	25 years
#	road sign support structures and other roadside furniture	15years
#	fixed elements of water treatment plant and systems	30 years
#	noise barriers, noise attenuation devices and acoustic panels and support systems	30 years
#	artwork, signage and way finding - primary support systems (excluding foundation systems or panel faces/fascia panels)	15 years
#	pumps, tanks and valves, pump control systems and accessible pipe systems	20 years
#	general lighting, electrical, ventilation, fire and other fire life safety services	25 years
#	high voltage switchboards, transformers and high voltage electrical subsystems	30 years
#	low voltage switchboards, lighting fixtures and electrical systems	30 years
#	external building roof finishes, glazing and external cladding	25 years
#	external pedestrian paving (including substrate and paving finish)	25 years
#	building services – main switchboards, central systems and plant and reticulation	30 years
#	lifts, escalators and vertical transportation	30 years
#	cabling, conduits and cable support systems	30 years
#	PTO communication systems, public information systems and security systems	20 years
#	external furniture and fittings, fences and security/fire gates or doors	20 years
#	internal non-structural elements - fit out, fixtures and finishes	20 years
#	fire systems – automatic detection and hoses	20 years
#	flexible (asphalt) road pavements, car park surfaces, external paving, footpaths, shared paths and hard landscaping features	20 years
#	artwork, signage and way finding - panel faces and fascia panels (internal and external)	20 years
#	multi-user-screens, IT equipment and general whitegoods	5 years
#	UPS batteries, HV/LV switch/control batteries and battery chargers	5 years
Stations & Precincts		
#	platform screen doors – glazing, frames, fixtures and fittings	30 years
Rapid Transit Rail Facility		
#	train wash – slab, structure, drainage systems, tanks and sumps	50 years
#	facility plant and equipment	30 years
Rail Corridor		
#	rail side barriers and other rail side furniture and fixtures	40 years
Rail Systems		
#	permanent way track including supports, fixings and fastening systems, turnouts, crossing diamonds, arrestor systems, noise and vibration isolation components	30 years
#	electrical supply and traction power supply systems, transformer, main distribution boards, switches and control systems	30 years
#	OHW, masts and portals, contact and catenary, insulators and switches	30 years
#	rail telecommunications systems – fibre and copper back bones	30 years
#	signalling and train control systems, wayside equipment	20 years
#	all other rail telecommunications systems	15 years
#	passenger information systems, PA, help points	15 years
#	access control and security systems including CCTV	15 years
Other		
#	all other Assets not described above	Typical industry values for similar Assets of a high standard and quality

ASSET ELEMENTS		MPM REQUIREMENTS (excludes PM)			
MAIN ELEMENT	SUB ELEMENT	REQUIREMENT	Frequency	UNIT	UNIT ESTIMATE
hourly rates	cleaning				$40 hr
	trades				$60-$80 hr
Lift shafts	Glazing & frames	Wash down / maintain	1	sum	incl in PM
Lifts	Annual inspection	Annual inspection	1	sum	incl in PM
Stormwater Drainage	Vertical Oil Separator	Trade waste disposal	1	sum	not allowed for
Platform Structure	Roof cladding	Clean gutters	3	manhours	$65.00
Roads	gutters	Clean road gutters	3	manhours	$40.00
Carpark Drainage	Buried pipes - drainage	Flush reticulation every three years	3	lin/m	$35.00
Carpark Drainage	Pits	Flush pits every three years	3	no	$260.00
Civil Drainage	Strip drains behind shotcrete	Clean / de-weed every 2 years	3	m	$3.50
Civil Drainage	Sedimentation and detention ponds (accessible)	Clean / de-weed every 2 years	3	m2	$3.50
Earthing & Bonding/electrical	Conduits & Cables	Redo connections	4	sum	$3,000.00
Platform Drainage	Piping and grated channels	Flush reticulation	3	sum	$4,000.00
Platform Drainage	Pits	Cleaning and flush	3	ea	$300.00
Stormwater Drainage	Buried Pipes	Clean / desilt every 4 years	4	lin/m	$25.00
Utility Services	Cabling/conduits	Redo connections	4	sum	dependent
Access stairs to platform	Stair roofing cladding	Wash down / maintain gutters	5	sum	$2,000.00
Lift shafts	Roof cladding	Wash down / maintain	5	sum	$1,000.00
Overpass Ped Bridge	Roof cladding	Wash down / maintain gutters	5	sum	$3,000.00
Platform Structure	platform	Washdown every five years	5	m2	$3.50
Platform Furniture	Bike racks	Washdown every five years	5	sum	$700.00
Platform Furniture	Seating	Washdown every five years	5	sum	$700.00
Platform Furniture	other	Washdown every five years	5	sum	$700.00
Platform Furniture	Weather screens	Wash down / maintain	5	sum	$5,000.00
Platform Structure	Roof cladding	Wash down	5	sum	$4,000.00
Safety Barriers and Fencing	Belmont type fence - 1.2m	Wash down / maintain	5	lin/m	$12.00
Linemarking and Signage	Linemarking - carpark	Repaint linemarking	7	lin/m	$4.50
Overpass Ped Bridge	Antigraffiti coating	Replace anti-graffiti coating	7	m2	$43.00
Platform Structure	Antigraffiti coating	Replace anti-graffiti coatin or repaint	7	m2	$43.00
Safety Barriers and Fencing	Anti-grafitti paint	Replace anti-graffiti coating	7	m2	$43.00
Carpark - Pavements Works	Wearing course	Pickup and relay aspalt	10	m2	$25.00
Platform Furniture	Tactiles (TGSI's)	replace	10	lin/m	capex
Safety Barriers and Fencing	Spear top fencing - 2.4m	Repaint	10	lin/m	$38.40
Safety Barriers and Fencing	Colourbond - 2.5m	Repaint	10	lin/m	$25.00
Safety Barriers and Fencing	Guardrail	Clean down / maintain	10	lin/m	$25.00
Signs	Signs / PIS	Replace sign	10	sum	capex

Appendix D – Technical Specification for Easy Access Station Upgrade Projects

Appendix D – Technical Specification for Easy Access Upgrade Projects

(Document Reference # 4896629_2, Desksite Reference # 4821457_2)

Technical Specification for Easy Access Upgrade Projects

Transport Access Program

Status:	Final
Version:	2.0
Date of issue:	9 Sept 2016

Table of Contents

1. Introduction

1.1. General

This Technical Specification sets out the performance and technical criteria for the Contractor's Activities for Easy Access Upgrade Projects.

1.2. Definitions, Interpretations and Abbreviations

The words, phrases and abbreviations used in this Technical Specification have the meaning given to them in the General Conditions of Contract, the TfNSW Standard Requirements and the Works Brief.

2. Performance Requirements

2.1. General

(a) The contractor must maintain as a minimum the existing levels of service, functionality and dimensions unless agreed otherwise in writing by the Principal. The Contractor's Activities must conform to Sydney Trains current track / maintenance alignment for the horizontal and vertical geometry.

2.2. Design Life

(b) Design Life is the period within which an asset element of the Works must continue to meet the technical requirements for its intended function without replacement, unscheduled maintenance or work that requires the operation of the station to be disrupted.

(c) The minimum Design Life for the various elements of the Works must be as set out in Table 1.

Table 1 – Minimum Design Life

Asset or Element of the Works	Design Life (years)
All structural elements including bridges, retaining structures (less than 2m height or not retaining railway embankment/cuttings), culverts, deflection walls, platforms, aerial concourses, substructure, buildings and miscellaneous civil structures.	100
Retaining structures greater than 2m high measured from the underside of footing, and any retaining wall supporting railway embankment or cuttings	100
Drainage structures and inaccessible pipe systems,	100
Embankments and cuttings	100
Permanent ground anchors	100
Waterproofing systems	100
Non-structural building elements	50
Elastomeric bridge bearings	100
Foundation structures and any permanent primary support connections for	50

Asset or Element of the Works	Design Life (years)
all artwork, signage and Wayfinding systems	
Flood scour protection	50
Fire systems – suppression, hydrant and hose reel systems (fixed parts)	50
Sign support structures and other roadside furniture	50
Road pavements - concrete	50
Road pavements – asphaltic concrete	20
External building roof finishes, glazing and external cladding	30
External pedestrian paving (including substrate and paving finish)	30
High voltage switchboards, transformers and electrical systems	30
Lifts	30
OHWS	100
OHW	30
Low voltage switchboards, lighting fixtures and electrical systems	30
Mechanical ventilation equipment (fans, condensers etc.)	15
Mechanical ventilation ducts, fittings, supports	30
Drainage pump systems and associated electrical equipment	30
All other pump systems and associated electrical equipment	30
Cabling, conduits and support systems	25
Communication systems, public information systems and security systems	20
External furniture and fittings	20
Fences and security/fire gates or doors	20
Fire systems – automatic detection and hoses	20
Flexible (asphalt) road pavements, car park surfaces, external paving, footpaths and hard landscaping features	20
Internal building finishes and fixtures	20
Artwork, signage and wayfinding - panel faces and fascia panels (internal and external)	20
Control systems	15
Multi-User-Screens (MUS), IT equipment and whitegoods	5

Table Notes:

(i) all inaccessible permanent works that cannot be inspected, maintained, repaired, or replaced outside of the normal railway and station operation must have a Design Life of 100 years

(ii) connections between items of different design life must be designed to allow for replacement without adverse damage of the item with the higher Design Life. e.g. fence base plate to top of retaining wall

(iii) for reinforced concrete structures, the onset of corrosion of the steel reinforcing and prestressing tendons must not have commenced within the specified Design Life

(iv) for inaccessible steel, additional steel thickness must be provided to achieve the specified Design Life ignoring any contribution from any coating.

(v) protective coating is required for concrete structures

2.3. Continuous Operating Environment

The Contractor must design, select and install all equipment, materials, finishes and fittings to operate in and provide the required Design Life based on a continuous operating environment as stated in the table below.

Table 2 – Continuous Operating Environment

Control/environment	Range / Commentary
Ambient Air Temperature	-10^{o}C to 50^{o}C
Relative Humidity	10% to 95% non-condensing
Rainfall Rate	0 to 40 mm/hour
Solar Radiation	0 to 1000 W/m^{2}
Wind Speed	0 to 150 kph
Vibration	Not in excess of an acceleration rate of 0.1 G continously, or 0.25G intermittently in the frequency range of 5 to 25 Hz
Ambient Lighting	10 to 100,000 lux

2.4. Pedestrian Planning

The Contractor must:

(a) meet the requirements of the 2036 forecast patronage figures plus 15%, for the relevant station as stated in the Works Brief, including making allowances for seating arrangements and other obstructions;

(b) provide a vertical transportation system with a capacity to meet the requirements of the 2036 forecast patronage figures plus 15%, for the relevant station as stated in the Works Brief.

(c) achieve a minimum Level of Service as defined by Fruin for normal operation of the relevant station as stated in the Works Brief, for:

(i) ticket barriers, stairs and other congestion points including interchange access points, queuing for taxis and for buses based on the Level of Service as defined by Fruin for “queuing”

(i) all platforms and other areas of the station(s), based on the level of service defined by Fruin for “circulation”

(ii) normal operation being defined as “operating to the standard working timetable”.

(iii) the criteria for achieving a minimum Level of Service as defined by Fruin are advised in the table following:

Fruin's Level of Service	Walkway		Stairs		Queue
	Density (m^2/ped)	Flow rate (ped/min/m)	Density (m^2/ped)	Flow rate (ped/min/m)	Density (m^2/ped)
A	>3.24	<23	>1.85	<16	>1.21
B	2.32-3.24	23-33	1.39-1.85	16-23	0.93-1.21
C	1.39-2.32	33-49	0.93-1.39	23-33	0.65-0.93
D	0.93-1.39	49-66	0.65-0.93	33-43	0.28-0.65
E	0.46-0.93	66-82	0.37-0.65	43-56	0.19-0.28
F	<0.46	>82	<0.37	>56	<0.19

(d) comply with the minimum circulation dimensions, clearances, run off distances and all minimum requirements stated in all Codes and Standards and the Works Brief.

2.5. Materials, Finishes, Fixtures and Fittings

2.5.1. General

The Contractor must provide all materials, finishes and fittings which are:

(a) fit for their intended purpose and suited to the functionality of the station;

(b) are high quality, attractive and durable and satisfy the requirements for the Design Life of the individual element and withstand the design load cases, wear and tear applicable to busy pedestrian and station areas;

(c) when located on or immediately adjacent to Local Council property, in accordance with Local Council requirements regarding shape, size, texture, colour and the like and match or blend in with the existing surrounding materials and surfaces;

(d) suitable for the environmental conditions such as direct sunlight, temperature, humidity, salinity, corrosive environments and stray currents;

(e) suitable to minimise discolouration, leaching, mould growth and deterioration due to weathering and UV light;

(f) graffiti and vandalism resistant; and

(g) easily cleaned and maintained without disruption to the normal operations of the station(s) or material performance.

2.5.2. Schedule of Materials, Finishes, Fixtures and Fittings

(a) The Contractor must provide a final schedule of materials, finishes, fixtures and fittings and a materials finishes board as part of the concept design submission to the Principal.

(b) The schedule must include details of all proposed:

(ii) materials and finishes to all surfaces;

(i) fixtures and fittings in all areas;

(ii) tolerances for horizontal and vertical joint alignment in walls, floors and ceiling panels and between adjacent surfaces; and

(iii) exposed concrete finishes, surfaces and tolerances.

2.5.3. Samples and Prototypes

(a) The Contractor must provide the samples and prototypes for all external finishes, urban design materials as part of each design submission, or at other times agreed with the Principal.

(b) The purpose of the samples and prototypes including supporting Design Documentation and specifications is to:

(iii) confirm any design decisions usually made through physical inspections, such as colour selection, sizes and textures

(i) establish design and construction workmanship quality benchmarks for the Contractor's Activities.

(c) The installation and/or storage of the Contractor's prototypes and samples must be in a location agreed to by the Principal at no cost to the Principal. The location may not be on the Site due to space availability and must be maintained until directed by the Principal.

(d) When required by the Principal, the samples and prototypes for electrical, mechanical and equipment systems must be fully functional.

2.5.4. Re-Use of Equipment

Equipment, fixtures and fittings impacted by the Contractor's Activities may be reused provided the equipment:

(a) meets all requirements of the Works Brief and current Codes and Standards;

(b) is in good working order and condition;

(c) has not been damaged by the Contractor's Activities; and

(d) is approved in writing by the Principal.

2.6. Building Certifications

(a) The Contractor's Activities involving building works must comply with:

(iv) the Building Code of Australia (BCA);

(i) the Environmental Planning and Assessment Act (1979) NSW ("EP&A Act");

(ii) the Environmental Planning and Assessment Regulation 2000 NSW ("EP&A Regulation");

(iii) the Disability Discrimination Act 1992 (DDA); and

(iv) the Disability Standards for Accessible Public Transport (DSAPT).

(b) The Contractor must secure building compliance certifications for all building works. Certifications must include the following:

(v) a BCA Compliance Assessment Report which must be submitted by the Contractor with the Concept Design;

(i) a BCA Design Certificate which must be issued prior to commencement of construction to comply with Section 109R of the EP&A Act;

(ii) a Disability Discrimination Act compliance certificate as part of the BCA Compliance Certificate;

(iii) a final Fire & Life Safety Certificate / report;

(iv) a final BCA Compliance Certificate which must be issued and submitted to the Principals Representative as a condition precedent to Completion; and

(v) a maintenance schedule for essential fire and life safety measures, equipment and infrastructure.

Other required certificates and reports shall include:

(vi) disability access consultant's report;

(vii) Disability Discrimination Act compliance certificate;

(viii) fire engineering briefs and fire engineering reports; and

(ix) final certification by the fire engineer.

(c) The Contractor is responsible for submitting all required documents to and securing all necessary approvals from Fire and Rescue NSW.

(d) All parts of the Contractor's Activities that involve building works must comply with the "Deemed-to-Satisfy" provisions of the Building Code of Australia unless "Alternative Solutions" are provided by appropriate persons as detailed in the BCA, and the EP&A Act and the EP&A Regulation.

(e) The Contractor must engage the following consultants:

(vi) an access consultant who is an accredited member of the Association of Consultants in Access, Australia;

(i) a BCA Certifier who meets the requirements of an "accredited certifier" as defined in the EP&A Act; and

(ii) a "fire safety engineer" as defined in the EP&A Regulation.

All of the above consultants must be selected by the Contractor, to meet criteria suitable to ASA as an AEO, prior to engagement.

2.7. Accessibility

(a) The Contractor's Activities must provide compliant access and facilities in accordance with all relevant Codes and Standards, including the relevant sections of AS 1428 'Design for Access and Mobility' including Part 2 Enhanced and Additional Requirements – Buildings and Facilities'.

(b) The Contractor must adjust or replace any existing infrastructure impacted by the Contractor's Activities to meet all current Codes and Standards, including provision of clear width pathways, grades, clearances, handrails, TGSI and signage and must provide compliant access:

(vii) to all areas within the station;

(i) to all station entrance/s from the Rail Corridor boundary as a minimum;

(ii) between the station entrance/s and all accessible car park spaces, bus stops, Kiss and Rides and taxi stands forming part of the transport interchange immediately adjacent to the station.

(c) The Contractor must ensure that the design incorporates the access modes to the station(s) and the associated transport interchange with the following priorities:

(viii) pedestrian access;

(i) bicycle access;

(ii) bus access;

(iii) taxi access;

(iv) Kiss and Ride access; and

(v) park and ride access.

2.8. Maintenance

The Works must incorporate the following maintenance requirements:

(a) all routine building maintenance including cleaning of all surfaces and general repairs must be able to be completed without an operational closure of the station nor the need for a Track possession;

(b) all Works and Temporary Works must be designed so that all planned maintenance and replacement may be carried out without the need for a Track possession. The design must, wherever possible, permit the repair or replacement of damaged or failed items which are not part of a planned maintenance or replacement program to be undertaken without impacting on train services or otherwise it must be possible to complete the replacement of damaged or failed items during Track possessions;

(c) roofs and canopies shall be accessible to maintenance staff only and all access' shall have fall arrest systems to provide safe maintenance access;

(d) access shall be available to complete all maintenance activities including access for all associated maintenance equipment;

(e) maintenance rooms/areas must be secured to avoid unauthorised access;

(f) structures and service systems shall be designed and configured to permit regular cleaning and maintenance using standard mobile plant eg elevated working platform, which can be transported in the pedestrian lifts;

(g) horizontal surfaces and ledges should be avoided to reduce cleaning requirements unless the horizontal surface is required for operational or compliance reasons;

(h) access for window/glazing cleaning shall be provided. If necessary, pivot windows or anchor points must be provided to facilitate safe access for window cleaning;

(i) traction power shall not be required to be isolated in order to permit window cleaning using a window cleaning machine or other methodologies. Any window cleaning machine or other methodology must be demonstrated and proven not to require traction power to be isolated;

(j) sections of throw screens must be able to be removed and replaced without the need for a Track Possession;

(k) potential bird roosting locations shall be eliminated;

(l) adequate space and facilities shall be provided to ensure safe maintenance, removal and replacement of plant and equipment including provision for unimpeded access under emergency conditions;

(m) all plant and equipment forming part of or impacted by the Contractor's Activities is easily accessible and must be safe to operate, maintain, clean, remove and replace in the proposed location; and

(n) access must be able to be provided for emergency services and maintenance vehicles as required by the Authorities.

3. Technical Requirements

This section provides the technical requirements that the Works must generally comply to.

3.1. Application of AEO Engineering Management Methodologies

The Contractor must have in place, maintain and consistently apply until Final Completion engineering management methodologies for the delivery and assurance of the Contractor's Activities. These methodologies must comply with the requirements of the Contract and ASA Requirements, including the requirements detailed within ASA Standard T MU MD 00009 ST "AEO Authorisation Requirements".

All engineering tasks undertaken as part of the Contractor's Activities are to be undertaken under the authority of an AEO or Project Authority in accordance with the contract and ASA Requirements. This authorisation may be held by a Subcontractor and evidence of this authorisation must be provided by the Contractor. The Contractor must demonstrate to the Principal's satisfaction that all of the engineering services required for the delivery of the Works will be provided and assured by organisations having AEO competence for the relevant service.

The Contractor is responsible for the integration and assurance of the Principals nominated interface contractors under its AEO assurance processes. The Contractor as part of their assurance process must take all steps appropriate to satisfy themselves that the Interface Contractors design and/or constructed equipment is complying and fit for purpose in accordance with the scope and Contract. If the Contractor deems any Interface Contractor is unsuitable through its assurance process it may raise this issue with the Principal so that an appropriate course of action may be determined. In such a case the Principal will expect that the Contractor will have carried out similar assurance activities on an equivalent supplier so that the deficiencies of the Interface Contractor may be evident by comparison.

3.2. Standards and Codes

The Contractor must comply with the codes and standards required by the Contract.

The Contractor must detail any ambiguity, inconsistency or discrepancies found between the standards, guidelines and codes, and assess the impact and seek clarification from TfNSW prior to commencing any work or design related activity. In such cases, the standard, regulation or code, which specifies the greatest level of service or gives the highest standard, shall generally apply.

3.3. Demolition and Adjustment of Existing Structures

3.3.1. General

The Contractor must:

(a) obtain all necessary Authority Approvals including permits and licenses required to complete the demolition activities and pay all associated fees and charges;

(b) design all Temporary Works including the provision of all structural engineering approvals and certificates required to complete the demolition activities;

(c) obtain advice from a qualified geotechnical engineer regarding risks associated with demolition activities and manage these risks appropriately.

(d) engage a specialist Subcontractor and prepare a destructive hazardous materials report for all buildings and structures to be demolished or modified prior to commencing the demolition activities;

(e) complete the Contractor's Activities relating to the removal of hazardous materials identified in the hazardous materials report in a safe manner and in accordance with all codes and regulations;

(f) assess the extent of all existing services which may be affected by the demolition works and protect, terminate, alter and provide all temporary services to permit the completion of the demolition works;

(g) obtain copies of DSS and DBYD surveys and any other relevant information and identify the presence of all services on and adjacent to the Construction Site prior to commencing any of the demolition work;

(h) confirm the location of all services including undertaking all necessary non-destructive investigations prior to undertaking any of the Contractor's Activities in the vicinity of all identified services;

(i) undertake a survey of the Construction Site including all areas affected by the Contractor's Activities and produce a property condition survey (as required by the TSR) of the findings;

(j) prepare a monitoring and contingency plan and develop an instrumentation and monitoring program that commences prior to construction; and

(k) During the works and in accordance with the plan; constantly monitor the induced movements within the underpass, track, platforms and existing structures for movement against benchmarking baseline readings.

3.3.2. Demolition and Adjustment Activities

The Contractor's Activities include, but are not limited to, the demolition and adjustment works including the:

(a) removal of the existing services and building structures affected by the Contractor's Activities;

(b) removal of underground structures such as ground slabs, walls, beams and any associated temporary or permanent structural support, dewatering, soil removal and ground treatment necessary;

(c) relocation of existing services or provide new services systems to suit the new lifts penetrations and underpass works at concourse, underpass and platform level;

(d) protection and/or relocation of existing equipment where required, including internal equipment;

(e) relocation of the existing CCTV cameras and PA speakers as required to maintain continuous operation both throughout construction phase as well as commissioned;

(f) disconnection and removal of redundant cables and other electrical items in the areas of the Contractor's Activities;

(g) protection of all signalling assets on the Construction Site during construction of the Works.

3.4. Structure

3.4.1. General

The Contractor's Activities include:

(a) Design and construct all new and affected structural elements in accordance with all relevant Codes and Standards.

(b) Select structural solutions for items such as structural members, retaining wall types and surface finishes to structural members so that the Works are aesthetically pleasing and address the architectural and heritage design requirements of the Works.

(c) Design the new and affected structural elements so they do not rely on any fire deluge systems.

(d) Prepare and provide detailed shop drawings for structural steel works and precast concrete works.

(e) Protect existing waterproofing to existing structures. If this waterproofing is compromised, repair and make good any damage to reinstate watertightness.

(f) Ensure watertightness to all areas affected by Contractor's Activities, including at joints between new and existing structures.

(g) All works shall be made good where new structural works interface with existing structural works.

(h) All structural steel to be galvanised. Exposed structural steel to have additional paint finish as noted in architectural and building works.

3.5. Fencing, Handrails and Balustrades

3.5.1. General

The Contractor must provide all temporary and subsequent permanent safety fencing, handrails and balustrades to all new and affected areas, structures and building work both within and outside the rail corridor. This includes but is not limited to the station and adjoining roads and footpaths to satisfy all Codes and Standards including ASA Standard ESC 510, BCA and AS 1428:2010 'Design for access and mobility.'

3.5.2. Safety Fencing, Handrails and Balustrades

The Contractor's Activities include but are not limited to the design and construction of pedestrian fencing, traffic impact rated fencing, handrails and balustrades including:

(a) Supply and install stainless steel handrails and associated brackets to new ramps as required to be DDA compliant. All new handrails, brackets and fixings to be similar in design to the existing handrails of the station.

(b) Supply and install new balustrade required in the station concourse area adjacent to the ticket barriers. New balustrade height and the gaps between the vertical members must be compliant with BCA requirements.

(c) Supply and install stainless steel handrails and associated brackets to new stairs. All new handrails, brackets and fixings to be similar in design to the existing handrails of the station. All new handrails to be compliant with DDA and Australian accessibility standards.

(d) Maintain the quality of the existing safety fencing, handrails and balustrades in affected areas.

3.6. Miscellaneous Metalwork

3.6.1. Miscellaneous Metalwork

The Contractor's Activities include but are not limited to the design and construction of miscellaneous metalwork including but not limited to:

(a) roof canopies

(b) new handrails to new stairs and ramps

(c) maintain quality of existing safety fences, handrails and balustrades

(d) new screens and gates

(e) new signage and temporary signage during the works

(f) new access and drainage covers

(g) new support posts, "unistrut" members, etc for services

(h) new cable ducts and cable trays

(i) any other miscellaneous metal work required to permit the Contractor's Activities or to satisfy the requirements of this Works Brief

3.7. Mechanical

3.7.1. General

The Contractor must:

(a) Design, construct, test and commission all mechanical ventilation systems with air flows in accordance with all Australian, Authority, ASA and Local Council Codes and Standards.

(b) Submit all designs to the Principal's Representative for review, organise all inspections, testing and the provision of all certificates as required for the system.

(c) Provide certification for the systems as required.

(d) Supply shop drawings for the system detailing fabrication, connections, construction, interfaces and installation for all elements.

(e) Rebalance the whole system to ensure minimum airflow requirements are met for all serviced rooms following any modification to existing ventilation systems.

(f) Not reduce the existing performance level of system.

(g) Make good any impact to building and existing services.

(h) Interface mechanical ventilation systems with the fire detection and alarm system in accordance with relevant standards.

(i) Provide all cable reticulation and connections to the new equipment from the switchboard in accordance with the low voltage design.

(j) Provide all fittings and fixtures required to support all new equipment from the building structure.

3.7.2. Mechanical Ventilation Activities

The Contractor's Activities include but are not limited to the design, construct, test and commissioning of the mechanical system including:

(a) lift ventilation system:

(i) lift supply air fans in accordance with relevant standards;

(ii) lift air filters to be easy access for maintenance, vandal protected and fitted with Magnehelic or other approved temperature controlled alarm to station management system; and

(iii) air relief louvre for lift shafts;

3.8. Electrical HV Works – RailCorp System

3.8.1. General

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the RailCorp HV Electrical Works including:

(a) Upgrade of the RailCorp Power Supply as required to ensure sufficient supply for new works with spare capacity as required by the relevant Codes and Standards,

(b) Undertake all design and approval works required for the Electrical HV upgrades.

(c) Provision of all civil works for the electrical works including all parts, material, labour, trenching, cabling, containment, ancillary services and works, installation and commissioning;

(d) For the HV electrical design, the Contractor must submit all designs and applications to the statutory authority and or Interface Contractor, pay all fees required by the statutory authority and or Interface Contractor for design reviews, inspections, testing, provision of all certificates

(e) Relocation of fencing, structures, services and tree and vegetation clearance as required facilitating the Works.

(f) Identify all existing non-compliant electrical equipment, cabling or systems interfacing with the Works and notify the Principal immediately;

(g) Where existing systems are to be used in the Works, ensure existing systems comply with RailCorp standards for earthing, bonding and electrolysis protection, relocation of fencing

3.8.2. RailCorp 11kV System aerials

The Contractor's Activities include but are not limited to the design, construction, test and commissioning of the electrical HV system including:

(a) Provide & install new cables that comply with RailCorp and ASA Codes and Standards.

(b) Provide temporary connections as required for staging requirements.

(c) Removal of redundant pole/s, including all associated redundant cabling and fixtures/fittings.

(d) Disconnection and removal of existing pole mounted transformer, distribution supply switchboards and associated consumers mains and submain cables.

Should the Contractors Activities require an alternative power supply to be installed during the course of the Works, in order to maintain a power supply to all existing equipment and outlets, the Contractor is responsible for completion of all work associated with this alternate supply.

3.8.3. RailCorp Distribution Transformer and Switchboards

The Contractor's Activities include but are not limited to the design, construction, test and commissioning of the electrical HV system including:

(a) 11kV/415V RailCorp Distribution padmount to provide power supply for the upgraded station when required.

(b) High voltage equipment, including switchgear, transformers, ring main unit, enclosure and cabling must meet the requirements of the relevant ASA standards, and other relevant Codes and Standards.

(c) All ancillary services and works required for the new 11kV/415V Sydney Trains distribution padmount substation including; metering and distribution main switchboards (DSMSB) and ATS.

(d) Disconnection and removal of existing transformer, distribution supply switchboards and associated consumers mains and submain cables.

3.9. Electrical LV Work – RailCorp System

3.9.1. General

The Contractor must select and install electrical materials, equipment and systems to operate in a safe and reliable manner under normal operating conditions and not cause danger from electric shock, fire, high temperature or physical injury in the event of reasonably anticipated abnormal conditions such as overload or fault.

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the electrical LV and station distribution system including:

(a) Design, construct, test and commission the electrical LV system for power requirements;

(b) provision of a new consumer mains connection from the distribution supply padmount and DSMSB to the new Installation Main Switchboard (ISMSB) including all pit and duct systems and required cable containment;

(c) Identify all existing non-compliant electrical equipment, cabling or systems interfacing with the Works and notify the Principal immediately;

(d) Provision of all civil works for the electrical works including all parts, material, labour, trenching, cabling, containment, ancillary services and works, installation and commissioning;

(e) Obtain relevant Authority Approvals and manage the interface with all Authorities regarding the LV system;

(f) Provision of new consumer mains connection from the distribution supply to the new switch board including but not limited to lighting and all required services.

3.9.2. LV Station Services

(a) Provision for new lift connection at the ISMSB, as well as re-configuration of existing distribution boards as required, complete with RCD's to all relevant sub-circuits including associated submains to suit proposed power upgrade;

(b) Cable routes, ducts, trays, cabling systems and electrical cables for all new systems, general lighting requirements, emergency lighting, illuminated exit signage, mechanical cooling and ventilation equipment, hydraulics, lifts, any fixed equipment, fire systems, communications (Inc CCTV, PA, station information systems etc), ticketing, IT, signalling and security systems / equipment.

(c) Local isolation to vending machines, water heaters and mechanical ventilation cooling and equipment as required.

(d) Disconnect and remove any redundant cables and other electrical items in the areas affected by the Contractor's Activities.

3.9.3. Spare Capacity in System and Equipment

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of spare capacity in the electrical LV system including:

(a) for all switchboards, a capacity to supply the maximum demand load under the minimum requirement, plus an additional 30% of spare capacity; and

(b) For all cable containment and support systems, allow additional capacity equivalent to 50% spare capacity unless otherwise nominated.

3.10. Low Voltage Consumer Mains and Switchboards

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the Local Authority LV supply (Endeavour Energy/Augrid)

3.10.1. General

The Contractor must:

(a) Design, construct, test and commission any new electrical works in accordance with all relevant Codes and Standards;

(b) Ensure Ausgrid/Endeavour Energy supply is modified to allow for the modifications to the Stations new power requirements;

(c) Submit all designs and applications to each relevant Authority and pay all fees required by the Authority for design reviews, inspections, testing and provision of all certificates;

(d) Manage the disconnection of existing accounts and creation of new electrical accounts for the new connections;

(e) Ensure compliance with AS3000 that requires any modification including alterations and additions be treated as a new installation and complies with all relevant standards;

(f) Maintain power supply to the stations at all times;

(g) Where a station does not have a backup supply a new backup supply is not required to be provided unless advised otherwise by the Principal;

(h) Liaise and manage interface with Sydney Trains and Ausgrid/Endeavour Energy to confirm the altered power supply arrangement;

(i) Supply shop drawings for all electrical switchboards detailing fabrication, connections, construction, interfaces and installation for all elements;

(j) Provide Level 3 design services as necessary for any Ausgrid/Endeavour Energy asset modifications including all fees and charges as applicable;

(k) Ensure all Ausgrid/Endeavour Energy asset modification construction works are undertaken by an appropriate Accredited Service Provider (ASP);

(l) Supply shop drawings for all electrical switchboards detailing fabrication, connections, construction, interfaces and installation for all elements;

(m) All ancillary services and works required for new RailCorp distribution systems including; metering, Isolation Transfomers and Automatic Transfer Switch (ATS). The ATS and all associated equipment must be installed in free standing, weatherproof and double insulated enclosure adjacent to the existing isolation transformer; and

(n) Provide fire rated consumer mains cabling, submains cables and cable support system to all new boards and lifts as 'WS52 Classification' in accordance with AS/NZS 3013:2005.

3.10.2. Main Switch/Distribution/Meter Board

Where the Contractor's Activities require the upgrade or modification of the main switch panel the Works include but are not limited to the design, construction, testing and commissioning of the main switch/distribution/meter board including:

(a) New ATS board and back up supply distribution main switch board including associated submains to replace the existing RailCorp DB and the associated changeover switch.

(b) All lighting and power sub-circuits within the new/existing boards are to be provided with individual RCD protection to AS 3000 requirements.

3.11. Lighting

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the new lighting system to the extent of the works area and any lighting affected by the works.

3.11.1. General

The Contractor must:

(a) as a minimum, comply with the following lighting levels:
   i) Levels of maintained luminance at floor level in accordance with ASA, Sydney Trains and Sydney Trains Station Design Standard Requirements.

   ii) Lighting in compliance with AS1680 and BCA.

   iii) In addition to the above levels the Contractor shall ensure that minimum levels are provided within the station (Inc to/from all entrances) to achieve compliance with AS1428.2 Clause 19 lighting.

(b) Provide a lighting design to incorporate final CCTV layouts and to be fully coordinated with the way-finding and signage systems as required.

3.11.2. General Lighting Works

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of lighting including:

(a) To all new canopies, stairs (including landings) and under pass.

(b) Reconnection of existing lighting systems within the station including switch wires and switching facilities.

(c) New sub-circuits, conduits and containment as required, whether at high or low level.

(d) All external lighting to comply with AS4282 Obtrusive Effects of External Lighting.

(e) All external lighting to new and upgraded areas of the station, including underpass, stairs and canopies are be LED lamps, flush recessed fittings and where possible anti-vandal type or in a positioning when potential for vandalism is mitigated.

3.11.3. Emergency Lighting and Exit signs

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of emergency lighting and emergency exit signage including:

(a) Single point emergency lighting services throughout all existing / new areas of the station (Incl through extent of new canopy coverage), including to/from new and existing entrances as necessary in compliance with AS 2293 and BCA.

(b) The extent of the works includes the works area and any adjacent area where the works have affected the compliance of the lighting and exit signage.

3.12. General Purpose Power

3.12.1. General

The Contractor must comply with all applicable Codes and Standards.

3.12.2. General Purpose Power Work

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the general purpose power system including:

(a) Provision of new General Purpose Power Outlets (GPOs) within the Station as required to the reconfigured areas as a result of new or altered Services.

(b) Provision of dedicated circuits to devices where required including but not limited to:
   i) All communications equipment and station systems associated with the Station upgrade.

   ii) Mechanical equipment.

iii) Fire and life safety equipment.

iv) Hydraulic equipment if required.

v) CCTV and security services.

vi) Other station systems described in the Works Brief.

3.13. Earthing, Bonding & Electrolysis Protection

3.13.1. General

Within the constraints of the work area defined for the project, the Contractor must:

(a) Ensure that the Contractor's Activities and Works, including any temporary structures which are to be permanently embedded in the Works, field control systems and fit-out elements that pass through the Site in the earthing, bonding, isolation and electrolysis protection boundaries conform to the requirements of the Earthing, Bonding, Isolation and Electrolysis Plan.

(b) All metallic structures including rebar cages, pipes and lift guard rails must be bonded in accordance ESB004 'Station Services and Systems.

(c) Electrolysis protection must be incorporated in the Works in accordance with Asset Standards Authority Electrical Standard, EP 12 00 00 01 SP to EP 12 30 00 01.

3.13.2. Earthing, Bonding, Isolation and Electrolysis Protection Plan

The Contractor's Activities include but are not limited to preparation and implementation of an Earthing, Bonding, Isolation and Electrolysis Protection Plan which must describe the Contractor's:

(a) Strategy, design and construction processes to develop, manage and mitigate the earthing, bonding, isolation and electrolytic risks;

(b) Design development process including the Contractor's approach to design packages and construction testing for new structures and earthing systems and the testing of existing electrical networks, buildings, structures and services earthing systems;

(c) Approach to testing and assurance for the Works, to confirm that the Works will not have any impact to the existing 'Global Earth' system, to Ausgrid/Endeavour Energy and Sydney Trains existing systems; and

(d) The construction methodology and field equipment to be used for earthing, bonding, isolation and electrolysis protection.

3.13.3. Earthing, Bonding, Isolation and Electrolysis Protection

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the earthing, bonding, isolation and electrolysis protection system including:

(a) Completing earthing, bonding & electrolysis protection to;

i) All metallic structures, such as new and existing canopies, steel stanchions and structures, fencing, light posts, mechanical services, new structural steel work, lift structure, signage, bus shelters, bike racks, Water supplies to the station, electrical padmount substations etc:

ii) Other areas of potential as a result of the Works; and

iii) Any temporary works.

(b) Lightning protection system to the lift shafts and station structures.

(c) Ensure existing systems comply with Sydney Trains and ASA Codes and Standards for earthing, bonding and electrolytic protection where these existing systems are to be used in the Works.

(d) Undertake a final electrolytic study of the Site prior to Completion to demonstrate the electrolytic performance of the new installation is in accordance with the relevant Sydney Trains and ASA Codes and Standards.

(e) Completing earthing, bonding & electrolysis protection to:

i) All metallic structures for fencing, gates/posts, anti- throw screens, light posts, new structural steel work, signage and metering supplies as required.

ii) Temporary works as required.

(f) Undertake a final electrolytic study of the Site prior to Completion to demonstrate the electrolytic performance of the new installation is in accordance with the relevant Sydney Trains and ASA Codes and Standards.

3.14. Closed Circuit Television (CCTV)

The Contractor's Activities include but are not limited to the design, construction, testing and commissioning of the CCTV system including:

(a) Assess the design and functionality of the existing CCTV system and expand accordingly to cater for the Contractors design. The design and construction of the CCTV system in accordance with all standards and codes including:

i) Sydney Trains Standard IAD-WIS-10-001 Standard Cabling and Containment Work Instruction for Sydney Trains;;

ii) Sydney Trains Standard: Security Standard RSS-200 (latest version);

iii) Sydney Trains Stations and Buildings – Station Design Standard Requirements ESB 001, 002, 003 and 004;

iv) AS 4806:2008 'Closed Circuit Television' (CCTV).

v) All other associated Standard.

(b) provide CCTV to enhance the pedestrian safety, provide safe and efficient operation of the station and deter station assets from being vandalised;

(c) ensure that the CCTV design is undertaken by a Sydney Trains approved electronic security contractor and that the design of the CCTV cameras coverage is to be

undertaken by a consultant holding a Class 2A Security Licence issued under the Security Industry Act 1997 (NSW);

(d) liaise with system maintainer and carryout a site survey of all communications equipment, to form an assessment of the current CCTV system;

(e) install all communications cables and equipment in accordance with all statutory Authority requirements and all applicable standards and codes including but not limited to those relating to the separation and containment of both communications and electrical services;

(f) install all communications cables and equipment in a manner not to interfere with the operation of any existing or proposed communications systems; and

(g) providing testing and commissioning records, works as-built drawings and Asset Management Information to the Principal

The Contractor must maintain CCTV coverage during the Works, including provision of any temporary locations and supplies as required.

3.15. Station Canopies

3.15.1. General

The Contractor is required to design, construct, test and commission the canopy for the Works.

The Contractor must:

(a) Ensure that the canopy is designed and constructed in accordance with the relevant ASA standards for shelter at railway stations.

3.16. Hydraulic

3.16.1. General

The Contractor is required to design, construct, test and commission the hydraulics for the Works and make adjustment to the existing systems in accordance with Sydney Water and BCA.

The Contractor must:

(a) submit all designs and applications to the Authority and pay all fees required by the statutory Authority for design reviews, inspections, testing and provision of all certificates.

3.16.2. Roof Stormwater Drainage

Roof stormwater drainage must comply with AS/NZS 3500.3 for the extent of the works. Rainfall intensities used for sizing of eaves gutters and box gutters are:

- 5 minutes duration with 20 years ARI for eaves gutters

- 5 minutes duration with 100 years ARI for box gutters.

Box gutter overflow devices shall discharge freely to the atmosphere at high level in a controlled manner. Eaves gutters shall overflow freely to the atmosphere in a controlled manner.

All stormwater discharge to comply with local Council stormwater discharge requirements.

The Contractor must:

(a) submit all designs and applications to Council and pay all required fees required by the Local Council for design reviews, inspections, testing and provision of all certificates as may be required;

(b) comply with Council standards and policies except where required otherwise within the Deed;

(c) design and construct all public domain works to comply with the requirements of the Deed and in accordance with:

  (i) the Project REF “Conditions of Approval”;

  (ii) Council public domain guidelines, finishes, materials, palettes, drainage guidelines;

  (iii) Sydney Trains - Station Design standard requirements; and

  (iv) ASA & Sydney Trains - - SSM-001 and RSS-200 Security Framework and Standards;

(d) comply with all relevant regulations and specific DDA requirements of Sydney Trains;

(e) provide design and construction solutions that recognise the heritage importance and listed aspects of the station;

(f) select all materials including landscaping species to minimise maintenance;

(g) ensure all public domain waterproofing elements including pavements, footpaths, planters and other areas over structure/slab are waterproofed with membranes, drainage cells and other suitable measures to ensure water does not penetrate at ground level;

(h) ensure all planter beds over structure/slab have multiple drainage points to ensure rapid discharge of storm water and general water;

(i) ensure paved areas freely drain away from buildings and entries toward storm water drains and must include strip drains and drainage pits at the top of all stairs and at entries to ensure maintenance of safe walking areas; and

(j) ensure drainage pits and channels are located away from main pedestrian circulation routes.

Appendix A – Not Used

Appendix E – Interface Schedule

Appendix E - Interface Schedule

Transport Access Program

Easy Access Station Upgrade

Document Number:	4827081
Date of Issue:	December 2015
Revision:	04

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
1. Trunk Cable Networks			
1.01	Trunk Cable Network - Fibre Optic (FO) Trunk Cable Network - Copper Trunk Cable Trunk Cable Network - Operational Critical Data Network Equipment (OCDN)	**Generally:** Provide a minimum of 4 weeks notice for attendance to site by the Interface Contractor. **Investigations:** Carry out all investigations, identify services and generally ensure that all existing infrastructure is correctly identified by function and capacity and forecast demand and to make this information available to the Contractor's design team for design development. **Design:** Review and validate the Principal's design against requirements and then finalise design and ensure that all requirements are addressed. Submit designs for acceptance in accordance with the Contract. **Coordination:** Identify and engage all stakeholders and co-ordinate the	**Investigations:** Provide available data as requested or advise if requested data is not able to be provided. Provide access to the Contractor for investigations **Design:** Liaise with the Contractor with respect to all technical and operational requirements Provide advice on operational requirements relating to equipment. **Coordination:** Provide information and resources to facilitate coordination and ensure that milestones are achieved.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		design with the Interface Contractor requirements. Manage timely input by all parties and circulate information for review in a manner that ensures milestones are achieved. Co-ordinate with Interface Contractor for all cable routes. Final position and functional relationship with all other services and equipment must be coordinated. **Construction:** Supply and install containment, pits, cabling (FO, Copper etc), and junction boxes as required. **Test and Commission:** Program and arrange the Interface Contractor as required to be in attendance when making connections and testing/commissioning the system. Obtain acceptance and sign-off by Interface Contractor of the systems. Provide test and commissioning records, as built drawings and asset management information.	**Construction:** Inspect final connections in the equipment room, test/commission and integrate the systems. Sign-off the systems. **Test and Commission:** Witness and approve in writing the testing and commissioning as required. Integrate the system with the existing network. Provide records/certification for integration and commissioning to the Contractor as required.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
2. Local Area Networks (LANs)			
2.01	Local Area Network (LAN) - supporting (Station Passenger Information (SPI) and Variable Messaging System (VMS), Public Address system and Security, CCTV and Help Points	As for 1.01 above	As for 1.01 above
3. Passenger Information – incl. Service Passenger Information (SPI) and Variable Message Service (VMS) Systems			
3.01	Passenger Information Systems - SPI and VMS. Investigate, Design, Coordinate, Construct, Test and Commission	As for 1.01 above except for Construction:: **Construction:** Contractor to supply and install, including, but not be limited to: containment, junction box to proposed future SPI screens/location, communications and electrical cabling to/from equipment room to junction boxes.	As for 1.01 above

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
4. Public Address incl. Long Line Public Address (LLPA) and Digital Voice Annunciation (DVA)			
4.01	Public Address - Long Line Public Address (LLPA)	As for 1.01 above	As for 1.01 above.
4.02	Public Address - PA System / Digital Voice Annunciation (DVA)	As for 1.01 above except for Construction:: **Construction:** Supply and install, including, but not be limited to: all Public Address (PA) equipment, associated containment systems, communications and electrical cabling*, brackets to support PA/DVA equipment, racks and amplification. Terminate and commission all cabling and systems. Cabling to be pulled into equipment room (above communications cabinet/rack), all to be labelled, provision of 5m spare capacity within equipment rooms. Contractor to mount the equipment in racks (amplification etc) with guidance from Interface Contractor.	As for 1.01 above.
4.03	Public Address - Hearing Induction Loop	As for 1.01 above except for Construction:: **Construction::**	As for 1.01 above.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		Supply and install, including, but not be limited to: containment systems, cabling, the hearing loop system, final connections and terminate.	
5 Clocks (Precise)			
5.01	Clocks – Precise Clocks	As for 1.001 above.	As for 1.01 above.
6 **Intruder Alarms & Electronic Access System**			
6.01	Alarms - Duress Alarm	As for 1.01 above if this scope item is required.	As for 1.01 above.
6.02	Electronic Access System - Swipe card access	As for 1.01 above except for Construction:: **Construction:** Supply and install, including, but not be limited to: containment, cabling, swipe card units and undertake final connections, terminate/test/commission the system. Obtain (and issue to the principal) DSX access cards. Request static IP address, from the Interface Contractor, to support the installed system.	As for 1.01 above except for Construction:: **Construction:** On request from the Contractor, Provide static IP address to Contractor.
6.03	Intruder Alarms – Electronic Door Strikes / Intruder Detection System,	As for 1.1 above except for Construction::	As for 1.01 with the addition of the following:

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
	Including Remote Connection to Rail Management Centre.	**Construction:** Supply and install, including, but not be limited to: penetrations, containment, all cabling to devices, MDF connections, provision of telecoms line, undertake final connections, terminate/test/commission the system. Arrange for integration of the system in to the Remote Management Centre/System with the Interface Contractor.	Advise details for Remote Management Centre/System.
7 Fire Detection Systems			
7.01	Fire Detection Systems - Fire indication panel (FIP) or Mimic Panel, including connection to Remote Connection to Rail Management Centre.	As for 1.01 above except for Construction. **Construction:** Supply and install, including, but not be limited to: Containment, cabling, detection devices, fire indicator panel, MDF connections and provision of telecoms line.	As for 1.01 with the addition of the following: Advise details for Remote Management Centre/System.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
8. Emergency Warning and Intercommunications System (EWIS) and Warden Intercom Phone (WIP)			
8.01	Emergency Warning and Intercommunications System (EWIS)	N/A	N/A
8.02	Warden Intercom Phone (WIP)	N/A.	N/A.
9. Electronic Ticketing System/ OPAL (ETS)			
9.01	ETS	As for 1.01 above except for Construction Relocation to suit new works including all civil works, cabling containment and connections	As for 1.01 with the addition of the following:: Supply and installation of ETS card readers including final testing, commissioning and operations
10. RailCorp Radio Network & General equipment			
10.01	RailCorp Radio Network - RailCorp Station Radio	N/A.	N/A.
10.02	RailCorp Radio Network - Train Radios (Metronet and Digital Train Radio System (DTRS))	N/A.	N/A.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
10.03	General Equipment - NSW Government Agency Radio (GRN), NSW Police Service Radio	N/A.	N/A.
10.04	General Equipment - Train Information System	N/A.	N/A.
11. High Voltage (HV)			
11.01	HV cabling – RailCorp HV (33kV and 11kV) Cabling	N/A	N/A
12. Overhead Wiring (OHW) including structures and Traction Power Supplies			
12.01	OHW	N/A	N/A
13. Signalling (inc Signal Phones)			
13.01	Signaling – Signaling	As for 1.01 above except for Construction: **Construction**:	As for 1.01 above except for Construction: **Construction:**

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		The Contractor shall request the Interface Contractors attendance (minimum 14calender days prior to requirement) for commissioning of the platform end signals (direction of travel). The Contractor is to co-ordinate with the Interface Contractor onsite, to witness that the signals are fully operational and integrated in RailCorp Network (ATRICS). Programme/assist/attend and manage the testing and commissioning of the systems. Contractor shall obtain records from the Interface Contractor to demonstrate that commissioning has been undertaken. Aside from the above, the Contractor is to protect existing signal assets during the works. This includes informing the Interface Contractor when undertaking construction work within 3metres of signal cables.	Witness the testing and commissioning of signalling as required and integration to ATRICS. Approve records/certification for integration and commissioning of signalling.
13.02	Signaling - Guards Indicator	As for 1.01 above except for Construction: **Construction**: Supply and install Guards Indicators, penetrations, containment, cabling to devices as per the design documentation. Undertake testing and commissioning of the systems. The	As for 1.01 above except for Construction: **Construction**: Witness final connections for Guards Indicator devices. Witness testing and commissioning of signalling. Inegration to ATRICS. Approve records/certification for integration and commissioning

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		Contractor is to co-ordinate with the Interface Contractor onsite, to witness that the signals are fully operational and integrated in RailCorp Network (ATRICS). Obtain acceptance and sign-off by Interface Contractor of the systems. Provide test and commissioning records, works as built and asset management information.	of signalling.
13.03	Signaling - Signal Phones	N/A.	N/A.
14. Ticketing incl. Ticket Gates, Ticket Vending Machines, Ticket Office Equipment			
14.01	Ticketing - Ticket Gates	N/A.	N/A.
14.02	Ticketing - Ticket Window Hearing Loop	As for 1.01 above	As for 1.01 above
14.03	Ticketing - Gate Access Control Point	N/A.	N/A.
14.04	Ticketing - Booking Office Machines (BOM)	As for 1.01 above	As for 1.01 above

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
14.05	Ticketing - Auto Ticket Office Machine (ATOM)	As for 1.01 above	As for 1.01 above.
14.06	Ticketing - Ticket Vending Machines (TVM)	As for 1.01 above except for Construction: **Construction**: Installation of penetrations, containment (separate for communications and power), communications and electrical cabling (for all devices), local isolation to the TVM and cashless load device. MDF connections and provision of telecoms line, Secure both devices to structure.	As for 1.01 above except for Construction: **Construction**: Witness disconnection of existing TVM and removal of redundant cabling. Witness connection and commissioning of TVM in new location. Integrate TVM into the ticketing system. Sign-off/certify the systems.
15 Assets – Vending Machines			
15.01	Assets - Vending Machines	As for 1.01 above except for Construction: **Construction**: Installation of penetrations, containment, cabling and local isolator and secure vending machines to the structure.	As for 1.01 above.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
16 Safes			
16.01	Safes - Safes	As for 1.01 above	As for 1.01 above.
17. Stormwater			
17.01	Storm water - RailCorp	As for 1.01 above except for Construction: **Construction**: Connect in to Storm Water System in rail corridor and/or existing systems outside the rail corridor as required. Contractor to allow for rail possession works to suit construction of the storm water system.	As for 1.01 above.
18. Assets – Public/Street Furniture			
18.01	Assets - Seating & Waste Bins	As for 1.01 above except for Construction: **Construction**: Obtain all approvals/sign-off from Interface Contractor for the items. Contractor to supply and install items as per agreed design/specification. Provide approvals/sign-off records, works as	As for 1.01 above except for Construction: **Construction**: Witness and approve in writing/certificate all supplied and installed items.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		built and asset management information.	
18.02	Assets - Bike Racks	As for 1.01 above except for Construction: **Construction**: Submit design detail for acceptance in accordance with the Contract. Contractor to supply and install items as per the Works Brief and Contract.	As for 1.01 above.
19. Station Telephones			
19.01	Station Telephones (internal)	As for 1.01 above except for Construction: **Construction**: Supply and install, including, but not limited to: containment system, sockets, cabling, connections at MDF, provision of telecoms line and telephone base unit / handsets. Arrange/attend system commissioning with Interface Contractor.	As for 1.01 above.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
20. Goods and Equipment			
20.01	Interface Contractor's Goods & Equipment	As for 1.01 above except for Construction: **Construction**: The Contractor is to provide designated lay-down areas for all Interface Contractors to store goods & equipment within the site. Co-ordinate with Interface Contractor regarding storage and installation of goods and equipment.	As for 1.01 above except for Construction: **Construction**: Co-ordinate with Contractor, including notification to Contractor prior to delivery of goods and equipment. Provide/supply all required goods and equipment. Ensure goods are protected and secured on delivery.
21. General Interface Responsibilities			
21.01	Interface with Rail Transport Operator (RTO) – ARTC/RailCorp	**Generally**: The Contractor must provide a minimum of 2 weeks notice for all requests for information. For requests for Interface Contractor's personnel to be made available for meetings, attendance at the site or for provision of	**Generally**: Provide reasonable access to facilitate Contractor's works

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		access to infrastructure, refer below. **Investigations**: Contractor to provide a minimum of 2 weeks' notice for all investigations and testing activities which do not require attendance by Interface Contractor's personnel. For investigations requiring attendance by Interface Contractor's personnel, the contractor must provide 4 weeks written notice. **Design**: Prepare all submissions for review by TPD and the Interface Contractor as set out in the contract. Prepare presentations and present the design at various forums to inform the Interface Contractor as to the status and particulars of the design. Keep records of meetings attended by the Interface Contractor and issue minutes of meetings. **Construction**: Chair and minute Station Construction Liaison Group (SCLG). Frequency of meetings to be agreed with TPD and the Interface	**Investigations**: Provide reasonable access to facilitate investigations. Terms of access must be clearly communicated and integrated with operational needs of each location. **Design**: Provide SWG comments within two (2) weeks of the SWG meeting. On receiving Contractor's responses to comments, Close out comments in a prompt and effective manner. Participate in design meetings and provide advice. **Construction**: Attend SCLG meetings and ensure that local and head office staff is informed of current and upcoming construction activities.

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		Contractor but must be weekly, fortnightly. Issue and present the 4-week look-ahead program in Gantt chart format to the SCLG. Consult with and receive guidance and advice through the SCLG on passenger safety, passenger movements during construction and operational considerations and allow for these constraints in planning and staging the works. **Test and Commission**: Coordinate all testing and commissioning activities impacting the Interface Contractor and station operations through the SCLG.	Provide advice and/or approve staging proposals impacting passenger safety, passenger movements during construction at the site and all other operational considerations. **Test and Commission**: Facilitate all testing and commissioning activities through the SCLG.
21.02	Access to the Rail Corridor - ARTC	**Generally**: The Contractor must prepare and submit all relevant documentation required to obtain a Licence to Enter the Corridor.	**Generally**: Review the Contractor's application to enter ARTC property. Provide reasonable access to facilitate Contractor's Works by issuing a Licence to Enter the Corridor

Interface Contractor: Rail Corporation of NSW (RailCorp)/ Sydney Trains/ NSW Trains/ARTC			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		The Contractor must pay all fees required to obtain access to the Rail Corridor to complete the Contractor's Works. The Contractor must ensure that all of its employees/personnel/subcontractors undertake the ARTC national online induction prior to commencing Work on Site.	
21.03	Possession Planning - ARTC	**Generally**: The Contractor must prepare and submit to the Interface Contractor all relevant documentation required to complete Works during track possessions. Liaise directly with the possession coordinator and attend all possession coordination meetings and pre possession meeting.	**Generally**: Coordinate possession planning meetings and issue minutes to meetings.

Interface Contractor: Sydney Trains (Indra)			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
22. CCTV and Help Points			
22.01	CCTV and Help Points – CCTV and Help Points	**Generally:** The Contractor will liaise with the Interface Contractor to obtain the technical requirements for integration of the CCTV and help point system as part of the Works. Provide a minimum of 2 weeks notice for attendance to site by the Interface Contractor. **Investigations:** Carry out all investigations, identify services and generally ensure that all existing infrastructure is correctly identified to facilitate design relating to the Interface Contractor's works and to make design and investigations information available to the Interface Contractor's design team for use in their own design development. **Design:** The Contractor shall work with the Interface Contractor to	**Generally:** The Interface Contractor will engage and liaise with Indra to develop and implement the CCTV and help point system. The Interface Contractor will advise the Contractor of the technical requirements of the CCTV and help point system for integration as part of the Works. Attend site within the 2 week notice period or as required for coordination with the Contractor. Provide technical information to the Contractor in a timely manner. **Investigations:** Carry out all necessary site inspections to understand the site and the Contractor's design and integrate findings with the Interface Contractor's own requirements.

Interface Contractor: Sydney Trains (Indra)			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		ensure all design is coordinated. Submit designs for acceptance in accordance with the Contract. **Coordination:** The Contractor is responsible for managing timely planning of activities by the Interface Contractor to ensure that milestones are achieved. **Construction:** Supply and install, including, but not be limited to: containment, conduits, support structures, enclosures, brackets, racks, pits, junction boxes etc. Communications cabling to be pulled into equipment room (above communications cabinet/rack), all to be labelled with provision of 5m minimum spare capacity within equipment rooms **Test and Commission:** Program and arrange the Interface Contractor to make connections and test/commission the system.	**Design:** The Interface Contractor shall work with the Managing Contractor to ensure all design is coordinated including any necessary design input. **Coordination:** The Interface Contractor is responsible for ensuring timely completion of activities to ensure that milestones are achieved. **Construction:** Provide approvals/sign-off records (including all regulatory certificates), works as built and asset management information. Interface Contractor to supply and install help point units, CCTV cameras and housing and CCTV units on platforms, interchanges and within lift cars. Undertake connections (input & output) at termination box and connect the CCTV camera head units. Interface Contractor to test, commission and integrate the CCTV and Help Points in to RailCorp system.

Interface Contractor: Sydney Trains (Indra)			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
		Arrange/assist/attend system commissioning with Interface Contractor. Obtain any approvals, acceptance and sign-off by Interface Contractor for the systems. Provide approvals/sign-off records (including all regulatory certificates), works as built and asset management information.	**Test and Commission:** Witness and approve in writing/certify all testing, commissioning and integration of the systems. Integrate the system with the existing network. Provide records/certification for integration and commissioning to Contractor as required.
22.02	Goods & Equipment	As for 1.01 above except for Construction: **Construction:** The Contractor is to provide designated lay-down areas for all Interface Contractors to store goods & equipment within the site. Co-ordinate with Interface Contractor regarding storage and installation of goods and equipment.	As for 1.01 above except for Construction: **Construction:** Co-ordinate with Contractor, including notification to Contractor prior to delivery of goods and equipment. Provide/supply all required goods and equipment. Ensure goods are protected and secured on delivery.

Interface Contractor: Liftronics Pty Limited			
Ref	**System**	**Works By Contractor**	**Works By Nominated Contractor**
23. Lifts			
23.01	Lifts	**Generally** Liftronics are not an AEO. The Contractor must certify all Works completed by Liftronics under its AEO accreditation. The Contractor has responsibility for the production/assurance of design and/or construction services completed by Liftronics, **Design & Construction:** The Contractor is to engage Liftronics to finalise design, and to co-ordinate all design with the Interface Contractor requirements, including co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract. Supply and install, including, but not be limited to: Construct lift shafts, roofing, cladding & finishes, louvres, containment and cabling for power and communications services. Programme/assist/attend commissioning with Interface Contractor. Obtain any approvals/sign-off from Interface Contractor for the systems (including 'Safe to Operate').	**Design & Construction:** The interface contractor to provide design input including lift car shop drawings to input into the Managing Contractor's design submissions. Interface Contractor to supply lift cars, all mechanical items (hoisting gear/lift controls etc), A/C units, fit-out lift cars, service termination boxes for communications services. Undertake testing of lifts and provision of all testing and commissioning certification (including 'Safe to Operate') and integration of the systems. RailCorp attendance to inspect lifts once fully completion achieved, including witness and approve in writing.

		Provide approvals/sign-off records (including all regulatory certificates (WorkCover Registration), works as built and asset management information.	Note: notice period to the nominated Contractor, for attendance to site, is a minimum of 4 weeks.
23.02	Lifts - Lift car handset	**Design:** Contractor to finalise design, including co-ordination of design with the Interface Contractor requirements. To include co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract. **Construction:** Supply and install, including, but not be limited to: Containment and cabling to lift shaft from equipment room, connections at MDF and provision of telecoms line. Undertake termination to input and output points of the termination box for the handset and make final terminations in the equipment and test the system. **Test and Commission:** Programme/assist/attend commissioning with Interface Contractor. Obtain any approvals/sign-off from Interface Contractor for the systems. Provide approvals/sign-off records, works as built and asset	**Construction:** Interface Contractor to (Liftronics) supply and install, including but not limited to: lift handset and IDF, services termination box on top of each lift control box for the termination of lift phone.

		management information.	
23.03	Goods & Equipment	**Construction:** The Contractor is to provide designated lay-down areas for all Interface Contractors to store goods & equipment within the site. Co-ordinate with Interface Contractor regarding storage and installation of goods and equipment.	**Construction:** Co-ordinate with Contractor, including notification to Contractor prior to delivery of goods and equipment. Provide/supply all required goods and equipment. Ensure goods are protected and secured on delivery.

Interface Contractor: Nil			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
24. Escalators			
24.01	Escalators	N/A.	N/A.

Interface Contractor: Others			
Ref	**System**	**Works By Contractor**	**Works By Interface Contractor**
25. General			

25.01	Interface/Community Meetings	Contractor to attend meetings as requested by the Principal	Principal's Representative to arrange and manage meetings.

INTERFACE WITH SERVICE PROVIDERS

Construction Stakeholder: Telstra, Optus and Vodafone (including any other Communications Services Providers)			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
1. Public Telecommunications Operators (PTO's) and Broadband			
1.01	PTO's	**Generally:** Contractor to arrange all attendance and comply with the requirements of the Interface Contractor **Design**: Contractor to finalise design, including co-ordination of design with the PTO requirements. To include co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract. **Construction**: Supply and install, including, but not be limited to: with PTO, agree and provide route for cabling to the station. Penetrations, containment systems, all sockets, cabling and antenna(s), enclosures/rack, procure/secure Telstra MDF panel. **Test and Commissioning:**	**Design:** Review / respond to queries and submissions by the Contractor **Construction**: Supply/install, including provision of cabling into site, the PTO equipment. Terminate communications cables at MDF. Make final connections in the equipment room, test/commission and integrate the equipment/system. Sign-off the systems. **Test and Commissioning:** Carryout/certificate all testing, commissioning and integration of the systems with existing networks. Provide test certification to the Contractor.

Construction Stakeholder: Telstra, Optus and Vodafone (including any other Communications Services Providers)			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
		Programme/assist/attend commissioning with Telstra. Obtain any approvals/sign-off from Interface Contractor for the systems. Provide approvals/sign-off records, works as built and asset management information.	
1.02	Trunk Cable Network – Copper Trunk Cable	As for 1.01 above except for Construction: **Construction**: Supply and install, including, but not be limited to: with PTO's, agree and provide route for cabling to the station. Provision of penetrations, containment systems, all sockets and cabling	As for 1.01 above.
1.03	PTO's - Public Phone Booth	**Design**: Contractor to finalise design, including co-ordination of design with the Telstra requirements. To include co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract.	As for 1.01 above except for Construction (see below):

Construction Stakeholder: Telstra, Optus and Vodafone (including any other Communications Services Providers)			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
		Construction: Supply and install, including, but not be limited to: Contractor to procure phone booth and phone unit/handset from Telstra and provide containment, sockets, communications and electrical cabling, mechanical fixings and penetrations as required. **Test and Commissioning:** Programme/assist/attend commissioning with Telstra. Obtain any approvals/sign-off from Telstra for the systems. Provide approvals/sign-off records, works as built and asset management information.	**Construction:** Telstra to install phone booth and terminate/ commission/ certify the unit.
1.04	PTO's - National Broadband Network (NBN)	N/A.	N/A.

Utility Company: Local Energy Provider (Endeavour Energy / Ausgrid or others)			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
2. Power Supply			
2.01	Power Supply - High voltage (11kV) cabling	As for 1.01 above except for Construction: **Construction**: Supply and install, including, but not be limited to: Groundwork's, kiosk/substation, metering, containment and cabling to station, MSB, UPS, final connections, testing, provision of certification (provision of appropriate level electrical resource), **Test and Commissioning:** Programme/assist/attend commissioning with Local energy provider. Obtain any approvals/sign-off from Local energy provider for the system/integration. Provide approvals/sign-off records, works as built and asset management information.	**Generally**: Interface Contractor to integrate supply in to their wider network and attendance at test and commissioning of the installation. Review design and confirm load/capacity available to support the Station.

Utility Company: Hunter Water Corporation/Sydney Water including others			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
3. Water Supply			
3.01	Hunter Water Corporation/Sydney Water – Mains Water	As for 1.01 above except for Construction and Commissioning: **Construction**: Supply and install, including, but not be limited to: Groundwork's, pipe work to station, tanks, pumps, sanitary drainage, final / mains connection. **Test and Commissioning:** Programme/assist/attend commissioning with Hunter Water Corporation/Sydney Water. Obtain any approvals/sign-off from Hunter Water Corporation/Sydney Water for the systems. Provide approvals/sign-off records, works as built and asset management information.	As for 1.01 above except for Construction and Commissioning: **Construction**: Supply and install metering equipment. **Test and Commissioning:** Witness and approve in writing/certificate all testing, commissioning and integration of the systems.

4. Storm Water			

4.01	Hunter Water Corporation/Sydney Water – Storm Water	Contractor to finalise design, including co-ordination of design with Hunter Water Corporation/Sydney Water requirements. To include co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract. Supply and install, including, but not be limited to: Drainage system throughout the site (inc. Ground and Civil works), connection into existing system. Programme/assist/attend commissioning with Hunter Water Corporation/Sydney Water. Obtain any approvals/sign-off from Hunter Water Corporation/Sydney Water for the systems. Provide approvals/sign-off records, works as built and asset management information.	Undertake final inspections - witness and approve in writing/certificate all testing, commissioning/integration of the system.

	Hunter Water Corporation – Sewer	Contractor to finalise design, including co-ordination of design with Hunter Water Corporation requirements. To include co-ordination with final position of all other services, equipment and structures. Submit designs for acceptance in accordance with the Contract. Supply and install, including, but not be limited to: Sewer system throughout the site (inc. Ground and Civil works), connection into existing system. Programme/assist/attend commissioning with Hunter Water Corporation. Obtain any approvals/sign-off from Hunter Water Corporation for the systems. Provide approvals/sign-off records, works as built and asset management information.	Undertake final inspections - witness and approve in writing/certificate all testing, commissioning/integration of the system.

Construction Stakeholder: Nil			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
5. Gas			
5.01	Gas Services	N/A.	N/A.

Construction Stakeholder: Roads & Maritime Services			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
6. Site Access & Roadwork			
6.01	Site Access & Roadwork	Contractor to liaise with Roads & Maritime Services in their capacity as a public authority	N/A.
Construction Stakeholder: Council			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
7. Site Access			
7.01	Site Access & Roadwork	Contractor to liaise with Council in their capacity as a public authority	N/A.
	Maitland City Council – Storm Water	Contractor to finalise design, including co-ordination of design with Maitland City Council requirements. To include co-ordination with final position of all other services and equipment. Submit designs for acceptance in accordance with the Contract. Supply and install, including, but not be limited to: Drainage system throughout the site (inc. Ground and Civil works), connection into existing system.	Undertake final inspections - witness and approve in writing/certificate all testing, commissioning/ integration of the system.

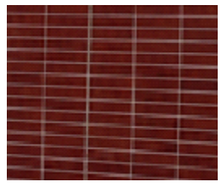
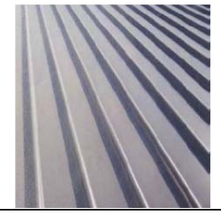
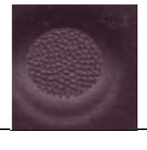
		Programme/assist/attend commissioning with Maitland City Council. Obtain any approvals/sign-off from Maitland City Council for the systems. Provide approvals/sign-off records, works as built and asset management information.	
Construction Stakeholder: Private Land Owners			
Ref	**System**	**Works By Contractor**	**Work By Contractor which involves Service Providers Input**
8. Site Access			
8.01	Site Access	N/A.	N/A.

Appendix F – Finishes Schedules

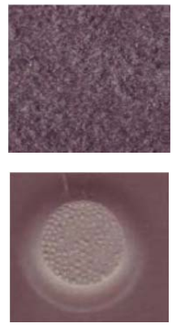
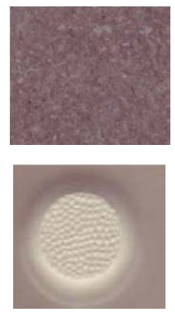
Appendix F – Finishes Schedules

Document Reference # 4828695_1 (Desksite Reference # 4959378_1)

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
EXTERNAL AREAS							
FP	Footpaths			Concrete, broomed finish with steel trowel ending. DDA compliant. Steel resistance to comply with AS 4586 and HB 198		In accordance with Structural Engineer's Specification.	
GD-01	Grated Drains	Platforms Concourse		Stainless Steel drains		Heel proof gates shall not be installed below down pipe discharge. Use a suitable SS grate to prevent discharge over adjacent surfaces. Rating of grates shall be as required to suit the expected traffic.	
TL-01	Tiling	Platform Building		Select to suit the station environment and colour requirements. The type should be robust and vandal resistant.		Comply with ESB 003 part 3.11 All grouting in walls exposed to public should have epoxy grout.	
MSR	Metal Sheet Roofing	Building roof Platform canopies		Lysaght Klip Lok 700 OR 0.42BMT / 0.48BMT Spandek Roof sheeting OR Custom Orb/ Custom Blue Orb OR Kinspan or Ritek Panels	Lysaght (Bluescope Steel)	Finish shall be Colorbond. Select to suit station environment and color requirements.	
PA-01	Paving – Type 1	Concourse Station Entry		CONSTELLATION SERIES 600x300mm PORCELAIN TILES Slip resistance of R12 & W	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au	Slip resistance for sloping surfaces shall comply with AS 4586 and HB 198	
TIL-01	Tiling – Type 1	Concourse – Type 1		6325NS Taurus 600 x 300mm R12 Slip Resistant	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au	Slip resistance for sloping surfaces shall comply with AS 4586 and HB 198	 

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
TIL-02	Tiling – Type 2	Concourse – Type 2		6321NS Cetus 600 x 300mm R12 Slip Resistant	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au	Slip resistance for sloping surfaces shall comply with AS 4586 and HB 198	
TIL-03	Tiling - Type 3	Back of House		9605s9 600 x 300mm R11 Slip Resistant	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au	Slip resistance for sloping surfaces shall comply with AS 4586 and HB 198	
TIL- 04	Tiling – Type 4	Wet Area Floor and Wall		Size 300 X 600 mm	"Glennon Tiles" or equivalent For graffiti removal application: "Graffiti On"	Easy On" application to allow for easy removal of graffiti Dark Epoxy Grout for wall and floor tiles and R10 slip rating for floor tiles only.	
COL-01	Columns (Concrete)	Platform Concourse Footbridge		To comply with Structural Engineer's details		Surface finish in accordance with AS 3610.1 Class 1 or 2 for columns with a smooth exposed surface. Or alternative boarded/ textures finish as directed by the Principal.	
COL-02	Columns (Steel)	Platform Concourse Footbridge		To comply with Structural Engineer's details		Hot dip galvanised The paint system to comply with AS 2309, AS 2312.1 or 2312.2. Surface finish as directed by the Principal	

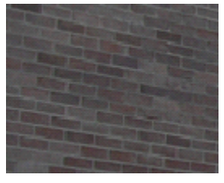
FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
							
LVR	Louvers	Lift Shaft		Two stage storm proof louvres. Vandal resistant where exposed to public. Clear anodised or powder coat finish	Air Grilles Pty Ltd OR Austral Monsoon		
HR	Handrails	Stairs Ramps Footbridge		Finish: No.4 Linish finish Stainless Steel . Stainless steel fixed to stair structure to comply with AS1428.1 and 1428.2		Must meet AS 1428.2-1992, 10.1.1 (C) A tactile indicator in the form of a domed button is places where the handrail is not continued. Return ends shall comply with AS 1428.1 Fig 26 (C), b or c or d or e. Ensure AS 1428.2-1992, 10.1.1 (C).	 
TG-01	Tactile Ground Surface Indicators (TSGI)- Type 1	Platforms		Tiled Warning tactiles to comply with AS1428 4.1		To provide luminance contrast and slip resistence as per AS 1428.4 100 wide yellow line may be incorporated in the width of the tactile band providing they match AS 2700 sunflower Yellow Y 15 Directional tactiles shall not be installed on Platforms.	
TG-02	Tactile Ground Surface Indicators (TSGI)- Type 2	Ramps Stairs		Tiled warning tactiles to comply with AS 1428.4.1 OR Austac Type 2 or equal stud tactiles OR Stainless stell studs with coloured inserts to provide required luminance contrast.		To provide colour contrast as per AS1428.4	

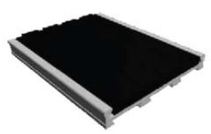
FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
TG-03	Tactile Ground Surface Indicators (TSGI)- Type 2	Bus Stops		Tiled Warning and Directional both type of tactiles to be different and comply with AS1428.4.1		Bus Stops required two types of tactile: Directional and Warning so compliant equivalent for both types are to be provided.	
TG-04	Tactile Ground Surface Indicators (TSGI)- Type 2	Platforms (Concrete or Asphalt)		Warning tactiles to comply with AS1428.4.1 equl. To Austac Type 2 studs		To provide luminance contrast and slip resistance as per AS 1428.4 100 wide yellow line may be incorporated in the width of the tactile band providing they match AS 2700 sunflower Yellow Y 15 Directional tactiles shall not be installed on Platforms	
BAZ	Boarding Assistance Zone Stamp	Platforms		Thermoplastic sign to TfNSW Wayfinding requirements		Refer to TfNSW Principal's Representative. The signs to be located on platforms 112m from the 8 car marker unless the infrastructure prevents the placement within this location. The final placement should be in consultation with Sydney Trains Rep.	
ATS	Anti-throw Screens/ Protection Screens	Footbridge		Design to comply with T CI 1203 O ST and AS 5100		To be vandal proof and graffiti resistant	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
DP	Downpipes	Platform buildings Canopies		Colourbond or galvanised Steel pipe to 2100 OR Stainless steel to suit roof material and finish		To be vandal proof where exposed to public areas	
GU-1	Gutters –Eaves and box	Platform buildings Canopies		Colorbond Steel Colourbond to suit roof material and finish OR Roofing membrane in formed gutter channel		Comply with AS 3500.3	
Gu-2	Gutters –Eaves and box	Platform buildings Canopies		Colorbond Steel Colourbond to suit roof material and finish		Where Heritage Type required, it should be Rainwater Heads type as per the approval by relevant Heritage Authority	
B-01	Brickwork	Platform buildings		Selected face or common bricks to comply with AS 3700 and AS 4455		To match and complement existing station building if there is heritage significance.	
B-02	Blockwork (concrete)			Solid or hollow units to comply with AS 3700 and AS 4455		The reinforced concrete structures shall be to Structural Engineer's design requirements	
F-01	Fencing	Platform (End)		Custodian fence of height required to comply with ESB 003 Cl. 3.8.3.3	Northern Fencing OR Speedline Fencing		

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
F-02	Rail Corridor Fencing			Comply with ESC 510, SPC 511 and ESB 003 Cl. 3.8.3.3			
F-03	Platform White loop top fence			Custodian fence of height required to comply with ESB 003 Cl. 3.8.3.3			
ST-01	Stairs	Platforms		Pre-cast concrete		Fabricate to Structural Engineer's design and with required slip resistance	
CGS	Cages	Platform Buildings Interchanges		Construct using Galvanised steel angle frame and Securifor mesh		Provide hinged access panel with padlock	
STN	Stair Nosing	Stairs		Crystalline, Concealed Fixing System, Square Nose (or SC 8 rounded nose) , Recess Type, 75mmx10mm overall dimensions, CLEAR anodised base with insert consisting of Crystalline 4, Square Nose, Recess Type, 65mmx5mm, BLACK anodised with BLACK insert. Pre-drilled countersunk holes Code: CL-CFS-SN-RT(75X10) CA CL4-SN RT(65x5) BA/BLK. AS 1428. 1:2009 compliant design	Safety Stride Suite 8, 20-28 Carrington Rd Marrickville NSW 2204 1300 131 757 02 9559 8743 02 9559 7860 OR Stair Care Australia 02 9939 3838 OR	Retrofitted to existing concrete stairs and fitted to new stairs	

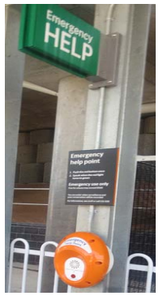
FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
					Latham Asbra with a 56 wide monolithic silicon carbide infill to prevent infill strips to be pulled out		
D-01	Stainless Steel Clad Fire Rated Doors	Buildings (external)		Vertical linish finish to cladding and edge angle trim		Heat bond the door panel	
FURNITURE / FITTINGS / EQUIPMENT							
BR	Bike Racks	Station Entry and Interchanges		Bolt down bicycles rails Code: BR85B. Galvanised Br85b	Leda Security 1300 780 450 www.securabike.com.au	Install to AS2890.3 and Leda / Securabike Layout Guide	
BC	Bike Cages	Station Entry and Interchanges				Location to be agreed with relevant stakeholder e.g. Sydney Trains/ Council/ TfNSW	
BOL-01	Bollards	DDA carspaces		1200 high safety yellow steel bollard equal to those available from Ingal or Securapost		Secure the base plate to concrete slab or footing with 4 off M16 galvanised anochors	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
BS-01	Bench seating – Type 1 Underground and New Stations)	Platforms Station Entrances		SFA– Concourse Transit Quad Seat, Post CM05 'Sable Brilliance – Textured Finish' + Palladium Silver Pearl, Post Leg	Street Furniture Australia 92-94 Buckland Street Alexandria NSW 2015 Tel 02 8096 0100	Bolt fix to concrete slab or 400X400 footing in accordance with the manufacturer's instructions	
BS-02	Bench Seating - Type 2 (Heritage Stations)	Platforms Station Entrances	Heritage Station	SFA – CMM5 Mall DDA 'Bush Cherry' Aluminium Battens, Post Leg	Street Furniture Australia 92-94 Buckland Street Alexandria NSW 2015 Tel 02 8096 0100	Bolt fix to concrete slab or 400X400 footing in accordance with the manufacturer's instructions	
BS-03	Bench Seating - Type 3 (State Heritage Register SHR Stations)	Platforms Station Entrances	State Heritage Register SHR Stations	SFA – CMM5 Mall DDA Jarrah Battens, Splayed Leg	Street Furniture Australia 92-94 Buckland Street Alexandria NSW 2015 Tel 02 8096 0100	Bolt fix to concrete slab or 400X400 footing in accordance with the manufacturer's instructions	
BS-01	Bus Shelters – Type 1	Interchange		Submit the design for TfNSW and Sydney Trains approval to ensure safe maintenance access is provided. Must be robust and vandal resistance and extent of glass should be minimised		Base plates to be secured above ground level for ongoing inspections.	
BS-02	Bus Shelter – Type 2	Interchange		Submit the design for TfNSW and Sydney Trains approval to ensure safe maintenance access is provided. Must be robust and vandal resistance and extent of glass should be minimised		Base plates to be secured above ground level for ongoing inspections.	
LP-1	Light Poles	Car park, Interchange and platforms		Poles to be designed to comply with AS 4100, AS 1170.2, AS 1789, AS 4676 and 4677		Folding type light poles are required. The poles to comply with ESB E001 Low Voltage Electrical Standard. The poles combining lights and CCTV to be selected to comply with Sydney Trains Security Standard.	
LP-02	Light Poles Luminaries	Car park, interchange and		LED Phillips Green Vision Xceed 1 with adjustable brackets and 500mm extension pipe		LED fittings are required with wattage specified by the designer to suit necessary lux levels. Comply with ESB	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
		platforms				E001 Low Voltage Electrical Standard.	
LI-01	Light Fittings			LED using Pierlite Vandalux - VOLED524E4 - Vandaux LED Pro, 52W, 1200MM, C/W OPAL DIFF & DIE CAST ALU BASE, IK10,IP66, 4K		Secure in accordance with ESB E001	
BN	Bins	Platforms Station entry areas		Stainless Steel Square Bins with Hood and large chute and new decals. These new bins will replace the existing. Available in Garbage & Recycle	Emerdyn Pty Ltd 39 Stanley St, Peakhurst NSW 2210 Phone:(02) 9534 1314 OR Safer by Design bins for class A Stations	To Sydney Trains/TfNSW Standards	
HP	Help Points	Platforms Concourse			Indra		
ATM	Automated Teller Machine					The Contractor must liaise with Principal Contractor's Representative regarding relocation to new position, if required.	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
TVM	Ticket Vending Machine					The Contractor must liaise with Principal Contractor's Representative regarding relocation to new position, if required. The Contract to liaise with TfNSW Ticketing Program Manager regarding the OPAL top up machine replacement strategy for vending machine requirements.	
VM1	Vending Machine	Concourse Station Entry				The Contractor must liaise with Principal Contractor's Representative regarding relocation to new position, if required.	
PH	Payphone	Platforms Concourse			Telstra	The Contractor must liaise with Principal Contractor's Representative regarding relocation to new position, if required.	
BRC	Boarding Ramp Cabinet	Platforms				The Contractor must liaise with Principal Contractor's Representative regarding relocation to new position, if required.	
SPI	Station Passenger Information Screen (SPI)					As per the Technical Specification provided in the Works Brief	

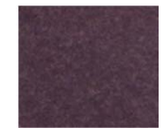
FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
PC	Precise Clocks	Platforms Booking Office					
SB-01	Signboards	Platforms Concourse				The contractor to liaise with TFNSW CSD regarding locations of the poster cases.	
STS	Station 'T' Sign	Station Entrance				The contractor to liaise with TFNSW CSD regarding locations of the sign and power supply.	
LIFTS							
LFT-01	Lift Shaft Glazing	Lift		Virdian Supergreen VLAM glass in Capral 300 or 400 narrowline aluminium frame in Dulux powercoat colour 'APO Grey'. 3mm safety glassand security ultra 400 film to internal (lift shaft) face of glass to all glazing panels within 2.1m of platform FFL. Apply all films to glass prior to installing glass in glazing suite. Provide sub sill to base of all window assemblies.		The glass is required to be toughened laminate to comply with ESB 003 and ST Security Standards.	
LFT-02	Lift Shaft Cladding	Lift			Alucobond OR Vitrapanel		

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
							 
LFT-03	Lift – Door frames and doors	Lift		Finish: Linished Stainless Steel	Liftronic	TfNSW Contract with Liftronic	
LFT-04	Lift – door control panel and control button	Lift		Finish: Linished Stainless Steel	Liftronic	TfNSW Contract with Liftronic	
LFT-05	Lift Car - Floor	Lift		Finish: Stainless Steel Rimex IR5, Satin		TfNSW Contract with Liftronic	
LFT-06	Lift Car – Walls	Lift		Finish: Stainless Steel Rimex 5WL Satin		TfNSW Contract with Liftronic	
LFT-07	Lift Car - Ceilings	Lift		Finish: Stainless Steel Rimex 5WL Satin		TfNSW Contract with Liftronic	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
INTERNAL AREAS							
T01	Tiles	Toilet (WC) and FAT Walls 1. Female 2. Male 3. Disabled		F725 600x300mm 1. GW02353 2. GW02578 3. GW02579	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au	Use epoxy grout for ease of graffiti removal	
T02	Tiles	Toilet (WC) and FAT Floors		GN13104 600x300mm R10 Slip Resistant	F.S. GLENNON & CO PTY LTD 121 McEvoy St Alexandria NSW 2015 Tel: (02) 9698 2799 Fax: (02) 9698 5697 www.glennontiles.com.au		 
P-01	Painting				Dulux	Refer to ESB010 guidelines for SHR and RailCorp S170 listed stations. All wall surfaces below 2600 and exposed to the public needs to be protected with clear anti-graffiti non sacrificial coating.	
CEL-01	Ceilings – Type 1	Canopies		Suspended flush concealed fixed moisture resistant prefinished FC with expressed joints			
CEL-02	Ceiling – Type 2	Platform Building		Suspended flush set plasterboard including cornices as required. Paint Finish Colour: Off White		Install 2 hour fire rated plasterboard where required by BCA and moisture resistant plasterboard in wet areas and toilets.	
D-02	Doors	Building (internal)		The Designer to select and specify type of doors to AS 1905.1 and BCA requirements.		The doors to suit the specific type: - fire rated paint finish solid core - stained finish solid core	
VNL-01	Vinyl Flooring	Station Services Equipment Room		Floor vinyl sheet – Antistatic Accolade Safe: Sterling Grey Slip resistance in accordance with AS 4586 and	Armstrong	Prep existing station building floor suitably for installation of new vinyl. Use levelling compounds as necessary. Hot weld or chemically seal joints.	

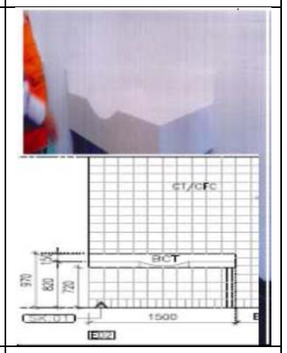
FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
				HB 198		Provide threshold strips at change of floor finish and exposed edges.	
VNL-02	Vinyl Flooring	Building (Meal room)		Floor vinyl slip R11 Quantum: Collins Grey	Armstrong		
INS-01	Wall insulation	Buildings FAT				To achieve R3.2 or as necessary as defined in BCA. Foil back to provide moisture barrier.	
INS-02	Roof insulation	Buildings FAT				To achieve R3.2 or as necessary as defined in BCA. Foil back to provide moisture barrier.	
UR	Urinals	Toilets		Stainless Metal Craft, Southern Cross SS, Britex Usan recessed mounted, centre outlet		Sensor for auto flush to be located in ceiling/bulkhead	
WP	Wash planes	Toilet		Polished stone slabs on CFC sheets and steel / timber Supports Gris Antracita	Quarella Quartz		
WC-01	WC pans	Toilet		CWC_80_EXT Wallgate Anti Vandal WC Pan - Back to Wall Rear Fixed and floor fixed with rear pan extension. AS1428.1 Compliant Wallgate In Wall 9 Litre Cistern - 6 Litre single Flush Includes Flush Pipes & Seals Pneumatic / mechanical Flush Button & Valve - Palm Push AS1428.1 Compliant. For Wall thickness up to 150 mm Colour: White	Hydraware	White WC with Black seat http://www.hydraware.co.nz/portfolio/wallgate Concealed cisterns with full access secure fixing access panels to allow replacement of cistern.	
WC-02		Toilet		Wallgate Anti Vandal WC Pan - Back to Wall Rear Fixed and Floor Fixed. Includes Seat Fixing Points Colour: White	Hydraware	http://www.hydraware.co.nz/portfolio/wallgate Concealed cisterns with full access secure fixing access panels to allow replacement of cistern.	
WC-03	Accessible WC	Toilet		CWC_80_EXT Wallgate Anti Vandal WC Pan - Back to Wall Rear Fixed and floor fixed with rear pan extension. AS1428.1 Compliant Wallgate In Wall 9 Litre Cistern - 6 Litre single Flush Includes Flush Pipes & Seals Pneumatic / mechanical Flush Button & Valve - Palm Push AS1428.1 Compliant. For Wall thickness up to 150 mm	Hydraware	http://www.hydraware.co.nz/portfolio/wallgate Concealed cisterns with full access secure fixing access panels to allow replacement of cistern.	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
AB	Accessible basin			SHB_01 / SHBSH_01 Washbasin & shroud (provisional disabled AS1428 compliant)	Hydrware	http://www.hydraware.co.nz/portfolio/wallgate ONE TAP HOLE ONLY.	
AT	Accessible taps			GAL368696VRL EZY Push Lever Vandal Resistant Timed Flow Pillar Tap	Hydraware	http://www.hydraware.co.nz/portfolio/wallgate	
BA	Male / Female basin	Toilets & FAT		SHB_01 / SHBSH_01 Washbasin & shroud (provisional disabled AS1428 compliant)	Hydraware	http://www.hydraware.co.nz/portfolio/wallgate ONE TAP HOLE ONLY.	
T-01	Taps over the wash planes	Toilets (Male and Female)		Presto 504 timed flow Bib tap – cold 7.5 seconds. Part NO: P63007- 2.0 ltr/ min flow rate or equivalent	Thornthwaite	Ensure compliance with AS 1428.1 The control to be operated with a force not exceeding 19.5 N	
T-01	Taps in basins	Toilets (Male and Female)		Presto 605 timed flow Bib tap or equivalent – cold 7.5 seconds Part NO: P64614- 2.0 ltr/ min flow rate or equivalent	Thornthwaite	Cold water only	
TP	Toilet Partitions	Toilets (Male and Female)		Waterloo Contempoary system - vandal resistant Colour: "Charcoal" to frontals, partitions and doors	Waterloo		
TRH	Toilet Roll Holders	Toilets (Male and Female)		Jumbo - code B-2890 Stainless Steel	Bobrick or equivalent	http://www.bobrick.com/washroomaccessories/Pages/ProductDetails.aspx?Product+Number%3dB-2890	
HD	Hand Dryers	Toilets (Male and Female)		Dyson Airblades V hand dryer - code AB12 (White)	Dyson	http://www.dysonairblade.com.au/handdryers/airblade-v/airblade-v/range.aspx	

FINISHES & FIXTURES SCHEDULE, APPENDIX F TO WORKS BRIEF EASY ACCESS STATION UPGRADE

Code	Item / Description	Location	Applicable Station	Specification / Finish	Supplier	Comments	Reference Image
SD	Soap Dispensers over wash planes	Toilets (Male and Female)		AQUARIUS* Hand Cleanser Dispenser - Cassette / White /1 Litre Colour: White	Kimberly Clark	No drip tray required as it dispenses foam. Install above sink if possible http://www.kcprofessional.com.au/products/dispensers/skincare-dispensers/foam-soapdispensers/69480-aquarius-hand-cleanserdispenser-cassette	
BCT	Baby Change Table			Depending on size of room Either:- 1. Builder is to construct frame in accordance with ESB 003 Cl 3.5.3.1 and picture attached. Marblo or sim on base of HMR MDF or WP ply to be used not laminate. OR (if there is not enough room) 2. Foldable change table from Metlam, code ML9100EH		http://www.washroomaccessories.com.au/metlam/5030-ml9100eh-slimline-horizontal-babychange-table.html Install as per ESB 003 Cl 3.5.3.1.	
CH	Coat Hooks	Toilets (Male and Female)		Stainless Steel Coat Hook to be installed on the back of toilet doors		Family Accessible Toilets to be Installed in accordance with AS 1428.1	
DH	Door Hardware					Door closers(if fitted to Family Accessible Toilets) to have delayed action to suit access by people in wheelchairs and maintain an acceptable level of privacy. Door furniture, locks to accessible toilets should be checked to ensure they comply with AS 1428.1 Cl 15.2.9 and AS 1428.2 Cl 23 Door stop: Wall fixed or door mounted stops are preferred	
MR-01	Mirror	Toilets (Male and Female)		1000Hx600Wmm aluminium framed stainless steel mirror. Secured to concealed wall hanger with theft resistant mounting.		The size of the mirror needs to be reconsidered to suit specific installations where smaller (600mm width) units would be better suited and also to comply with DDA requirements. Ref AS 1428.1 Cl15.4.1. http://bobrick.com/washroomaccessories/Pages/ProductDetails.aspx?Product+Number%3dB-1556+1824	
MR-02	Mirror	FAT		1200Hx600Wmm aluminium framed stainless steel mirror. Secured to concealed wall hanger with theft resistant mounting.		The size of the mirror needs to be reconsidered to suit specific installations where smaller (600mm width) units would be better suited and also to comply with DDA requirements. Ref AS 1428.1 Cl15.4.1. http://bobrick.com/washroomaccessories/Pages/ProductDetails.aspx?Product+Number%3dB-1556+1824	

Appendix G – Engineering Safety Assurance

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Document No.	Name	Version
3879947	TAP Engineering Safety Assurance Requirements	Version 1, 28. 11. 2014

(Reference # 4959364_2)