PART E - TECHNICAL SPECIFICATION

E1. DESCRIPTION OF THE WORKS

E1.1 SCOPE OF WORK

E1.1.1 Background

There are numerous ladders and platforms within Warragamba Dam and at various locations along the Warragamba to Prospect Pipelines.

An audit of these ladders and platforms has found that there are some non-compliances in relation to AS 1657: “Fixed Platforms, walkways, stairways and ladders – Design, construction and installation”.

E1.1.2 Purpose

This project is for the installation of new ladders, platforms and walkways and the modification/repair of some existing ladders, platforms and walkways at Warragamba Dam and various locations along the pipeline so that they are compliant with the current Australian Standards, relevant statutory and regularity requirements in order to provide safe access.

E1.1.3 Location

Warragamba Dam is located on the Warragamba River approximately 65 km southwest of Sydney.

E1.1.4 Work to be carried out by Contractor

The scope of work under this specification includes the following:

1.1.4.1 The design, fabrication, delivery to site and installation of ladders, platforms and steel frames as per Cardno MBK Warragamba Dam Access Audit Report, January 2003 and in accordance with AS 1657: “Fixed Platforms, walkways, stairways and ladders – Design, construction and installation” were practical in accordance with Australian Standard AS4902 General conditions of contract for design and construct.

1.1.4.2 The design, fabrication of parts/items, delivery to site and modification of ladders, platforms and steel frames as per Cardno MBK Warragamba Dam Access Audit Report, January 2003. *(Including self closing gates on platforms.)*

1.1.4.3 Supply of “As Built” Drawings.

1.1.4.4 Supply of all materials and equipment to carry out demolition, installation and modification of ladders and platforms as specified in this specification.

1.1.4.5 Site-check all dimensions and elevations.

1.1.4.6 Removal of all redundant steelwork, all waste material and rubbish from the work areas and SCA property in accordance with SCA requirements.

1.1.4.7 Hot dip galvanise all new steelwork as specified in this specification.

1.1.4.8 “Touch-up” with Cold Gal any steelwork modified on site.

1.1.4.9 Make good any surfaces or equipment, civil or structural, damaged during the demolition, installation and modification phases of the project.

1.1.4.10 All workmanship and materials shall comply with relevant Australian Standards and controlling authorities, including the NSW Heritage Office if applicable.

1.1.4.11 The contractor is to ensure that no damage occurs to any existing equipment, civil structures and structural steel during the installation phase of the project.

1.1.4.12 Remove, repair and install new concrete as required.

1.1.4.13 Re-use existing supports were practical and safe to do so.

1.1.4.14 The contractor is to supply all materials and equipment to complete the installation as specified in this specification.

1.1.4.15 Accept responsibility for all erection procedures including the provision of all necessary guying, temporary bracing and the like, so as to ensure the safety of the structure under all conditions of wind, seismic and erection loads occurring during the construction period.

Table 1: Scope of Supply as per Cardno MBK Warragamba Dam Access Audit

	Details	Comments
	Shafts	
1.1	Shaft 11B	
1.2	Shaft 12A/2	
1.3	Shaft 12H	
1.4	Shaft 12J	
1.5	Shaft 12K	
1.7	Shaft 15A	
1.8	Shaft 15D	
1.9	Shaft 16 B	
1.10	Shaft 17D/2	
1.11	Shaft 18B	
1.12	Shaft 18D/1	
1.13	Shaft 18D/2	
1.14	Shaft 18H	
1.15	Shaft 18J	
1.16	Shaft 18L	
1.17	Shaft 18N	

1.18A	Shaft 19A/1	
1.18B	Shaft 19A/2	
2	Lift Access Stairs	
2.1	Lift Well No. 1Valve House (Actually No. 3)	Refer Item 18
2.3	Lift Well No. 3 East (Actually No. 1)	
3	Cathedral ©	
4	Sump Access	
	GA15	Refer Item 16.1
	CACG	
5	Penstock	
7	Radial Gate Insp Walkways	
8	Penstock Emergency Gate Chamber	N/A (Refer Cardno MBK Report)
9	Radial Gate Counterweight Chambers	
15	Jet Pump Inlet Screen Chamber	
16	Galleries	Refer Item 1.10
17	HEPS (Hydro Electric Power Station	
19	Valves V01 & V02	
20	Addit No. 1	
21	Warragamba Weir	
23	Access Venturi Chamber	
23	Access down stream of venturi	
24.1	Megarrity's Creek Riparian Valve	
24.2	Megarrity's Creek Pipeline 1 & 2	
25	Nepean River Crossing	
26	Cross connection No. 1	
27	Orchard Hills Off Take	
28	Cross Connection No. 2	
29	Mamre Road Cross Connection	
30	Wallgrove Road Cross Connection	
31	Cross Connection No. 3	

E1.1.5 Work to be carried out by Others

None.

E1.1.6 Access

1.1.6.1 SCA general conditions for on site work by contractors at Warragamba Dam are applicable to this work. The contractor should also make allowance for his supervision staff and workforce, including any sub-contractors, to be inducted on the site specific requirements for working at Warragamba Dam.

1.1.6.2 Disruption to all traffic shall be kept to a minimum.

1.1.6.3 The contractor's attention is drawn to the fact that other contractors and SCA staff, could be working in the area during the installation phase of the project. All care is to be exercised to minimise interference at this time.

1.1.6.4 All project personnel entering or leaving Warragamba Dam must report to the Warragamba Office and log on/off. A register of personnel on site will be maintained.

1.1.6.5 All the contractors vehicles shall be well maintained and fitted with drip trays to minimise spills of fuel and lubricants that maybe required.

1.1.6.6 All fuels and lubricants, if stored on site by the contractor, are to be stored safely and away from sensitive areas. Spill/leak containment and clean-up equipment are to be kept onsite ready for immediate use.

1.1.6.7 All equipment, including vehicular, used on site is designed and operated to control the emission of smoke, dust, fumes and other objectionable matter into the atmosphere.

E1.1.7 Shutdowns

The contractor will need to co-ordinate with SCA NW Operations and other contractors on site when carrying out on site installation to avoid access conflicts and operational issues, as well as when areas will not available for access by SCA personnel and other contractors.

E1.1.8 Electrical Work

1.1.8.1 No electrical work.

1.1.8.2 Earth Leakage Circuit Breakers (ELCB)

Earth Leakage Circuit Breakers (ELCB) devices are to be used on all power tools and welding equipment used whilst the contractor is carrying out work in accordance with Australian Standard AS3012 – 1995 Electrical Installations – Construction and demolition sites. There is also a Code of Practice - Electrical Practices for Construction Work. In part the Standard and Code require RCD protection of all portable power tools and devices, and SCA procedures.

1.1.8.3 All electrical power tools and leads used on site must be inspected and certified as being safe and tagged monthly by a licensed electrician in accordance with AS3760. The results of these tests will be recorded and maintained on site.

(The requirements of AS 3012 and the Code of Practice are MANDATORY for construction and demolition sites. A copy of the Code of Practice can be found at the following web site:

http://www.workcover.nsw.gov.au/Publications/LawAndPolicy/CodesofPractice/electrical.htm)

E1.1.9 Equipment and Material Handling

1.1.9.1 All material on site shall be handled in accordance with Australian Standard AS3828: Guidelines for the erection of Building Steelwork.

1.1.9.2 At all stages of the work structural metalwork shall be handled and stacked so that it is not damaged, bent or twisted, or that damage to any part of the protective coating does not occur.

1.1.9.3 Structural metalwork shall be stacked clear of the ground and so that the collection of water in troughs, pockets and the like is avoided. Where materials are likely to be damaged by moisture or exposure, store the materials in covered dry areas on the site.

1.1.9.4 Bolts, nuts, washers and load indicating devices shall be stored and handled in a manner that will prevent damage, contamination, corrosion, or loss of lubricant, preferably in grit-free containers. Burred, damaged, corroded or otherwise unserviceable fasteners shall not be used.

E1.1.10 Design

1.1.10.1 The design and construction of this project shall be in accordance with Australian Standard AS1657: “Fixed Platforms, walkways, stairways and ladders – Design, construction and installation” and AS4902: General Conditions of contract for design and construct.

1.1.10.2 Some ladders and platforms will not be able to comply fully with AS1657 unless major civil works are carried out at Warragamba Dam. A hold point is required in the ITP when these non compliant ladders are encountered. These items will be subject to a detailed risk assessment, to be undertaken to identify safe systems of access and egress i.e. fall arrest systems to *AS/NZS 1891 Industrial fall-arrest systems and devices, Parts 1 to 4* and/or appropriate signage could be utilised.

The contractor is to advise the SCA which ladders, walkways and platforms are unable to comply.

1.1.10.3 All drawings are to be submitted to the SCA for review two weeks prior to any fabrication, installation and modifications work commencing.

1.1.10.4 The Contractor to provide detail information including costs of proposed Fall Arrest Systems.

E1.1.11 Programme

1.1.11.1 The contractor is to submit a programme schedule showing the duration of the various activities.

E1.1.12 Project Management

1.1.12.1 The contractor will be required to provide monthly reports of project progress and update the programme.

1.1.12.2 The contractor is responsible for all on and off-site supervision, as well as for any sub-contractors he may engage to carry out the work.

E1.1.13 Permit to Work Certificate

1.1.13.1 SCA personnel will initiate all clearances if required. However all clearances will need to be obtained and held by the contractor on-site for this project.

1.1.13.2 The Contractor shall advise SCA personnel when they are leaving the work site each day and sign off at the SCA Production Office.

E1.1.14 Interruption to and Operation of Existing Operating Equipment and Systems

1.1.14.1 No live electrical equipment or instruments at Warragamba Dam shall be disconnected, diverted, taken out of service or returned to service without the written approval of the Warragamba Dam Operations personnel.

1.1.14.2 Lock out tag out procedures as prescribed by Permit to Work Certificate shall be strictly adhered to when applicable.

E1.1.15 Confined space

Confined space procedures will be followed if applicable to this project in accordance with Sydney Catchment Authority Procedure 006 – Confined Space and Australian Standard AS2865: Safe Working in a Confined Space.

E1.1.16 Pits and Holes

1.1.16.1 Pits and holes shall not be left uncovered for a time longer than necessary to complete a task. Suitable barriers shall be installed around the uncovered pits at all times.

1..1.16.2 Suitable temporary covers will be used where possible.

E1.1.17 Lighting

Adequate lighting shall be provided by contractor and his subcontractors to carry out their respective work, especially when they are working in an area where there is insufficient natural light, eg inside the dam galleries.

E1.1.18 Scaffolding and Other Working Equipment

Scaffolding, safety harnesses, handrails, ramps, ladders etc. shall be provided by the contractor where necessary, especially for personnel working at heights. These items of equipment will comply with the relevant legal requirements.

Industrial fall arrest systems and devices when required are to be in accordance with AS1891 Parts 1 to 4.

E1.1.19 Housekeeping

Work areas and amenity facilities shall be kept clean and tidy at all times. Equipment removed and not to be reused shall be removed from the site each week or stored in the Contractors enclosure.

E1.1.20 Training

1.1.20.1 Any persons undertaking activities on site are to be inducted in the requirements of this Safe Work Method Statements document including hazards of the site and the controls relevant to the work they will undertake.

1.1.20.2 Relevant safety training records e.g. first aid certificates, are to be sighted, a summary list retained on the project file and where necessary copies obtained.

1.1.20.3 Personnel requiring Permits/Tickets/Licences to undertake tasks on the Project shall have current training and records shall be retained as necessary eg. Confined Space training

E1.1.21 Noise

1.1.21.1 Noise generated the construction phase of the project will need to comply with the noise level restrictions specified in the EPA's Environmental Noise Control Manual.

1.1.21.2 Residents (especially along the pipeline) likely to be affected by noise generated during construction phase of the project will need to be notified in accordance with SCA procedures.

E1.1.22 Removal of Waste

1.1.22.1 The contractor will remove and properly dispose of all surplus material and debris resulting from the works inline with environmental requirements. Every effort would be made by the contractor to have any recyclable material appropriately handled and disposed.

1.1.22.2 All waste removal and disposal activities would be in accordance with the provisions of the *Waste Resource and Recovery Act* and the EPA's *Waste assessment Guidelines*.

E1.1.23 NSW Heritage Office Requirements

The contractor is to ensure that the requirements of the NSW Heritage Office and the NSW Heritage Act 1977 are meet, were applicable at Megarrity's Creek and Warragamba Weir.

E1.2 Standards

All works shall comply with this Specification, all relevant Australian Standards and Codes of Practice Manuals as mention throughout this specification. Particular attention is drawn to:

AS1100.101	Technical drawing – General Principles and amendments

E1.3 MATERIALS

E1.3.1 Concrete

1.3.1.1 All civil work shall be designed and constructed in accordance with Australian Standard AS 3600: Concrete Structures.

1.3.1.2 Workmanship and materials shall comply with Australian Standard AS 3600: Concrete Structures.

1.3.1.3 Formwork shall comply with Australian Standards AS 3610: Formwork for concrete.

1.3..1.4 For those surfaces of existing concrete against which new concrete is to be placed, cut/scabble the concrete surface back to expose the coarse aggregate and cleaned with air before air prior to apply new concrete.

1.3..1.5 Any concrete repair shall be in accordance with industry standards and as agreed to by the SCA representative.

1.3..1.5 All grout shall be applied in accordance with the manufactures data sheets.

Where concrete demolition, coring, scabbling or drilling is to be carried out to the Warragamba Dam including valve houses, galleries, crest, apron, spillway, blocks/monoliths, training walls etc, the contractor is advised that the concrete strength may exceed 70Mpa in some areas.

E1.3.2 Masonry Anchors

Where hold bolts do not exist ladder and platforms supports are to be secured to concrete with Dynaset or Chemset stainless steel masonry anchors in accordance with the manufacturers instructions and AS 3600: Concrete Structures. Minimum size of anchor to be M16 diameter. Unless specified otherwise grout and packing to be 20 mm thick minimum between the concrete and the fixing brackets.

E1.3.3 Steelwork

1.3.3.1 All ladders, walkways and stairways materials shall be in accordance with AS 1657: “Fixed Platforms, walkways, stairways and ladders – Design, construction and installation”.

1.3.3.2 All structural steelwork shall be designed, fabricated and erected in accordance with AS4100: Steel Structures and AS1170: Structural Design Actions.

1.3.3.3 All structural steel bolted connections shall be made with 2 off bolts (M16 minimum) and shall be to Australian Standards AS1252: High Strength Steel Bolts, associated nuts and washers for structural engineering and AS1111.1: ISO metric hexagon bolts and screws minimum grade 8.8. Nuts shall be in accordance with Australian Standard AS1112: ISO metric hexagon nuts minimum grade 8.8. Washers shall be in accordance with Australian Standard AS1237: Plain washers for Metric Bolts, screws and nuts for general purposes – General Plan and Tolerances. Bolts, nuts and washers shall be galvanised in accordance with Australian Standard AS1214: Hot-dip galvanised coatings on threaded fasteners (ISO metric coarse threads series).

E1.3.4 Grating

All grating shall be in accordance with AS1657 and to match existing grating at the numerous locations on site.

E1.4 FABRICATION

E1.4.1 Steelwork

1.4.1.1 The design, ladders, walkways and stairways shall be in accordance with AS 1657: “Fixed Platforms, walkways, stairways and ladders – Design, construction and installation” were practical.

1.4.1.2 All structural steelwork shall be designed, fabricated and erected in accordance with AS4100: Steel Structures and AS1170: Structural Design Actions.

Additionally all design, fabrication and erection shall comply with the minimum requirements of the relevant Statutory Authorities.

1.4.1.3 Workmanship and materials shall comply with Australian Standard AS4100: Steel Structures.

1.4.1.4 Welding shall comply to Australian Standard AS1554: Structural Steel Welding – Welding of Steel Structures, Part 1 Category SP (Structural Purpose). Welding shall be carried out by qualified experienced welders in accordance with AS1554.1.

1.4.1.5 Fabrication shall comply with Australian Standard AS4100: Steel Structures.

1.4.1.6 Erection and installation of steelwork shall be carried out in accordance with Australian Standards AS4100: Steel Structures and AS3828: Guidelines for the erection of Building Steelwork. Structures shall be maintained in safe and stable condition during all phases of erection

1.4.1.7 All structural steel bolted connections shall be made with 2 off bolts (M16 minimum) and shall be to Australian Standards AS1252: High Strength Steel Bolts, associated nuts and washers for structural engineering and AS1111.1: ISO metric hexagon bolts and screws minimum grade 8.8. Nuts shall be in accordance with Australian Standard AS1112: ISO metric hexagon nuts minimum grade 8.8. Washers shall be in accordance with Australian Standard AS1237: Plain washers for Metric Bolts, screws and nuts for

general purposes – General Plan and Tolerances. Bolts, nuts and washers shall be galvanised in accordance with Australian Standard AS1214: Hot-dip galvanised coatings on threaded fasteners (ISO metric coarse threads series).

1.4.1.8 All steelwork etc. is to be fabricated off-site.

1.4.1.9 Welding, grinding and oxy-cutting is permissible in the nominated areas at the discretion of SCA personnel, SCA Procedure SCAP-020-Permit to Work Procedure 4.5 and SCA Procedure SOP-BWD-ALL-006 “Undertaking Hot Work During the Bush Fire Period for any outside work”.

1.4.1.10 Industrial fall arrest systems and devices when required are to be in accordance with AS1891: Industrial Fall Arrest Systems and devices – harness and ancillary equipment Parts 1 to 4.

1.4.1.11 All materials to be used in the work shall be new and in good condition. Material that is deformed or otherwise permanently damaged shall not be used.

1.4.1.12 All metalwork shall be free from rust, pitting, laminations and other defects which will either impair the structural capacity of the member or the quality of the protective coating system.

1.4.1.13 In addition to the general requirements, and except where otherwise specified and/or shown, fabrication shall conform to the methods and recommendations set out in AS4100: Steel Structures or AS1664.

1.4.1.14 All members shall be fabricated true to shape and size with out distortion and with all necessary provisions for handling, field splicing, field welding and the like. The welding of “off-cuts” or short lengths of members to make up the required length of a member is not permitted.

E1.5 PROTECTIVE COATING

1.5.1 All steelwork shall be “hot dipped” galvanised after prefabrication to Australian Standards AS1627: Metal Finishing – Preparation for treatment of surfaces, AS4680: Hot-dip galvanised coatings on ferrous articles and AS4792: Hot-dip galvanised(zinc) coatings on ferrous hollow sections applied in a continuous , or specialised process.

1.5.2 Touch Up Galvanising

Repair welds, cuts, abrasions or damaged areas of galvanised surfaces shall be repaired by the contractor by the application of two coats of “Cold Gal” or equivalent in accordance with the manufacturer’s data sheet.

E1.6 INSTALLATION

E1.6.1 Hot Work

No Hot Work (grinding, welding, thermal or oxygen cutting or heating (Oxy-acetylene or LPG) or any other related heat or spark-producing operation of any kind shall be undertaken on site without the specific approval by the Superintendent.

Refer to attached Sydney Catchment Authority procedural document “Undertaking Hot Work: SOP-BWD-ALL-006 which specifies the procedures and precautions to be taken prior, during and after Hot Work.

E1.7 TESTING

All work performed in accordance with this Specification including protective coating may be subject to inspection and approval by the Purchaser.

The Purchaser shall, at all times, have access to all places where materials are being produced or fabricated or where tests are being conducted and shall be provided full facilities for inspection and observation of tests.

Test certificates shall be provided.

E1.7.1 Quality Assurance

1.7.1.1 The Contractor shall carry out all inspections and testing in accordance with a “Inspection and Test Plan” which shall be approved by the Principle prior to fabrication commencing.

1.7.1.2 The Inspection and Test Plan shall include but not be limited to:

- Welding procedures
- Welder qualifications
- Weld inspection
- Fabrication techniques
- Fabrication
- Correction of distortion
- Dimension checks
- Non destructive testing
- Cleaning of completed ladders, platforms and structures prior to delivery
- Installation
- Commissioning

E1.8 ASSET INFORMATION REQUIREMENTS

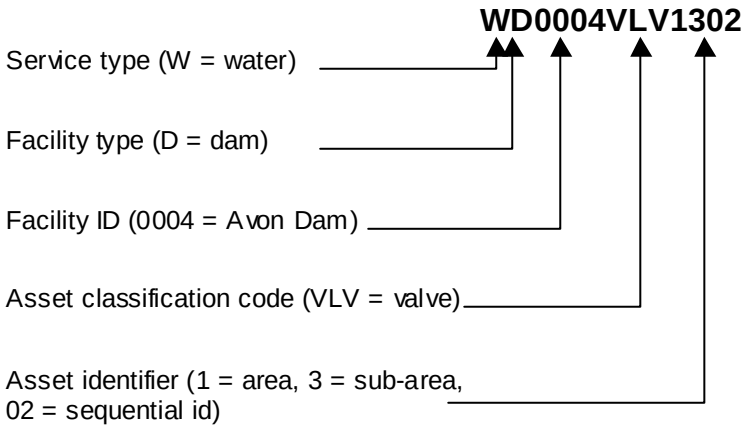
The Contractor shall provide all asset information detailed below that is required by the Principal’s asset and document management systems. This information will assist ongoing asset management, maintenance and upgrade works.

The Contractor is to provide a price for the supply of this information in the tender pricing schedules.

E1.8.1 Determination of Asset Changes

During the planning and design phases of this contract the Contractor shall produce schematic drawings, process & instrumentation diagrams or other concept design drawings as appropriate to identify the asset/ equipment components of the facility/ system. The Contractor is to identify each asset/equipment item on the drawings using the

Principal's asset/ equipment coding procedure. This procedure uses an intelligent numbering system as shown in the following example.



The Contractor shall submit the concept design drawings to the Principal for review of the concept designs and approval of the asset identification codes used. The approved codes will then be used by the Contractor to identify assets/ equipment in all subsequent drawings, reports and manuals.

The full procedure will be made available to the successful tenderer (see clause 0). The Contractor shall make allowances for the Asset Registration and Asset Identification Processes to be followed.

E1.8.2 Asset Information Database

To facilitate the collection of asset information the Principal will provide to the Contractor a software database (the Database). The Contractor shall enter the asset information detailed below to the Database to ensure proper formats and linking of the data.

The Principal will load the Database with existing data relevant to the approved concept designs as a guide for further data entry. The Principal will also provide one (1) initial instruction session for the Database usage at the Contractor's premises and telephone support for the duration of the contract at no cost to the Contractor.

A demonstration of the Database functionality will be provided by the Principal if this is required for the purposes of tendering.

E1.8.3 Information To Be Collected

The Contractor shall collect and enter all asset information into the Database. Particular attention is drawn to the following.

Asset Details

For each asset or equipment item, there is a range of details that are required for ongoing identification, tracking, maintenance, analysis and valuation. These details include, but are not limited to:

- a hierarchy of assets/equipment
- location codes & descriptions

- GPS co-ordinates (datum GDA94)
- equipment numbers & descriptions
- job plans for maintenance and safety
- preventive maintenance and inspection schedules
- technical details, e.g. flow rating
- expected life
- replacement costs.

Drawings

The Contractor shall notify the Principal of the nature and number of plans and drawings to be provided under this contract. The Principal will then supply drawing number sequences and a drawing registration sheet or database to the Contractor for entry of all drawing details necessary for registration in the Principal's Records Management System. The Contractor shall then proceed with development of drawings that must:

- be on the drawing border and title block supplied by the Principal
- be in electronic format (AutoCAD)
- use the Principal's asset/ equipment identification codes (see clause 0)
- be submitted to the Principal for acceptance prior to construction
- be fully compiled and not contain external references in final versions.

The Contractor shall provide a full set of final drawings on CD-ROM. Two (2) full sets of drawings in hardcopy format shall be provided by the Contractor. The Contractor shall provide a price for the supply of this information in the tender pricing schedules.

The Contractor shall make allowances for the drawing creation and registration process to be followed.

Maintenance Plans and Schedules

The Contractor shall provide all operational, maintenance job plans and inspection requirements necessary for the ongoing management of the asset/equipment. This information is to provide task details for job plans for:

- maintenance works and inspections
- operational tests and inspections.

The Contractor shall also provide recommended schedules indicating when the works are to be undertaken.

The Contractor shall enter these details into a spreadsheet for upload to the Database or to the Database directly. A report from the Database can be used to satisfy Sections 5 & 6 of the Operations & Maintenance Manual.

Spare Parts and Tools

The Contractor shall provide a list of recommended spare parts, and details of their current supplier(s), and details of alternate suppliers that can provide the same or equivalent spare part. The Contractor shall enter these details to the Database.

A report from the Database can be used to satisfy Section 9 of the Operations & Maintenance Manual.

Photos & Images

The Contractor is to provide a digital photographic record, including maps where relevant to aid identification of each item of equipment, particularly where the attachment of labels is not possible. The Contractor shall register the photos and maps in the Database and link the electronic image file to the record. The preferred image format for photographs is JPEG and editable PDF for graphics images. All linked electronic files shall be provided on CD-ROM.

Reports

Where a report/s are to be provided as a specific deliverable, the report will be subject to a review process by the Principal. Two (2) weeks are to be allowed for the Principal to review the report/s and return comments. The Contractor shall make allowances for the review process to be followed.

The Contractor shall provide two (2) hardcopies and one electronic copy of each report Electronic files are to be provided on CD-ROM in Adobe PDF format, however the information contained on the disc must be in a format that will allow for:

- simple navigation through all sections of the report (by way of bookmarks)
- full text searching for words and phrases.

Documents in general

The Contractor shall provide one (1) hardcopy and electronic copy of all final documents that may be required for future modifications or upgrades to the assets/equipment that have not otherwise been provided as part of Operations and Maintenance Manuals. Particular attention is drawn to:

- geological reports
- design calculations
- etc.

The Contractor shall register these documents in the Database and link the electronic file to the record. The electronic files shall be provided on CD-ROM in Adobe PDF format with appropriate bookmarks to facilitate searching of sections and text.

E1.8.4 Manuals

Operations and maintenance manuals shall be supplied for systems and equipment to guide operators and maintainers, and to ensure compliance with manufacturer's specifications and recommendations. To ensure manuals are complete and easy to read, the following standard format shall be provided by the Contractor.

The Manual must provide sufficient information for all modes of operation and maintenance of all the equipment supplied/ installed by the contractor.

The following must not be presented in the Manual:

- information which is irrelevant to the equipment supplied by the contractor
- operating and maintenance instructions that are of a general nature and do not specify the relevance of the information to the equipment actually supplied/ installed.

Simple presentation of one or more manufacturer's proprietary manuals in a binder will not normally be considered acceptable.

The format of the Manual shall follow the SCA's O & M Manual template (a copy of which shall be made available free of charge to the contractor).

Copies of Manuals

The Contractor shall provide two (2) hardcopies and one electronic copy of each manual. The electronic copy of the manual/s is to be provided on a CD-ROM in Microsoft Word format (based on the SCA's template provided).

Appendices, engineering drawings, schematics, diagrams, photographs, etc are not to be embedded in the main body of the electronic manual. These files are to be provided separately on the CD-ROM and a hot-link placed in the body of the manual.

All manuals will be subject to a review process by the Principal. The Contractor shall make allowances for the review process to be followed.

E1.8.5 Location & Equipment Labels

To facilitate field identification and asset auditing the Contractor shall label the asset locations, and equipment installed at those locations. The inscriptions for the labelling shall be in accordance with the Principal's asset/equipment coding system referred to in clause 0. The Contractor shall provide a list of asset location and equipment labels and durable label types to the Principal for approval prior to manufacture and installation. The Contractor is advised to review existing labelling types prior to selecting an approach.

Label types selected by the Contractor are to be appropriate for the asset/equipment group and consider:

- internal/ external applications
- external weathering due to sun, wind and rain
- easy visibility from normal access paths.

Equipment number labelling is to be permanently and securely fixed *ON* the asset/equipment in a conspicuous position so that identification is clearly visible and still possible in the event that the asset/equipment is moved to another location.

Location code labelling is to be permanently and securely fixed *ADJACENT TO* the asset/equipment.

The Contractor is to provide a price for asset/equipment labelling in the tender pricing schedules.

All other labelling requirements shall be in accordance with the relevant Australian Standard or Code of Practice.

E1.9 DOCUMENTATION PROVIDED BY THE PRINCIPAL

The following documentation will be provided to the successful tenderer within five (5) working days of the letter of acceptance. Should these documents be required for the purposes of tendering, Tenderers may inspect the documents during the tendering period at the SCA's Head Office Reception Desk on Level 2, 311 High Street (Penrith) by making arrangements with the Contract Officer (see the front page of this Invitation to Tender for contact details).

All information provided and details of the SCA assets shall be treated with strict confidentiality.

All documents supplied under this Contract are not to be copied and shall be returned to the SCA in conjunction with the final deliverables.

E1.9.1 Technical Documentation

Hot Work during the Bush Fire Period: SOP-BWD-ALL-006	Specifies the procedures and precautions to be taken prior, during and after Hot Work.

E1.9.2 Asset Information Documentation

Registration of New Assets and Updating of Asset Information – CD2004/00137	Details the procedure that shall be used for the registration of new assets, and the updating of asset information.
Asset Identification – Part 1 Codification – CD2004/00038	This procedure shall be used to determine the codification and labelling of all assets affected by any asset alterations.
Procedure for creating & modifying BWD drawings - D2005/03065	This procedure shall be used to govern the review and approval of plans and drawings supplied to the Principal as part of this contract.
Development of Manuals from External Providers – CD2004/00164	This procedure shall be used to develop all Technical Manuals (including O&M Manuals) that are supplied to the Principal as part of this contract.
Review of Reports and Manuals – CD2004/00165	This procedure shall be used to govern the review and approval process for all reports and manuals to be delivered under the contract.

E1.10 ACCEPTANCE CRITERIA

The following criteria are to be satisfied before the Principal will consider work under this contract to be complete:

- Upgrading of ladders, walkways and platforms in accordance with AS 1657;
- Disposal off all debris in line with environmental requirements;
- A project review is completed including a favourable a safer environment audit report and OHS&R report;
- TRIM records are updated with all new drawings (Work As Executed);
- Heritage Database is updated. (If required)
- Sign off on ladders and platforms where we can not comply
- Supply of a complete asset information database

E2. OHS & R

E2.1 General Requirements

(a) The occupational health, safety and rehabilitation requirements contained in this specification:

(i) may be in addition to, but are not in substitution for, any other requirements of any legislation or regulations or of any condition in the General Conditions of Contract or the Special Conditions of Contract; and

(ii) shall not be taken to limit the powers of the SCA or the liabilities and responsibilities of the Contractor under the Contract.

(b) The Contractor shall, at all times, exercise any other necessary and reasonable precautions appropriate to the nature of the Work and the conditions under which the Contract is to be performed for the safety of all persons on the Site, or in the vicinity.

E2.2 Additional Safety Requirements

(a) Notwithstanding the general requirements of clause E2.1(a), it shall be a requirement of the Contract that all supervisors, employees and visitors wear Safety Helmets, as defined in AS 1801, and safety footwear, as defined in AS 2210, whilst on the Site.

(b) Blasting explosives shall not be taken onto the Site without the written approval of the SCA.

(c) The Contractor shall comply with occupational health and safety legislation and regulations, AS 2865:1995 and SCA Group Procedures/Instructions relating to work in confined spaces.

(d) In addition, the Contractor shall comply with the SCA Group Procedures/Instructions as set out in clause F5. In circumstances where

these are in conflict, the more stringent requirements shall apply. The Contractor shall comply with the SCA's directions regarding these matters.

(e) It shall be the Contractor's responsibility to provide equipment, training, personnel and documentation necessary to satisfy the above requirements. The Contractor shall comply with these requirements and shall provide relevant documentation as preconditions for issue and continuation of a Permit to Work at the Site.

(f) The Contractor shall provide documentation to demonstrate compliance with the requirements for confined spaces. The information to be provided shall include the following:

(i) The names of all personnel required to enter confined spaces.

(ii) Evidence that personnel have completed SCA approved training courses dealing with entry to confined spaces. These courses shall be conducted in accordance with the requirements of AS 2865 and the relevant SCA Group Procedure/Instruction and include instruction in:

- first aid, including CPR;
- gas detection;
- breathing apparatus;
- fire protection; and
- practical emergency response.

(iii) A record of initial courses attended by all personnel and any further update courses attended.

(iv) Details of an assessment system to evaluate the aptitude and physical competence of personnel who will be required to enter confined spaces.

(g) The confined spaces on the Site for the purposes of the Contract is to be assessed by the Contractor by carrying out a risk assessment as per the relevant Australian Standards.

(h) The SCA shall confirm, prior to the Contractor commencing WUC, the Sites or parts of Sites, which are classified as confined spaces and their categories.

(i) In the event of gases being detected in a confined space, the Contractor shall ensure a safe working environment by providing adequate ventilation or by controlling the source of contaminants.

E2.3 Serious Accident and Dangerous Occurrence Reports

(a) The Contractor shall immediately notify WorkCover and the SCA of any serious accident or dangerous occurrence. The Contractor shall then formally notify WorkCover in accordance with the Occupational Health and

Safety Regulation 2001, using the prescribed form, and immediately supply an additional copy to the SCA.

(b) If requested, the Contractor shall supply a written report to the SCA in the form directed and shall co-operate in any subsequent incident investigation and/or debrief conducted by the SCA.

(c) The Contractor shall promptly submit reports of all accidents involving loss of time or incidents with serious accident potential such as equipment failures, slides, cave-ins, etc., giving such information as may be required by the SCA.

E2.4 Safety Co-ordination Committee

(a) In the absence of an Occupational Health, Safety and Rehabilitation (OHS&R) Workplace Committee, the SCA may direct that a Safety Co-ordination Committee be established.

(b) The Committee shall be chaired by the SCA or SCA's nominee and shall comprise representatives of the SCA, the Contractor, subcontractors and employees on the Site or such one or other of those as the SCA may direct. If more than one Contractor is working on a particular Site, all such Contractors may be represented.

(c) At the direction of the SCA, recommendations made by the Committee shall be put into effect by the Contractor. If such direction involves a variation to the Works, then Part C - General Conditions of Contract shall prescribe the method of valuing the variation.

E2.5 Hazard Identification and Risk Assessment Meeting.

Following award of the Contract, the Contractor shall attend and participate in, a 'Hazard Identification and Risk Assessment Meeting', which shall be chaired by the SCA. Attendance by other stakeholders shall be as determined by the SCA. The purpose of the meeting shall be to ensure that significant OHS&R hazards and risks associated with the Contract Work have been identified.

E2.6 Preparation, Review and Sign-Off of Project Safety Plan

(a) Following the Hazard Identification and Risk Assessment Meeting, the Contractor shall prepare a 'Project Safety Plan', which shall include appropriate controls to minimise the OHS&R hazards & risks identified in the accepted Hazard Risk Identification in clause F2 and at the Hazard Identification and Risk Assessment Meeting.

(b) The Project Safety Plan shall detail the OHS&R systems and procedures which will apply during the term of the Contract, including all relevant aspects of the Work and in regard to sub-contractors. The Project Safety Plan shall incorporate the Contract requirements listed under 'Project Safety Plan – Specifics' in the relevant sub-clause below.

(c) The Contractor shall submit the Project Safety Plan for review and formal sign-off by the SCA prior to the 'Kick-off Meeting' and grant of Site possession.

(d) All work activities identified in the Hazard Identification and Risk Assessment Meeting as carrying a high or moderate safety risk shall be addressed in Safe Work Method Statements. These shall be included in the Project Safety Plan. Where conditions of the job Site on the day must be known to determine the specific work method to be used, Safe Work Method Statements may be of a generic nature. In such cases a site-specific Safe Work Method Statement shall be developed at the Site prior to commencement of the relevant Work.

(e) Where the Project Safety Plan does not meet SCA's Contract requirements the SCA shall notify the Contractor who shall make appropriate modifications to the Project Safety Plan. The Contractor shall not commence on-site work until the SCA has acknowledged in writing to the Contractor, that the Project Safety Plan is acceptable to the SCA.

E2.7 Kick-off Meeting, Contractor Induction and Site Possession

(a) The Contractor shall attend and participate in a 'Kick-Off Meeting' and Contractor induction. These shall be conducted by the SCA and attended by other stakeholders nominated by the SCA. The purpose of the meeting shall be to ensure that all OHS&R controls required to be deployed prior to Site possession are in place and that Contract responsibilities are understood by the key personnel. Key OHS&R issues associated with the Site, the Work and the Project Safety Plan shall be reviewed.

(b) At the satisfactory conclusion of the Kick-Off Meeting and Contractor induction the SCA shall grant the Contractor possession of the Site or sufficient of the Site to enable the Contractor to commence work.

E2.8 Types of OHS&R Induction

(a) It is a legislative requirement that employees receive adequate induction and training to ensure tasks are undertaken in a manner that minimises the risk to their health and safety. SCA OHS&R induction must be completed for all contractors, subcontractors and their employees before they commence Work. There are three levels of OHS&R induction:

General Induction	Conducted initially by SCA for the Contractor and the Contractor's key personnel. Additionally conducted by the Contractor for other Contractor employees and subcontractors.
Site Specific Induction	Conducted initially by SCA for the Contractor and the Contractor's key personnel for all SCA Sites. For manned operating Sites: always conducted by SCA for Contractor employees and subcontractors. For non-operating Sites and unmanned Sites: conducted by the Contractor for the Contractor's employees and subcontractors.

Project Specific Inductions	Conducted by the Contractor.

E2.9 Guidelines for OHS&R Induction

(a) The following guidelines provide an outline of the content of induction courses to be delivered to persons working on SCA contracts, and the responsibilities for delivery of different induction components. They also outline the requirements for issue of SCA Contractor Induction Cards.

(b) The Contractor shall ensure that all Personnel, subcontractors and employees involved in the Work under the Contract are properly inducted before their commencement of Work on Site. Specific responsibilities for delivery of inductions are outlined below. These responsibilities shall be specified in the Contractor's Project Safety Plan.

(c) General Induction Process

(i) All Contractors, subcontractors and their employees shall be given a General Induction.

(ii) The SCA shall provide the initial General Induction to the Contractor and to the Contractor's nominated contract representatives at the Kick-Off Meeting. A General Induction Card shall be issued by the SCA to recipients of this induction (refer SCA Contractor Induction Card System below).

(iii) The Contractor shall be responsible for incorporating the General Induction content into the Contractor's subsequent induction processes for the Contractor's Personnel. Only holders of an official SCA General Induction Card will be permitted to provide subsequent general inductions.

(iv) A general induction package shall include:

- SCA's OHS&R policy;
- an overview of SCA OHS&R requirements for contractors (including responsibilities of SCA and responsibilities of the Contractor); and
- SCA contractor safety rules.

(v) The General Induction will provide the Contractor with practical safety induction to SCA. It is the first part of a three part induction process that the Contractor and each of the Contractor's employees and subcontractors must complete before commencing Work on SCA Sites. In addition to this General Induction, the Contractor shall ensure that each of the Contractor's employees and subcontractors (and their employees) shall receive a Site-Specific Induction and a Project-Specific Induction.

(d) SCA Site-Specific Induction

(i) The Contractor and its Personnel shall be given a Site-specific induction before they commence Work on Site.

(ii) For the Contractor and the Contractor's nominated Contract representatives the Site-Specific Induction shall be conducted by the SCA Site owner at the Kick-Off Meeting. The Contractor shall be responsible for incorporating this induction content into the Contractor's subsequent induction processes for contractor employees and subcontractors, except at manned SCA operating Sites.

(iii) At manned SCA operating Sites all inductions shall be conducted by the SCA Site owner. The Contractor shall be responsible for ensuring all the Contractor's employees and subcontractors have received this induction before they commence Work.

(iv) Where management of the Site is not under the control of SCA, the Site-Specific Induction will be delivered by the person who has management responsibility for the Site. This shall be the Contractor unless otherwise advised in writing by the SCA.

(v) Site-Specific Inductions shall as a minimum address the following:

- Site-specific hazards.
- Controls to be adhered to on Site.
- Site safety rules.
- Work permits.
- Emergency evacuation and incident procedures.
- Emergency contacts.
- Hazard and incident reporting procedures.
- Regulatory requirements and Codes of Practice relevant to Site hazards.
- Safe access and amenities.
- Other site-specific OHS&R issues.

(e) Project-Specific SCA Induction.

(i) The Contractor shall ensure that all employees and sub-contractors have received a Project Specific Induction prepared and provided by the Contractor. The Project Specific Induction shall be tailored by the Contractor to the specific project and work activity.

(ii) The Project-Specific Induction shall include:

- Safe Work Method Statements;
- the Project Safety Plan key contents; and
- Codes of Practice.

E2.10 Induction Records and Monitoring

(a) The Contractor shall keep records of all inductions given to the Contractor and its Personnel. Specific inductions received by each individual shall be

recorded on each individual's project specific induction card (refer contractor induction card system below).

(b) Contractor Induction Card System

(i) There shall be two types of Contractor Induction Card:

(A) **General Induction Card -** This card shall have a validity period of two years. It shall indicate that the recipient has received a General Induction. A General Induction Card shall be issued by the SCA on completion of a General Induction.

(B) **Project Specific Induction Card -** This type of card shall be issued by the Contractor. It shall indicate that the Contractor's employee, sub-contractor or sub-contractor's employee named on the card has been inducted as specified on the card. It shall indicate the level of induction received including General Induction, Site Specific Induction and Project Specific Induction. A Project Induction Card shall be valid for the duration of the project only. The Contractor shall ensure that all persons working on Site shall carry a Project Specific Induction Card. A number of blank Project Specific Induction Cards shall be provided to the Contractor by the SCA at the Kick-Off Meeting.

E2.11 Project Safety Plan - Specifics

(a) The Contractor shall prepare a Project Safety Plan in accordance with the requirements of the Contract.

(b) The Contractor shall implement the Project Safety Plan and shall carry out frequent workplace inspections to ensure that OHS&R controls are in place, systems are implemented, OHS&R risks are identified and promptly addressed. The Contractor shall ensure that subcontractors follow the requirements of the Project Safety Plan.

(c) The SCA may audit the Contractor's Project Safety Plan at any time to evaluate implementation, effectiveness and level of compliance with the Project Safety Plan. The SCA may report any non-conformance issues. The SCA shall appraise the Contractor's performance for the SCA's records.

(d) The Project Safety Plan shall cover the eleven key elements contained in the current NSW Government OHS&R Management System Guidelines and shall incorporate the requirements of that publication's "Corporate OHS&R Management System".

(e) The Project Safety Plan shall be reviewed at regular intervals throughout duration of the Contract to ensure that it is maintained in an up to date condition. The Project Safety Plan shall also form the basis by which the Contractor's management systems will be audited by SCA.

(f) The Project Safety Plan and Safe Work Method Statements should utilise but not depend solely on the Hazard Risk Identification included in the Contract documents. The Project Safety Plan and Safe Work Method Statements

should take into account the interface/s with ongoing SCA operations and with any other employees and contractors who may be undertaking other work simultaneously on the Site/s. Revisions to the documentation shall also be submitted.

(g) Outlined below are the general requirements for and elements of the Project Safety Plan to be provided by the Contractor.

(i) Management Responsibility

The Contractor's Project Safety Plan shall state the name of the Contractor's management representative responsible for the following:

- Overall compliance on-Site to OHS&R requirements & legislation.
- Reviewing subcontractors' Project Safety Plans.
- Monitoring subcontractors' Project Safety Plans.
- Monitoring purchasing and materials delivery.
- Receiving, safely storing and using materials and hazardous substances.
- Communicating OHS&R information & Site Safety Rules.
- Providing OHS&R training and site induction.
- Maintaining accident and emergency procedures and first aid equipment.
- Conducting Site inspections.
- Identifying, assessing and controlling hazards.
- Workplace injury management and rehabilitation.
- Managing communication between OHS&R Workplace Committees.
- Ensuring appropriate interaction with SCA procedures and operating systems.

(ii) Subcontracting and Purchasing

Safe Work Method Statements or procedures for the project should be in place for the following.

- Selection of subcontractors.
- Monitoring of work undertaken by subcontractors.
- Purchasing and delivery of materials.
- Delivery of hazardous substances.
- Handling of materials and hazardous substances.
- Review of Subcontractors' Project Safety Plans.
- Subcontractors' compliance with their Project Safety Plans.

(iii) Process Control (includes Safe Work Method Statements)

(A) Hazard identification and risk analysis will be completed and documented in the Project Safety Plan. All work activities identified in the Hazard Risk Identification and Hazard Identification and Risk Assessment Meeting as carrying a high

or moderate safety risk shall be addressed in a Safe Work Method Statement.

(B) A Safe Work Method Statement shall include the following elements:

- A description of the Work.
- Identification of potential hazards associated with the Work.
- The actual step by step sequence involved in doing the Work (may reference SOP).
- The foreseeable hazards for each step listed.
- The safety controls that will be in place to minimise these hazards.
- All precautions to be taken to protect health and safety.
- All health and safety instructions to be given to employees involved with the Work.
- The names and qualifications of those who will supervise the Work.
- The names and qualifications of those who will inspect and approve work areas, work methods, protective measures, plant equipment and power tools.
- Description of what training is to be given to those doing the Work.
- The names and qualifications of those responsible for training workers in the requirements of the Safe Work Method Statements;
- Identification of health and safety related standards or codes applicable to the Work, and where these are kept.
- Identification of the plant and equipment that will most likely be used on the project.
- Details of inspection and maintenance checks that will or have been carried out on the equipment.

(C) Some Contract Works may involve activities for which a proven work method or training requirement is required by standards or regulations. These proven work methods shall be included in the Project Safety Plan. These activities may include:

- emergency procedures;
- electrical work;
- tool and equipment inspections;
- safety systems for isolated areas;
- scaffolding;
- working at heights;
- ‘hot work’ procedures;
- fire protection;
- clothing and footwear;
- power tools;
- confined spaces;
- excavations;

- dust control;
- dangerous goods, chemicals;
- disposal; and
- traffic control.

(D) A pro-forma outline for a Safe Work Method Statement is included in clause F7.

(iv) Training

Procedures shall be clearly defined for the following activities:

- The training of management, supervisors and workers.
- OHS&R induction training.
- Task training and refresher training.
- Task training necessary to conform to OHS&R standards.
- Keeping appropriate records of OHS&R training.

(v) Incident Management

The Project Safety Plan shall document who will:

- be available (both during and outside normal working hours) to prevent, prepare for, respond to and recover from incidents;
- ensure that the procedures for contacting the available person(s) are communicated and clearly displayed on Site; and
- ensure that everyone is made aware of accident and emergency procedures and first aid facilities are clearly identified.

(vi) Control of OHS&R Issues

(A) General

Procedures shall be clearly defined for the following activities:

- Incidents of non-compliance.
- Non-compliance of materials and substances.
- Elimination of unsafe work practices and areas.
- Disposal of non-conforming materials and substances.
- General site safety procedures.
- Injury management.
- Rehabilitation.

(B) Multiple Sites

The Project Safety Plan shall document how OHS&R issues will be managed where the project is conducted at multiple sites including:

- OHS&R roles and responsibilities;
- consideration of Site specific OHS&R issues and hazards;

- OHS&R inspection and review requirements; and
- induction requirements.

(C) Site Safety Rules

The Project Safety Plan shall always include Site Safety Rules. The Site Safety Rules shall apply to the particular Site and to the procedures used on the Site. Site Safety Rules should also be integrated with SCA operating procedures and Permit to Work Certificates.

(D) PPE

The Project Safety Plan shall identify how the Contractor will ensure that appropriate personal protective equipment (PPE) such as safety helmets and safety footwear is worn by all employees, agents and visitors.

(E) Access to the Site

The Project Safety Plan shall identify how the Contractor will make sure that there is only authorised entry to, movement on or exit of persons, vehicles and equipment.

(vii) Contractor OHS&R Performance Report

The Contractor shall supply to SCA on a monthly basis, or at such frequency as shall be accepted in the Contractor's Project Safety Plan, a completed copy of a Contractor OHS&R Performance Report. This should confirm that reasonable health and safety precautions have been taken. The report shall be as per the Contractor OHS&R Performance Report format in clause F8.

(viii) Corrective Action

Procedures shall be clearly defined for the following activities:

- Corrective action reporting.
- Responding to corrective actions.
- Maintenance of records.
- Incident investigation and reporting.

(ix) Handling, Storage, Packaging and Delivery

(A) Procedures should include, but not be limited to:

- methods of unloading/handling heavy equipment;
- damaged labels, ie. danger tags, chemical labels, etc;
- storage facilities;
- packaging and delivery, ie. products that do not provide adequate protection, etc;
- licensing for crane drivers;
- required approvals for equipment.

(B) Work procedures may need to be in place covering any of the following:

- materials handling;
- manual handling;
- the identification, transport, storage and use of hazardous substances;
- compliance with relevant regulations, standards and codes;

(x) Inspection and Testing

Inspection and testing procedures shall relate to the relevant Work being undertaken for the Contract. Inspection and testing procedures may include, but are not limited to, the following:

- Site monitoring.
- Safe Work methods.
- Adherence to safe working rules.
- Incoming materials, products and equipment.
- Access and egress.
- Protective measures.
- Electrical safety.
- Plant and equipment.

(xi) OHS&R Records

(A) Records shall be properly maintained, covering management of the following issues and business activities:

- Inspection and test reports.
- Internal audit reports.
- Accident and incident reports.
- OHS&R meeting minutes.
- Incident analysis.
- Safety equipment records.
- Material safety data sheets.
- Relevant (Site) training and Site inductions. (Names and signatures of persons who have been inducted to the Site, shall be submitted upon the request of SCA).
- Design reviews.
- Internal OHS&R review reports.

(B) The Contractor, upon the request of SCA, shall make records available.

(xii) Design

Where the Contract Work includes a design component, then responsibilities and procedures shall be defined for:

- persons undertaking design review;
- ensuring design complies with OHS&R legislation;
- reviewing designs to identify, assess and control OHS&R risks; and
- approving design changes.

(xiii) Internal OHS&R Review

Where appropriate, procedures shall be defined for:

- conducting regular systematic reviews of OHS&R procedures;
- identifying and communicating to appropriate persons any deficiencies found; and
- ensuring that corrective actions are implemented and effective.

E2.12 Audit

The Contractor shall make available, on request, all relevant OHS&R records including those of subcontractors and suppliers, for the purpose of audit and surveillance. The Contractor shall provide all reasonable assistance during the audits including attendance by the Contractor.

E2.13 Failure To Comply

If at any time the Contractor has not carried out any part of its obligations under clause E2, then SCA shall not be required to make payments to the Contractor, notwithstanding any other clause of the Contract.

E3. ENVIRONMENTAL REQUIREMENTS

E3.1 Noise Specifications

Equipment supplied and installed may need to provide a quiet working environment for SCA operations personnel and others such as nearby residents. The Contractor shall comply with the Sydney Catchment Authority Corporate Instruction No. 831 - “Noise Control”.

E3.2 Purchasing

(a) The Contractor shall purchase and use recycled content products where appropriate.

(b) The Contractor shall submit a progress report to the SCA every two months during the Contract Term and a summary report before Completion regarding the purchase of certain materials with details of the total and recycled content tonnages (the “Purchasing Reports”).

(c) The Purchasing Reports are to be in the format set out in clause F4.1 below.

E3.3 Waste Management

(a) The Contractor shall recycle and divert from landfill surplus soil, rock and other excavated or demolition materials, wherever this is practical.

(b) The Contractor shall separately collect and stream quantities of waste concrete, bricks, blocks, timber, metals, plasterboard, paper and packaging, glass and plastics and offer them for recycling where practical.

(c) The Contractor shall monitor waste tonnage and record their method and location of disposal and whether or not that location was a place that could lawfully be used as a waste facility for the waste.

(d) The Contractor shall submit to the SCA a progress report every two months and a summary report before Completion regarding the implementation of waste management measures, including the record of waste tonnage and their method and location of disposal (the "Waste Management Report"). All receipts issued by the waste facility need to be supplied to the SCA.

(e) The Waste Management Reports are to be in the format set out in clause F4.2 below.

(f) The SCA promotes the use of the recycled paper to protect the environment. The Contractor shall print all documents and reports required by the Authority **on a minimum 50% recycled content paper**. Where it is not practical for the Contractor to use recycled paper for printing of reports and documents, the Contractor shall obtain written approval from the SCA before printing reports or documents on non-recycled paper.

E3.4 Energy Management

(a) All equipment used in the construction of and installed under this Contract should minimise energy use. Equipment should meet beset practice in energy management by being the most efficient of its class, and by using the most appropriate energy source for the application (whether that be electricity, natural gas or LPG, a renewable energy source, or any other fuel). This is to ensure low ongoing costs for the operation of the installation.

(b) Energy star for office equipment and energy ratings for (usually household) appliances can be used where appropriate.

E3.5 Site Requirements

(a) Unless directed otherwise by the SCA, the Contractor must ensure that:

(i) any door that is unlocked is locked when left;

(ii) all windows, external doors and gates are securely fastened and locked after all personnel employed on the Work leave the premises;

(iii) all keys given to the Contractor by the SCA are kept securely, are not copied and are returned to the SCA when asked.

(iv) If a key given to the Contractor by the SCA is lost, the Contractor shall immediately inform the SCA.

(b) The SCA may supply electricity and water for the WUC however, the Contractor must ensure that the use of these services is not more than is reasonably necessary to carry out the WUC and that all electric lights, power points and water taps are turned off immediately after use. The Contractor must ensure that its employees do not use telephones or other equipment on SCA's premises without the consent of the SCA.

E3.6 Complying with Environmental Laws

(a) The Contractor must become aware of liabilities and responsibilities applying to the Contractor and/or SCA under environmental laws. The Contractor must also become aware of any requirements of SCA's Operating Licence Environment Plan and environmental policies relevant to this Contract. In particular the Contractor must become aware of and comply with the requirements of the NSW Protection of the Environment Operations Act, 1997.

(b) The Contractor must ensure that the operation of equipment or other activities required under this Contract are carried out in a manner, which satisfies these laws, regulations and SCA's environmental requirements. If the Contractor fails to do so, the Contractor will be responsible for any resulting costs and/or penalties.

E3.7 Environmental Impact Assessment

(a) The Contractor must ensure that the Environment Ready Reckoner (see Attachment F10) undertaken for the activities required under this Contract adequately represents the work that the Contractor will actually perform under this Contract. The Contractor must notify SCA if the Contractor proposes work practices, use of equipment or other activities, which are different to those described in the Environment Ready Recknor. The Contractor must provide SCA with all information necessary to determine whether additional environmental impact assessment is required as a result of the differences identified.

E3.8 Environment Management Plan

(a) At least 7 calendar days before commencement of the Work, the Contractor shall provide to SCA a written explanation ("Environmental Management Plan") of how the Contractor will carry out the Work in a manner which will protect the environment. The Contractor's Environmental Management Plan shall demonstrate to the reasonable satisfaction of SCA that the Contractor has carried out an adequate risk assessment, developed and implemented appropriate controls to protect the environment. The "reasonable satisfaction of SCA's Representative" shall <u>not</u> be construed to mean that the Contractor's Environmental Management Plan is automatically adequate to protect the environment. The responsibility for such adequacy always remains with the Contractor.

(b) The Contractor shall implement the Environmental Management Plan and shall take appropriate measures to ensure the Plan is kept relevant to the carrying out of the work under the Contract.

E3.9 Changing the Environment Management Plan

(a) The Contractor may make changes to the Environment Management Plan at any time, however the Contractor must ensure that any changes are agreed in writing by SCA before they are implemented.

(b) The Contractor is required to immediately change an existing Environment Management Plan if:

(i) there are changes in environmental laws, regulations or SCA's environmental policies/requirements during the course of the Contract;

(ii) the Environment Management Plan does not adequately reflect the environmental management requirements of this Contract;

(iii) the procedures/plan do/does not reflect the Contractor's actual working practices;

(iv) the Contractor alters or reschedules the work undertaken within the Contract.

E3.10 Non Conforming Work Practices

(a) The Contractor is required to immediately stop any work practices that do not meet the requirements of the Environment Management Plan, and to rectify any non-conforming Works.

(b) Work practices which could result in a violation of SCA's environmental responsibilities or requirements, are to be considered as non-conformances.

(c) The Contractor must record all non-conformances detected and notify SCA as soon as possible. A written report must be submitted to SCA within one working day of detecting the non-conformance.

E3.11 Contractor's Environmental Representative

The Contractor shall nominate a person from the Contractor's own management to be responsible for ensuring that environmental management for the Contract meets the requirements of this specification.

E3.12 Records

The Contractor is to ensure that all records related to the implementation of the Environment Management Procedures/Policies are stored and maintained in such a way that they are not subject to deterioration, damage or loss and can be easily retrieved for supply to SCA for up to 7 years from the date of Completion of the Contract.

E3.13 Induction and Training

The Contractor shall ensure that all employees undertaking on-Site Works for this Contract are aware of the environment management procedures required by this Contract. The Contractor shall assign specific tasks related to environmental management required by the Contract only to personnel who are qualified to perform them.

E3.14 Subcontracting

The Contractor must specify the environmental management requirements of this Contract in all sub-contract agreements. Sub-contractors shall be required to comply with the environment management procedures/plan in accordance with the requirements of this Contract.

E4. QUALITY ASSURANCE

E4.1 General

The Contractor shall comply with all requirements of this Technical Specification and either of the following Quality Management Systems appropriate to the Contract: AS/NZS ISO 9001, 9002 and 9003 pertaining to Quality Assurance.

E4.2 Quality System

(a) The Contractor shall plan, establish, document and maintain a quality system which conforms with the requirements of the Contract and shall provide SCA with access to the Contractor's and subcontractors' quality systems for monitoring and quality auditing. Quality systems proposed by the Contractor and subcontractors shall be used as an aid to achieve compliance with the requirements of the Contract and to document such compliance.

(b) If the Contractor discovers material or work, which is not in accordance with the Contract, the Contractor shall promptly initiate the non-conformance procedure required by the quality system. If the Contractor proposes a disposition of any nonconforming materials or work which is at variance with the requirements of the Contract, the proposal shall be submitted in writing to SCA whose decision on the proposal shall be obtained in writing before the nonconforming material or work is covered up or incorporated into the Works, or is the subject of any other disposition.

E4.3 Quality Manual

The Contractor shall conform with the policies stated in the Company Quality Manual submitted with the Contractor's tender.

E4.4 Quality Plans

Within three weeks of the Commencement Date the Contractor shall submit to SCA for verification a Quality Plan specific to the Contract. The Quality Plan shall conform to the requirements of AS/NZS ISO 9004.1 - Clause 5.3.3.

E4.5 Inspection and Test Plans

(a) Inspection and testing shall be carried out by the Contractor in accordance with the Inspection and Test Plans (ITP) submitted to and reviewed by SCA, if specified as part of the Work.

(b) Within two weeks from the Commencement Date the Contractor shall forward to SCA ITPs appropriate to the supply of Works for review.

(c) The Contractor shall provide set procedures to all subcontractors employed to perform Works under the Contract. The procedures shall include verification by the Contractor of all subcontract work performed. The verification shall include appropriate completed checklists by the subcontractor.

(d) The Contractor shall prepare project specific ITPs in accordance with AS/NZS 3905.2: 1997 clauses 4.9 and 4.10. Where applicable the ITPs shall include observations, measurements and tests and incorporate all necessary Hold, Witness and Verification points as required by the Technical Specification.

(e) Prior to presenting ITPs to SCA for witness and/or hold points, the Contractor shall verify the Works covered by the ITP against the acceptance criteria. Verification data are to be included with ITPs presented for the Work in progress.

(f) Where work presented on the ITP does not satisfy the acceptance criteria, the departure from the acceptance criteria shall be registered on the ITP and a non-conformance report raised by the Contractor for that work.

(g) The Inspection and Test Plans shall comply with the following Hold and Witness Points:

Hold/Witness Point	Requirement
Hold	Submit Environmental Management Plan.
Witness	Submit evidence of environmental induction.
Hold	Submit Safety Management Plan and Safe Work Method Statements.
Witness	Submit OHS&R records on request.
Witness	Submit Quality Plan.
Witness	Submit ITPs.
Witness	Submit Quality Records.
Witness	Submit Maintenance Program.
Witness	Submit Work-as executed drawings.
Witness	Submit names and procedures for 24 hour contact with persons nominated for Incident Management.

(h) SCA shall be entitled to order additional testing over and above those specified in the ITPs.

E4.6 Quality Tests

(a) The Contractor shall be responsible for the quality of all products, processes and services under the Contract, and shall provide all test facilities and perform demonstrative conformance of all products, processes and services to the technical requirements of the Contract.

(b) Unless otherwise agreed by the Contractor and SCA, all laboratory tests undertaken by the Contractor, shall be performed by laboratories currently registered with the National Association of Testing Authorities (NATA) or equivalent authority recognised by JAS-ANZ.

E4.7 Quality Audits

(a) SCA may nominate selected times at which Quality Compliance Audits may be conducted within the Contract Term.

(b) Upon request, SCA shall be given access in conjunction with or through the Contractor, to carry out Quality Audits, Quality Monitoring, Assessment or Reviews, to ascertain the effectiveness of the Quality System put in place by the Contractor and its subcontractors.

(c) SCA shall be entitled to carry out the second or third party audits of the Contractor's and subcontractors' Quality System by:

(i) Review of the Contractor's conformance to the Quality Plan;

(ii) Review and verification of the Contractor's Quality Procedures and Work Instructions and documentary evidence of compliance with the technical requirements of the Contract.

E4.8 Traceability

The Contractor shall establish and maintain documented procedures for unique identification of individual products or batches as appropriate. This traceability shall include but not be limited to:

(a) the source(s) of material and equipment used;

(b) instructions, equipment (processing, inspection, measuring and testing equipment) and personnel utilised for performing activities essential in meeting the specified customer needs, throughout the provision of services as required by the Contract.

E4.9 Quality Records

(a) Quality records shall be stored and maintained such that they are readily retrievable in facilities that provide a suitable environment to minimise deterioration or damage, and to prevent loss. Quality records shall be available for evaluation by SCA during the period of the Contract and shall include all pertinent subcontractor or secondary consultant records.

(b) Quality records shall be retained by the Contractor for a minimum period of seven years from the Date of Completion.

(c) The Contractor shall maintain records in two categories:

(i) Test Records - which shall comprise all working sheets associated with testing in accordance with the Inspection and Test Plan(s);

(ii) Project Quality Records - which shall include, but not be limited to, contract specifications, site meeting minutes, technical reviews, minutes of meetings between SCA and Contractor, and where necessary with Subcontractors or secondary Consultants, and other documentation relevant to the provision of Works required by the Contract.

(d) The Contractor shall submit to SCA quality reports as evidence that the Work has complied with the specified Quality requirements. These reports shall include summaries of inspection and test results, and shall be submitted within 24 hours if unsatisfactory, and seven days if satisfactory.

(e) Within three months from the Date of Completion the Contractor shall make available a register of all quality records held. The Contractor shall supply copies of all quality records or parts thereof as required by SCA.

(f) Should the Contractor fail to comply with the provisions of this sub-clause, notwithstanding the provisions of clause C7 of the General Condition of Contract, SCA may withhold the issue of the payment next due and any subsequent payments, until such time as the Contractor complies with the provisions of this sub-clause.

E4.10 Inspection

(a) SCA shall be given access in conjunction with or through the Contractor to all laboratories and other facilities used for quality control tests to verify that specified requirements are being met.

(b) The Contractor shall make suitable arrangements to notify SCA when a Hold, Witness or Verification Point will be reached so that SCA can review and/or witness if required any work process or test being undertaken by the Contractor.

(c) SCA shall have the right to carry out at Hold, Witness or Verification Points inspections or tests to verify that the Contractor is implementing and maintaining the Quality System in accordance with the Contract documents.

E5. ADDITIONAL WORKS REQUIREMENTS

E5.1 Construction Program

(a) The Construction Program shall include:

(i) the duration and sequence of, and the inter-relationships between, the planned events and activities which comprise WUC;

(ii) a project calendar clearly denoting which days are work days (allowing for restrictions on working time and contingencies for which the Contractor is responsible under the terms of the Contract. This would include but not be limited to weekends, holidays, Christmas close-down, union designated and other days off and manufacture and trade delays).

(iii) the sequence of activities for the Works;

(iv) any constraints outside the Contractor's control which affect the timing of activities and events;

(v) mobilisation to Site;

(vi) appointment of subcontractors and their construction program;

(vii) the preparation of and approval process for all calculations, designs and documents required;

(viii) the time allowed for testing and commissioning of major items of plant or equipment;

(ix) the estimated plant and manpower resources and projected productivity rates for each activity;

(x) the estimated Contract value of WUC to be done each calendar month throughout the currency of the Contract;

(xi) the differences or divergences from the tender program;

(xii) any further requirements stipulated by the Contract or required by the SCA.

E5.2 Not Used

E5.3 Australian Standards Mark

(a) When any manufactured product, required by the Specification to comply with an Australian Standard is offered as complying with that Standard by virtue of being marked "Approved to Australian Standards" under a licensing scheme of the Standards Association of Australia, then SCA, before accepting the product, may require some or all of the tests set out in the Australian Standards to be done and passed and may require inspection of manufacture by a representative of the SCA.

(b) Acceptance by SCA of any item shall not be deemed to be a waiver of any provision of the Specification that the product meets requirements other than those of the Australian Standards or any other requirement of the Specification.

(c) Before acceptance, SCA may require from the Contractor a written declaration satisfactory to SCA that the product was manufactured during the currency of the relevant licence of the Standards Association of Australia.

E5.4 Working Hours

Unless the Contract otherwise provides, the span of working hours shall be nine hours per day worked between 7:00 a.m. and 5:00 p.m. and the working days shall be Monday to Friday inclusive, but exclusive of public holidays and exclusive of one day every four weeks, usually a Monday, which is a rostered day off.

E5.5 Customer Complaints

(a) SCA has a Customer Complaint Resolution Policy to address complaints and enquiries from customers. The procedures for this policy are applicable to all personnel, including external Contractors engaged by SCA.

(b) SCA will make available to the Contractor a number of Customer Assistance Cards upon request. The Contractor shall provide a Customer Assistance Card to any SCA customer, member of the public or affected party who complains to the Contractor or who enquires about any SCA activity or associated work under this Contract.

(c) The Contractor shall advise SCA of the occurrence and nature of any such complaint or enquiry within one week of the occurrence.

E6. NOT USED

E7. INCIDENT MANAGEMENT

(a) The Contractor shall manage all incidents in a manner, which conforms with the requirements of relevant legislation and minimises the adverse effects of the incidents.

(b) The Contractor shall, before commencing any Work under the Contract, provide to SCA, and obtain its approval of, an Incident Management Plan, which shall deal with issues including:

(i) a clear statement of accountabilities;

(ii) identification and analysis of the risks;

(iii) prevention of incidents;

(iv) preparedness for incidents;

(v) declaration of incidents;

(vi) early notification of incidents;

(vii) response to and recovery from incidents;

(viii) current contact directories including the names and procedures for 24 hour contact with persons nominated by the Contractor to prevent, prepare for, respond to and recover from incidents. The Contractor shall advise SCA immediately of any changes in the names of persons so nominated.

(c) The Contractor's Site Incident Manager shall notify each incident to SCA immediately it occurs and manage the incident, unless SCA's Incident Manager takes over the role of Site Incident Manager from the Contractor for that incident. In that event the Contractor shall continue to provide necessary support and assistance to SCA's Incident Manager in managing the Incident.

(d) "Incidents" shall include, but are not limited to, those events causing or with the potential to cause a threat to or impact upon:

(i) the life, health and safety of any persons;

(ii) the environment;

(iii) public or private property;

(iv) interruption to availability and/or quality of services to SCA customers;

(v) SCA property or systems;

(vi) SCA businesses operations including infrastructure, staffing, major suppliers;

(vii) community infrastructure including electricity, gas, telephone, rail, road, footpaths;

(viii) prosecution or fines by a regulatory authority;

(ix) requirements for urgent action under legislation;

(x) the reputation and/or public image of SCA; and

(xi) customer expectations (service quality, quantity, duration, damage, social inconvenience).

(e) “Incidents” shall also include an anticipated imminent incident arising from a flood, fire and/or weather warning, terrorist threat, industrial action, potential electrical failure, etc.

(f) The Contractor shall manage all incidents in a manner, which conforms with the requirements of relevant legislation, and SCA’s Incident Management Procedures to minimise the adverse effects of each incidents.