

PART E - TECHNICAL SPECIFICATION

E1. SCOPE OF WORK

E1.1.1 Background

The 7 tonne overhead crane at Cordeaux Dam Upper Scour Valve House is used to handle floor plates, stop-boards, screens and other equipment located in the valve house and dates back to when the dam was built (completed 1926). The hoist part of the overhead crane still has an electric motor connected to open gearing.

The North-South long travel of the overhead crane is still a hand operated chain wheel, which is difficult to operate.

E1.1.2 Purpose

1. Carry out major crane inspection to assess overhead crane at Cordeaux Dam Upper Scour Valve House for continued use.
2. Replace the existing motor and open gearing on the overhead crane in the Cordeaux Dam Upper Scour Valve House with a new 2 speed AC Squirrel-cage motor and helical gear unit.
3. Motorize the existing hand operated north-south long travel of the overhead crane at Cordeaux Dam Upper Scour Valve Houses with a single speed motor/gearbox.

E1.1.3 Location

Cordeaux Dam is located on the Cordeaux River, off Picton Road, approximately 70 km south of Sydney.

The overhead crane is located in the Upper Scour Valve House located on the crest of Cordeaux Dams.

E1.1.4 Work to be carried out by Contractor

The scope of work to be executed under the Contract is broadly described in this clause. The full scope of work can only be determined by reference to all documentation, including engineering drawings, forming this Contract.

1. Carry out major crane inspection to assess the overhead crane Cordeaux Dam Upper Scour Valve Houses for continued use in accordance with AS 2250 Section 7.3.5 and provide written report with recommendations (if required) and costs for any repairs required to make crane compliant.
2. Replace the existing motor and open gearing on the overhead crane at Cordeaux Dam Upper Scour Valve House with a new two speed AC Squirrel-cage motor and helical gear unit in accordance with AS 2550 and AS 1418 directly mounted to drum hoist (mounting TBA advised/recommended by the contractor). Low speed same as current speed. High speed as recommended/advised by contractor.
3. Motorize the existing hand operated north-south long travel of the overhead crane in the Cordeaux Dam Upper Scour Valve Houses with a single speed motor/gearbox in accordance with AS 2550 and AS 1418. Traversing speed as recommended/advised by the contractor. *(Develop detailed design.)*
4. Modify or replace existing hoist control "pendants" to include north-south travel in accordance with AS 2550 and AS 1418.

5. Carry out all electrical work to carry out above in accordance with AS 2550, AS 1418 and AS 3000.
6. Supply and installation of any new guards, as required, as per the requirements of AS 2550, AS 1418 and WorkCover.
7. Modify existing guards, as required, as per the requirements of AS 2550, AS 1418 and WorkCover.
8. Testing of crane to requirements of AS 2550 and AS 1418 following modification work and the issuing of certificates/documents which will allow the SCA to operate modified hoist.
9. Supply of all equipment and materials to carry out the above scope of work.
10. Supply and installation of all new necessary labels and signs in accordance with this specification and as per the requirements of AS 2550, AS 1418 and WorkCover.
11. The contractor is to carry out all design work in accordance with AS 2550, AS 1418 and AS 3000.
12. Establishment of staff and equipment on site.
13. Demobilisation of staff and equipment from site.
14. Removal of all waste from site and supply of waste disposal dockets.
15. Modification of existing drawings (if issued by the SCA) or supply of new Work as Executed Drawings showing new equipment installation in relation to existing equipment.
16. Supply of Operations and Maintenance manuals for all new equipment installed. and modify the existing manual sheets supplied by the SCA
17. Revision of operations and maintenance job plans issued by SCA.
18. Apply protective coatings to all new equipment, new guards, new structural members and modified existing equipment. (Refer Appendices for details.)
19. All works will be undertaken in accordance Heritage Office, Department of Planning to ensure the heritage values of Nepean Dam are not compromised. (Heritage Office requirements will be provided by SCA)
20. Provide training to operate modified crane functions to SCA staff.
21. Optional: The contractor is to provide a separate cost and technical details to replace existing pendant control with a remote crane pendant control.

E1.1.5 Work to be carried out by Others

Not Applicable.

E1.1.6 Access

Keys to the Upper Scour Valve Houses will be provided by the SCA for the duration of the project.

E1.1.7 Shutdowns

Contractor is to provide a program to carry out the specified work and advise commencement and completion dates.

E1.2 Standards

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

AS 2550	Safe Use of Cranes, hoists and winches
AS 1418	Cranes, hoists and winches
AS 1554	Structural steel welding
AS1100.101	Technical drawing – General Principles and amendments
AS1101.201	Graphical symbols for mechanical engineering drawing
AS3000:2000	Electrical Installations

E1.3 SPECIFICATION OF EQUIPMENT

As advised by the Contractor. All equipment shall be in accordance with requirements of AS 1418, AS 2550 and AS 3000.

Note: Nominal Safe Working Load (S.W.L.) for overhead crane is 7 Tonne.

E1.4 SAFE WORK PLAN AND SITE INDUCTION

The contractor shall submit a comprehensive safe work plan for SCA endorsement prior to start of site work. Personnel assigned for this contract shall undergo general SCA induction at Campbelltown and a site specific induction by the SCA at Cordeaux Dam prior to commencement of site work.

E1.5 MATERIALS

E.1.5.1 Steelwork

All steelwork shall be in accordance with requirements of AS 1418 and AS 1554.

E1.6 FABRICATION

E1.6.1 Welding and Post Weld Heat Treatment

All fabrication shall be in accordance with requirements of AS 1418 and AS 1554.

Seal welds shall be used to seal any crevices in the fabrication after all structural welds are completed. Stainless steel shall be kept separate from other steel components, tools, fixtures and materials, and only stainless steel or non-ferrous tools, and fixtures shall be used in the working and handling of stainless steel. Non-ferrous materials shall include copper or plastic.

All welds and heat affected zones shall be cleaned of all slag and shall be smoothly finished so as to be free of surface cracks, roughness, undercut, crevices and sharp edges, and surfaces shall be uniformly cleaned by mechanical or hand finishing or sanding to achieve a uniform, smooth finish, free of discolouration due to staining, heat tint or dark oxide layers.

E1.7 PROTECTIVE COATING

E1.7.1 Protective Treatment of Steelwork

All steelwork shall be painted in accordance with Protective Coating Specification PCS 105 Part A and PCS Parts B&C System EPU-3 and manufacture's requirements.

All property equipments eg electric motors shall be painted in accordance with Protective Coating Specification PCS 105 Part A and PCS Parts B&C System EPU-4 and manufacture's requirements.

Refer Appendices for details.

E1.8 INSTALLATION

E1.8.1 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 SCA.

Refer to attached Sydney Catchment Authority procedural document "Procedure 0617 Undertaking Hot Work" which specifies the procedures and precautions to be taken prior, during and after Hot Work.

E1.9 TESTING

Final testing of the overhead crane shall be in accordance with the requirements of AS 1418, AS 2550 and AS 3000.

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

Test certificates shall be provided by the contractor.

E1.10 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.

E1.10.1 Information to be collected

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 for new drawings, *.TIFF files for existing drawings 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
- 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.

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 SCA will provide existing job plan details and schedules for modification as required.

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 spreadsheet/database supplied by SCA.

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

Reports

Where a report/s are to be provided as a specific deliverable as stated in Section E1.9, 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 specified in Section E1.9. 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.

E1.10.2 Manuals

Operations and maintenance manuals shall be supplied by the contractor, or modified by the contractor for existing manuals 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.

E1.10.3 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. 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.

E1.11 DOCUMENTATION PROVIDED BY THE PRINCIPAL (SCA)

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.

E1.11.1 Technical Documentation

Procedure 0617 Undertaking Hot Work	Specifies the procedures and precautions to be taken prior, during and after Hot Work
Figure 3.1-14	Cordeaux Scour Outlet Crest House Crane – General Arrangement (Extract from Cordeaux Dam Operations & Maintenance Manual Trim No. CD2001/00118) Asset No. WD0003CR1216
PM (Job Plan No. WD0005CR1184/04	Cordeaux Crane Electric Travelling Maximo Preventative Maintenance Schedule
	SCA Manual Template
	Equipment Spare Part and Tools spreadsheet/database

E1.11.2 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.
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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 – SAP-BWD-ALL-014	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.

E1.12 ACCEPTANCE CRITERIA

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

- Major inspection report in accordance with AS 2550
- New AC Squirrel-cage motor and helical gear unit installed.
- New motorize north-south travel installed.
- Testing of overhead crane with new equipment installed.
- Certification that overhead crane is suitable for continued use.
- Supply of all final Operations & Maintenance Manuals
- Supply of all final plans and drawings (Work As Executed)

Appendices



Figure 1: Overhead Crane Upper Scour Valve House Cordeaux Dam



Figure 2: Pendant for Overhead Crane Upper Scour Valve House Cordeaux Dam

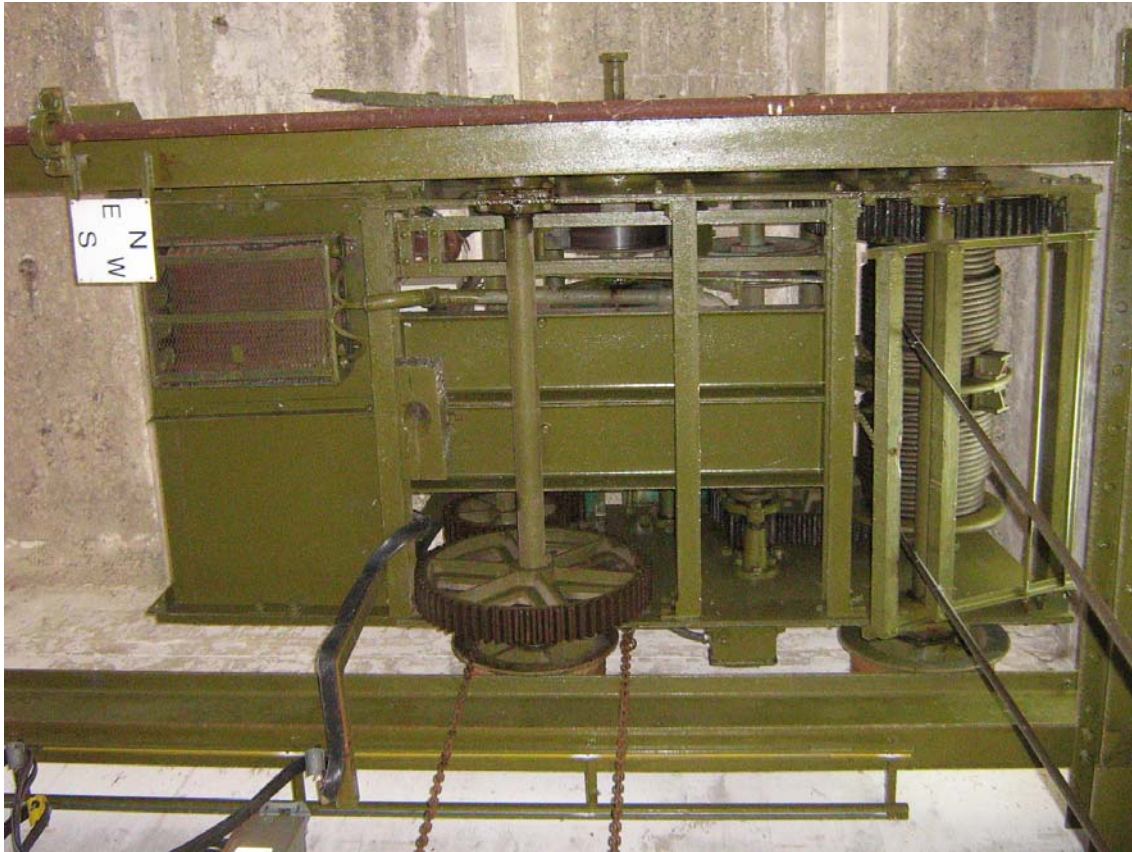


Figure 3: Overhead Crane Upper Scour Valve House Cordeaux Dam

Cordeaux Dam Operations & Maintenance Manual
Part 3 - Dam Structure

Section 3.1
Water Supply Outlets and Scour Outlets

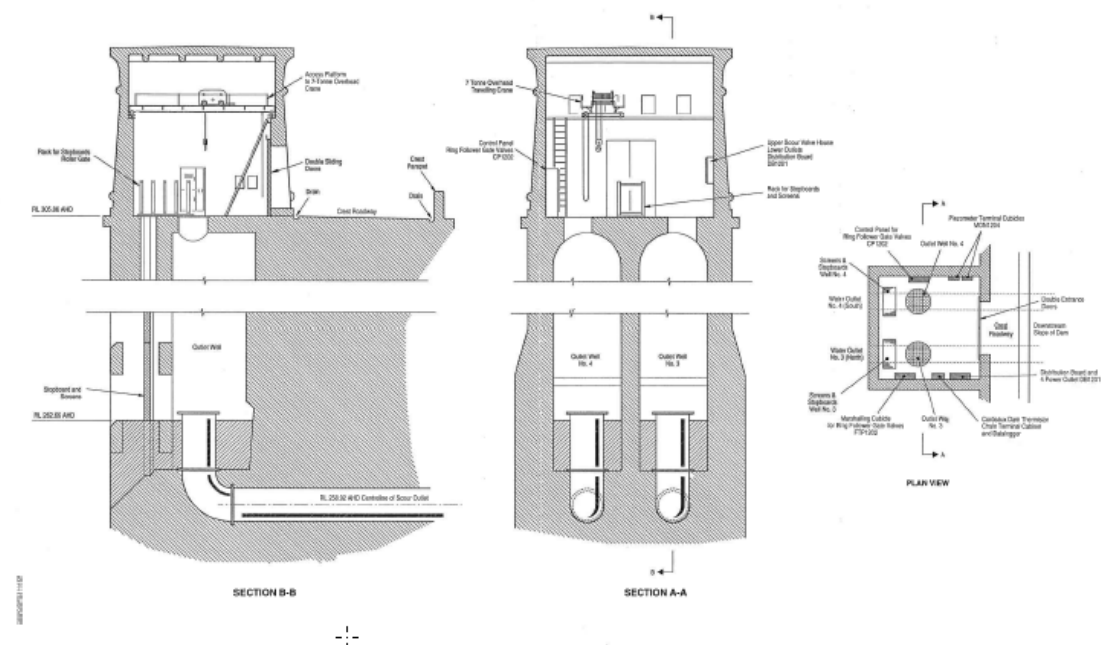


Figure 3.1-14 Scour Outlet Crest House-General Arrangement

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Figure 3.1-14 Scour Outlet Crest House-General arrangement