Hunter Water Corporation A.B.N. 46 228 513 446

Standard Technical Specification for:

STS 640
CRANES AND LIFTING EQUIPMENT

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Standard – STS 640 LIFTING EQUIPMENT

1 Purpose

This standard technical specification (STS 640) details the mechanical requirements of Hunter Water Corporation (Hunter Water) for design, manufacture, installation, modification and decommissioning of lifting equipment.

These specifications are available from the Hunter Water website at http://www.hunterwater.com.au.

1.1 Scope

STS 640 Lifting Equipment applies to fixed lifting equipment that is to be owned or controlled by Hunter Water.

Fixed lifting equipment in STS 640 includes:

- fixed cranes;
- fixed hoists;
- fixed winches;
- fixed davits;
- fixed jib cranes;
- fixed or permanently installed lifting attachments, including
    - shackles;
    - chains;
    - C-Hooks;
    - lifting beams;
    - lifting forks.

STS 640 addresses:

- general requirements applicable to all fixed location lifting equipment supplied to Hunter Water, including statutory and regulatory compliance;
- specific Hunter Water requirements for various types of lifting equipment.

1.2 Out of Scope

This STS does not address:

- personnel lifting equipment such as used for working at height safety, e.g. personnel davits;

- mobile cranes (see *AS 1418.5-2013* based on the European standard *EN 13000:2010*, and *AS 2550.5);* including vehicle mounted cranes;
- earthmoving equipment used as a crane (see AS 1418.8);
- mobile elevating work platforms (see AS 1418.10);
- vehicle-loading cranes (see AS 1418.11);
- portable lifting gear including slings and shackles;
- portable beam clamps and trolleys;
- slings and chains that are not fixed/permanently installed.

2 Interpretation

For the purposes of interpretation of this STS 640, except where the context requires otherwise:

- 'drawings' means the drawings detailing the work involved in a particular project in hand
- ‘include’ means including but not limited to, and is used to provide clarification or examples of the type and nature of items intended
- 'specification' means a specification detailing the work involved in a particular project
- ‘standards’ means applicable industry standards including the Australian Standards (AS), Australian/New Zealand Standards (AS/NZS), American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME) and ISO Standards (ISO) referenced in Appendix A
- 'standard drawings' means Hunter Water Corporation drawings
- 'standard technical specification' (STS) refers to any of Hunter Water’s standard technical specifications, as implied by the text.

Headings are for the convenience of the reader and must not be used in the interpretation of this standard technical specification.

Unless stated otherwise, any expression such as "give notice", "submit", "approval", or "directed" means give notice to, submit to, approval by, or directed by the person nominated by Hunter Water.

Approval does not imply acceptance of responsibility by Hunter Water for compliance with this technical specification. Unless approval has been issued in writing, approval has not been granted.

2.1 Order of precedence

All work must meet all stated requirements in this STS in addition to project specifications or standards specified.

Any deviation from this STS must be approved in writing on a case by case basis by Hunter Water’s Document Owner.

The order of document precedence is:

- Legislative requirements;

- Project specification;
- Content in this STS;
- Australian Standards;
- WSAA standards.

3 Roles and responsibilities

3.1 Document Owner

The Document Owner of *STS 640 Lifting Equipment* is Hunter Water's Manager Mechanical Engineering.

3.2 Responsibilities

The nominated Document Approver in Hunter Water's *Standard – Integrated Management System Document Management* must approve in writing the issue of any updated version of STS 640. Any concession to any requirement in *STS 640 Lifting Equipment* is valid only when authorised in writing by the Document Owner.

4 Definitions

4.1 STS terms

Where the following term, abbreviation or expression occurs in this STS, it is defined as follows, unless the context implies otherwise.

Term / Abbreviation / Expression	Definition
AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
Competent person	A person who has acquired through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required task
Davit	A manual jib crane with maximum rated capacity less than 1 tonne and that is fitted with a hoisting winch mechanism connected to the point of lifting via a pulley, excluding equipment designed to lift personnel
Design life	The planned life, in years, from commissioning to disposal, including any planned overhaul, as required. See AS 1418
Fixed Lifting Equipment	Fixed lifting or pulling equipment, including cranes, hoists, winches, davits, jib cranes. Permanently installed attachments, including shackles, chains, C-Hooks, lifting beams, lifting forks
Hunter Water	Hunter Water Corporation
STS	Hunter Water Corporation Standard Technical Specification
Weatherproof	Prohibits the entry of water, dust, aerosols and vermin
WSAA	Water Services Association Austalia

4.2 Crane terms

Term / Abbreviation / Expression	Definition
Bridge crane	A crane comprising a bridge beam or beams mounted to carriages at each end, capable of travelling along elevated runways and having one or more hoisting mechanisms arranged across the bridge. Also known as overhead travelling crane
Chain block	A type of serial hoist. An appliance for manual hoisting of a load suspended from a link chain
Chain hoist	A powered appliance for hoisting of a load suspended from a link chain
Crane	An appliance intended for raising or lowering a load and moving it horizontally, but does not include an industrial lift truck, earthmoving machinery, an amusement structure, a tractor, an industrial robot, a conveyor, a suspended scaffold or a lift
Drum winch	A winch which provides pulling force and motion by means of a wire or fibre rope stored on a drum

Term / Abbreviation / Expression	Definition
Gantry crane	A crane comprising a bridge beam or beams, which are supported at one or both ends by legs mounted to end carriages, capable of travelling along runways, and has one or more hoisting mechanisms.
Hoist	An appliance intended for raising and lowering a load, people, or gate assembly vertically and without slewing which includes a mast climbing work platform, personnel and materials hoist, scaffolding hoist and serial hoist but does not include a lift or building maintenance equipment
Jib	A member, attached to the crane structure, from which the load is suspended and which is not capable of being luffed while the crane is handling a load
Load Shadow	The footprint on the ground that could be impacted, if the suspended load fell from the highest position.
Luff	Angular movement, of a crane boom or jib, in a vertical plane
Monorail beam	A fixed beam designed to support hoists or other lifting equipment rolling directly on its bottom flange
Monorail crane	A crane comprising a monorail beam fixed in location, from which is supported a hoist and trolley to enable travelling beneath the monorail beam
Pendant	A device for controlling crane or hoist motions
Power-operated wire rope hoist	A hoist, power-operated by means of an electric, hydraulic, pneumatic motor, connected to a rope-winding drum, intended for the hoisting of a load suspended from a wire rope
Push trolley	A trolley capable of holding a suspended load that can be moved manually by applying a horizontal force to the trolley, suspended serial hoist hook or load
Rail head	The top section of the rail that the crane wheel runs on
Runway	A fixed support structure on which wheeled cranes travel
Serial hoist	A mass-produced hoist. Usually equipped with a hook, attached to the hoist by means of a rope or chain, for attachment of its load. Serial hoists include manually operated chain hoists (chain blocks or lever hoists), power-operated chain hoists (electric chain hoists), power-operated wire rope hoists, scaffolding hoists, creeper winches, manually operated drum winches, power-operated drum winches, trolleys
Slew	Angular movement of a crane boom or crane jib in a horizontal plane
Trolley	A wheeled mechanism intended to support a hoist and capable of travelling along a suspended track, such as a monorail jib or monorail beam
Wire rope hoist	An appliance for hoisting a load suspended from a wire rope (see also *serial hoist*)
Winch	A device comprised of a rope and winding drum or load chain wheel for the purpose of providing a haulage or pulling force i.e. horizontal movement. Can be operated manually or by power.

5 Lifting equipment requirements

This section of STS 640 addresses the requirements for design, manufacture, installation, modification and decommissioning of fixed lifting equipment.

5.1 Design of Fixed Lifting Equipment

5.1.1 Legislation, codes of practice and Australian Standards

Fixed lifting equipment must comply with all relevant legislative requirements, codes of practice, and Australian Standards.

All cranes, hoists and winches must be designed, manufactured and tested in accordance with:

- AS 1418.1 Cranes, hoists and winches – General requirements and also with all other relevant parts of the AS 1418 series of Australian Standards;
- AS 2550 series:
    - AS2550.1: Cranes, hoists and winches – Safe use general requirements
    - AS2550.3: Cranes, hoists and winches – Safe use Bridge, gantry, portal (including container cranes), jib and monorail cranes

Fixed lifting equipment must comply with Hunter Waters Standard Technical Specification STS500 and STS600.

5.1.2 Design Requirements

Fixed lifting equipment design must:

- be fit for purpose and service for the:
    - operating environment, including contact with corrosive aerosols or liquids;
    - estimated usage;
    - full design life of the equipment;
- have a minimum design life for fixed lifting equipment must be:
    - 50 years or greater for structures;
    - 25 years for hoists, winches and lifting attachments;
- be designed to account for lifting all loads safely without personnel working within the load shadow of the crane. The lift plan methodology must be identified and communicated during design to demonstrate meeting this requirement.

5.1.3 Design, manufacture and installation requirements

Cranes, hoists and winches supplied to Hunter Water must be class C3/M3 in accordance with *AS 1418.1 Cranes, hoists and winches – General requirements* as a minimum, or higher if appropriate for the expected usage or if otherwise specified.

Cranes must:

- be solid girder beams (not lattice girder type cranes);
- be designed:
    - for a vertical lift only (unless otherwise stated in the project specification);
    - to lift from directly above the load to be lifted wherever practicable without including any side loading. In cases where it is not practicable to lift from directly above the load, the crane must be supplied with design verification and documentation specifically stating its rating is appropriate for any potential side loading situations.;
    - with sufficient hoist and hook travel to lift the intended load(s) clear of obstructions by a minimum of 100mm;
    - to place the load in the service area or on to a suitable truck in the loading area;
- be electrically powered for all vertical and horizontal directions of movement, for cranes over 500kg lifting capacity;
- be designed to ensure that all crane operations can be performed from outside the load shadow;

Crane life usage recording devices must be installed for cranes 5 tonnes capacity or greater; or which are to be operated multiple times per day. Crane life usage recording devices must:

- record the load & the duration of operation;
- be automatic and cannot be disabled by the operator
- monitor remaining life of the crane and whether a major inspection is due.

Hoists must:

- be supplied with wire rope or chain length sufficient to reach to within 200 mm above the lowest floor below the hoist operational area;
- be fitted with a self-closing safety catch on the hook;
- have lifting chain or wire rope of stainless steel grade 316, where the lifting chain or wire rope can be submerged in any liquid;

Hoists and winches using wire rope must:

- use wire rope designed to be spooled.

Lifting equipment components must be designed for the intended operating environment.

Cranes with manual chain operation must:

- have the chain/s (for operation) suspended below the crane to between 0.5m and 1.0 m above the operating floor;
- be moved horizontally with an effort of less than 200 N with the maximum load (geared travel mechanisms must be provided where required in order to meet this requirement);
- have the chain located outside the shadow of the load, with the load at the highest point.

All powered cranes must:

- be controlled by a hand held pendant control unit. The pendant must be:
    - wired with an extra low voltage power supply;
    - where a wireless pendant is specified, a wired pendant must also be fitted;
    - fitted with an E-stop.
- have a minimum of 2 speed operation on all functions (slow & fast) when requiring movement more than 2m;
- have soft stop function on travel operations to achieve a controlled stop (as defined in AS1418), this can include limit switches that stop the crane prior impacting the mechanical end stops during normal operation, an example is “helicopter” limit switches, prior to the mechanical end stops;
- be rated at IP56 or higher;
- have anti-strain cables on catenary runs
- have a load cell display, where:
    - the crane capacity is greater than 3T and there is the potential for a captive lift;
    - the cranes is for general use in a building (not single purpose lift).

5.2 Serial hoists and winches

Serial hoists and winches must:

- comply with the requirements of *AS 1418.2: Cranes (including hoists and winches) – Serial hoists and winches*;
- be fitted with a self-draining chain bucket, attached to the trolleys or hoists to collect hoist chains.

5.3 Bridge, gantry, portal, monorail and jib cranes

All bridge, gantry, portal, monorail and jib cranes must:

- comply with the requirements of *AS 1418.3: Cranes, hoists and winches – Bridge, gantry, portal (including container cranes) and jib cranes;*
- be fitted with double-flanged wheels for any long or cross travel mechanisms that run on runway rails;
- be fitted with single-flanged wheels for any underslung travel mechanisms that run on monorails.

The design, supply, and installation of all bridge, gantry, portal, monorail and jib cranes must comply with the requirements of the following sections of *AS 2550.3: Cranes, hoists and winches – Safe use – Bridge, gantry, portal (including container cranes), jib and monorail cranes*:

- Section 2 – Planning
- Section 3 – Selection
- Section 4 – Siting
- Section 5 – Erection and Dismantling.

Cranes that run on runway rails or are underslung from monorails, must be fitted with backup anti-derailment devices to prevent excessive lateral movement for both long and cross travel movements in the event of loss of guidance, and anti-drop devices to prevent the crane from falling more than 25 mm in the event of a component failure. Excessive lateral movement is defined as when either of the following conditions is not met:

- for underslung carriages and crabs, each wheel must maintain at least one third of its normal contact width but no less than 10 mm;
- for long travel and top-running carriages and crabs, the wheel must cover at least two thirds of the rail head width.

Anti drop devices must be:

- able to a hold >30% of the crane mass when fully loaded. (E.g. for a crane with 4 wheels, the anti-drop device at each wheel must be able to hold >30% of the fully loaded crane);
- welded on (not bolted).

Access for maintenance of the hoists, trolley and long travel carriages must be provided by either:

- permanent platforms, installed on the opposite side runway to any long travel collector rails (if applicable); or
- elevated work platform. Where this option is applied, the design must ensure there is flat clear hardstand beneath the crane parking area.

5.4 Crane runways and monorails

All crane runways and monorails must comply with the requirements of *AS 1418.18: Cranes, hoists and winches – Crane runways and monorails.*

5.5 Permanent davits

Davits must be installed with:

- a fully enclosed winching/brake system to eliminate safety hazards (E.g. pinch points);
- wire rope, sheaves, hooks, handles and all fixings required to operate;
- a brake that prevents uncontrolled lowering of the load (E.g. ratchet or similar). The brake must be:
    - tamper proof;
    - guarded with mesh to enable witness the brake is engaged (ratchet type);
- a swivel arm to move the suspended load to the laydown area. The swivel arm must:
    - be located at appropriate ergonomic height for operation and be clear of any obstructions for intended use (e.g. pinch points)
    - eliminate operation in the load shadow;
    - eliminate the need for the operator to handle the load or the wire rope to swivel the load.

The davit must raise/lower the equipment from its installed position and slew to a service area (ground or platform) where the equipment can be inspected, serviced or transported to a loading bay.

Permanent installed davits must be constructed from:

- painted steel for indoor installations;
- galvanised steel for indoor or outdoor installations;
- stainless steel grade 316, indoor or outdoor installations.

5.6 Permanent lifting attachments

For the purpose of STS 640, the requirements for lifting attachments applies to attachments permanently attached to equipment (E.g. submersible pump and submersible mixer). The attachments include:

- shackles:
- slings;
- lifting chains;
- turnbuckles;
- and other permanently installed lifting attachments.

Lifting attachments must comply with all relevant Australian Standards.

5.7 Lifting devices

Lifting devices must comply with *AS 4991: Lifting devices.* Lifting devices include:

- spreaders
- C-hooks
- clamps
- lifting beams
- lifting forks

Maintenance manuals must state the frequency and scope of maintenance and inspection activities required for any lifting device, compliant with the requirements of *AS 4991: Lifting devices*.

6 Manufacture of Fixed Lifting Equipment

6.1 Testing

Fixed Lifting equipment must be tested in accordance with the requirements of the relevant Australian Standards. Testing certificates must be supplied prior to the crane being dispatched from the factory.

7 Installation of Fixed Lifting Equipment

7.1 Signage and labelling

The following signage and labelling must be provided on cranes, hoists and winches:

- maximum rated capacity (MRC) (clearly visible from both sides of the crane girder as applicable, or in another clearly visible appropriate location if no girder is fitted, minimum 100mm tall font);
- class, for the hoist and travel mechanisms and the structure, clearly visible from both sides of the crane girder as applicable, or in another clearly visible appropriate location if no girder is fitted. The “M” class of the hoist must also be included on the hoist nameplate (minimum 100mm tall font);
- details of wire rope/lifting chain, included on the hoist nameplate;
- labelling of any potential live uninsulated power (such as on long travel collector rails) (minimum 100mm tall font);
- any safety signage, as required by AS 1418 or as recommended by the designer, manufacturer, or as identified through risk assessment;
- applicable north south east west labelling, clearly visible from both sides of the crane girder as applicable, or in another clearly visible appropriate location if no girder is fitted (minimum 100mm tall font);
- the designated Hunter Water plant number, clearly visible from both sides of the crane girder as applicable, or in another clearly visible appropriate location if no girder is fitted.

7.2 Competent person inspection

Fixed lifting equipment must be inspected for compliance with STS 640 by a competent person during construction. For fixed lifting equipment with capacity greater than 2 tonne, the competent person must be a specialist crane engineer independent from the company supplying the fixed lifting equipment. The inspection by the competent person or third party crane engineer must include:

- Review of design/supply documentation;
- Check the installation against legislative requirements and relevant parts of Australian Standards AS 1418 series and AS 2550 series;
-
- Review the recommended maintenance and provide a recommendation for the expected duty and operating environment confirming it is appropriate but not excessive;
- Recommend specific commissioning actions.

A report detailing the findings of the review and inspection must be submitted to Hunter Water 2 weeks prior to the lifting equipment being commissioned. Any non-compliances must be rectified and recommended actions must be completed prior to making the equipment available for operation.

7.3 Commissioning

Cranes, hoists and winches must be installed and commissioned in accordance with *AS 2550.1: Cranes, hoists and winches – Safe use – General requirements.*

All lifting equipment must be commissioned in accordance with the requirements of *STS 600 General Mechanical Requirements*. The commissioning of lifting equipment must:

- demonstrate that the equipment can be moved to the unloading or laydown area without impediment;
- demonstration of achieving the required clearance of surrounding equipment;
- demonstration of the most complex liftd
- demonstration once only, even where there are multiples of the same equipment (e.g only demonstrate lifting one pump, if there are 3 pumps).

7.4 Training

Fixed lifting equipment must include training of operators and maintainers. Training for operation and maintenance of fixed lifting equipment must:

- Include:
    - Safe crane operation;
    - Inspection requirements (each use, and longer cycle);
    - Maintenance requirements;
    - Description of failure modes;
    - Fault finding and rectification;
- Have training manuals supplied 2 weeks prior to the training;
- Have training material supplied 2 weeks prior to the training, including:
    - Safe Work Method Statement for training;
    - Training programme for the session;
    - Training presentation;
- Allow for up to 10 personnel to attend;
- Be conducted on site, including demonstration of the lifting equipment.

7.5 Documentation

Fixed lifting equipment that has been supplied, installed or modified must have documentation supplied in accordance with Hunter Water's STS904.. In addition the Contractor must provide to Hunter Water:

- documentation in accordance with WHS Regulation 2011 and all Australian Standards to show the design and manufacture are compliant;

- Documentation that complies with *AS 1418.1: Cranes, hoists and winches – General requirements*;
- Registered Design certificate with SafeWork NSW, where required by SafeWork NSW and AS1418 (includes Dangerous Goods cranes and large cranes);
- test certificates:
    - load test certificate as per AS 1418.2, Section 1.13 for power operated hoists;
    - load test certificate that meets the requirements of AS 1418.3, for all bridge cranes;
- a single page data sheet titled *"<Crane/hoist/winch description> – <Hunter Water plant number> crane data sheet"* including the following information:
    - Hunter Water equipment reference number (Hunter Water to provide);
    - Hunter Water drawing numbers for the crane;
    - manufacturer's name;
    - model;
    - crane type (using *AS 2549 Cranes (including hoists and winches) – Glossary of terms*);
    - serial number;
    - date of manufacture;
    - installation/commissioning date;
    - class – design duty crane classifications for all applicable components including structure, end carriages, bridge, trolley, hoist etc (applicable C, M and S ratings as per *AS 1418.1: Cranes, hoists and winches – General requirements*);
    - design life, in years;
    - warranty period (warranty expiration date);
    - maximum rated capacity (MRC) in kilograms (if less than 1 tonne) or tonnes;
    - estimated usage per year (e.g. average two lifts per year at 1.7 tonne);
    - a table summarising *all* recommended inspection and maintenance activities, and the initial recommended frequency for each;
    - design registration number (if applicable);
- pre-start checklist recommendations specific to the installed crane, hoist or winch, that meets the requirements of *AS 2550.1: Cranes, hoists and winches – Safe use – General requirements*, Section 7 Maintenance, Inspection and Repair, clause 7.3.2, Pre-operation inspection;
- operator's manual that meets the requirements of *AS 2550.1: Cranes, hoists and winches – Safe use – General requirements*, Section 6 Operation, and other applicable parts of AS 2550 series Australian Standards;
- maintenance manual. Maintenance manuals must state the frequency and scope of maintenance and inspection activities required for fixed lifting equipment and any permanent lifting attachment,

compliant with the requirements of the relevant Australian Standard. The maintenance manual must include:

  - a preventative maintenance program based on the operating environment and proposed duty cycle;
  - a routine inspection schedule and associated written instructions, which comply with *AS 2550.1: Cranes, hoists and winches – Safe use – General requirements*, Section 7 Maintenance, Inspection and Repair, clause 7.3.3, Routine inspection;
  - recommended periodic third-party inspection program based on the operating environment and proposed duty cycle;
  - recommended inspection program for any crane runways or monorails based on the operating environment and proposed duty cycle;

- a list of recommended skills, licences and certificates for the tasks relating to operation and maintenance;
- the construction inspection report;
- registration certificates with SafeWork NSW, where required by the Compliance and Regulatory requirements (see Section 5).

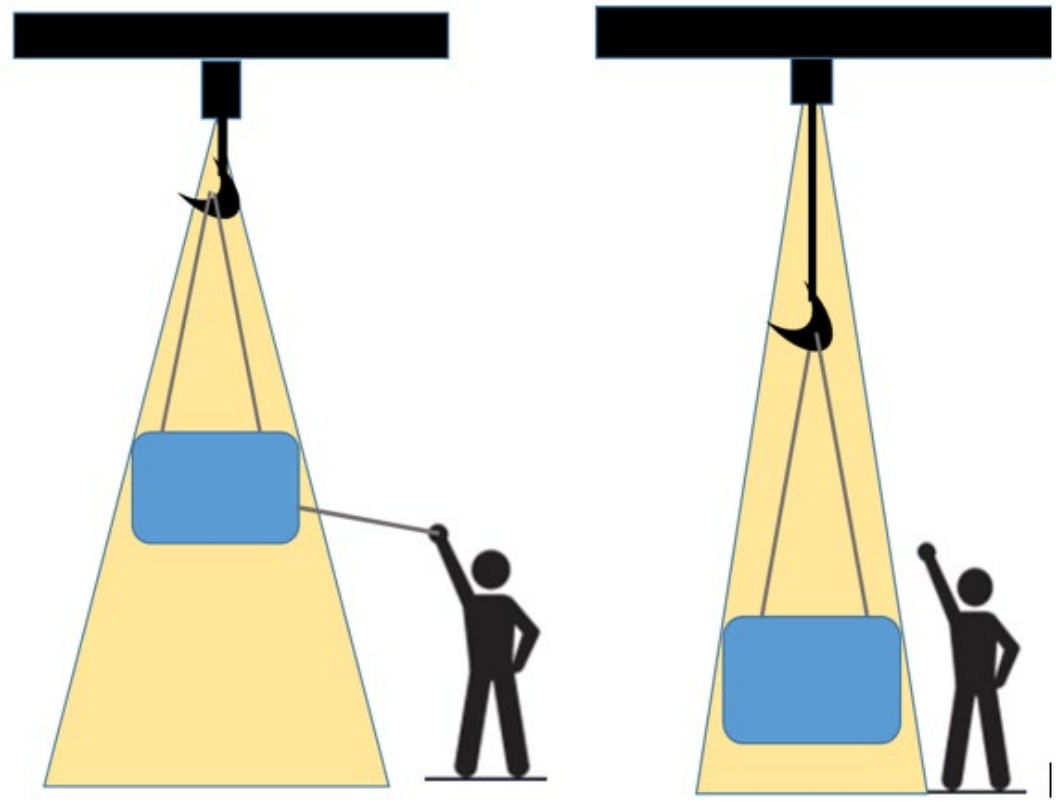
7.6 Site document storage

For all fixed lifting equipment a weatherproof document storage container must be installed beside the lifting equipment's isolation switch. For unpowered lifting equipment the document storage container must be mounted adjacent to the park position of the lifting equipment. The container must be labelled "Crane Documents and Log Books" with additional labelling to identify which crane, hoist or winch to which it belongs. Documents in the container must include:

- a log book;
- a set of pre-start checklist forms, specific to the installed crane, hoist or winch, that meet the requirements of *AS 2550.1: Cranes, hoists and winches – Safe use – General requirements*. The pre-start checklist forms must be provided in a booklet, with enough entries to last 12 months of operation;
- an operation and maintenance manual, as detailed above;
- drawings of the crane (colour and minimum A3 size).

8 Operation of Fixed Lifting Equipment

Safe use of fixed lifting equipment involves exclusion from the load shadow. Dogman must stay outside the load shadow, with ropes, hooks or other attachments used to guide the load, the load can be touched when the bottom of the load is below the dogman's knee height and the top of the load is below the dogman's shoulder. The diagrams below indicate the load shadow exclusion zone:



9 Modification of Fixed Lifting Equipment

Where new or modified fixed lifting equipment involves utilisation of any part of an existing installation for the lifting equipment to operate safely, retained components must be confirmed as fit for purpose for a design life equal to the design life of the new or modified equipment. Hunter Water must be notified wherever further works are required in order to meet this requirement.

10 Decommissioning of Fixed Lifting Equipment

Fixed lifting equipment that is decommissioned, must be removed or made unusable, to avoid use of unregistered lifting equipment. Fixed lifting equipment being disposed of must:

- Be made unusable including photo evidence;
- Be scrapped in a manner that maximises recycling of materials;
- Not be sold second hand as usable/operable equipment to any parties;

11 Related documents

In addition to the requirements listed in this document, all work must comply with relevant current standards and regulations inclusive of all amendments. In particular:

- Hunter Water's *STS 600 General Mechanical Requirements;*
- all other current Hunter Water standard technical specifications that are applicable to the lifting equipment being installed;
- Hunter Water's standard drawings;
- the Australian Standards listed in Appendix A, as applicable for specific types of lifting equipment.

12 Document control

Document Owner: Manager Mechanical Engineering

Document Approver: Executive Manager Customer Delivery

Document review is as per the Integrated Management System Document Management Standard HW2013-421/22.002.

Version	Author's name	Details of change	Approval date	Approved by
1.0	R. Lonergan	Initial Release	Feb 2018	Lutz Backhausen
2.0	GW Moore	Redrafted to current format & style	14/10/2020	Lutz Backhausen
3	R. Lonergan	Changes as detailed in HW2009-2368/2/42.006	18/9/24	Glen Robinson

Appendix A: Standards

For clarity, where a standard has several parts and/or amendments and/or supplements, the reference number is for the leading part of the standard. The standards listed below are deemed relevant to lifting equipment. The latest version of the standard applies in each case. This is not an exhaustive list.

Reference Number	Title
AS 1353	Flat synthetic-webbing slings
AS 1380	Fibre rope slings
AS 1418 - set	Cranes, Hoists and Winches
AS 1438	Wire-coil flat slings
AS 1666	Wire-rope slings
AS 2317	Collared eyebolts
AS 2321	Short-link chain for lifting purposes
AS 2549-1996	Cranes (including hoists and winches) – Glossary of terms
AS 2550 Set	Cranes, hoists and winches – Safe use – Set
AS 2741	Shackles
AS 2759	Steel wire rope – Use, operation and maintenance
AS 3569	Steel wire ropes – Product specification and Amendment 1
AS 3775.2	Chain slings – Grade T – Care and use
AS 3585	End fittings for synthetic flat-webbing and round slings
AS 4024.1- Series	Safety of machinery
AS 4797	Stainless steel chain for lifting purposes
AS 4991	Lifting devices
AS/NZS 1418 Set:	Cranes, hoists and winches – Set
ISO 9001:	Quality management systems – Requirements