

## **Appendix 1**

### **Definitions, References and Standard Drawings**

## DEFINITIONS

### **Anchorage**

Secure points of attachment for fall prevention system whether fall arrest or fall restraint.

### **Bosun's Chair**

A seat attached to a suspended rope, designed to accommodate one person in a sitting position;

### **Brittle Roof**

Any roofing material that will be liable to fail if the weight of a person likely to pass across the material, and anything carried by or on the person, were applied to it.

### **Can**

Used for statements of possibility and capability, whether material, physical or casual

<b>Verb Form</b>	<b>Meaning</b>
can	be able to there is a possibility of it is possible to
cannot	be unable to there is not possibility of it is not possible to

### **Competent Person**

A person who has acquired through training, qualifications or experience, or a combination of them, the knowledge and skills to carry out that task.

### **Confined Space**

An enclosed or partially enclosed space which:

- Is at atmospheric pressure during occupancy
- Is not intended or designed primarily as a place of work and
- May have restricted means for entry and exit

and which either

- Has an atmosphere which contains potentially harmful levels of contaminant
- Has an unsafe oxygen level or
- Is of a nature that could contribute to a person in the space being overwhelmed by an
- Unsafe atmosphere or a contaminant.

### **Confined Space Entry (CSE)**

The process of entering and withdrawing from a Confined Space. Operators are required to have obtained a confined space entry permit and use gas monitoring equipment prior to entry and to follow the WC-OSH 108 Safe Working in Confined Spaces Procedure. The confined space entry team consists of a Responsible Person and an appropriate number of Competent Persons.

**Dam**

A surface water collection facility normally associated with a surface water catchment. Generally supplies a major scheme. Generally have treatment facility and may have ancillary equipment. Has large valves and associated pits/structures eg. Canning Dam.

**Dry Well Sewerage Pump Station**

A below ground structure comprising a wet well and a dry well. It may have a pump station building over the dry well where the electrical equipment is located. The wet well is accessed through gatic covers. The dry well, containing pumping machinery and pipe work, is normally accessed by ladder or stairway. The wet well is accessed by Confined Space Entry procedure.

**Edge Protection**

Edge protection (often referred to as a ‘guard rail system’) is used to reduce the risk of a person falling from one level to another.

**Emergency**

An emergency is a situation that poses an immediate threat to human life or serious damage to property, requiring immediate action.

Examples of emergency situations that may arise while working at heights include: falls and injury to personnel, fires sudden changes in physical conditions (e.g. equipment failure) or atmospheric conditions (e.g. hydrogen sulphide accumulation or inclement weather).

**Elevated Tank**

Water storage structure above ground level, either supported on a framed stand or an integral support structure, such as concrete. Tanks on framed stands are usually made of steel.

**Elevating Work Platform (EWP)**

A telescoping device, scissor device or articulating device, or any combination of these devices, used to move personnel, equipment or materials to and from work locations above the support surface.

**Energy Absorber (Deceleration Device)**

An attachment designed to reduce the deceleration force imposed by a suddenly arrested fall. A personal energy absorber is designed to be used with a fall-arrest harness and lanyard.

**Fall-Arrest System**

Fall arrest comprises an anchor point, lanyard with energy absorber and fall arrest harness. A system incorporating a fall-arrest harness that is designed to minimise the risk associated with a free fall. Fall Arrest is suitable instead of restraint if the user can reach a position where a fall may be possible or a danger exists where the user could fall through the surface eg. ladder climbing system or working on fragile roofing.

**Fall-Arrestor**

A self locking device whose function is to arrest a fall, including rope grabs, ladder climbing systems and self retracting lifelines (inertia reels).

**Falling**

A reference to a person falling and includes a reference to a person falling from, through or into a place or thing.

**Fall Injury Prevention Systems (FIPS)**

Pertains to specialised items for use in working at heights e.g. harnesses, lanyards, karabiners, snap hooks etc.

**Fall Restraint**

Fall restraint comprises an anchor point, restraint line and fall arrest harness and is suitable for use where the user can maintain secure footing without having to tension the line and without the aid of a hand hold or support. Slope, surface and material type should be considered eg. a static line used on solid ground near an edge.

**Fixed Swivel Davit**

A lifting device consisting of a bracket to hold a mast in place (davit base), a mast, and a personnel rated recovery reel (winch). The davit is fitted to structures to enable lifting of equipment from ground level to the top of the structure, CSE and rescue of personnel.

**Gatic Cover**

The concrete lid to a pit to prevent odour from escaping. The gatic cover requires a gatic key to unlock it

### **Grate**

A fixed or removable panel of metal mesh designed to cover a hole or opening where there is the potential for a fall.

### **Ground Level Tank**

Generally cylindrical water storage structure constructed with the floor at ground level. Ground tanks are usually made of reinforced concrete.

### **Ground Water Treatment Plant**

Generally comprises concrete water tanks, process building/s, large pump station, chemical storage areas eg. Wanneroo GWTP.

### **Guardrail**

A structure to prevent persons falling from any platform, walkway, landing or stair.

### **Handrail**

A rail to provide a handhold on a platform, walkway, stairway or step type ladder. It may form part of a guardrail

### **Inertia Reel**

A self retracting lifeline and type 2 & 3 fall arrestor. A fall arrest device from which a spring loaded anchorage line pays out and which locks when loaded and releases when the load is removed.

### **Karabiners**

Metal types of connectors that can be attached to anchorage points. They come in a variety of sizes, shapes and locking mechanisms to suit various applications and provide the most convenient type of connector as they can be easily attached and detached. They should be self-closing and self- or manual-locking and capable of being opened only by at least two consecutive deliberate manual actions.

### **Ladder Climbing System**

Ladder safety/climbing systems are type 1 fall-arrest systems, which provide continuous fall protection for persons using ladders. They consist of a steel cable or rail fixed to the ladder and a cable/rail sleeve with a karabiner for connection to the system by the operator wearing a fall arrest harness.

**Lanyard**

A line usually used as part of a lanyard assembly to connect a harness to an anchorage point or static line in situations where there is risk of a fall.

**Lanyard Assembly**

An assembly of a lanyard and a personal energy absorber.

**Horizontal Lifeline System**

A flexible line supported by two or more anchorages such that the slope of a straight line joining any two adjacent anchorages does not exceed the system manufacturer's recommended slope or, in the absence of such recommendation, five degrees. The system components recommended rigging configurations need to be traceable to prototype or sample testing to *AS/NZS 1891.2*. Lifelines are also called static lines.

**May**

Indicates a course of action permissible within the limits of the document.

<b>Verb Form</b>	<b>Meaning</b>
may	is permitted is allowed is permissible
may not	it is not required that no .... is required

**Mesh**

Material with small openings that can be used to form a grate, walkway or steps.

**Mobile Scaffold**

An independent freestanding scaffold that is mounted on castors. Refer to *AS 4576*.

**Platform**

An area at which work or rest is carried out, which is elevated above the surrounding floor/ground level and which has a slope within the range of  $0^0$  to  $3^0$ .

**Pump Station (water and wastewater)**

Large sizes are generally in a building containing more than 2 pump sets and large enough for traveling overhead gantry crane in commercial style building eg. Armagh St Sewerage Pump Station.

## **Practicable**

"Practicable" means reasonably practicable having regard, where the context permits, to:

- the severity of any potential injury or harm to health that may be involved, and the degree of risk of it occurring
- the state of knowledge about
  - the injury or harm to health referred to in paragraph
  - the risk of that injury or harm to health occurring
  - means of removing or mitigating the risk or mitigating the potential injury or harm to health
- the availability, suitability, and cost of the means.

## **Regularly**

For the purpose of this Standard regular refers to weekly e.g. climbing the ladder regularly.

## **Reservoir (Service Reservoir)**

A water storage facility not associated with a surface water catchment. Large sites may have a treatment facility with pump station and possibly an elevated tank/s. Generally roofed eg. Bold Park reservoir.

## **Restraint Line**

The line securing workers to a point of anchorage and is used to prevent a person from reaching a point from which he or she could fall from one level to another regardless of distance.

## **Risk**

The likelihood or probability that a hazard may cause harm

## **Risk Assessment**

The process that seeks to identify hazards; then determine the level of risk by taking into account the likelihood that someone will be injured or something damaged by the hazard; the frequency of contact or exposure to the hazard, the level of exposure (eg number of people, amount/degree/extent of exposure to noise, chemicals, etc), pattern of exposure (eg continuous, intermittent etc) and the adequacy of any existing control measures.

## **Risk Control**

The use of measures to control the risk to an acceptable level. The hierarchy of controls is an acceptable tool for risk control. i.e. elimination, substitution, engineering, administration, PPE.

**Rung Ladder**

A fixed ladder inclined 70-90° or vertical with rungs. Compliant with *AS/NZS 1657*

**Safety Grate**

A mesh barrier used to prevent a person from falling through an opening. Compliant with *OSH Regulation 3.54*.

**SCADA (Supervisory Control and Data Acquisition System)**

Telemetry and control system used for operational control of remote and metropolitan water service systems.

**Scaffold**

Means a temporary structure, stage or platform specifically erected to support access or working platforms, persons, plant or other material but does not include a gantry.

**Shall**

Indicates that a statement is mandatory. Indicates requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

Verb Form	Meaning
shall	is to is required to is required that has to only .... is permitted it is necessary
shall not	is not allowed (permitted/acceptable/permissible) is required to be not is required that ... be not is not to be

### Should

Indicates a recommendation. Used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that (in the negative form) a certain possibility or course of action is depreciated but not prohibited.

Verb Form	Meaning
should	it is recommended that ought to
should not	it is not recommended that ought not to

### Sloping Walkway

An access way having a slope greater than 3° and up to 20° to the horizontal.

### Submersible Sewerage Pump Station (SSPS)

A wet well containing submersible pumps. The wet well is accessed through gatic covers. The electrical switchboards are above ground. Submersible pumps are withdrawn to ground level through gatic cover openings and access to the wet well is by Confined Space Entry (CSE).

### Static Line (Horizontal Lifeline)

Horizontal line to which a lanyard may be attached and which is designed to arrest a free fall. Allow users of fall restraint or fall-arrest equipment the flexibility of lateral movements without having to disconnect from the anchorage.

### Step Ladder

A fixed ladder inclined 60-70° with handrails on both sides and steps rather than rungs. Compliant with *AS/NZS 1657*. Treads shall not be less than 100mm wide and every tread shall be slip resistant.

### Tank (Water)

Ground level or elevated (tank on stand frame or concrete structure) storage for creating gravity feed into the reticulation system. May have associated treatment facilities and a pump station.

### Tank On Framed Stand

A water storage structure made up of a steel tank on a steel frame and wooden platform.

**Toe Board (kickboard)**

A section of a guardrail intended to prevent objects falling from a floor level

**Type 1 Fall-Arrest Device (Includes Rope and Rail Grabs)**

This is a fall-arrest device that travels along an anchorage line and, when loaded, locks to the line. The user is connected via a short lanyard to the activating lever, which locks the device in the event of a fall. A typical use of a Type 1 device is as a ladder fall-arrest system, using a rigid rail or a flexible line attached to the ladder.

**Type 2 and Type 3 Fall-Arrest Device (Also Known as an Inertia Reel or Self-Retracting Lifeline)**

This is a fall-arrest device from which a spring loaded anchorage line pays out, and which locks when loaded and releases when the load is removed. When incorporating a retrieval winch, it becomes a Type 3 fall-arrest device.

**Valve Pit**

A below ground structure surrounding pipes and valves. The structure may be covered with mesh and may contain other equipment such as flow meters and controls. The valve pit structure is usually constructed from Reinforced Concrete (RC) and may be rectangular or round.

**Wastewater Treatment Plant**

Comprises numerous process buildings, tanks, pump stations and chemical storage areas eg. Beenyup WWTP.

**Wet Well**

A below ground structure containing raw sewerage.

**Workbox (Personnel Cage)**

A workboxes is a steel cage used as a temporary work platform by conveying personnel with tools and work material to a work location by crane. Personnel are required to work within the confines of the workbox.

**Working At Height**

Work in any place, including a place at or below ground level or obtaining access to or egress from such place while at work, except by a staircase in a permanent workplace where, if measures required by the Regulations were not taken, a person could fall a distance liable to cause personal injury.

## REFERENCES

### Confined Space Entry

- WC-OSH 108 Safe Working in Confined Spaces
- AS 2865 - 2001 Australian Standard/WorkSafe Australia National Standard

### Cranes, Hoists and Winches

- AS 1418.1 Cranes, Hoists and Winches – General Requirements
- AS 1418.10 Cranes (Including Hoists and Winches) – Elevating Work Platforms
- AS 1418.13 Cranes (including hoists and winches) – Building Maintenance Units
- AS 1418.17 Cranes (including hoists and winches) – Design and Construction of Workboxes
- AS 2550.1 Cranes, Hoists and Winches – Safe Use – General Requirements
- AS 2250.10 Cranes – Safe Use – Elevating Work Platforms
- AS 2550.13 Cranes – Safe Use – Building Maintenance Units

### Excavations

- WorkSafe WA Code of Practice – Excavation
- WC - OSH 110 Excavation
- WC - OSH 111 Traffic Management
- WC - OSH 24G OSH Handbook for Construction Site Hazards
- WC - OSH 129 Public Safety at Construction Sites

### Emergency and Rescue Planning

- Emergency and Rescue Planning WC - OSH 21

### Fall-Arrest/Restraint Equipment

- AS 1891.1: Industrial fall-arrest systems and devices, Part 1: Safety belts and harnesses
- AS 1891.2 Industrial fall-arrest systems and devices, Part 2: Horizontal lifeline and rail systems
- AS 1891.3 Industrial fall-arrest systems and devices, Part 3: Fall-arrest devices
- AS 1891.4 Industrial fall arrest systems and devices, Part 4: Selection, use and maintenance
- AS 4488.1:1997 Industrial rope access systems – specifications
- AS 4488.2:1997 Industrial rope access systems- selection, use and maintenance
- AS 3569 Steel Wire Ropes
- AS 2317 Collared Eyebolts
- AS 2319 Rigging Screws and Turnbuckles
- AS 4142.3 Fibre Ropes – Man-made Fibre Rope for Static Life Rescue Lines

### Fitness for Work

- WC-OSH 202 Fitness for Work

**OSH Legislation**

- WA Occupational Safety and Health Act 1984  
Part 3, Division 2, General provisions relating to occupational safety and health
- WA Occupational Safety and Health Regulations 1996  
Part 3, Division 5, Prevention of falls at workplaces - Section 3.26 Portable Ladders  
Part 3, Division 8 - Work in Confined Spaces

**Other**

- Rules for the Structure and Drafting of Australian Standards HB 162-2002

**Platforms, Walkways, Ladders and Stairways**

- AS 1657:1992 Fixed platforms, walkways, ladders and stairways - Design, construction and installation
- DR 01136 Fixed platforms, walkways, ladders and stairways - Design, construction and installation
- AS 1892.5-1999 Portable ladders Part 5: Selection, safe use and care

**Public Liability**

- S197 Site Security, Public Safety and OSH Signage Standard
- Water Corporation Design Standard DS62 – Standard for site security treatments, ladders, ladder shrouds
- WA Occupiers Liability Act 1985

**Risk Management**

- SG122 Risk Management Guidelines 2007
- AS HB 205 OSH Risk Management Handbook

**Safety Grates**

- AS 1170.0:2002 Structural design actions – General principles
- AS 1170.1:2002 Structural design actions – Permanent, imposed and other actions

**Scaffolding**

- AS 1576 Scaffolding series
- AS 4576 Guidelines for scaffolding

**Traffic Control**

- AS 1742.3 Manual of uniform traffic control devices – Traffic control devices for works on roads

**Water Corporation Design Standards**

- DS61 Water Supply Distribution Standard - Tanks
- DS51 Design and Construction of Wastewater Pumping Stations and Pressure Mains
- DS42-03 Scheme SCADA Equipment and Installations

**Working At Height Codes of Practice**

- WorkSafe WA Code of Practice – Prevention of Falls at Workplaces

**Surface Treatments**

- Water Corporation Floor Safety Requirements, OSH Branch Homepage, Hazard Treatment Documents
- AS/NZS 3661.2:1994 Slip resistance of pedestrian surfaces – Guide to the reduction of slip hazards
- AS/NZS 4586:2004 Slip resistance classification of new pedestrian surface materials

## STANDARD DRAWINGS

### Anchorage

- Drainage task anchor point – Drawing Number IP76-3-1

### Gates

- Self Closing Gate – Drawing Number IP76-2-1

### Ladders

- Portable Ladder Securing Bracket – Ground Mounted – Drawing Number IP76-5-1
- Portable Ladder Securing Bracket – Top Mounted – Drawing Number IP76-5-2
- Fixed Ladder Top Stile Portable Extension – Drawing Number IP76-5-3
- Fixed ladder stiles fixed to top of access chamber – Drawing Number IP76-5-4
- Ladder guard and cage door – FW65-30-30 and 31

### Lighting Fixtures Winch

- Lighting Fixtures Winch System – Drawing Number IP76-4-1

### Safety Grates

- Access Chambers Portable Rectangular Aluminium – Drawing Number IP76-1-2
- Access Chambers Portable Rectangular FRP- Drawing Number IP76-1-3
- Access Chambers Portable Circular Aluminium – Drawing Number IP76-1-4
- Access Chambers Portable Circular FRP – Drawing Number IP76-1-5
- Access Chambers Portable Circular Hinged Aluminium – Drawing Number IP76-1-6
- Access Chambers Portable Circular Hinged FRP – Drawing Number IP76-1-7
- Portable Barriers Safety Gate Rectangular Aluminium – Drawing Number IP76-1-8
- Portable Barriers Safety Gate Rectangular FRP – Drawing Number IP76-1-9
- Foldaway Barrier (for hinged aluminium cover over submersible sewerage pump station or similar structure) – Drawing Number D06222w-01 to 05
- Closed Deck Hinged Safety Gate (for dry well pump station) – Drawing (to be completed)
- Hinged Safety Grates (for under gatic covers) - Drawing (to be completed)

### Standard Portable Barrier System

- Post and Rail System – Drawing Number IP76-1-11
- Grate Lifting Tool – Drawing Number IP76-1-1

### Stairway Protection

- Guide to Selection of Security Barriers – Drawing Number GX54-7-0
- Ground Level Barrier – Drawing Number GX54-7-2
- First Platform Level Barrier – Drawing Number GX54-7-1
- Fenced Compound – Drawing Number GX54-7-3

**Tool Safe Lifting Devices**

- Tool bucket – Drawing Number IP76-8-1
- Tool bucket – Heavy Duty – Drawing Number IP76-8-2
- Tool/Equipment Winch and Basket - Drawing Number (to be completed)

**Workbox (personnel cage)**

- Workbox (personnel cage) – Drawing Number IP76-6-1

**No Step Warning Sign**

- Drawing Number IP76-1-10

**Control Zones for Roofs**

- Drawing Number IP76-9-1