

1. Purpose:

The BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in order to control risks associated with scaffolding. BSMS do not replace any State/Territory specific regulatory requirements, codes of practice or Australian Standards and are to be used in conjunction with the documents referenced in Section 3.

2. Mandatory Requirements:

Scaffold Design

- 2.1 A documented design, by a qualified Engineer, is to be carried out for any of the following scaffold types to be installed on a Built project site:

1. Scaffolding > 20m in height	5. Spur Scaffold	9. any non-standard scaffold assembly significantly outside the configuration specified by the manufacturer is to be designed by an Engineer
2. Suspended Scaffolds	6. Loading Platforms built from scaffolding components where intended to support loads above the duty rating load for the scaffold.	10. Or as otherwise requested by Built
3. Perimeter Catch Scaffold or Fan Scaffold	7. Scaffold designed as an overhead protection for public / workers safety (i.e., 10kpa rated or above).	
4. Hung Scaffold	8. Cantilever Scaffold	

- 2.2 The documented design must be kept on site.

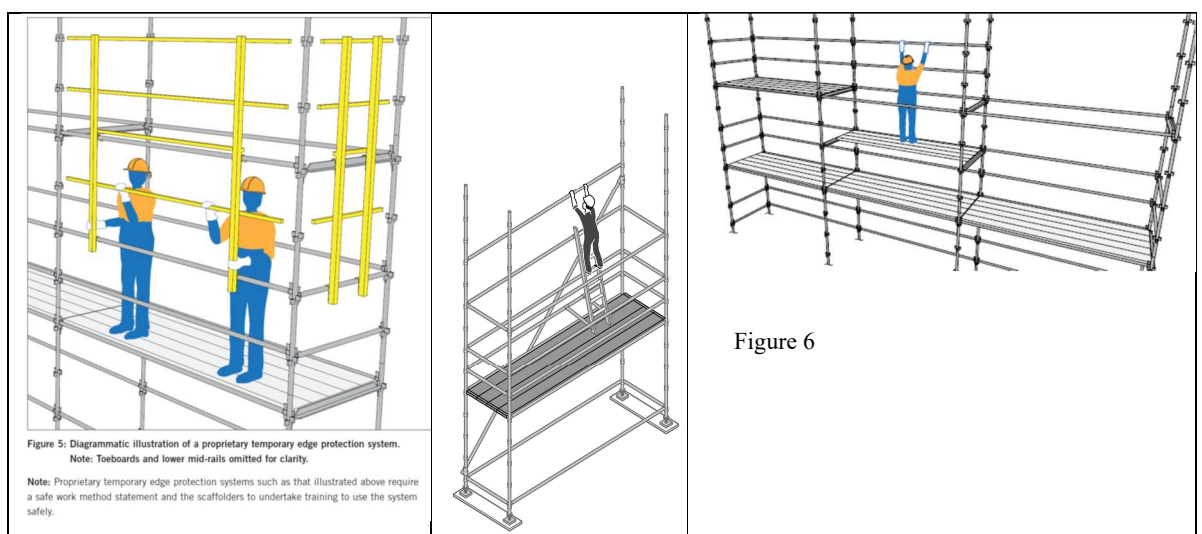
- 2.3 The engineer design detail is to include:

- The maximum duty ratings of the working platforms and access platforms in accordance with AS/NZS 1576.1 (e.g., Light Duty, Medium Duty, Heavy Duty, Special Duty);
- The maximum working load limit for each working platform/deck;
- Acceptable combinations of the following factors, within any bay:
 - Number of installed platform levels
 - Number of working platforms (with or without bay extension platforms fitted as appropriate)
 - Access platform duty ratings
 - Loading platform working load limits
- Any other relevant limitations on the loading of the scaffold structure (e.g., containment sheets, mesh, shade cloth, signage);
- Adequate access to scaffold, e.g., ladders, stairs, stretcher, exiting floor level
- Maximum number of working decks and hop-ups;
- Method of tying the scaffold to the structure (including proof testing requirements for bolted connections);

- Method of fixing any approved add-on to the scaffold such as plywood, shade-cloth, mesh, signage, etc ...;
- Wind loading calculations of any addition material;
- Elevations showing arrangements for bracing, tying, decks;
- Credentials and signature of the authorising Engineer and date.

Installation

- 2.4** Scaffold is not to be erected, altered or dismantled without prior authorisation and approval from the contracted scaffold installer and must only be carried out by persons holding the appropriate class of licence for the specific type of scaffold they are working on.
- 2.5** A licence is not required if the person is working under the direct supervision of a person who is licenced to carry out the specific class of scaffolding and is enrolled in an accredited course of training towards certification. A person is not required to hold a scaffolding licence to carry out minor scaffolding work where a person or object may fall 4 metres or less. However, any person carrying out scaffolding work should be competent and must be provided with relevant information, instruction, training and supervision for erecting, dismantling, maintaining and altering the scaffold safely.
- 2.6** Drilled-in anchors, such as friction or chemical anchors, may only be used where it is not practical to use other methods to tie the scaffold to the structure. Where a scaffold is tied to a structure/structural element by means of friction or chemical anchors the suitability of the supporting structure must be determined by a qualified Engineer with the connections designed with a safety factor of 3 in accordance with AS/NZS 4576.
- 2.7** Where there is any risk of the ties pulling out due to tensile loads, such mechanical connections must be proof tested on installation in accordance with the qualified Engineer's requirements.
- 2.8** Guardrails and mid-rails are to be installed in advance of the decking being installed (see example proprietary systems below).



- 2.9** To minimise the risks associated with scaffolders falling through and from the scaffold during erection, altering and dismantling, scaffolders are to deploy methods of erection or dismantling which prevent the

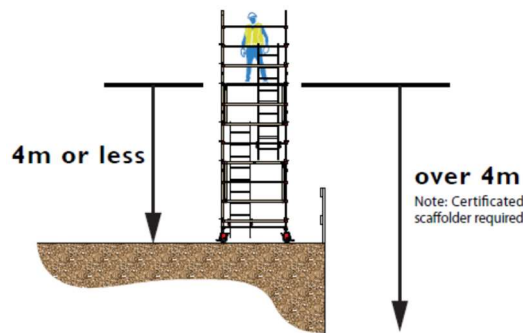
risk of falling. Such methods may include, proprietary edge protection/guard rail systems (e.g., as illustrated in figure 5 above), installation of temporary boards (as illustrated in figure 6 above) or other suitable temporary platform.

- 2.10** Unless outlined in the design, all fully planked platforms are to remain in place until the scaffold is dismantled.
- 2.11** Guard rails, mid-rails, and toe boards must be installed on all open sides of platforms from which people or materials may fall. Where there is a risk of materials falling from the scaffold, means of preventing materials falling must be provided, e.g., chain-link mesh and shade cloth.
- 2.12** The mixing of components from different proprietary systems shall not be permitted.

Scaffold Handover

- 2.13** A Handover Certificate is to be obtained from a licensed scaffolder holding the qualification to erect the particular type of scaffold for which the handover certificate is being issued, prior to the scaffold being used by others, and is to include:
- Details for the Built site where the scaffold has been installed;
 - The name and address of the organisation that erected the scaffold;
 - A description of the type of scaffold;
 - The size of the scaffold;
 - The duty loadings applicable to the scaffold;
 - The maximum number of platforms that can be worked from at any one time;
 - The intended purpose of the scaffold;
 - The date and time of the handover;
 - Confirmation that the scaffold complies with any design specifications, suppliers' information and is suitable for its intended use/tasks;
 - Reference to AS/NZS 1576
- 2.14** A Handover Certificate is also required following any significant modifications to the scaffold, i.e.
- modifications which potentially affect its structural integrity;
 - extensions to the scaffold;
 - dismantling the scaffold, i.e., where ties are removed;
 - where there is a change or addition to access to the scaffold or egress from the scaffold.

Note: Handover certification is also required for mobile scaffold where the working deck is greater than 4m in height. In addition, a handover certificate is also required for mobile scaffolds under 4m from the working platform where there is a risk of person falling more than 4m (as shown in the diagram below).



- 2.15** Copies of the Scaffold test certification to the Australian Standard AS1576.3 for all componentry is to be held on site for all proprietary scaffolds over 4m high.

Inspection

- 2.16** A documented inspection, at maximum 30 day intervals, is to be carried out by a qualified Engineer or Scaffolder for all scaffolding (and any supporting structure) for which a handover certificate has been issued.
- 2.17** In addition to inspections carried out at 30 day intervals, inspections are to be carried out following any damage to the scaffold or damage/alteration to any structure supporting the scaffold.

Note: Scaffolding and any supporting structure is to be inspected following any major storm event where there is a potential for the scaffold or supporting structure/foundation to be affected.

- 2.18** The inspection is to be documented and is to include items, such as:

- Project details
- Name of person carrying out inspection
- Details of items inspected

- 2.19** All other scaffold is to be inspected as part of the daily monitoring of the worksite and weekly safety inspections
- 2.20** No part of a scaffold, including any ties, rakers or fixings securing the scaffold to a structure or part thereof are to be altered or otherwise modified unless authorised by Built and the contracted scaffold installer.
- 2.21** Climbing up the outside of scaffolds is not permitted.

Dismantle

- 2.22** Scaffolding shall be dismantled in the opposite sequence to erection, handover certificates (see 2.14) and documented inspections (2.16) are to continue until the scaffold has been fully dismantled.

Mobile Scaffolds

- 2.23** Mobile scaffolds with a working platform/deck height over 1m and up to 4 meters height must be erected by a competent person.

- 2.24** Mobile scaffolds with a working platform/deck height over 4 metres have been erected by a licenced scaffolder.
- 2.25** Mobile scaffolds over 4 metres must display Scaf-tag (or similar tag) to identify the status of the scaffold.
- 2.26** Safe means of access to the scaffold is to be provided to the working platform, e.g., internal ladder access, and hinged work platform hatch.
- 2.27** Handrails are to be installed on all scaffolds where the working platform is above 1m in height.
- 2.28** The overall height of the scaffold must not exceed 3 times the width of the scaffold, unless ties or outriggers are installed.
- 2.29** Mobile scaffolds are never to be moved whilst anyone is on the scaffold
- 2.30** Wheel locks are to be fully engaged at all times whilst persons are working from the scaffold

Suspended 'Swing-stage' Scaffolds

- 2.31** The '*Guide to suspended (swing stage) scaffolds*' from Safe Work Australia provides useful information on the potential hazards for suspended (swing stage) scaffolds and provides practical examples of ways you can control the risks associated with them.

Containment Netting/Screening

- 2.32** Subcontractors are to provide the following information where containment netting/screening is to be used:
- the results of ignitability, flame propagation, flammability, or smoke release testing and analysis
 - the measures included within the design and manufacture of the containment netting to control fire hazards, e.g. fire retardation substances
 - the conditions necessary to eliminate or minimise any residual risk associated with fire hazards and the containment netting.
- 2.33** Until an Australian standard or industry guidance is developed and published that prescribes acceptable performance criteria, suppliers of containment netting should provide information on fire hazard properties including:
- demonstrating compliance with Loss Prevention Standard 1215 or British Standard 7955:1999 (or equivalent standard that prescribes the same test and performance criteria), or
 - demonstrating compliance with NFPA 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; or
 - providing test results with a flammability index between 0 and 25 (where zero is the least flammable) when tested in accordance with AS 1530.2-1993 Methods for fire tests on building materials, components and structures - Test for flammability of materials, or
 - providing test results that demonstrate self-extinguishing and low flame propagation properties.

All tests conducted within Australia should be undertaken by a NATA accredited laboratory.

Personal Protective Equipment (PPE)

- 2.34** Lanyards are to be used on tools and chin straps to be worn on hard hats when there is the potential for these to fall into public areas whilst installing or dismantling scaffold adjacent to public areas.

3. References:

- Work Health and Safety Regulations (NSW, QLD, ACT, SA and NT)
- OHS Regulations (VIC)
- OSH Regulations (WA)
- Model Code of Practice - Managing the Risk of Falls at the Workplace - (27/03/2015)
- AS/NZS 1576.1:2010 Scaffolding Part 1: General Requirements
- AS/NZS 4576:1995: Guidelines for scaffolding
- AS/NZS 1576.3: Prefabricated and tube-and-coupler scaffolding
- Erecting, altering and dismantling scaffolding - Part 1: Prefabricated steel modular scaffolding November 2010 (SafeWork NSW)
- Erecting, altering and dismantling scaffolding - Part 2: Aluminium Scaffolding November 2010 (SafeWork NSW)
- Scaffolding Code of Practice 2009 (Workplace Health and Safety Queensland)
- Managing the Risk of Falls at the Workplace Code of Practice (Queensland) 2011

Definitions

- 'Qualified Engineer' means someone who is registered under a law that provides for the registration of professional engineers, e.g., Registered Professional Engineer of Queensland.
- 'Competent' or 'Competent Person' means someone who has acquired, through training, qualifications, experience or a combination of these, the knowledge and skill enabling the person to undertake the work.

1. Purpose

The BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in order to control significant hazardous task, thing or circumstance. BSMS do not replace any State/Territory specific Regulatory requirements, codes of practice or Australian Standards and are to be used in conjunction with the documents referenced in Section 3.

Exclusion: This BSMS does not apply to electrical work on a high voltage electrical installation, which is specialist work that must be carried out by a trained high voltage electrical contractor.

2. Mandatory Requirements:

Electrical Administration

Evidence of electrical qualifications and licenses are attached to the **Worker Registration** form for workers carrying out work on electrical equipment or installations.

An independent electrical audit will be completed on the project. Projects greater than 6 months at 6-month intervals. Projects less than 6 months in duration will be by assessment of the Project Manager. The assessment shall be identified on the **Project Risk Register** and the audit recorded as a **BSMS Review in Lucidity**

A **Certificate of Compliance** is to be obtained for all energised electrical installations to confirm the safety and compliance of the electrical work.

The state specific **Certificate of Compliance** must be used in states where it is required. In states where a state specific Certificate of Compliance is not required, a suitable format may be accepted.

Where a state-specific **Certificate of Compliance** is not required under the local governing authority, **HSE-094 Temporary Electrical Supply Handover Certificate** is to be completed by the installing contractor.

The safety and compliance tests must be carried out according to the AS/NZS 3000: Wiring Rules checklist, which includes visual inspection, continuity of earthing, insulation resistance, polarity, correct circuit connections and RCD trip time values.

The **Certificate of Compliance** or **HSE-094 Temporary Electrical Supply Handover Certificate** is to be obtained by Built prior to the electrical supply being put into service.

A **Dial-before-you-dig** report is to be obtained prior to excavation no later than 28 days prior to commencing the work.

A permit is required for all cutting, drilling and core holing into concrete where services are known.

Site Implementation

Temporary Electrical Supply

Breaker (ELCB), Residual Current Device (RCD) or a Ground Fault Circuit Interrupter (GFCI), fitted at the source.

Temporary electrical boards are to meet the following requirements:

- Comply with AS/NZS 3000
- Comply with AS/NZS 3012
- Installed in a manner and location so as to prevent tip-over or movement (e.g., secured to a wall, post or free-standing structure) and to be of IP23 Rating where affected by the weather or the ingress of water if installed in wet area locations;
- Include a device to prevent strain or termination of cables and flexible cords (e.g., tie-bar).
- Protected from weather extremes.
- Be designed to ensure all main switches are accessible at all times.
- Clearly marked and capable of being locked in an open or closed position.
- Have markings at least 6mm high, in a clear and legible manner, identifying all mains/isolating switches.

- Sign on door stating: 'KEEP CLOSED, RUN LEADS THROUGH BOTTOM';
- Area in front of switchboards are to be kept clear at all times (1.2m minimum clearance);
- Identification of who to contact, contact number and where identification/location of where the board is fed from.

Construction Wiring

A risk assessment is to be completed by the Electrical Contractor prior to the installation of cables or whenever a change occurs as to the likelihood of the cables being exposed to mechanical damage.

A risk assessment is to identify the controls for the pulling and fixing of mains cabling.

Construction wiring shall be readily distinguishable from permanent wiring by using cable of a different colour or by attaching iridescent yellow tape spaced at intervals appropriate for the work location and generally not exceeding 5 meters and stamped with the words 'temporary construction wiring'.

Unarmoured cables shall not be installed on metallic roofs or similar structures unless suitably protected against mechanical damage.

Overhead wiring shall be positioned to avoid crossing roadways or access ways where cranes, high loads or heavy machinery may travel. Where it is not possible to avoid crossings and access ways, an effective means shall be provided to minimise the risk of the vehicular contact with the aerial wiring system, e.g., by placing a flagged catenary wire at a lower level at a distance before the overhead wiring,

Cables supported by means of a catenary shall be stranded or flexible cables affording double insulation or the equivalent of double insulation.

Cabling shall be installed in a manner so as to avoid cables hanging down and thereby being prone to snagging or interference with workers and plant.

Construction wiring and lighting shall not be roughed in with permanent wiring.

All ends to new and existing cables that are not connected to a junction box, fitting, appliance or equipment are to be folded over with the end of the cable taped with approved electrical tape so as to further minimise the risk of persons inadvertently coming into contact with a live electrical cable.

All construction wiring shall be visually inspected by a licensed electrician or electrical engineer to confirm compliance of AS/NZS 3000 in the installation at intervals not exceeding 6 months.

A record of the Construction Wiring inspection shall be recorded and obtained by Built.

Records of construction wiring shall include the following.

- Identification of the person who completed the test
- Visual inspection
- Continuity of earthing system
- Insulation resistance value
- Polarity
- Correct circuit connection
- RCD-Values for trip time

All electrical equipment is to be identified on a register and recorded in **Lucidity** or similar

Inspection and Test of Electrical Equipment

All electrical equipment is to be identified on a register and recorded in **Lucidity** or similar

All construction wiring, including switchboards, fixed RCD's and transportable structures shall be inspected and tested, by a qualified person to verify they are in accordance with AS/NZS3000 following installation.

All faulty electrical equipment is to be identified on a faulty equipment and repair register.

All tested equipment shall have a durable, non-metallic, non-reusable tag.

The tag shall identify the person who performed the test, the test date and re-test date.

Where a coloured tag is used, it is to be coloured in accordance with the RGBY outline.

Red	Green	Blue	Yellow
December	March	June	September
January	April	July	October
February	May	August	November

Equipment test frequency;

Monthly	3 Monthly	6 Monthly	Annually
Temporary Switchboards (Inclusive of RCD)	Leads	Construction wiring	Electrical equipment within an office
Portable RCD	Power tools	Emergency Evacuation lighting discharge test	
Non-portable RCD (e.g. Site sheds, ablution blocks)	Appliances		

Services Identification and Protection

All electrical circuits, permanent and construction wiring, including overhead and underground services are fully identified and recorded in schematics and /or plans. Work procedures are developed for safe work.

Live electrical services/equipment shall be permanently decommissioned or otherwise temporarily decommissioned by a licensed electrician where there is a risk to any worker coming into contact with live electrical equipment or services when performing their work. Where it is not reasonably practicable to permanently or temporarily decommission the services, appropriate safeguards are to be established to ensure those undertaking the work are protected and informed of the presence of live services.

HSE-092 Notification of Services Status is to be completed, in conjunction with the relevant electrical trade subcontractor to identify the status of services within any area where the risk to others from live electrical services has been identified (e.g. working in ceiling voids, demolition of walls, floors etc) and where the status of services needs to be communicated to others.

HSE-092 Notification of Services Status is to be provided by Built to affected trades/workers involved in undertaking work within areas specified and communicated to relevant workers.

The status or change of status of electrical installation services is to be communicated to relevant workers through tool box talks and/or induction into the relevant SWMS (i.e., where their work involves working on or near live electrical services), each of which shall include reminding them of the need to continue to treat all cables as potentially live and not to cut these or remove them.

Requirements for Residual Current Devices (RCD)

All final sub-circuits of construction wiring shall be protected at the switchboard where the final sub-circuit originate by RCD with a maximum rated residual current of 30mA, that operate in all live (active and neutral) conductors.

Where construction wiring is not provided (e.g., in the case of working in existing a partially occupied building or office space) and the electrical supply is to be taken from an existing wiring socket (e.g., the buildings existing power supply) an appropriately qualified electrician is to test the circuit and confirm in writing the power supply is RCD and Earth leakage protected and the cabling meets AS/NZS 3012 prior to use.

Where the supply is not RCD and Earth leakage protected, or the cabling does not meet AS/NZS 3012, a RCD and Earth leakage protection shall be installed, so far as is reasonably practicable, to protect the circuit. On completion, an licensed electrician is to confirm in writing the circuit is safe to use.

Where the electrical supply for construction/demolition work supply can only be obtained from an existing permanent wiring socket outlet, and the outlet is not protected by an RCD, a portable RCD must be

connected between the socket outlet and the equipment plugged into the socket outlet.

NSW and Qld Regulations provide that residual current devices must have a tripping current that does not exceed 30 milliamps if electricity is supplied to the relevant equipment through a socket outlet not exceeding 20 amps. Sub-mains supplying site sheds shall incorporate an RCD having a rated tripping current not exceeding 100 mA;

In the event of an RCD or circuit-breaker operating, the cause of any fault should be assessed by a licensed electrician before being reset.

Extension Cords and Fittings

3 pin plugs and cord extension sockets used on flexible extension cords and portable power tools are to be either a non-rewireable (moulded) or transparent type.

Cables that are normally used for fixed wiring are not be used as flexible extension cords.

Flexible extension cords are to be elevated above any work area or passageway to ensure that clear access is provided beneath.

Flexible extension cords used in multi- storey construction are to be confined to the same floor as the power source (this does not apply in the case of formwork; external staging; lift or service shafts and stairwells).

Wet lead connections or tools will not be used.

All plugs are to be heavy duty with lipped see through or moulded plugs.

Flexible cord extension sets shall be heavy duty and the sheath of a flexible cord shall not contain the colour green.

Double adaptors, 3 pin piggy back plug adaptors and domestic type power boards shall not be used on construction and demolition sites.

Lighting

Adequate artificial lighting to illuminate the work area is to be installed if there is insufficient natural lighting.

Minimum lighting levels should be 40lx for walkways and 160lx for general areas.

Lamps in luminaires must be protected against mechanical damage.

Emergency lighting shall

- Be provided in designated access and egress paths where the general lighting requirements cannot be met using natural lighting.
- Be provided above each switchboard.
- Provide an average of 20lx at 900 mm above the floor level along the centre line; or be confirmed in writing by an electrician that the luminaires installed comply with the AS for classification, mounting height and spacing; or provide a minimal horizontal luminance of 3 lx.
- Allow a minimum of 1 hour following loss of normal lighting in the area

Temporary wiring supplying lighting circuits shall be connected to the designated lighting circuits of the switchboard.

Where a lighting circuit contains detachable connections for emergency lighting, those detachable connections shall prevent unauthorized disconnections without the use of a tool.

The emergency lighting level shall be verified by use of an appropriate light level meter or confirmation of the installed luminaire types by a competent person.

Emergency lighting shall meet the requirements of AS/NZS 2293 and AS/NZS 1680

Task Lighting

A mechanical guard is to be fitted to task lighting in order to protect the lamp.

Task lighting shall be of an adequate stability.

Portable luminaires shall have a minimum degree of protection IP2X in accordance with AS 60529.

Portable luminaires shall meet the requirements of AS/NZS 1939

Portable Generators

Electrical equipment supplied by low voltage generators shall be connected in accordance with AS/NZS 3010.

Typical arrangements shall be one of the following:

- Small portable generating sets
- RCD protected generating sets
- Generating sets provided with a self-contained switchboard
- Generating sets used to supply a directly connected site construction switchboard

Lift shafts

Construction wiring dedicated to the installation of lift shaft equipment shall consist of a separate final sub-circuit protected by a 30mA RCD that operates in all live (active and neutral) conductors..

The circuit breaker shall be locked and tagged to prevent inadvertent isolation of supply to the lift shaft by others on site.

Lighting in the lift shaft shall;

- Be installed at intervals not exceeding 6 metres with the uppermost fixture installed within 1 metre of the top of the lift shaft.
- Be connected to supply via plug and socket arrangement.
- Be at a minimum lighting level equivalent to that provided by a 36 W fluorescent and guarded against mechanical damage.
- Have emergency lighting at a minimum level of 20 lx for a period not less than 1 hour.

Construction wiring for false cars shall;

- Be supplied from a minimum 230 V, 20 A socket-outlet on a separate final sub circuit.
- Be heavy-duty, double insulated, flexible cord or cable with a minimum conductor size of 4mm².
- Be protected by a 30mA RCD that operates in all live conductors.
- Be dedicated to the climbing hoist, lighting and power tool use from the false car.
- Be secured at the top of the lift shaft and at the point of attachment to the false car by suitable means to prevent mechanical damage.
- Not foul between the false car and lift shaft when running.

Transportable Structures

Transportable structures shall be supplied by one of the following methods;

- Sub-mains originating at a circuit-breaker on a switchboard and installed as construction wiring.
- Final sub-circuits originating at a circuit-breaker on a switchboard and installed as construction wiring.
- Flexible cord and plug connected to a final sub-circuit via a socket-outlet in accordance with AS/NZS3001

Where supplied by flexible cord the minimum cross-sectional area of the flexible cord shall be 2.5mm² and no greater than 15m in length.

Sockets inside the transportable structure shall only be used to supply electrical equipment and lighting within that transportable structure.

Sockets inside and outside the transportable structure shall be protected by 30mA RCD that operates in all live conductors.

Transportable structures and their site supplies shall comply with AS/NZS 3001.

Emergency Preparedness

Critical electrical isolation points and the contact details of the electrical contractor are to be identified on a site map and displayed on the site noticeboard or similar.

All suspected electric shocks are to be reported to Built.

All workers who receive a suspected electric shock are to be taken to a medical practice and monitored by an ECG prior to returning to work.

High Voltage Electrical Installations

A **Risk Workshop** or similar is to record the risk assessment of all existing and new high voltage installations.

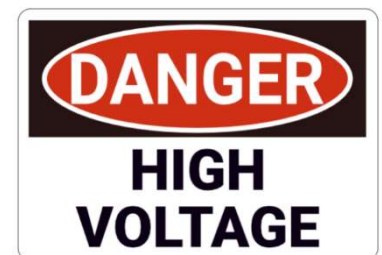
An **Installation Safety Management Plan** is to be developed by the specialist high voltage contractor for all high voltage appliance and cabling work.

All high voltage cables and conduit paths shall be treated as live regardless of their energisation status.

Once high voltage conduits are installed, the areas shall be communicated to the workforce by a **Site Address** or similar and signposted with 'Danger High Voltage' or similar.

Where possible, high voltage conduit encasements and protective structures shall be painted in orange highlight colour in a chevron or stripe pattern.

All drilling, cutting or plant movement completed on or near the high voltage electrical conduits shall be completed under a permit.



Energisation/Commissioning

De energised testing methods should be used before energised testing methods.

Energisation and commissioning procedures are to be provided to Built before energisation / commissioning activities commence and are to include:

- Requirements for developing a SWMS for working in or around live services.
- A Permit to Energise is in place for the electrical work
- Isolation points are correctly identified and documented on an Isolation Register
- Identification of circuits to be energised.
- Drawings/sketches reflecting services.
- Workers are trained and qualified, including LVR and CPR
- Arrangements for communication to workers regarding circuits to be energised.
- Tools and equipment and emergency rescue equipment is adequate for the task
- Procedure for inspecting all outlets and circuits prior to energising/commissioning, ensuring that there are no open 'live ends'.
- Arrangements are in place for managing unfinished work and leaving the workplace in a safe state. o Any circuit required to be connected to a source of supply prior to the field end point completion must be approved by BUILT and the Isolation Register updated to reflect the change. o Prior to energisation

confirmation that the circuits and equipment has been tested and electrical test records as required by AS/NZS 3000 completed by a licensed electrician.

Work on Energised Electrical Systems

Work on energised equipment is prohibited.

The only exceptions are;

- The work is necessary for the purposes of testing required under the legislation.

Where there is no reasonable alternative means of carrying out the work, or it is necessary that the electrical equipment to be worked on is energised in order for the work to be carried out properly, or it is necessary in the interests of health and safety that the electrical work is carried out on the equipment while the equipment is energised (such as in the hospital-based scenario provided above or where road safety dictates that work be carried out on working traffic lights) written approval must be obtained by the Construction Manager and HSE manager prior to commencing the work.

Where approval to work on live electrical services has been granted, the controls are to be in accordance with regulatory requirements and must include:

- a risk assessment is carried in relation to the proposed work.
- the area is clear from obstruction and work being performed by others in the immediate vicinity, including the risk of others coming into contact with energised equipment.
- a SWMS is prepared covering the work and provided to Built.
- a **Safety Observer** is used whilst the work is being performed.
- emergency response procedures are in place,
- the work must be carried out by a competent person who has tools, testing equipment and PPE that is suitable for the work, properly tested and maintained in good working order,
- those tools, testing equipment and PPE must be used during the work,
- the work is carried out in accordance with the dedicated SWMS.

The role of the **Safety Observer** is to be clearly communicated and understood. The **Safety Observer** must:

- be competent to implement the controls measures in an emergency
- be competent to rescue the worker who is carrying out the work if necessary and must have been assessed in the previous 12 months as competent to rescue and resuscitate a person.
- not carry out any other work or function that compromises their role, for example they should not be required to observe more than one task at a time
- not be situated in the work basket of the elevating work platform from which the electrical work is being carried out

Lock-out / Tag-out (LOTO)

For all isolation and energisation electrical works

- A Lock-out / tag-out (LOTO) procedure is to be obtained from the electrical contractor for the works
- The LOTO must be referenced in the relevant Safe Work Method Statement (SWMS)
- The LOTO procedure must reflect;
 - De-energise, isolate, test and prove for dead prior to any work on electrical circuits and electrically powered equipment.
 - Testing must be carried out by a licensed electrician using a calibrated contact meter not a non-contact tester, i.e. volt stick.
 - Ensure that all stored energy has been released and the correct circuit and/ or equipment isolated. Identify and isolate secondary circuits and alternate sources of energy for example, solar systems, generator back up, safety services, UPS's.
 - Only positive isolation switches may be used for electrical isolation, not emergency stops or push buttons,
 - The need to ensure lock-out ('Engineering') control is used as the primary control, in conjunction with tag-out ('Administrative') controls

- Isolated circuits to be locked out with personal locks and fitted with personal danger tags.
- For more complex isolations involving multiple people a 'Group Isolation Procedure' will be required.
- Personal danger tags to be installed and removed by the same worker only.
- No worker is permitted to remove other worker's danger tags, unless authorised by BUILT following a documented investigation.
- Circuits are not isolated with zip ties, copper wire or similar tags that can be easily removed.
- Never assume an exposed conductor is dead – TEST FOR DEAD BEFORE YOU TOUCH

3. References

- Work Health and Safety Regulations (NSW, QLD, ACT and NT)
- OHS Regulations (VIC)
- OSH Regulations (WA)
- Managing Electrical Risks in the Workplace – Code of Practice
- HSE-094 Compliance Certificate for Temporary Electrical Work
- HSE-068 Electrical Equipment Inspection Register
- HSE-092 Notification of Services Status
- AS/NZS 3000 Electrical Installations – Wiring Rules
- AS/NZS 3001 Electrical installations – Transportable structures
- AS/NZS 3010 Electrical Installations - Generating sets
- AS/NZS 3012 Electrical installations – Construction and demolition sites
- AS 2293 Emergency escape lighting and exit signs
- **Lucidity**
 - Site Address
 - Worker Registration
 - Risk Workshop
 - Register
 - BSMS Review

1. Purpose:

This BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in relation to the design, installation and inspection of Temporary Works, as defined in this document. BSMS do not replace any State/Territory specific regulatory requirements, codes of practice or Australian Standards and are to be used in conjunction with the documents referenced in Section 3.

2. Mandatory Requirements:


2.1. General

2.1.1. 'Temporary works' is a widely used expression in the construction industry for an "engineered solution" used to support or protect an existing structure or the permanent works during construction, or to support an item of plant or equipment, or the vertical sides or side-slopes of an excavation, or to provide access or protection of people (e.g. fall protection barricading, hoardings etc). The construction of most types of permanent works will require the use of some form of temporary works. They include but are not limited to:

Temp Works	Subcontractor Design / Proprietary	Third-party Design Review	Third-party Installation Inspection
Edge Protection			
Proprietary edge protection fencing systems (including fixings);	✓		
Proprietary edge protection fencing systems (<u>where they cannot</u> be installed in accordance with the manufacturers specifications);	✓	✓	✓
Non-proprietary edge protection systems;	✓	✓	✓
Non-proprietary lift opening (or penetration cover (exceeding the size of penetration described in Attachment A)	✓	✓	✓
Hoardings / Gantries			
Hoardings - A Class (External) with no public interface;	✓		
Hoardings - A Class (External) public interface;	✓	✓	✓
Hoardings - B Class / Gantries / Overhead Protective Structures (and Scaffolding used as a hoarding);	✓	✓	✓
Trenching/Excavations			
Proprietary shoring systems for excavations less than 1.5m deep/high;	✓		
Proprietary shoring systems for excavations greater than 1.5m deep/high;	✓		✓

Temp Works	Subcontractor Design / Proprietary	Third-party Design Review	Third-party Installation Inspection
Non-proprietary shoring system for trenches or excavations;	✓	✓	✓
Non-permanent earth retaining wall systems;	✓	✓	✓
Propping / Structural Support			
Structural loadbearing support systems (needles/propping);	✓	✓	✓
Proprietary crane loading platforms (e.g. Preston);	✓		
Non-proprietary crane loading platforms and propping;	✓	✓	✓
Proprietary bracing for precast concrete;	✓		
Non-Proprietary bracing for precast concrete;	✓	✓	✓
Platforms / Stairs / Roofs			
Temporary public access platforms and staircases;	✓	✓	✓
Temporary roof structures (including those used as part of site office establishment/amenities);	✓		✓
Non-proprietary crane loading platforms / Suspended platforms / Purpose built loading platforms;	✓	✓	✓
Scaffolding / Screens			
Scaffolding as follows: <ul style="list-style-type: none"> a. Scaffolding > 20m in height b. Suspended Scaffolds c. Perimeter Catch Scaffold or Fan Scaffold d. Hung Scaffold e. Spur Scaffold f. Loading Platforms built from scaffolding components where intended to support loads above the duty rating load for the scaffold. g. Scaffold designed as an overhead protection for public / workers safety (i.e., 10kpa rated or above) h. Cantilever Scaffold i. any non-standard scaffold assembly significantly outside the configuration specified by the 	✓	✓	✓

Temp Works	Subcontractor Design / Proprietary	Third-party Design Review	Third-party Installation Inspection
manufacturer is to be designed by an Engineer			
Perimeter screens (i.e. used in conjunction with formwork); (1not each lift)	✓	✓	✓ ¹
Concrete Lines			
Fixed vertical Concrete Lines;	✓		
Non typical fixing details for fixed vertical Concrete Lines;	✓	✓	
Cranes / Hoists / Piling Rigs			
Tower crane bases, grillages, and ties;	✓	✓	✓
Ground working platforms for mobile/crawler cranes;	✓	✓	
Working platforms for piling rigs the working platform is to be designed by a competent person (e.g. a geotechnical engineer):	✓	✓	
Hoists including mast ties and bridging platforms (e.g. from the hoist to the structure);	✓	✓	✓
Catch decks designed to supporting a load (e.g., demolition material such as a catch deck below a slab penetration for a staircase; Intermediate loading platform for deep excavation);	✓	✓	✓
Structural Support (Miscellaneous)			
Flying and Raking Shores;	✓	✓	✓
Temporary Façade retention systems;	✓	✓	✓
Temporary vehicle or pedestrian bridges;	✓	✓	✓
Structural steel erection support systems.	✓	✓	✓
Ramps (for vehicles, plant/equipment and pedestrian traffic greater than 2m in height);	✓	✓	✓
Formwork			
Conventional and engineered formwork systems used for the structural support of concrete for suspended slabs, penetration in-fills (e.g., where a stair void is being filled in), columns and walls;	✓		Qualified Structural Engineer appointed by subcontractor

HSE-122	BUILT SAFE MANDATORY STANDARD (BSMS) TEMPORARY WORKS	
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Temp Works	Subcontractor Design / Proprietary	Third-party Design Review	Third-party Installation Inspection
Jacking systems (Formwork jump/slip and heavy lifts);	✓	✓	✓
Signage			
Signage attached to tower cranes, jump-forms or scaffolding (or other structure where, due to their size, weight or position place additional loadings to the structure).	✓	✓	✓

Temporary works are not to be used until a Third-party inspection has been carried out, as required above, and all actions raised from the inspection have been closed out.

Any ambiguity in the interpretation/application any of the above is to be discussed and agreed with the nominated Temporary Works Coordinator, Construction Manager and HSE Manager.

Each state is to maintain a register of recommended consulting engineers who can perform Third-party Design Reviews and Third-party installation inspections of temporary works (this can be found under the 'Resource' tab on the HSE Home Page on Built IQ).

2.2. Structural Steel

The planning processes and controls necessary to help support best practice outcomes with the erection of steel structures is to be in accordance with the Australian Steel Institute ***'Practical Guide to Planning the Safe Erection of Steel Structures'***; or, WorkSafe Victoria ***'Safe erection of structural steel for buildings: Industry standard'***

A copy of the guide can be downloaded from Australian Steel Institutes website or WorkSafe Victoria by clicking on either of the following link:

<https://www.steel.org.au/focus-areas/fabrication-and-erection/erection-of-steel-structures/>

<https://www.worksafe.vic.gov.au/resources/safe-erection-structural-steel-buildings-industry-standard>

Any ambiguity in the interpretation/application any of the above is to be discussed and agreed with the nominated Temporary Works Coordinator, Construction Manager and HSE Manager.

2.3. Temporary Works Coordinator

The Project Manager shall appoint a person to perform the role of Temporary Works Coordinator (**TWC**) to oversee the implementation of temporary works, including:

- Ensuring the project risk register appropriately incorporates temporary works design risks
- Preparation of an adequate design brief (see attached example)
- Completion and maintenance of a temporary works register
- Ensuring the production of a temporary works design for each identified element
- Ensuring the Independent checking of the temporary works design (as required in 2.1.1)
- Maintaining the Temporary Works folder and Register

- g. Pre-erection inspection of the temporary works materials and components.

Note: The TWC for the project will generally be an experienced member of the project team (e.g.: Senior Project Engineer, Design Manager or Project Engineer). It is essential that those selected to act as the TWC are competent with relevant experience and qualifications appropriate to the complexity of the project.

2.4. Temporary Works - Identification

- 2.4.1. All Temporary Works are to be recorded on the 'HSE-122A Temporary Works Register' (or similar providing it covers all the criteria in HSE-122A)
- 2.4.2. Where temporary works are of similar appearance to permanent works/structure and their proximity to such permanent works/structure may potentially lead to the inadvertent removal of an element of permanent works/structure and not the temporary works (such as during the removal of temporary works on completion) such elements of the temporary works are to be positively identified (e.g., through physical markings on the temporary or permanent works so as to clearly identify which member is which).

Note: As an example, a universal beam being used as a floor to underside of slab support column forming part of the permanent works may be installed beside a universal beam of the same/similar dimensions and/or appearance to that of a universal beam forming part of the temporary works and may be inadvertently removed when the temporary works are removed on completion.

- 2.4.3. Perimeter screens are to be individually numbered so they can be readily identified during placement or removal. The numbers should be visible, durable and placed in a prominent position on the screen.

2.5. Temporary Works - Design

- 2.5.1. In the case of non-proprietary systems where Built commissions a Temporary Works design, a documented design brief (refer attached example) is to be provided to the designer and is to include, as a minimum:
- a. The proposed use / purpose of the Temporary Works;
 - b. Details of any supporting structures;
 - c. The required design life;
 - d. The foundations for the proposed Temporary Works;
 - e. Details of any proposed signage, lighting or other item to be attached;
 - f. The exposure of the temporary work to inclement weather, details of other known hazards which may affect the temporary works, such as close proximity to traffic or potential for the structure receiving heavy impact.
- 2.5.2. Copies of the approved Temporary Works design are to be retained on site.

- 2.5.3. Any changes to the Temporary Works design are to be approved in writing by the original designer. Where the original designer is not available, the design changes may be approved by another party with equal or greater qualifications.
- 2.5.4. Where the designer and or engineer of any existing structure to be modified or supported is not available, the Temporary Works designer shall ensure they conduct a structural investigation or obtain the necessary documentation and or information to determine the specific capacity of the existing structure to meet any requirements of the Temporary Works.

2.6. Temporary Works Design folder

- 2.6.1. The TWC shall establish a TW design folder for each temporary works design element and shall include, as applicable:
- a. Engineering Design Brief
 - b. Design Drawings
 - c. Design Documents
 - d. Supporting information/investigations (as appropriate)
 - e. Preferred temporary works strategy/staging/methodology/systems
 - f. Design reports
 - g. Investigation reports (e.g. Existing structure, Geotechnical)

2.7. Temporary Works - Installation

- 2.7.1. The following Temporary Works must be installed by a person with appropriate Rigger qualification;
- a. 'B' Class Hoarding/Gantries
 - b. Façade retention
 - c. Bracing for Precast concrete
 - d. Crane loading platform
 - e. Suspended platforms
 - f. Temporary structural steel systems
 - g. Crane grillages and ties
 - h. Perimeter containment screens:
 - Intermediate scaffolding or Basic Rigging (NSW; ACT; WA)
 - Basic Rigging (VIC; SA)
- 2.7.2. The following Temporary Works must be installed by a person with Advanced Scaffolding qualification;
- a. Overhead protective structure made of scaffold
 - b. Needles for scaffolding
 - c. Crane loading platforms made of scaffold
- 2.7.3. All other Temporary Works must be installed by a competent person.

- 2.7.4. Safety tape (e.g., red and white striped plastic tape), is not to be used as the primary control for edge protection where a person can fall more than 2m.
- 2.7.5. Fixing details for handrail systems are to be documented and available on site for verification of compliance to installation requirements.
- 2.7.6. All props and braces are to be adequately secured to prevent them from falling.
- 2.7.7. All gates to hoists are to be secured by a suitably rated lanyard, or other means, to prevent them inadvertently falling during their installation or removal. This is to apply irrespective of any installed exclusion zones.

2.8. Temporary Works – Ongoing Inspections

- All Temporary Works and structures or other elements they may support shall be regularly inspected and monitored by a competent person as specified in the Temporary Works Register to ensure the ongoing stability and structural integrity.
- An inspection of Temporary Works may be required after an extreme weather event or other incident that could affect the stability or structural integrity of temporary works.

2.9. Temporary Works – Alterations

- 2.9.1. No alterations to the Temporary Works, including any part of the structure or element supporting the Temporary Works, is to be carried out without written authorisation from Built and approval from the Temporary Works designer/ TWC.
- 2.9.2. If structural alterations or excavations are to be carried out adjacent to any temporary works, the Temporary Works designer is to be consulted and where necessary a suitable methodology developed to ensure the integrity of temporary works is maintained. If affected by the alterations or excavations the temporary works are to be reinspected.

2.10. Temporary Works – Removal

- 2.10.1. Where the removal of temporary is subject to the permanent works attaining sufficient strength to allow dismantling of the temporary works written authorisation is to be obtained before dismantling commences.

2.11. Penetrations

- 2.11.1. Where a person can fall through a penetration (e.g., penetration in a concrete floor slab) the penetration is to be secured by means of an appropriate guardrail, fence or penetration cover. For small penetrations, e.g. less than 1 metre span, plywood meeting the requirements in Attachment A will suffice. For spans greater than 1 metre the penetration cover is to be designed by a structural engineer.

3. References:

- Work Health and Safety Regulations (NSW, QLD, ACT, SA and NT)
- OHS Regulations (VIC)
- OSH Regulations (WA)
- HSE-120 High Risk Mandatory Standard – Scaffolding
- National Code of Practice for Precast, Tilt-up and Concrete Elements in Building Construction
- 'HSE-122A Temporary Works Register'
- NSW Code of Practice: Overhead Protective Structures
- Practical Guide to Planning the Safe Erection of Steel Structures Australian Steel Institute
- Piling work and foundation engineering sites - Industry standard WorkSafe Victoria
- Safe erection of structural steel for buildings: Industry standard - WorkSafe Victoria

4. Definitions

- 'Qualified Engineer' means someone who is registered under a law that provides for the registration of professional engineers, e.g., Registered Professional Engineer of Queensland.
- 'Competent' or 'Competent Person' means someone who has acquired, through training, qualifications, experience or a combination of these, the knowledge and skill enabling the person to undertake the work.

Attachment A – Standard Penetration Cover

Attachment B – Engineering Design Brief (Example)



Temporary Works Engineering Design Brief (TWEDB)

Built

Project Name	
Project No.	
Scope Item/Description of work	
Category of Works	
TWEDB No.	
EDB prepared by/date:	
Email:	
Mobile:	
EDB checked by/date:	

1. Design Brief

Description of the temporary works, including assumptions, staging and proposed methodology. Provide information on project constraints e.g. access, height restrictions, loading restrictions, ground conditions, existing services, etc.

Staging/methodology

Access

Height Restrictions

Loading restrictions

Ground Conditions

Existing services

2. Project Information:

Provide background design information including description of permanent structure, design documentation, other relevant information that provides context to the project. Include any investigation results as relevant to the works.

Specific loading or functional requirements including requirements for lifting and handling temporary works.

Key constraints of the site. This may be a constraint of the existing or proposed structure, geometrical constraints, access related constraints, interface with the general public, ground conditions, etc.

Preferred temporary works strategy or construction methodology.

Any specific requirements/methodology relating to the dismantling/removal of the temporary works including removal of footings, props, de-stressing, etc.

Installation life of temporary works.

3. Supplied Documentation:

Provide details of documentation supplied including drawings, reports including geotechnical, testing results, investigations, existing structural drawings, in-ground survey information, etc.

List all relevant documents in this section and issue via formal transmittal.

Advise of additional information that may be available if relevant.

HSE-123	BUILT SAFE MANDATORY STANDARD (BSMS) DEMOLITION	
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1. Purpose:

The BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in order to control significant hazardous tasks, things and circumstances.

2. Mandatory Requirements:

General

- 2.1.** Demolition includes the demolition or dismantling of a structure, including parts of a structure that are loadbearing, and the demolition or dismantling of components in a fitout project including glass, joinery, partitions, walls, ceilings and workstations.

Notification

- 2.2.** Where required under local legislative requirements, notification of demolition work is to be provided, within the specified timeframe and in the required manner, to the relevant authority prior to demolition (of the type where notification is required) commencing. By way of example, the New South Wales and Queensland WHS Regulations require persons intending to carry out demolition work to give the regulator 5 days' advance written notice of the works if the demolition:
- (a) Is of a structure (or part of a structure) that is loadbearing or otherwise related to the physical integrity of the structure and the structure is at least 6 metres in height,
 - (b) Involves load shifting machinery on a suspended floor,
 - (c) Involves explosives.
- 2.3.** Where the local requirements include the requirement to give notice of demolition work, Built shall maintain a copy of such notification as part of the project records.

Training and Experience

- 2.4.** The Project Manager/Site Manager are to ensure any subcontractor's supervisors (for example, a leading hand or foreman) overseeing the demolition work must be competent in the type of demolition being carried out and must be available whilst the work is being performed.
- 2.5.** Where Built is directly supervising demolition works, the relevant supervisor overseeing the demolition work must be competent in the type of demolition being carried out.

Planning Prior to Demolition

- 2.6.** A Demolition Work Plan shall be completed for all demolition works which require notification to the local regulatory authority or otherwise requested by Built and shall include:
- the location of the site on which the structure to be demolished stands
 - the overall height of the structure above ground level and the least distance from the structure to each site boundary

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- the type of building (occupancy class), its structural support system and the principal materials of its construction
- the proposed methods of demolition including the number and types of major items of plant
- the proposed methods for handling and disposing of demolished materials and, in particular, of hazardous materials
- the proposed methods of controlling and maintaining access and egress to workplace
- the proposed sequence of carrying out the demolition works and an estimate of the time (in days) it is likely to take to complete all of each of the stages of the work
- the proposed hoardings, scaffolding and fencing and of any overhead sidewalk protection
- any other plans, illustrations, written documents, or specialist reports as may be necessary to support the proposed methods of work or protective structures
- traffic management arrangements, which includes managing vehicles and mobile plant hazards in relation to operation at the workplace and interaction with the public.
- the location and condition of Underground and above ground services and installations including:
 - a) electricity
 - b) drainage and sewerage
 - c) gas
 - d) water
 - e) communications cables (for example, telephone, radio, etc ...)
 - f) hydraulic pressure mains
 - g) liquid fuel lines
 - h) lubrication systems
 - i) process lines (chemical, acid)
 - j) hazardous materials, including asbestos, lead and PCBs
 - k) underground structures, such as a basement, cellars or storage tanks
 - l) any confined spaces where work will be undertaken
 - m) the general condition of structures on adjoining properties, particularly where these are close to or on the boundaries of the demolition workplace
 - n) the effect demolition may have on people working in adjoining properties or seeking access to and egress from those properties, and
 - o) the emergency arrangements, which should include equipment for the rescue of injured persons.

Safe Work Method Statement

- 2.7.** The requirements for a SWMS in respect of demolition works varies between those states that have adopted the model WHS Regulations and those continuing to operate under their existing OHS Regulations. Consequently, the following requirements apply:

NSW, ACT, QLD, SA

A safe work method statement is to be prepared for work involving:

- demolition of an element of a structure that is load-bearing or otherwise related to the physical integrity of the structure;

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- involves, or is likely to involve, the disturbance of asbestos;
- involves structural alterations or repairs that require temporary support to prevent collapse;
- involves a risk of a person falling more than 2 metres;
- is carried out on a telecommunication tower;
- is carried out in or near a confined space;
- is carried out in or near a shaft or trench with an excavated depth greater than 1.5 metres or a tunnel;
- involves the use of explosives;
- is carried out on or near pressurised gas distribution mains or piping;
- is carried out on or near chemical, fuel or refrigerant lines;
- is carried out on or near energised electrical installations or services;
- is carried out in an area that may have a contaminated or flammable atmosphere;
- involves tilt-up or precast concrete;
- is carried out on, in or adjacent to a road, railway, shipping lane or other traffic corridor that is in use by traffic other than pedestrians;
- is carried out in an area at a workplace in which there is any movement of powered mobile plant;
- is carried out in an area in which there are artificial extremes of temperature;
- is carried out in or near water or other liquid that involves a risk of drowning; or
- involves diving work.

Victoria

A safe work method statement is to be prepared for:

- Demolition works;
- Works involving the removal or likely disturbance of asbestos;
- Works involving structural alterations that require temporary support to prevent collapse.

Western Australia

A safe work method statement is to be prepared for the same processes described for NSW, ACT, QLD & SA as described above.

- 2.8.** The Safe Work Method Statement must be submitted to Built, along with a completed copy of **HSE 041 SWMS HRCW Checklist** and must be reviewed by Built prior to commencement of any demolition work.

Demolition License

- 2.9.** Where a licence is required under local regulatory requirements to undertake demolition work, including asbestos removal work and high-risk work, Built shall obtain a copy of the license from the demolition contractor (and other contractors, as applicable) and maintain a copy of such notification as part of the project records.
- 2.10.** Contractor to provide Certificate for Prescribed Activity and include the person nominated within that company that are deemed competent.

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Adjacent and adjoining buildings

- 2.11. Prior to any demolition taking place where there is the likelihood or potential to cause damage to any adjoining structure, building or building fabric (or part thereof) a dilapidation survey is to be carried out in order to record any pre-existing condition prior to demolition.
- 2.12. No part of the demolition process (including vibration) is to adversely affect the structural integrity of any other building or structure. Consideration is to be given to the use of shoring and underpinning and to the effects of changes in soil conditions as a result of the demolition work. (Seek advice from relevant engineer).
- 2.13. No part of the demolition process should cause flooding or water penetration to any adjoining building.

Essential Services

- 2.14. The location and disconnection of all essential services, include the supply of gas, water, sewerage, telecommunications, electricity, chemicals, fuel and refrigerant in pipes or lines is to be established before demolition work is commenced.
- 2.15. All electric, gas, water, sewer, steam and other service lines not required in the demolition process should be shut off, capped, or otherwise controlled, at or outside the building line, before demolition work is commenced.
- 2.16. In each case, any utility agency involved should be notified in advance and its approval or services, if necessary, obtained. Any service retained for the demolition work should be adequately protected as required by the relevant authority (for example, the protection of overhead electric lines).
- 2.17. Prior to demolition work being carried out which is likely to affect or potentially effect existing in-ground services, the demolition contractor (where specified) or Built are to obtain existing services documentation showing the type of service and specific location or undertake existing services identification surveys. This shall be done by contacting **Dial before you dig before any work commences in order to** obtain existing services documentation from the relevant utility service provider.
- 2.18. All obtained existing services drawings/documentation shall be issued to the demolition contractor and Built with copies to be held on site at all times whilst demolition work is in progress.
- 2.19. **HSE 092 Notification of Service Status** must be completed and provided to Built before any demolition is carried out where services are required to be terminated or otherwise decommissioned.
- 2.20. Services isolation and or decommissioning must only be carried out by a qualified person.

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- 2.21.** Only licensed electricians may work on energised equipment. A licensed electrician must be present where other persons are near any energised equipment

Hazardous Chemicals and Materials

- 2.22.** Demolition work may involve workplaces or structures that contain or have contained hazardous materials, including chemicals, hazardous materials such as lead, asbestos, polychlorinated biphenyls (PCBs), contaminated dust and combustible materials. The risks arising from potential exposure to hazardous materials are to be identified, assessed and control measures incorporated into the Demolition Plan (where required) or SWMS.

Asbestos Register/ Audit

- 2.23.** Built is to ensure all asbestos or asbestos-containing material (ACM) present or assumed present at the project site is identified by a competent person and an asbestos register/ audit is completed.
- 2.24.** An initial asbestos register/ audit may not be adequate for works and a further asbestos register/ audit maybe required to be organised by Built, e.g., unable to access areas, change of scope, only non-destructive investigation completed.
- 2.25.** Asbestos register/ audit is to be within 5 years of current date and must accurately identify all asbestos or asbestos-containing material present on site, including the date the substance was identified and the location, type and condition of the asbestos-containing material.
- 2.26.** The asbestos register and audit must encompass all relevant work areas.
- 2.27.** Areas where no test have been completed or unknown material still present are to be deemed positive to until further testing has been complete and finding presented.
- 2.28.** Site team are to be inducted to asbestos register/ audit and an asbestos briefing is to be delivered by competent person.
- 2.29.** Notification to local statutory authority where required.
- 2.30.** Air monitoring for removal works to be completed for all friable asbestos and non-friable asbestos where in the vicinity of others (Consult with your relevant HSE Manager/ Coordinator)
- 2.31.** Asbestos clearance is to be provided to Built prior to others entering work area.
- 2.32.** All asbestos records and results are to be made available and kept on site in accordance with the applicable legislation.

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Lead

- 2.33.** Lead is found in paint, old water pipes and other plumbing fittings, sheet lead, solders, lead flashing, lead light windows, glass and linoleum floor tiles. The age of a structure may be directly related to the amount of lead that can be present. If it is suspected that the structure contains lead-based paint, a test for the presence of lead should be conducted.
- 2.34.** In New South Wales and Queensland, areas in which lead process work are carried out are called *"lead process areas."* A *"lead process"* consists of any:
- a) Work that exposes a person to lead dust or lead fumes arising from the manufacture or handling of dry lead compounds,
 - b) Work in connection with the manufacture, assembly, handling or repair of, or parts of, batteries containing lead that involves the manipulation of dry lead compounds, or pasting or casting lead,
 - c) Breaking up or dismantling batteries containing lead, or sorting, packing and handling plates or other parts containing lead that are removed or recovered from the batteries,
 - d) Spraying molten lead metal or alloys containing more than 5% by weight of lead metal,
 - e) Melting or casting lead alloys containing more than 5% by weight of lead metal in which the temperature of the molten material exceeds 450°C,
 - f) Recovering lead from its ores, oxides or other compounds by thermal reduction process,
 - g) Dry machine grinding, discing, buffing or cutting by power tools alloys containing more than 5% by weight of lead metal,
 - h) Machine sanding or buffing surfaces coated with paint containing more than 1% by dry weight of lead,
 - i) A process by which electric arc, oxyacetylene, oxy gas, plasma arc or a flame is applied for welding, cutting or cleaning, to the surface of metal coated with lead or paint containing more than 1% by dry weight of lead metal,
 - j) Radiator repairs that may cause exposure to lead dust or lead fumes,
 - k) Fire assays if lead, lead compounds or lead alloys are used,
 - l) Hand grinding and finishing lead or alloys containing more than 50% by dry weight of lead,
 - m) Spray painting with lead paint containing more than 1% by dry weight of lead,
 - n) Melting lead metal or alloys containing more than 50% by weight of lead metal if the exposed surface area of the molten material exceeds 0.1 square metre and the temperature of the molten material does not exceed 450°C,
 - o) Using a power tool, including abrasive blasting and high pressure water jets, to remove a surface coated with paint containing more than 1% by dry weight of lead and handling waste containing lead resulting from the removal,
 - p) A process that exposes a person to lead dust or lead fumes arising from manufacturing or testing detonators or other explosives that contain lead,
 - q) A process that exposes a person to lead dust or lead fumes arising from firing weapons at an indoor firing range,
 - r) Foundry processes involving:
 - (i) Melting or casting lead alloys containing more than 1% by weight of lead metal in which the temperature of the molten material exceeds 450°C, or

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(ii) Dry machine grinding, discing, buffing or cutting by power tools lead alloys containing more than 1% by weight of lead metal,

s) A process decided by the regulator to be a lead process under the WHS Regulations.

2.42. Lead exposure must be confined to lead process areas.

2.43. All lead process areas must be kept clean at all times.

2.44. No lead process area can be cleaned in a manner that creates a risk to the health and safety of any person in the vicinity of the lead process area and no cleaning methods that have the potential to spread lead contamination may be used at any time.

2.45. No person is permitted to eat, drink, chew gum, smoke or carry any materials used for smoking in a lead process area at any time.

2.46. All persons must remove clothing and equipment that could be contaminated with lead and must wash their hands and faces before entering any drinking or eating area at a Built workplace.

2.47. All PPCE that could be contaminated with lead dust must be:

- (a) Sealed in a container before being removed from the relevant lead process area,
- (b) Disposed of at the completion of lead process work at a site equipped to accept lead-contaminated equipment.

2.48. Containers in which lead contaminated PPCE are contained must be decontaminated before being removed from a lead process area.

Polychlorinated biphenyls (PCBs)

2.49. Workers can be exposed to PCBs when dismantling electrical capacitors and transformers or when cleaning up spills and leaks. Appropriate control measures should be implemented when handling damaged capacitors to ensure that any spillage does not contact workers and is appropriately cleaned up and disposed of.

2.50. Any equipment or parts containing PCBs should be placed in a polyethylene bag and then placed into a marked sealable metal container.

2.51. If PCBs cannot be transported immediately for disposal, all containers should be stored in a protected area which prevents any discharge of PCBs to the environment.

Synthetic Mineral Fibres

2.52. Synthetic mineral fibres are used extensively for insulation in building walls and ceilings, as well as on items such as air-conditioning duct work.

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- 2.53.** Personal protective equipment shall be provided to workers and worn when insulation is being removed during the demolition process.

Chemicals & Liquids

- 2.54.** During the demolition of tanks and pipelines, the following precautions should be taken:

- make sure that no flammable or toxic substances or combustible liquid is allowed to enter any drainage system or watercourse
- if excavating underground tanks and/or pipelines, check the soil surrounding the tank/pipe to establish that it is not contaminated, either by leakage from the tank/pipe or by spillage
- hot work (for example, welding; oxy-acetylene cutting) should not be undertaken where there is a chance that flammable material may be present as a result of leakage/spillage or after cleaning out the tank/pipe.

Security of Worksite Public access and protection

- 2.55.** To protect workers undertaking demolition activities, exclusion zones shall be implemented and controlled to prevent unauthorised personnel entering work areas.
- 2.56.** A system to prevent falling objects impacting on workers and the public is to be implemented to protect the safety of people who are working on or in the vicinity of the demolition work. In particular, any area where a falling object might reasonably be expected to land is to be designated an exclusion zone. The enclosed and/or protected area should extend horizontally to a safe distance beyond the overhead work area.
- 2.57.** Adequate public safety is to be maintained in public places and areas adjoining the workplace as the work progresses (e.g., roads and walkways). Where demolition work is adjacent to a public place and there is a risk of falling debris or hazardous noise, a method of protection should be selected and:
- erected before the commencement of demolition work
 - kept in position at all times during the progress of the work, and
 - regularly inspected and maintained.
- 2.58.** Control measures to isolate the work from the public may include installing hoarding such as security fencing, containment sheets and mesh, an overhead protective structure, road closures and specified exclusion zones.
- 2.59.** The need for overhead protective structures for public walkways in conjunction with perimeter fencing is to be considered as appropriate. Where considered necessary, overhead protection using suitable material is to be designed by a qualified Engineer to

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withstand an appropriate load (may be constructed from scaffolding, fabricated steel or timber).

Engineering Consideration

- 2.60.** Before structural demolition occurs, appropriate engineering advice is to be obtained.

Mobile Plant

- 2.61.** All powered mobile plant used for demolition work must be fitted with a suitable combination of operator protective devices and must be operated by a person holding the required competencies for the item of plant they are required to operate.
- 2.62.** All mobile plant is to be site inducted using **HSE 050 Plant Documentation Checklist**
- 2.63.** Operator protective structures should be designed to the appropriate standard that eliminates or minimises the risk, so far as is reasonably practicable, of operator injury due to:
- roll over and consequent cabin impact damage
 - objects falling on or over the cabin
 - objects penetrating the cabin

3. References

- Work Health and Safety Regulations (NSW, QLD, ACT, SA and NT)
- OHS Regulations (VIC)
- OSH Regulations (WA)
- Demolition Work Code of Practice
- AS 2601 – 2001 The Demolition of Structures
- HSE-121 Built Safe Mandatory Standard (BSMS) – Scaffolding

1. Purpose:

This BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in relation to Formwork, Reinforcement and Concrete placement as defined in this document and is to be read in conjunction with those documents referenced in section 3.

2. Mandatory Requirements:

2.1 Formwork

2.1.1 Definition

'Formwork' for the purpose of this BSMS includes conventional and engineered formwork systems used for the structural support of concrete for suspended slabs, penetration in-fills (e.g., where a stair void is being filled in), columns and walls, including:



- Traditional Timber Formwork (e.g., steel frames, timber bearers, plywood decking)



- Self-climbing Formwork (i.e., crane or hydraulic assisted lifting formwork systems such as Slip Forms and Jump Forms)



- Table Form Systems with handrail installed before being placed in position;



- Proprietary Formwork systems (e.g., Peri Deck, Airotek).

Note: The intent is to ensure adequate structural integrity of formwork systems used in situations where the formwork supports a significant load (including materials, workers, steel and concrete) but would not for example apply to edge boards for a slab on ground.

2.1.2 Formwork Design

- Formwork Systems are to be designed by a qualified engineer in accordance with the requirements set out in AS 3610 – *Formwork for Concrete* and AS 3600 – *2009 Concrete Structures*;
- A copy of the Formwork design documentation is to be held on site and is to include:
 - The engineer's name and qualification;
 - Any necessary preparation of the foundation (e.g., filling, compaction drainage);

- Any footing design assumptions, such as foundation material description, safe bearing values, limitations on settlement during erection of formwork;
- Plans, elevations or sections sufficient to depict the arrangement of formwork and to identify/locate all members, components and bracing including:
 - component types and spacing;
 - maximum jack extensions;
 - bearer and joist timber type, dimensions and spacing;
 - prop sizes and maximum extensions;
 - form ply size, thickness and grade;
 - methods for tying the structure together and spacing between ties (if required);
- Details sufficient to fully describe important or unusual features of the design;
- The areas of the forms designed to carry stacked loads together with the maximum allowable load and the minimum strength of concrete to be achieved prior to materials being stacked, including maximum allowable point loading to be applied and any additional propping requirements at any specific loading area;
- Sequence of concrete placement and minimum elapsed time between adjacent placements;
- Where required, location of weep holes, vibrator holes, clean-out holes and inspection openings;
- Footing design where not placed on structural concrete slabs;
- Identification of proprietary formwork items/systems;
- Back propping required after formwork removal;
- Certification or engineer's design documents for lifting points for formwork shutters.

2.1.3 Formwork Materials

- All materials and equipment used in formwork must be fit for the intended purpose, meet design specifications and comply with relevant Australian Standards, evidence of which should be made available by the supplier.

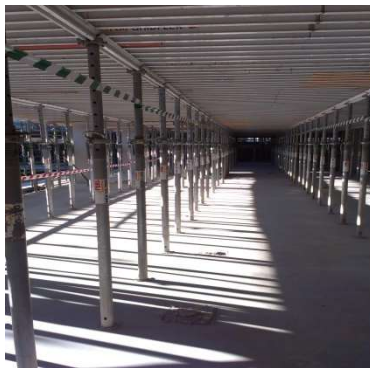
2.1.4 Formwork Installation

- The installation, erection and dismantling of formwork is to be performed by appropriately trained and competent persons;
- All engineered formwork is to be erected and used in accordance with the manufacturer's instructions.

Base plates are to be provided under props and standards on formwork frames unless the prop or standard has an integral foot or a competent engineer documents that a base plate is unnecessary;



- Sole boards designed to suit the ground conditions shall also be used under props and standards on natural ground, unless a competent engineer document otherwise;
- Frames and props must be located on a firm base which is ground that will not subside, fail or get washed away. Adequate drainage for stormwater run-on/run-off shall be provided to prevent scouring of formwork foundations and footings. Where foundations are located on batters, these need to be protected against scour by directing drainage away from the base of frames;
- As the erection of frames continues, designated access ways are to be indicated by the use of bunting or by other means. However, areas underneath where formwork is incomplete or otherwise unsafe to access (e.g., during concrete pour) are to be isolated by signage and suitable barriers to ensure no unauthorised access;



- Temporary lighting is to be installed in all access ways with emergency exit signs in place;
- The risk of falling is to be controlled during the installation of Formwork Systems and may include:
 - **Working from underneath** which may include platform ladders and mobile scaffold;
 - **Intermediate working decks** may be constructed in a manner similar to a final formwork deck (that is, using bearers, joists and sheeting) or may be a further extension of a catch platform;
 - **Temporary working platforms** must be a minimum of 450 mm wide (2 planks) as required by AS 1576. Temporary working platforms should be erected on the horizontal cross members of the frames. Cleats can be used to prevent planks from slipping off the frames;
 - **Catch platforms** may be temporary working platforms that are extended and may be built from a combination of bearers, sheeting and planks or metal transoms and planks;
 - **Handrails/Guardrails** at the perimeter of the building or deck openings must be at least 900 mm in height above the final working surface and have a top rail, mid rail / Kick Board;
 - **Scaffolding** complete with guardrails and toe boards can provide effective protection against falls at the perimeter of a building, providing the guardrail of the scaffolding extends at least 900 mm in height above the proposed finished concrete level. The scaffold platform should be positioned or constructed to prevent persons or materials falling between the scaffold platform and the edge of the formwork;
 - **Perimeter Screens** consisting of an outer mesh screen erected at the edge of the concrete slab to protect personnel erecting and dismantling formwork and other trades associated with the construction of the concrete slabs and columns and to contain materials on the upper floors prior to the installation of a safety handrail system or other fall prevention system;

Note: The use of fall arrest harness systems to arrest a fall and travel restraint harness systems are impractical for formwork system installation as the leading edge is constantly changing, requiring the length of the travel restraint line to be continually adjusted therefore requiring multiple lanyard anchorage points to be installed. Also, the greater the number of workers building the formwork deck increases the likelihood of lines becoming tangled.

- **Penetrations** - Plywood covers must be structurally graded and sound, securely fixed and marked with appropriate wording, e.g., 'Peno' or 'Danger penetration below.' Engineering approval is required where the span of a plywood cover exceeds the design criteria for the plywood deck, i.e., joist to joist.
Small penetrations in concrete slabs (less than 300mm) may include cast-in-mesh as a back-up system. The mesh should be of a small aperture, for example 50 x 50 mm mesh size or smaller and made of material capable of withstanding the potential imposed loads. Where mesh or other physical fall protection material is to be provided for larger penetrations, this is to be included in the slab design specifications to ensure it can withstand potential loads including those applied by people, equipment and material.

2.1.5 Formwork Inspection

- A certificate from a qualified engineer is to be obtained for all completed formwork, as defined in this BSMS, prior to concrete placement and is to include:
 - The engineer's name
 - Project name
 - An inspection date no greater than 2 working days prior to the proposed pour
 - Location of formwork (e.g. level, area)
 - A statement saying:

"This is to certify that the Formwork identified as _____ for the above project has been inspected and is considered to be adequate to support the design loads in accordance with the relevant Australian Standards including AS 3610 Formwork of Concrete. The works have been inspected and is considered to be adequate to support the design loads in accordance with the relevant SAA Codes.

Note: All remedial work identified during an inspection of the formwork is to be completed and verified as complete by an appropriate, competent person. Re-inspection of remedial work by the engineer is to be as directed by the engineer.

2.1.6 Formwork Monitoring / Removal

- Sufficient exclusion zones are to be established during concrete pours to suspended formwork;
- A competent person should be appointed to monitor underneath the formwork during the concrete pour;
- Access routes between formwork frames are to be delineated, well-lit and clear from trip hazards;
- Formwork shall not be stripped until verification of sufficient concrete strength is obtained in writing from the engineer;
- Formwork stripping shall be undertaken by appropriately trained persons;
- Sufficient exclusion zones shall be established prior to the commencement of stripping;

- All formwork material shall be stripped in a controlled manner. No material is permitted to be dropped during the stripping of formwork (no drop stripping);
- All material shall be de-nailed before stacking.

2.1.7 Slip and jump forms

Slip forms and jump forms are the terms given to self-climbing formwork systems designed to construct lift and stair cores in high rise buildings and other concrete structures like silos, stacks and chimneys. The term 'climb form' is sometimes used to describe both slip or jump forms. The power for the climbing operation can be provided in a variety of ways, usually by hydraulic rams or electric motors connected to climbing feet or screw feet or screw shafts.

Slip forms and jump forms usually consist of a number of platforms or decks for workers and may also be fitted with trailing screens suspended from the form.

No two slip or jump forms will be identical because their design depends on the size and configuration of the permanent structure to be formed.

Slip forms usually climb slowly and continuously during the concrete pour. This allows high smooth concrete structures like chimneys to be constructed without obvious joints.

The following requirements apply:

- The jump form or slip form designer (or competent structural engineer) is to be involved both in the initial design of the form and in addressing ongoing design issues that will occur during form erection and during the life of the building project
- The designer should therefore inspect the form at the workplace and work closely with people involved in its operation including the principal contractor, to determine if difficulties are being encountered.
- Entry to the form may be provided in a variety of ways including one or more of the following:
 - personnel hoists on the building
 - permanent stair systems in the building
 - a trailing stair system suspended from the slip form or jump form (designer should ensure a trailing access system is designed for the loads that could be applied in an emergency evacuation situation. Both the system itself and the form should be able to withstand applied loads from the access system)
 - trailing ladder
- Penetrations should be covered by form ply secured in position, clearly visible and identified or have leading or perimeter edge protection.
- Trailing screens can provide edge protection, a means of preventing falling objects and be designed to incorporate working platforms
- The risk of falling objects must be controlled
- Conveyer belt grade rubber is to be used for flaps to prevent falling objects
- Working decks should be double plywood

2.2 Reinforcement and Post Tensioning

2.2.1 Definition

- For the purpose of this BSMS, 'Reinforcement' includes reinforcing steel bar or mesh and mono strand post tensioning for concrete placement greater than 10m3;



- Traditional reinforcement



- Mono strand post tensioning reinforcement

2.2.2 Reinforcement / Post Tensioning Installation

- The reinforcement storage locations are to be in accordance with information supplied by the formwork engineer and must be capable of supporting the placing of reinforcing/stressing equipment and material to be installed. Additional propping and or support locations may be required, e.g., placing of coil;

Reinforcement workers are not permitted to be within Formwork exclusion zones.

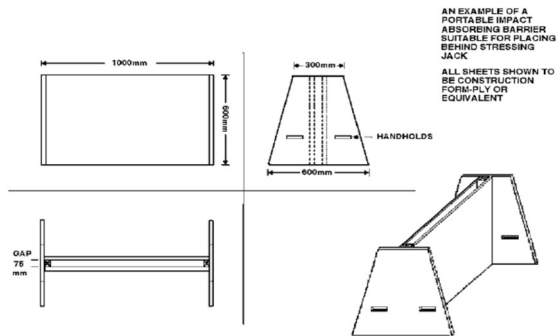
Bar caps or other means of protection are to be placed on the end of strands when not in use.

- A sufficient exclusion zone by use of signage and appropriate barricading is to be established around the unstrapped stressing strand coil and support frame (Bripac) during stressing operations;
- Anti-burst reinforcement must be installed for all post tensioning systems;
- Strands are to be placed inside a conduit at distance not greater than 4 meters from the Bripac feed and no greater than 4 meters from the strand pusher;
- All penetrations greater than 225mm X 225mm are to have steel mesh cast in during construction with size of mesh to suit penetration span and approved by engineer;
- Initial stress shall not exceed 30% of final stress;
- Stressing is not commencing until:
 - written confirmation is received from an appropriate person that concrete compression tests indicate appropriate transfer strength has been reached;
 - exclusion zones of at least 2 meters are established with barricades and signage erected at all live and anchorage ends of tendons being stressed;
 - a compliant impact absorbing barricade is established behind the jack (in the case of double live end tendons, ensure that barricades are erected at both ends even if only stressing from one end);
 - the stressing area has been appropriately flagged and warning signs displayed;
 - a trained observer is present to monitor the anchorage end during stressing and a line of communication can be maintained;
 - no persons are standing between the jack and the impact absorbing barricade and within 2 meters of any live or anchorage ends;
 - the operator has checked that the area has been cleared and there is no person standing between the jack and the barricade or within 2 m of any live end anchorage;
 - the operator has ensured that there are adequate clearances available for the jack to prevent possible skewing or lifting during stressing;

- concrete compression tests indicate transfer strength has been reached. Advice should be confirmed in writing if possible;
- All exposed reinforcement bar ends are to be capped.
-

2.2.3 Barricading

- An adequate barricade is one that has been designed to restrain and reduce impact from strands or jacks if strands snap or release under tension or if the system fails in some other way. They are generally constructed from timber and two separated layers of 17 mm form ply sheets and are placed behind jacks during final stressing and de-tensioning.



2.4 Concrete Placement

2.4.1 Concrete Boom Pumps

- For the purpose of this BSMS, 'Concrete Placement' includes the use of all static or mobile concrete placement booms, Concrete line pumps and the use of a kibble.

2.4.2 Inspection

- Concrete placing units are to be registered via the Built plant induction process (HSE-050); Concrete placing units (truck mounted with boom) must be registered with Relevant Statutory Authority;
Consultation must occur with other operators' plant, such as the tower crane, prior to the set-up of concrete placement booms;
Concrete pump line thicknesses test certificates are to be confirmed as adequate (minimum of 2mm thickness for lengths of pipe, note elbows are required to have a thicker minimal thickness) and obtained on a regular basis. Thickness tests are to be carried out monthly;
- Concrete kibles are to have a current lifting certificate;
The operator of a truck mounted concrete boom pump and static boom pumps must hold the required certificate of competency (e.g., high risk work licence);
Barricading/signage is to be installed so as to ensure no workers are allowed to access the immediate area beneath the section of formwork during concrete placement activities.

2.4.3 Concrete placement plant use

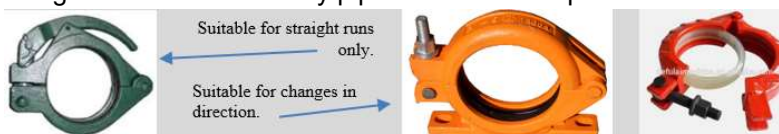
- Concrete placement boom pumps shall:
 - not come into contact with scaffolding, structure or plant;
 - not be used as a crane;
 - not be erected until stabilisers/outriggers are established and locked in position;
 - maintain safe distances from power lines;
 - have the boom folded in the travel position before raising the outriggers, when making any positioning adjustments;
 - be established in a sufficiently level and solid so as to ensure safe operation;

- not lift, drag, luff upwards or slew the concrete placement boom in any direction if the concrete delivery line is:
 - Stuck or caught on an object;
 - Are connected to two or more pieces of concrete line (metal or rubber)
 - Not in sight of the operator.
- Concrete placement boom pump stabilisers/outriggers shall:
 - Have stabilisers/outriggers set out in areas free from excavations, trenches or holes in the ground, inadequately compacted or soft ground, cellars, basements, pits or back-filled ground, unless approved in writing by a qualified engineer
 - Barricading around outriggers to eliminate worker moving into slew zone
 - Have adequate packing of sufficient strength and load bearing area available for the outrigger stabiliser pads.
 - Packing may include engineered bog mats or suitable timbers.
 - The use of loose softwood timbers is not recommended.
- Be fully extended;
 - if outriggers are not fully extended, the reduced safe operating radius must be known and recorded;
 - regular inspections of the outrigger pads to check for subsidence and loss of stability.
- Where the general public are in close proximity to any part of the concrete placement operation, consideration should be given to:
 - the endorsed traffic and pedestrian management plan
 - directing the public to an alternative footpath, or providing an alternative pathway
 - the installation of protective screens to prevent concrete splashing on the public
 - the installation of a suitable ramps over concrete placement lines
 - the erection of barricades and warning signs necessary to comply with council requirements.

2.4.4 Concrete placement lines

- All concrete placement plant and accessories are to be visually inspected prior to the commencement of concrete placement
- The wall thickness of each pipeline segment shall be tested using ultrasonic testing instrument or other suitable methods determined by the manufacturer and not exceed 30 days and with a register to keep wall thickness results

- All concrete lines joints are to be clamped and fixed closed prior to concrete placement
 - Includes 'R' pins in quick clamps and bolts through fixed lines
- No metal couplings are to be at the end of the concrete placement line
- Rubber lines here connected to a boom are to be secured by a safety chain, sling or other retaining device
- The length of flexible hose suspended from a concrete boom pump must be in accordance with the manufacturer's specifications the length of hose may vary due to the diameter of the hose –
 - 3 metres for 125mm diameter pipe;
 - 4 metres for 100 diameter pipe
- To prevent damage to the boom, the boom is not to be luffed upwards or slewed whilst there is more than 3m (for 125mm hose) and 4m (for 100mm hose) suspended from the end of the boom at any time. This is particularly important that the boom is not moved in any way when the hose is filled with concrete
- The rubber delivery end-hose should:
 - Where connected to a boom, secured by a safety chain, sling or other retaining device;
 - Be inspected for excessive wear or damage prior to being fitted;
 - Not be longer than specified by the pump manufacturer;
 - Delivery hose end has no metal sleeve.
- Concrete placement plant is to be disengaged (switched off) when hoses are being connected or disconnected
- Pipe line connections at a change in direction from horizontal to vertical require a bolted connection and not a clamped connection. Refer to AS2550.15-1994 section 4.3 which requires concrete delivery lines to be secured to the building or structure with particular attention to reactionary forces which may be considerable where high pressures are involved.
- The reaction blocks or mountings at change of direction of pipelines shall be adequately designed to ensure delivery pipelines remain in place.



2.4.5 Concrete placement plant completion and monitoring

- Concrete placement lines are to be 'blown' in a controlled manner and is to be controlled so as to ensure no workers are in the immediate vicinity whilst this operation is taking place;
- Excess concrete is to be placed in the appropriate location;
- Excess concrete is not to have reinforcement bar inserted into it and used for the purpose of lifting;
- Continual monitoring of boom and hoses by boom operator.

3.2 Perimeter Screens

2.2.1 General

Perimeter Screens generally consist of an outer mesh screen erected at the edge of the concrete slab to protect personnel erecting and dismantling formwork and other trades associated with the construction of the concrete slabs and columns and to contain materials on the upper floors prior to the installation of a safety handrail system or other fall prevention system. They eliminate the need for perimeter scaffolding.

2.2.2 Perimeter Screen Design

- Perimeter screens are to be designed by a qualified engineer;
- A copy of the Perimeter Screen design documentation, including the design loadings on the cantilevered support needles (or other means) and the reaction loads on the supporting structure are to be obtained by a qualified engineer prior to the approval to install perimeter screens;

2.2.3 Perimeter Screen Installation

- Perimeter screens are to be installed by persons competent in the particular screen system being installed. At least one person in the installation team must hold a recognised rigger's certificate;
- Where the installation, jumping or removal of perimeter screens is to involve the crane crew, each member of the crew is to be inducted into the safe work procedures and or instructions to carry out the task safely;
- Prior to the installation, jumping or removal of perimeter screens exclusion zones shall be installed so as to prevent unauthorised persons entering the exclusion zone and shall remain in place until the screen installation is complete;
- A handover certificate/ checklist is to be obtained once the screens have been installed to verify the screens have been installed in accordance with the manufacturer's requirements and that **ALL LOCKING DEVICES ARE ENGAGED**;
- A pre-removal checklist is to be obtained by Built prior to removal of perimeter screens in which the rigger should check all mechanical locking latches are engaged prior to commencing screen removal.



3. References:

- Work Health and Safety Regulations (NSW, QLD, ACT, SA and NT)
- OHS Regulations (VIC)
- OSH Regulations (WA)
- Formwork Code of Practice – Work Health & Safety Queensland

- Formwork Code of Practice – SafeWork NSW
- Code of Practice for Formwork – Work Safety ACT
- Concrete Pumping Industry Standard – WorkSafe Victoria
- Concrete Pumping Code of Practice – Work Health & Safety Queensland
- AS 3610 Formwork for concrete
- Safe Work Australia Guide to Formwork

1. Purpose

This BSMS sets out the mandatory health and safety standards to be applied on all Built project sites in relation to the management of asbestos materials that are known to be present or may be suspected of being present within an existing building, structure or in-ground.

2. Mandatory Requirements

2.1 Identification - Asbestos and Asbestos Containing Material (ACM)

Friable Asbestos: - Any material that contains asbestos in the form of a powder or can be crumbled, pulverized or reduced to powder by hand pressure when dry and contains asbestos. Common forms of friable asbestos include: Sprayed limpet, asbestos cloth and rope, millboard, pipe lagging and boiler lagging.



Non-friable Asbestos: - Is material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound, typically a cement type material or plastic membrane. Common forms of non-friable asbestos include: Flat (fibro/wet area/ external cladding), corrugated or compressed asbestos cement sheeting, asbestos cement pipes such as electrical, water drainage and flu pipes and vinyl floor tiles. Note that non-friable asbestos may become friable asbestos as it deteriorates.



- A Hazardous Substance Survey ('HSS' - also known as a 'Hazardous Substance Audit' or Asbestos audit) undertaken by a qualified occupational hygienist is to be carried out by the asset owner or controller of premises and obtained by Built before any invasive work such as demolition, refurbishment or ground penetration work commences (i.e., excavation and trenching). Note: In some instances, a dial-before-you-dig search may identify the presence of asbestos pits and pipes;
- The HSS must accurately represent the presence, nature and position of all ACM on site when provided to Built and must be supplemented with further HSSs whenever it ceases to become so representative. The site Asbestos Register must, at all times, be maintained so as to ensure that the information it contains is up-to-date;

- The Register must record the date upon which the relevant asbestos or ACM was identified, the location, type and condition of same or (if no asbestos or ACM has been identified) state that no asbestos or ACM has been identified;
- A HSS is not required if the building or structure was constructed after 31st December 2003 or if there is other substantial evidence from a competent person certifying that no asbestos material is present;
- Where the asset owner or their agent is unable to provide a HSS, Built is to commission a suitably qualified person (e.g., occupational hygienist) to undertake the HSS;
- Any HSS or Asbestos Register provided by the client, asset owner or occupier of premises is not to be solely relied upon due to the potential to have excluded areas unable to have been fully assessed at the time of inspection (e.g., due to occupancy or other access restrictions). As such, all work areas are to be deemed potentially contain asbestos until inspection / testing, completed by a qualified occupational hygienist confirm otherwise;
- So as to avoid confusion, each additional HSS report is to supersede any previous report(s) with the information consolidated into the one report;
- Once the HSS has been finalised, diagram(s) and or map(s) are to be drawn or otherwise marked-up by a competent person (if not already completed by the occupational hygienist) to indicate:
 - POSITIVE, NEGATIVE and INACCESSIBLE areas;
 - Type, condition and location and quantities of ACM;
 - Suitable legend so as to clearly identify the status of each area.
- Where the HSS identifies material as potentially containing Asbestos it shall be treated as containing the presence of such materials unless determined otherwise by approved testing methods;
- If material suspected of containing asbestos is found and is not included on the list of materials in the HSS/Register, it is to be treated as potentially hazardous and not disturbed until verified by approved testing methods;
- Testing for the presence of asbestos is to be carried out by a NATA accredited testing laboratory. Confirmation of accreditation is to be retained by Built as part of the project records.

2.2 Asbestos Removal

2.2.1 Induction

- Built's site-specific induction is to include information relating to the presence of asbestos at the worksite and the controls to be applied and or caution to be observed and is to include:
 - Location of where asbestos or other hazardous material is located;
 - Location of when and where asbestos is being removed, and for how long;
 - The type of asbestos or other hazardous material to be removed;
 - The "NO GO ZONE" areas;
 - Where sampling and air monitoring results are to be placed/located for accessibility;
 - What to do in the event of an unexpected find on site.

- If work is to be completed within an area where there is likelihood of disturbing ACM a safe work method statement is to be developed following a review of the HSS;
- No Built workers are permitted to carry out work involving asbestos. Work involving asbestos means any work involving the manufacturing, supplying, transporting, storing, removing, using, installing, handling, treating, disposing of or disturbing asbestos or ACM;
- If work is to be completed within an area where asbestos or other hazardous materials are present, a Permit to Work is to be completed and signed off by all trades permitted to work in the area following induction into the controls and precautions to be observed when working in such areas. (HSE 084 Permit to Work can be used as a suitable format or a site-specific permit can be developed for this purpose).

2.2.2 Licenses for removal

- The removal of all asbestos material, irrespective of quantity, shall be carried out by a Contractor/ removalist who holds an appropriate Asbestos Removal License issued by the relevant state regulator for the type of asbestos to be removed (e.g., 'Class A' Friable; 'Class B' non-friable);
- A copy of the licence is to be obtained and kept by Built;
- All workers involved in the removal process must hold the relevant certification for the works that is being completed, e.g., friable/ non-friable, and records of licenses held are to be obtained by Built and filed with the relevant individual's induction record;
- When licensed asbestos removal work is being carried out at a workplace, an asbestos removal supervisor, who holds certification appropriate to the type of asbestos removal work, must oversee the work.

2.2.3 Notification to Authority

- Where specifically required under local regulatory requirements, Built is to obtain a copy of the written notification made to the regulator by the licensed asbestos contractor of the intention to remove asbestos.

2.2.4 Notification to Adjoining Property Owners

- Prior to any licensed asbestos removal work being carried out, the Project Manager is to notify anyone conducting a business or undertaking at or in the vicinity of the workplace and or anyone occupying premises in the immediate vicinity of the workplace. A template letter for this purpose is included in this BSMS.

2.2.5 Signage, Barricading and Works Authorisation

- If asbestos containing material cannot be immediately removed, the location of the material is to be suitably marked with durable warning signs or otherwise barricaded off so as to prevent inadvertent disturbance by workers. All workers required to perform work within such areas are to be authorised to do so through a permit to work system which is to ensure they are made aware of any restrictions in relation to their works, no go zones and what to do in the event of an unexpected find;
- Whilst asbestos material is in the process of being removed, all other workers or persons not involved in the removal of asbestos material shall be prohibited from entering Asbestos Removal Zones by suitable barricades or fencing.

**2.2.6 Documentation**

- If the HSS identifies asbestos material an 'Asbestos Management' Plan must be prepared by the removalist before removal work commences and must include, as a minimum:
 - Name of removalist
 - Name/address of removal site
 - Notification of regulator
 - Nominated supervisor assigned for job
 - Person who commissioned work has notified people (other employees) in immediate and adjacent areas
 - Copies of training tickets
 - Copy of asbestos removalist licence
 - Copy of hazardous material audit
 - The occupational air monitoring arrangements by person who commissioned the removal works, all friable works, indoor and outdoor works that present risks to others
 - Asbestos containing material present
 - Personal Protective Clothing and Equipment to be used
 - Administrative controls (SWMS, Barricading, signage)
 - Controls/work practices to control airborne asbestos fibres
 - Enclosed removal area (friable)
 - Decontamination equipment and procedures
 - Methods of disposal
 - Methods of clean up following removal
- SWMS is required for asbestos all persons carrying out HSS and asbestos removal work.

2.2.7 Asbestos Removal Methods

- Non-friable asbestos removal shall:
 - Adopt wet removal techniques (spraying asbestos material with a PVA compound. Material should not be wetted down where there is an electrical hazard);
 - Prevent/limit the breakage of sheeting/material;
 - Adopt Nail punching to detach non-friable asbestos sheeting where fixed by nail;
 - Oxy cutting nails and fixings.
- The following tools and equipment that generate dust must not be used on asbestos:
 - power tools, abrasive power and pneumatic tools, for example angle grinders, sanders, saws and high-speed drills;
 - brooms and brushes (unless brushes are used for sealing);
 - high-pressure water spray, jets, power or similar tools and instruments on asbestos in the workplace;
 - compressed air; or
 - any other implements that cause the release of airborne asbestos into the atmosphere.
- Friable asbestos removal work shall only be undertaken by a competent, licensed person and only by means approved by them;

Where the area is to be encapsulated, drawings depicting the arrangements for encapsulation are to be provided by the asbestos removalist contractor and approved by the Occupational Hygienist. Inspection of the adequacy and integrity of the encapsulation is to be carried out by the Occupational Hygienist.

2.3 Transportation/ waste removal

- All asbestos material shall be contained, packaged, removed, transported and disposed of in accordance with the applicable workplace health and safety and environmental laws;
- Built must maintain copies of the receipts issued by the waste disposal facility identifying the quantity of asbestos material received by the facility, the transporting entity and the date and time at which the material is received by the facility.

2.4 Unexpected Asbestos Finds

- If suspected asbestos material is discovered that has not been listed in the HSS, it shall be treated as hazardous unless determined otherwise by subsequent testing;
- Where there has been an unexpected find of asbestos material the following measure are to be followed:
 1. Only licensed, competent and authorised persons may access the area in which the asbestos or suspected asbestos is identified;

2. Contact an occupational hygienist to attend site (if not already present) following advice from legal counsel;
 3. Air monitoring should be conducted in accordance with the applicable legislation;
 4. Sampling can be completed by hygienist or engage licensed removalists;
 5. Maintain air monitoring in public areas until all potential hazards are removed;
 6. Check for exposed ceilings, floor, ducted heating/ cooling, access/ egress areas for potential risk and isolate or barricade if required;
- Clearance monitoring shall be undertaken subsequent to asbestos removal.

After verifying the material is asbestos a toolbox talk is to be held with relevant workers.

2.5 Clearance

- For ACM removal requiring a Class A license, a clearance inspection is to be carried out and a clearance certificate received from an independent license asbestos assessor before the workplace can be re-occupied by others;
- For ACM removal requiring a Class B license, a clearance inspection is to be carried out and a clearance certificate received from an independent competent person before the workplace can be re-occupied by others;

Note: To be independent, the licensed asbestos assessor or competent person must not be involved in the removal of asbestos for that specific job and is not involved in a business or undertaking involved in the removal of the asbestos for that specific job.

2.6 Personal Exposure Procedure

- Legal counsel should be advised immediately if any person is suspected of having been exposed to asbestos or possible asbestos.

Asbestos Exposure Emergency Procedure

If friable asbestos or a suspicious material or substance similar to friable asbestos is found during the course of works, the following procedures must be followed:

1. Stop work & move at least 10 meters away from the affected area;
2. Do not leave the area/location due to the potential for contaminating other areas such as toilets, change rooms, lunch room, etc. ...;
3. Notify your Supervisor & Built Management (by phone, radio or send a person who has not been exposed);
4. Remove work clothes & boots then put on a disposable coverall suit (to be provided);
5. Leave work clothes & boots in the work area inside plastic bags (to be provided). Do not remove contaminated work clothes from the affected area unless test results are negative for asbestos. Companies involved in demolition are to have spare clothes and disposable suits available for use in an emergency;
6. Contact hygienist to complete testing and air monitoring results and to obtain decontamination advice;
7. Decontamination unit/wash down area established and approved by hygienist – exposed workers are to proceed to this area;
8. The work area is to be barricaded. If friable, the whole area. If non-friable, a 10 metre radius (approximately);
9. If test results are positive for asbestos, then a licensed asbestos removal contractor is to be engaged. Work cannot continue in the contaminated area until a clearance certificate has been issued by a qualified occupational hygienist.

2.7 Health Surveillance

A number of key items which must be presented by the licensed asbestos removalist include;

- An appropriate medical examination for all employees prior to commencing (ASCC health surveillance documented Guidelines for health surveillance ascc.gov.au)
- Continued at intervals no longer than two years
- Within 30 days of employee cease asbestos removal works (If not completed within a 12-month period of finish date)
- Health monitoring reports must be provided to the relevant regulator in accordance with the applicable workplace health and safety laws
- Retain a copy of medical records for 40 years
- Provide register of workers health examinations dates

2.8 References

- Work Health and Safety Regulations (NSW, QLD, ACT, SA and NT)
- OHS Regulations (VIC,)
- OSH Regulations (WA)
- Removing asbestos in workplace – Compliance Code – October 2017 (Vic)
- Managing asbestos in workplace – Compliance Code – September 2008
- How to safely remove asbestos – Code of Practice – December 2011

- AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective devices
- AS/NZS 1716:2012 Respiratory protective devices
- AS 4260:1997 High efficiency particulate air (HEPA) filters
- *"How to Manage and Control Asbestos in the Workplace"* Code of Practice, December 2011, SafeWork NSW
- The National *'Code of Practice for The Safe Removal of Asbestos,'* 2nd edition NOHSC:2002 (2005)
- The *'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment'* (NOHSC:1003 (1995)
- Code of Practice for The Management and Control Of Asbestos In Workplaces (NOHSC:2018 (2005)

Dear Resident,

We would like to take this opportunity to inform local residents about forthcoming construction activity at [Insert details](#).

Built ([Insert relevant State](#)) has been engaged by ([Insert client details](#)) to undertake ([insert details](#)). This work will involve asbestos removal work.

In accordance with relevant legislation, we have notified ([Insert relevant statutory authority](#)) of the proposed removal work.

The work is planned to be undertaken between the hours of ([Insert details](#)) Monday to Friday and ([Insert details](#)) Saturday and is due to commence on the ([Insert date](#)).

Those undertaking the work are appropriately licensed (~~delete 'licensed' if not required~~), trained and supervised to ensure stringent asbestos handling procedures, complying with current legislation for asbestos removal, are strictly adhered to and complied with.

([Insert relevant details relating to the type of asbestos removal work to be undertaken. E.g.:](#))

Due to the age of the existing roof, the sheeting will contain a matrix of cement and asbestos material, commonly referred to as bonded asbestos containing material (ACM). To ensure our contractors are managing and controlling the potential liberation of asbestos fibres, Built will install air monitoring devices around the area and will inspect and take samples from the air monitors every second day. If at any time the air monitoring identifies asbestos fibre liberation above the threshold standard, works will cease immediately, and control methods will be re-assessed for effectiveness, and if required additional controls will be implemented. In addition, Built will engage the services of an Approved Asbestos Assessor (Occupational Hygienist) to review the risk management strategies for the removal of the ACM and throughout the roof removal process.

Please note that as a consequence of the effective management of asbestos containing material, workers removing the roof sheets will be wearing personal protective clothing (white disposable coveralls, dust masks and gloves).

The removal work is planned and will be undertaken in a manner ensuring no negative impact to the site or its neighbours.

Information about asbestos can be found on the appropriate regulatory authorities' website.

For further information, please contact Built's ([insert details](#)).

([Insert name](#))
([Insert email details](#))
Project Manager

Yours Sincerely