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CS ENERGY PROCEDURE

SCAFFOLDING CS-OHS-70

Responsible Officer: Health and Safety Coordinator
Responsible Manager: Head of Health and Safety
Responsible Executive: Executive General Manager People and Safety

DOCUMENT HISTORY

Key Changes	Prepared By	Checked By	Approved By	Date
Original Issue	J Usher B Welsby W Sauer	B Pike D Clarke	S Faulkner	03/05/2017
Added requirement to secure toe boards – IMD 8937	D Clarke	B Pike	S Faulkner	27/02/2018

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1 PURPOSE

The purpose of the CS Energy Scaffolding Procedure is to gain access to a variety of elevated plant that will require access to conduct inspections and maintenance as required by the work scope.

All scaffolding work undertaken on all CS Energy sites shall comply with:

- Australian/New Zealand Standards AS/NZS 4576: 1995 “Guidelines for scaffolding”
- Australian/New Zealand Standards AS/NZS 1576 series
- Queensland Scaffolding Code of Practice 2009

2 SCOPE

This procedure applies to all CS Energy sites where personnel work with scaffolding; this procedure also establishes a minimum standard for scaffolding.

3 RESPONSIBILITIES AND ACCOUNTABILITIES

3.1 Plant Manager / Maintenance Manager

- Ensure all scaffolding is erected in accordance with AS1576 as a minimum standard.
- A Scaffold register, including a Scaffold tag System, are implemented.
- Scoping and planning of scaffolds for scheduling purposes.
- After periods of inclement weather such as, heavy rains or high winds, erected scaffolds exposed must be inspected by a competent licensed person before use.

3.2 Supervisors

- Ensure scaffolding is safe for use and appropriate for its intended purpose.
- Ensure fall protection has been designed into the erection and dismantling process (e.g. risks are eliminated through safe design)
- The storage of all scaffold and associated equipment shall be stored in a safe manner before, during and after construction.

3.3 Scaffolder

Must: -

- Ensure scaffolding is erected and dismantled in accordance within the relevant Australian Standards AS1576.1:2010
- Access to the area where the scaffold is being erected shall be barricaded and warning signs or do not enter signs for a potential drop zone posted as per CS Energy barricade procedure.
- A re-inspection schedule shall be established and documented on Scaffold tag and register (within 30 days of erection).
- Ensure all requirements for safe erection, use and dismantling of scaffolding are complied with.
- Where practicable scaffolds shall be erected one lift at a time ensuring each level is fully decked and a guard rail fitted as per AS 4576 1995 Sections 9.4, 9.5, and 9.6.

- Any working platform 2 meters or more shall be fitted guardrails and toe boards on all open sides and ends. The guardrail shall be between 900mm and 1100mm in height and the mid rail halfway between the deck and the top rail.
- Toe boards installed on scaffolds must be secured in place (e.g. with toe board clips) to prevent uplift and dislodgement.
- Where fixed edge protection is omitted to facilitate access, a self-closing gate should be installed, or other suitable method used that gives the equal edge protection.
- Prior to starting work complete or review:
- JSEA with the group party involved; and
- Form S2214 Scaffold Plan
- Hold a current and valid scaffolding licence¹.
- Restrict access to unfinished sections of scaffold to prevent inadvertent access to at-risk areas (i.e. if a number of planks in one bay were omitted to facilitate access for a sling this bay shall be fundamentally blocked off).

3.4 Scaffold User

- Prior to use check the Scaffold tag is correctly completed endorsing the scaffold is safe for use.
- Carry out a visual inspection i.e. ladder is tied; scaffold has not been struck by vehicles etc.
- Use scaffolding for its purpose intended (i.e. understand weight restrictions for the scaffold, maintain three points of contact while on ladders, uni-mesh protection on handrails to prevent objects from falling, etc.).
- Check the inspection period (inspection intervals every 30 days). In the event that the scaffold requires inspection the competent person who built the scaffold or the scaffolder's Supervisor must be informed to arrange for the required inspection, prior to access being authorised.

4 SCAFFOLDING GENERAL REQUIREMENTS

The following general requirements shall be implemented to minimise the risks associated with scaffolding;

- Only trained and licensed personnel to erect and dismantle scaffolds
- Scaffold equipment must be used and maintained to a standard
- Scaffold must only be used as intended
- Scaffold Tags must be used for all scaffolds, displayed in the appropriate manner and used by all personnel accessing a scaffold
- Inspections of scaffolds must be completed at specified intervals outlined on the Scaffold register at a frequency of no more than 30 days
- Scaffold Plans manage the risk of erecting and dismantling scaffold.

¹ Only trained and competent personnel are allowed to erect or dismantle scaffolds and scaffolders in training may assist a competent scaffolder with the erection or dismantling of scaffolding.

5 SCAFFOLD IDENTIFICATION

All scaffolds will be monitored using the scaffold tag system, a scaffold tag holder will be attached to the structure next to the access point where a completed scaffold tag will indicate the status of the scaffold along with a register that will be maintained by the scaffolding supervisor and inspections are conducted at a frequency of 30 Days or less.

These scaffolds will be erected from a suitable structural base and all scaffolds will be built to one of the three duty weight carrying capacity being;

- Light Duty 225kg, or
- Medium Duty 450kg, or
- Heavy Duty 675kg

When the scaffold is incomplete the Scaffold tag holder will be showing the International prohibition symbol and the script “Do Not Use Scaffold”.

The Scaffold register is a logbook record of all scaffolds at each of CS Energy plants. It displays the unique scaffold number, location, and date of construction, inspection times and the name of the erector along with a copy of the scaffold plan; a scaffold register will be located within the maintenance teams and the overhaul teams.

Example of a scaffold tag system



cs energy
SCAFFOLD
 ERECTION & INSPECTION RECORD
 LOCATION:
 BUILT BY:
 DATE ERECTED:
 COMPETENT PERSON:
 SIGNATURE:
 ACCEPTED BY:
 SIGNATURE:
SCAFFOLD TO BE USED FOR
 Light Duty 225kg
 Medium Duty 450kg
 Heavy duty 675kg
 THE ABOVE WEIGHTS ARE FOR ANY ONE WORKING PLATFORM BAY AND INCLUDES MEN AND MATERIALS

Green portion depicting scaffold safe to use within weight restrictions



Scaffold tag holder depicting that the scaffold is unsafe for use

INSPECTIONS AND ALTERATIONS	SIGNATURE					
	DATE	COMMENTS				

Inspection and alteration traceability

6 ERECTION METHOD

Prior to any scaffold being erected on a CS Energy site the JSEA must capture these points detailed below.

6.1 Hazards and Control Measures

- Falling from heights
- Falling objects
- Atmospheric conditions
- Heat
- Manual Handling
- Access & Egress
- Lighting
- Scaffold Failure
- Noise
- Plant

6.1.1 Falling from Heights

At all times during the erection or the dismantling of scaffolding, scaffolders must not be at risk of falling from a height greater than 2.0 metres, or a lesser height where a risk assessment identifies a potential of falling onto hazards that could cause injury e.g. onto sharp equipment below.

Listed are three example methods of safe work at heights that could be used to control the heights risks²:

1. Use of a safe work method that keeps the scaffolder inside handrails and standing on no less than two planks and a full deck 2 metres below.
2. Use of a fall arrest safety harness and fall arrest / restraint device anchored to an anchor point above shoulder height that has an ultimate breaking strength of >15 kN.
3. Use of a catch net suspended no less than three (3) metres below the work platform and anchored by an approved method.

6.1.2 Falling Objects

Personnel are to ensure that scaffolding is passed in a manner that will maintain control of that item. Overhead protection is to be erected at all times and only restrict access to those who are building the scaffold. If one person is to leave the chain for any reason, then he/she is to alert both the person above as well the person below. If in area where visual contact cannot be maintained with the equipment being passed, then ensure person/s do not enter into this area.

Lift levels for each person in a chain is not to **exceed 2m** to manage potential falling objects and handballing injuries. When lifting or transporting, scaffold must be double wrapped to prevent scaffold components from falling.

² Refer to the [CS-PTW-HAZ-02 Working at Heights](#) for further information on suitable controls for this hazard.

6.1.3 Barricade

All areas where a risk assessment has recognised a potential risk of injury to pedestrian or damage site vehicles/plant, a suitable barrier/barricade must be erected in accordance to CS Energy Barrier/Barricade procedure – [CS-OHS-36](#)

6.1.4 Atmospheric Conditions

[CS-PTW-HAZ-03 Confined space](#) procedure to be followed at all times –

6.1.5 Heat

Prior to working in heat affected areas conduct an assessment as detailed in CS Energy procedure for working in heat – [CS-OHS-24](#)

When scaffolding is to commence personnel are to ensure that they drink sufficient water; supervisors are to monitor this hazard and when required organise rest periods or rotation of personnel.

6.1.6 Manual Handling

Supervisors are to monitor work requirements based on risk and rotate or rest personnel. Placement of scaffolding equipment is to be distributed so that handling is at a minimum. Use mechanical aides where possible and this includes the use of pallet jacks, cranes and winches.

Lifting techniques are to be discussed as part of the JSEA process

6.1.7 Access and Egress

Keep access clear to leave a route for passing scaffolding equipment and in an emergency, personnel can be accessed by ERT

6.1.8 Lighting

Ensure adequate lighting is installed and adequate power supply is available to ensure lighting is maintained inside confined spaces. Emergency lighting should also be installed progressively. Install an information tag at the power source to prevent loss of power whilst the space is occupied.

6.1.9 Scaffold Failure

Ensure engineered scaffolds are built (including all ties and bracing) as per the approved drawing. No alterations are to take place unless authorised by an engineer and supervisor. All supervisors and personnel to use scaffolding are to ensure that the scaffold is not over loaded.

All equipment should be visually inspected, and any faults or defects found shall be removed and reported as well as tagged out in a quarantined area

6.1.10 Noise

Impact noise is a hazard and ear protection may be required to be worn if the noise levels are in excess. Mandatory hearing protection zones are to be complied with.

6.1.11 Plant

Specific areas of plant have their own specific hazards during operations, unit run down and run ups.

PLANT	HAZARD	CONTROL
Boiler	Thermal expansion	<p>Scaffolds should not be installed within areas that are affected by thermal expansion unless:</p> <ul style="list-style-type: none"> - The scaffold can move freely to accommodate movement - Where a penetration exists there is sufficient room between planks/scaffolding components for movement - The scaffold is rendered out of service with the access barricaded and tag removed. - Once the heated component has cooled sufficiently the scaffold can be checked and tagged accordingly <p>If this cannot be achieved a scaffolder/crew should be on standby until the heated component has cooled sufficiently</p>
Actuators	Mechanical – moving parts	<ul style="list-style-type: none"> - Keep clear of actuators and other moving parts - Do not pass a scaffold component between arms that may interfere with the natural movement of the plant
Generator	Hydrogen	<ul style="list-style-type: none"> - Working within Hazardous areas guidelines
	EMF	<ul style="list-style-type: none"> - Do not encapsulate PIB ducts (Phase Isolation Bar) this will create a circuit from inductance
Ducting	Thin steel – eroded	<ul style="list-style-type: none"> - Inspect all loading points and tie points inside ductwork for erosion
Various heat affected areas	Fire	<ul style="list-style-type: none"> - Keep all combustible materials from touching or being in close proximity to hot surfaces for example ply against steam valve components.

6.2 Ladders

Scaffolds over 2.0 metres in height will have either an internal ladder system or be protected by a handrail access ladder system to prevent falls from the ladder.

All ladders shall be secured at a minimum of two locations e.g. at the top and at the base

If equipment required for the work cannot be placed in a shoulder bag a gin wheel or other suitable method shall be adopted to locate equipment safely on the scaffold platform.

6.3 Scaffold Planks

- All planks are to be inspected for damage prior to use as per manufactures recommendations.
- Laminated planks are to be inspected for water damage (normally indicated by weight increase or delamination), and
- All planks less than 44 mm thick are restricted to a maximum span of 1.8 metres.
- Damaged planks must be marked and placed in quarantine.

6.4 Scaffolding Plan

A plan showing the following must be developed by the scaffolder for each scaffold:

- The scaffold layout
- Loading restrictions
- Position of braces & Tie assemblies
- Overhead protection
- Suspension anchor points
- Inspection and maintenance procedures and
- Approved anchor point if intended to work at height and ladder access must be produced for all scaffolds.

Unusual or complex scaffolds require an engineering design and approval.

Scaffold plans are to be kept on the permit or the work pack.

CS Energy's [Form S2214](#) Scaffold Plan, or otherwise approved plan equal to or better than, shall be used for each scaffold. A copy is to be maintained in the site scaffold register or project register.

6.5 Prefabricated Scaffold

Prefabricated scaffolding is an integrated system of prefabricated components manufactured in such a way that the geometry of assembled scaffolds is pre-determined. This scaffold can be erected by a competent person³ up to a maximum height of 4 metres



7 DISMANTLING METHOD

A Sequential method of dismantling shall be adopted –

- Identify any components such as scaffold standards that have been modified during the work.
- Dismantle the scaffold from the top down and one complete elevation (lift / level) at a time whenever possible.
- Leave the handrails in place until the other components are dismantled to manage fall from height hazards.
- Remove the ties ensuring there is no more than two elevations (lifts / levels) of scaffold above the top row of ties.

All material is to be stacked in pallets for collection. Boards are to be stacked on timber, so they can be lifted by crane or forklift.

³ The competent person shall receive information, instruction, training and supervision in the safe erection, dismantling, maintenance and alteration of the prefabricated scaffolding.

8 DEFINITIONS

Term	Definition
Supervisor	A person who supervises and manages a business unit to complete work. (e.g. In relation to hot work, a Supervisor must ensure/assist an OIC in ensuring there are sufficient resources to complete the work (inc. fire watch)).
JSEA	A Job Safety Environment Analysis used to identify the safety and environmental hazards, their risk and controls required for a work activity. CS-OHS-11
Scaffold tag	Registered trademark for a scaffold management system.
PPE	Personnel Protective Equipment
Scaffold	<p>A temporary structure, stage or platform specifically erected to support access or working platforms, persons, plant or other material.</p> <ul style="list-style-type: none"> • Light duty; 225kg • Medium duty; 450kg • Heavy duty, 675kg as defined by AS1576.1.
Prefabricated scaffold	Prefabricated scaffolding is an integrated system of prefabricated components manufactured in such a way that the geometry of assembled scaffolds is pre-determined.
Scaffolder	<p>A person competent to erect, alter, repair and/or dismantle a scaffold.</p> <p>Basic Scaffolder can –</p> <ul style="list-style-type: none"> • Prefabricated scaffolds • Cantilevered hoist with a load limit not exceeding 500 kilograms (materials only) • Ropes • Gin wheels • Safety nets and static lines • Bracket scaffolds (tank and formwork) <p>Intermediate Scaffolder -</p> <ul style="list-style-type: none"> • Basic Scaffolding • Tube and coupler scaffolds including tube and coupler covered ways and gantries • Cantilever crane loading platforms • Cantilever and spurred scaffolds • Barrow ramps and sloping platforms • Scaffolding associated with perimeter safety screens and shutters • Mast climbers <p>Advanced Scaffolder –</p> <ul style="list-style-type: none"> • Basic Scaffolding • Intermediate Scaffolder Prefabricated scaffolds • Hung scaffolds, including scaffolds hanging from tubes, wire ropes and chains • Suspended scaffolds
Scaffolding	Any component assembly used to be used in the construction of a scaffold.

Term	Definition
Lift	Scaffold Level / Elevation
Hazardous Area	An area in which an explosive atmosphere is present or may be expected to be present, in quantities such as to require special precautions for: <ul style="list-style-type: none"> Any access or activity that presents an ignition source, or The construction, installation and use of electrical equipment
Unusual or complex scaffolds	A scaffold that requires engineering sign off (RPEQ) e.g. Special duty Scaffolds, where a combination of scaffold designs is required, where support components / structure analysis is required. Examples include Furnace Scaffold, Nose Scaffold, Wivenhoe suction conduit scaffold.

9 REFERENCES

Reference No	Reference Title	Author
Code of Practice	Queensland Scaffolding Code of Practice 2009	Worksafe Qld
AS/NZS 1576	Scaffolding Series	Standards Aust
AS/NZS 4576	Guidelines for scaffolding 1995	Standards Aust
B/D/15/22964	Form - S2214 - Scaffold Plan	CS Energy
B/D/12/11085	Procedure - CS-OHS-36 - Barricades and Signage	CS Energy
B/D/11/30949	Procedure - CS-OHS-24 - Working in Heat	CS Energy
B/D/11/19581	Procedure - PTW / H&S - CS-PTW-HAZ-02 - Working at Heights	CS Energy
B/D/11/39828	Procedure - PTW / H&S - CS-PTW-HAZ-03 - Working in Confined Spaces	CS Energy
B/D/12/1362	Procedure - H&S - CS-OHS-52 - Ladders	CS Energy

10 RECORDS MANAGEMENT

In order to maintain continual improvement, suitability, safety and effectiveness of the organisation, CS Energy's registered documents will be reviewed on a two-yearly basis or at intervals specified by legislative or regulatory requirements. Review of controlled documents should occur where it has been identified that there are changes in technology, legislation, standards, regulation or where experience identifies the need for alteration to the content. Registered documents should also be reviewed following an incident, change management process, modification or where directed as part of a risk assessment process. A 'review' can simply mean that it has been identified, confirmed and appropriately recorded that no changes are required and that the existing process remains the same.

CS Energy must ensure that records are retained according to accountability, legal, administrative, financial, commercial and operational requirements and expectations. In compliance with records retention and disposal, all documentation created in relation to CS Energy business must be retained in line with minimum retention periods as detailed in legal retention and disposal schedules.

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11 ATTACHMENTS

11.1 Attachment 1 - Form - S2214 - Scaffold Plan (Linked Image)

The SCAFFOLD PLAN Form S2214 Version 02/18

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SCAFFOLD PLAN

Work Order / Work Pack Number: _____

UNIT: _____ EQUIPMENT: _____

LOCATION: _____ DATE: _____

TYPE	CONSTRUCTION	SIZE IN METRES	DUTY
Tube & Coupler:	Drop:	Height:	Heavy:
Modular:	Cantilever:	Length:	Medium:
Frame:	Birdcage:	Width:	Light:
Planks Only:	Independent:	Platform:	Other:
Ladder Only:	Spur:	No Work Platforms:	
Other:	Putlog:		

Safety and Special Construction Requirements:

Are barricades required at job site, any foots below? Yes No

Have you checked foundations/support structure (including ground conditions and bedding)? Yes No

Is work being conducted near power lines or live equipment including P&G bays? Yes No

Could mobile plant and vehicular traffic potentially place the workers' safety and/or the structural integrity of the scaffold at risk? Yes No

Is the working at HEIGHT CONTROL CHECKLIST required on the PTW? Yes No

Plant movement has been identified (Aerials, thermal creep)? Yes No

Do you have 600mm clearance around scaffolds, fire cabinets etc? Yes No

What additional PPE is required? _____

STAGE	NUMBER OF SCAFFOLDERS	JOB TIME	HRW LICENCE CLASS	INSPECTION REQUIREMENTS				
Prepare:			BASIC	Each shift				
Erection:			Intermediate	Daily				
Dismantle:			Advanced	1 Weekly				
Standards:	Size	3m	2.5m	2m	1.5m	1m	0.5m	0.3m out off
	No.							
Ladders:	Size	3m	2.4m	1.8m	1.2m	1m	0.75m	0.5m
	No.							
Transoms:	Size	2.4m	1.8m	1.2m	1m	0.75m	0.5m	
	No.							
Braces:	Size	2.4m	1.8m	1.2m		Access Transom	2.4m	1.8m
	No.							
Hop-up Tie:	Size	2.4m	1.8m	1.2m		Hop-up Brackets	1.2m	1.2m
	No.							
Planks:	Size	4.2m	3.6m	3m	2.4m	1.8m	1.2m	Sole boards
	No.							
Tubes:	Size mm	54	48	42	38	38	33	3
	No.							
Couplers/Fittings:	Size	90°	Swivel	Putlog	Joiner	Girdler	Handrail	Adj Base
	No.							
Ladders:	Size					Rick Board Couplers		Base Plates
	No.							
Ply:	Length							
	Width							

▽ ▲ ▽ ▽ ▽

ERECTED FOR (Owner) _____ BY (Qualified Scaffolder) _____ DATE _____ Page 1 of 2

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