LENDLEASE

DEOP BEACON BARRACKS

DEFENCE SOURCING PORTAL

FUTURE OPPORTUNITY NOTICE

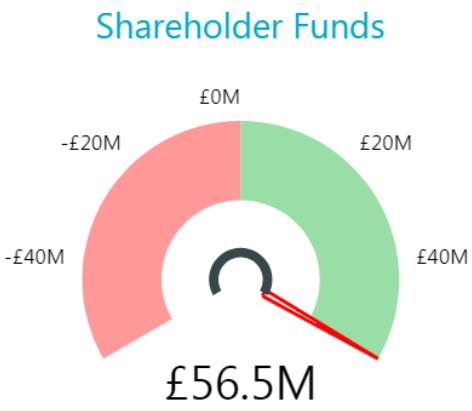
ADDITIONAL DOCUMENT

LENDLEASE FINANCIAL PERFROMANCE REQUIREMENTS

FINANCIAL PERFORMANCE

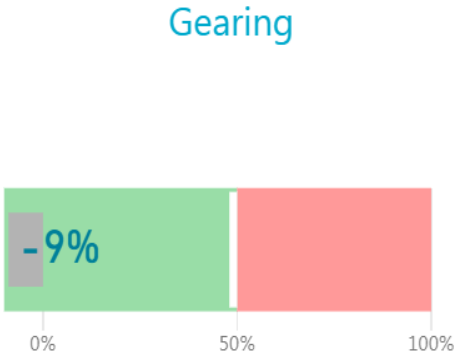
Understanding the Ratios in SCIP

MANDATORY RATIOS (Pass 3 out of 3)



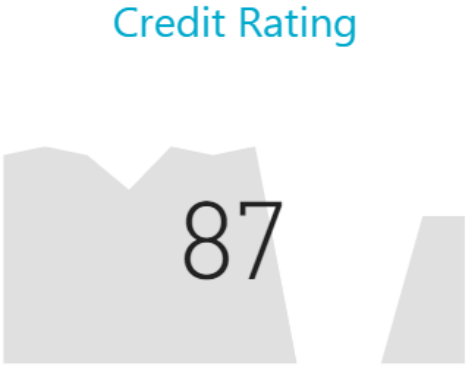
To pass, figure must be positive.

Dial to the right of the pass mark (£0) in the green shaded area



To pass, percentage must be less than 50%

To left of white line (50%) in green area is a pass (including negative percentage)



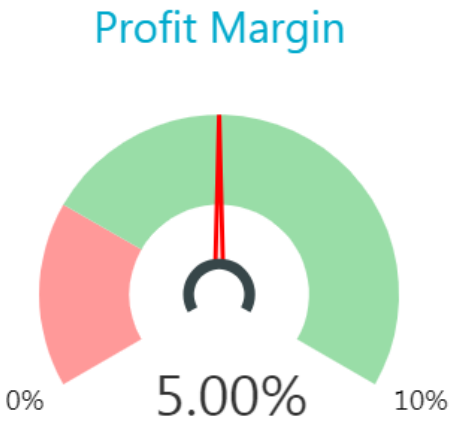
Credit Rating must be above 40

Note: this will also indicate no late filing of Accounts or Annual Returns which would result in a score of 0

Score out of 100 determined on several factors. Shaded area behind score shows trend of previous scores.

For Consultant appointments <£100K this is the only ratio that must be passed.

ADVISORY RATIOS (Pass at least 1 in addition to all Mandatory)

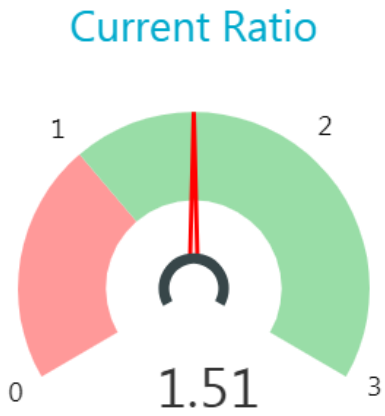


To pass, percentage needs to be >2.5%

Dial in the green area, if all red then the supplier fails this ratio.

To pass, percentage needs to be greater than 8%

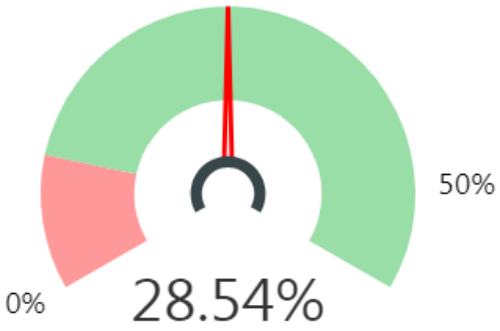
Dial in the green area, if all red then the supplier fails this ratio.



To pass, ratio needs to be greater than 1.05

Dial in the green area, if all red then the supplier fails this ratio.

Return on Capital Employed



To pass, percentage needs to be greater than 10%

Dial in the green area, if all red then the supplier fails this ratio.

FINANCIAL EXPOSURE

To pass, Exposure must be less than 30% of Turnover

Dial in the green area.

Current exposure is the £ amount of open purchase orders that is unpaid. Available to spend is equal to 30% of Turnover less Current Exposure.

If the dial is in the red area (Available to Spend is a negative value) or the value of the proposed package is greater than the Available to Spend figure, then the supplier fails the Exposure check.

Turnover	Max Package Value	Outstanding to Pay	Available to Spend
£302M	£90.56M	£8.47M	£82.13M

FURTHER CHECKS REQUIRED?

If the Supplier doesn't meet the required Financial Performance levels described above, further checks and approvals are required

The Business Unit Finance Manager will need to make further checks before determining whether they can be used. Sign off from the FM required and should be included on Tender Recommendation Reports.

Note: Approach to the additional reviews and sign off will shortly change under the "Reframing Procurement" initiative. Updates soon.

For any assistance with this process, please contact Central Procurement – centralprocurement@lendlease.com.

LENDLEASE ACCREDITATION REQUIREMENTS

1. Compliance (Accreditation)

To determine correct level or accreditation for a package/service; the value and risk need to be considered, as per below:

Risk

<table>
<tr><td rowspan="3">Package /Service Risk</td><td>High</td><td colspan="3" rowspan="2">Common Assessment Standard
(CAS Desktop Assessment)</td><td rowspan="2">Achilles Building Confidence
Gold – CAS Site Audit
(will show as ✔ on SCIP)</td></tr>
<tr><td>Medium</td></tr>
<tr><td>Low</td><td>SSiP</td><td colspan="3">(will show as ! on SCIP)</td></tr>
<tr><td colspan="2">Consultants
with design responsibility</td><td>SSiP</td><td colspan="3">Common Assessment Standard (CAS Desktop Assessment)
(will show as ! on SCIP)</td></tr>
<tr><td colspan="2">Other Consultant / Service Provider</td><td>n/a</td><td colspan="3">‘Know Your Business Partner’ (KYBP) check via LL compliance team
(Cerico/Dow Jones)</td></tr>
<tr><td colspan="2"></td><td><£20k</td><td>£20-50K</td><td>£50k-£100k</td><td>>£100k</td></tr>
</table>

Package or Service Value

Further guidance for Lendlease Development projects is available here.

Notes and Clarifications:

1) In addition to the above, contractors carrying out works including any form of passive fire protection also need to apply the rules here*:* **Passive fire Protection Accreditation Rules**
2) The ‘Common Assessment Standard’ is currently provided through Achilles (Building Confidence Standard product) Constructionline (Gold/CAS level) and CHAS.
3) SSiP (*Safety Schemes in Procurement*) accreditation for orders <£20k with design responsibility ensures we meet our minimum safety requirements under CDM regs.
4) A list of “High” and “Medium” risk subcontract packages can be found in the appendices for guidance. All consultants are considered, for the purpose of this policy, to be low risk.
5) Where the above accreditations are deemed to not be appropriate**, an alternative method of accreditation is to be agreed by the Project Director, EH&S Manager (subcontract packages only) and the Head of Procurement**. The ‘Know Your Business Partner’ check will need to be carried out to meet Lendlease’s anti-bribery and corruption requirements.
6) Where working with Rail, Utilities or other sector contractors/consultants that do not normally work in the building industry, the appropriate industry accreditation (including RISQS for Rail and UVDB Verify for Utilities) will be deemed to satisfy.
7) This process only covers the initial (stage 1) assessment of the suitability of a subcontractor or consultant. Project and Business Unit specific requirements (see guidance) should still be carried out as part of the tender selection process and recorded in an auditable manner.
8) Where contingent workers on an hourly/weekly rate are appointed (whether through an agency or their own Limited company) please follow the P&C procedures on People Portal.

LENDLEASE GLOBAL MINIMUM REQUIREMENTS (GMRs)

Delivery

GMR 4

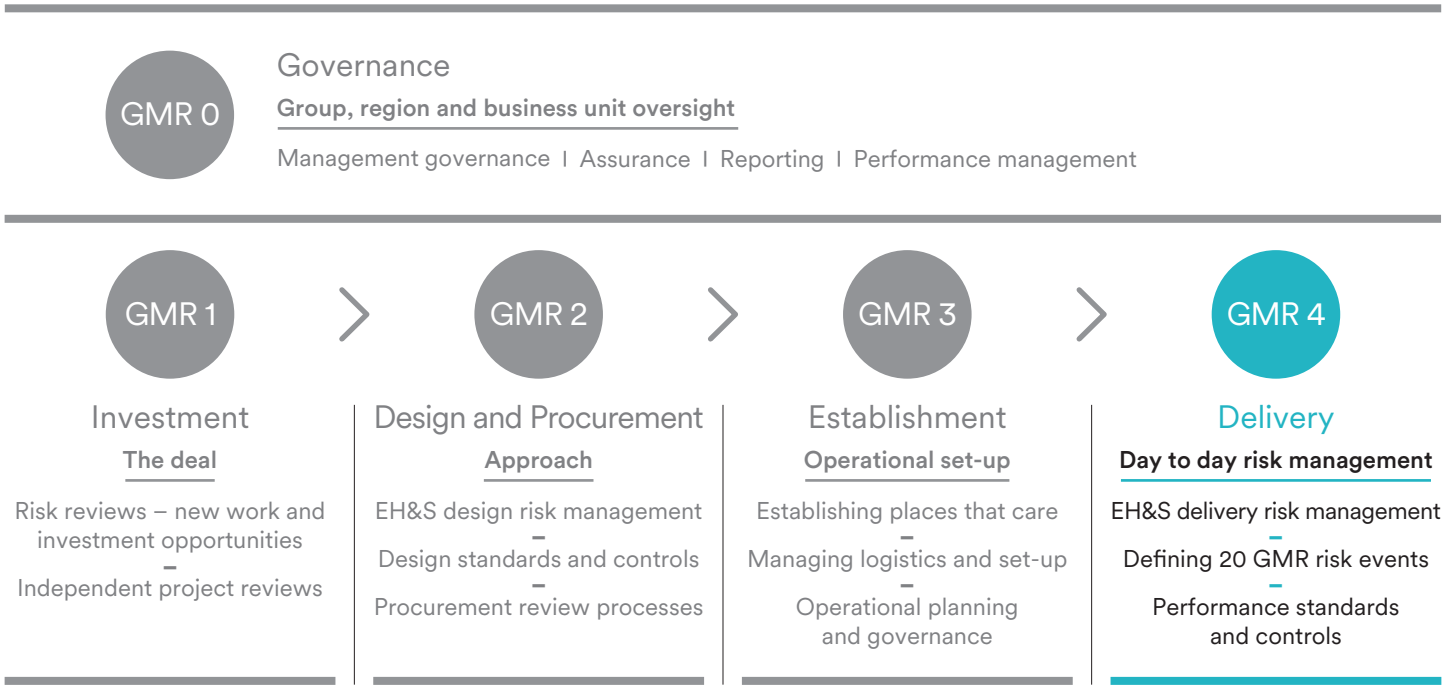


Figure 6: GMR Framework – GMR 4: Delivery

Preamble

GMR 4 addresses the potential for fatal risk outcomes amongst the day-to-day operational activities, hazards and risks that are present across Lendlease operations. Whilst many risks to people are present daily, there are 20 different GMR 4 risk events that have been identified that present the most significant risk to people (i.e. the risk of a single or multiple fatalities), or of causing significant environmental damage across Lendlease's operations. These GMR risk events have been assessed using the bow tie risk methodology to determine potential causes and impacts.

Potential causes are addressed by implementing preventative controls which are used to prevent the occurrence of the GMR risk event, whilst the potential impacts are offset with mitigating controls designed to lessen the impact if the event was to occur.

Whilst all 20 GMR risk events have preventative and mitigating controls listed for application, the top 10 GMR risk events at Lendlease (identified through analysis of internal incident data) also have performance standards provided which assist in determining appropriate controls to be applied for each work activity. For GMR risk events 11-20, no performance standards are included. If further detail is required regarding how the controls outlined will be achieved this will be provided by the business unit that oversees the operation.

GMR 4 is comprised of the following:

Protocols

4.0 Management of activities

GMR risk events 1-10: critical controls and performance standards

4.1. Fall of person
4.2. Fall of material/object
4.3. Vehicle and plant incident (work sites)
4.4. Uncontrolled release of electrical energy
4.5. Fire and explosion
4.6. Crane and hoisting equipment incident
4.7. Impact from moving parts of machines
4.8. Excavation and stockpile collapse
4.9. Failure of structures (temporary or permanent)
4.10. Occupational health exposure

GMR risk events 11-20: critical controls only

4.11. Public health exposure
4.12. Mental health and fatigue
4.13. Degradation or pollution of the environment
4.14. Vehicle and plant incident (public areas)
4.15. Uncontrolled release of stored energy (non-electrical)
4.16. Tunnel collapse
4.17. Failure of fixtures or fittings
4.18. Drowning
4.19. Confined space incident
4.20. Essential service failure

4.0 MANAGEMENT OF ACTIVITIES

For all Lendlease operations where any of the 20 GMR risk events apply, activities must be managed by implementing the controls and performance standards against each risk event. The controls outlined in the GMRs address varying elements found within the hierarchy of risk control outlined below. The hierarchy prescribes elimination as the most desirable control outcome through to administration and PPE as the least desirable control outcome.

- **Elimination:** Eliminate the hazard by removing it completely or designing it out.
- **Substitution:** Substitute the hazard with something safer.
- **Isolation:** Isolate the hazard from people, or the environment.
- **Engineering:** Reduce the risks through engineering controls (i.e. controls that are physical in nature, including mechanical devices or engineering processes).
- **Administration:** Reduce exposure to the hazard using administrative actions (i.e. work methods or procedures that are designed to minimise exposure to the hazard).
- **Protection:** Use personal protective equipment (PPE) to limit exposure to the harmful effects of the hazard.

Visual representation of the hierarchy of risk control

All operations must address the following six (6) steps in administering the requirements of GMR 4:

Note: Where new risks are identified for any operation that are not outlined in these GMRs, this methodology must be followed to eliminate or manage the risk if elimination is not reasonable.

Step 1:

Identify applicable GMR risk events

Each operation must apply the concept of 'What's the worst that could happen?' (WTWTCH) and identify the work activities in their scope where there is a likelihood of exposure to any one of the 20 GMR risk events. Once these activities are identified, they must be planned and managed in accordance with the applicable controls against each GMR risk event.

Step 2:

Determine the engineering controls (or above) to be implemented

As a minimum, at least one preventative control set at the engineering level or above must be in place for each of the identified critical risks. In addition to the (at least) one preventative engineering control, at least one mitigating control must also be in place. If it is not possible to implement any of the controls outlined in GMR 4 (or an equivalent control) the operation must seek a GMR exemption from the Region CEO and provide an alternate work methodology that addresses and manages the risks.

Step 3:

Document the activity methodology

For each activity where a GMR risk event applies, there must be an appropriate documented procedure or method of work outlining the application of critical controls identified in step 2 for that work activity, including protection requirements. Note that some activities may have exposure to more than one GMR risk event. For acute high risk activities, the proposed methodology will be subject to an independent methodology review (GMR 2.3.3). Step 3 and subsequent steps must be re-visited where changes are made to the work methodology or the resources allocated to the activity.

Step 4:

Pre-task discussion with the workers involved

Through a pre-task discussion process (e.g. 'pre-start' or 'safe start') all workers that will undertake or supervise the work must be consulted and made aware of the contents of the documentation and how the critical controls and performance standards must be applied in response to addressing the potential consequences from reviewing 'What's the worst that could happen?'. Communication must also extend to include people other than those directly involved in the activity that could be potentially impacted by the activity. For activities subject to a permit process, this is part of the communication and assurance process. Step 4 must be re-visited at the commencement of each day or shift.

Step 5:

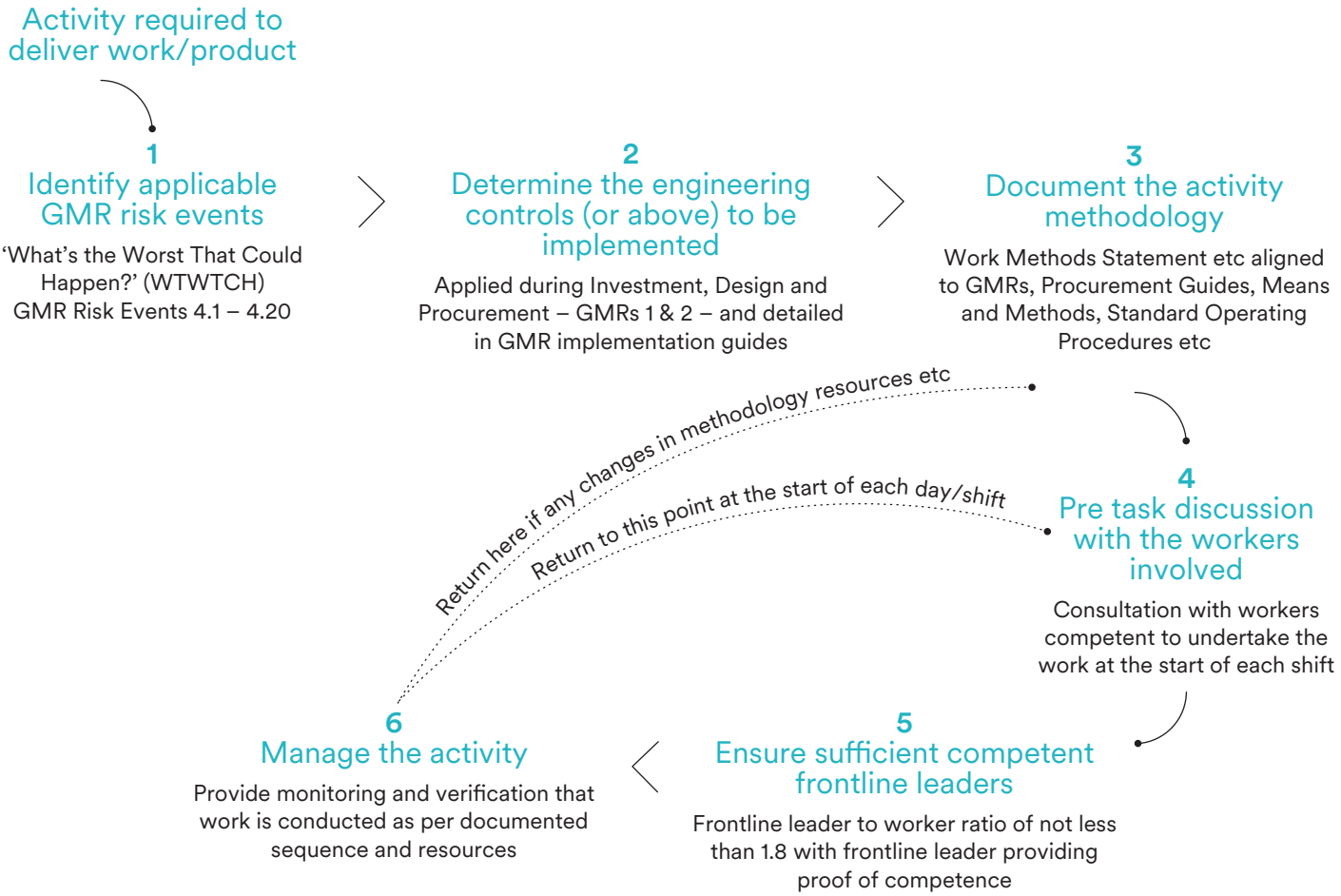
Provide sufficient frontline leaders with proof of competency

Activities where one or more GMR risk events have been identified must adopt a frontline leader to worker ratio of not less than 1:8. Frontline leaders and workers must provide proof of competency where required for the role undertaken and the GMR front line leader supervision ratio maintained across all shifts and scenarios wherever any of the GMR 4 risk events can occur. Frontline leaders on Lendlease operations should be made available to take part in the Lendlease Frontline Leader training module.

Step 6:

Manage the activity

Adequate verification and monitoring processes must be in place to determine that each activity is being managed in accordance with the agreed methods outlined in step 3. As a minimum, verification and monitoring must occur at the commencement of each working day/shift, and at regular intervals throughout the course of the day/shift. Wherever there is a change in working conditions, the agreed method of work, or where a change in sequence or scope is introduced, step 3 and subsequent steps must be revised to manage the change. If the scope of works changes, repeat from step 1.



4.1 FALL OF PERSON

Description

These critical controls and performance standards apply to situations where there is a risk of one or more people falling off an edge, object, structure or opening with the potential risk of fatal consequences. It is not intended to apply to slips or trips on the same surface level.

Potential Causes

A Fall from an unprotected or compromised edge at height

B Weather conditions leading to fall of person from an edge

C Failure of structure (temporary or permanent)

D Failure of non-trafficable surfaces

E Fall from plant, equipment or vehicle

F Failure of anchor support

G Fall from access equipment

H Failure of access equipment

I Fall into an unprotected or compromised excavation, pit, void or opening

Fall of Person

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Preventative Controls (4.1.1 – 4.1.5)

4.1.1 Fall Prevention Barriers
Provide robust physical barriers to protect people falling from height

4.1.2 Height Access Equipment
Height access equipment must be operated and maintained in accordance with the manufacturer's instructions

4.1.3 Temporary Access Platforms
Temporary access platforms must be structurally sound, free of defects and require three points of contact to be maintained when entering and leaving the access equipment

4.1.4 Management of Penetrations, Risers and Shafts
Effective measures must be in place to prevent the fall of people or materials down penetrations, risers and shafts

4.1.5 Use of a Safety Harness
Any safety harness in use must be an approved type with fit for purpose anchor points

Mitigating Controls (4.1.6 – 4.1.7)

4.1.6 Secondary Fall Protection
Secondary fall protection measures must be in place where the fall of person risk exists

4.1.7 Rescue Procedures
Rescue procedures must be in place for the recovery of any fall of person and arrest/suspension in a harness or in netting

Risk Event Preventative Controls and Performance Standards

4.1.1 Fall Prevention Barriers

Control

Provide robust physical barriers to protect people falling from height.

Performance Standard

i) All areas under construction or demolition (including deep excavations) from which a person could fall must be protected by physical barriers of sufficient height and strength to prevent people from falling or being blown off the edge of the structure or into an excavation or opening (e.g. screens, handrails, scaffolds, or guard rails for temporary structures).

ii) All open edges from which a person could fall in asset operations and maintenance scenarios must also be effectively protected by physical barriers of sufficient height and strength to prevent people from falling (e.g. permanent climb resistant balustrades, guard rails or void screens) addressing the risks associated with the operation such as, likely usage, location, structural stability and weather conditions.

iii) All mobile work platforms, temporary works platforms, equipment or machinery used for work at height must have edge protection in place to prevent the fall of a person from both the elevated work and from any potential for the platform to be destabilised from adjustment, movement or positioning manoeuvres. Restraining harnesses must be worn and secured to the manufacturer's designated anchor point by people working in MEWPs with booms unless working over water.

iv) Edge protection must conform to the requirements of the regulations, standards and applicable local codes and have a method of attachment and a supporting structure capable of withstanding the required design loads that will be applied.

v) Where containment mesh is secured to prevent fall of materials (refer to GMR 4.2.1) from an edge, it must also meet applicable edge protection requirements if required to prevent a fall of a person.

4.1.2 Height Access Equipment

Control

Height access equipment must be operated and maintained in accordance with the manufacturer's instructions.

Performance Standard

i) Control and prevent unauthorised access to climbable building equipment (e.g. cooling or heating plants and free-standing structures such as antennae, power station cooling towers, storage tanks and power transmission lines or towers).

ii) Equipment or structures requiring worker access must eliminate or minimise the risk of a fall. Equipment requiring regular maintenance must be installed at, or moved to, ground level to eliminate the need to work at height.

iii) Access to general construction work areas or floors must be provided by either a full permanent solution or via temporary staircases of adequate width with suitable handrails. Access via custom-built timber ladders is not permitted.

iv) Suspended access equipment such as bosun chairs, cradles, gondolas and swing stages must only be used where safer means of height access cannot be achieved.

v) Permanent BMUs such as mechanised cradle systems must provide safe access for cleaning and maintenance, be fixed to the operation's structure, have the safe working load clearly marked, and have sufficient designated safety harness anchor points designed to withstand the forces caused by a fall of any person(s) located anywhere on the platform.

vi) All mast climbers, swing stage scaffolds and BMUs must be installed, maintained and inspected by an engineer or person(s) technically qualified to do so, following the manufacturer's specifications as a minimum. Details of the design, maintenance, inspections and manufacturer's specifications must be provided.

vii) All people using mast climbers must attach using a fall restraint lanyard when the mast climber is moving. The lanyard must be attached to either a vertical line independent of the portable vertical access equipment, an engineered anchor point or horizontal static line fabricated and certified by the manufacturer or independent engineer for that purpose, or a transportable temporary independent anchor point engineered for that purpose. Emergency retrieval rescue procedures must be established for work involving a safety harness and lanyards.

4.1.3 Temporary Access Platforms

Control

Temporary access platforms must be structurally sound, free of defects and require three points of contact to be maintained when entering and leaving the access equipment.

Performance Standard

i) Effective measures are to be in place for the safe erection, dismantling and use of all scaffolds, temporary works and working platforms.

ii) All scaffolds must be fit for use, all structural members free from visible defects and the erected scaffold is stable and secure to prevent movement or collapse. Scaffolds must be plumb, have adequate cross-bracing, sound footings and be tied into the structure when the height/base ratio is greater than 2:1.

iii) The use of A-frame scaffolds above two levels (i.e. two levels of A-frame but only a single above ground working platform) for the purposes of façade scaffolding, blockwork or other means is not permitted as it cannot be erected or dismantled in a safe manner to meet the GMRs.

iv) Working platforms must be closely boarded or planked and free from defects. Remove any damaged boards or planks, debris, materials and waste from scaffolds as soon as it is practicable.

v) Guard rails, mid-rails and toe boards must be installed on all open sides of platforms representing a fall risk.

vi) The use of ladders for work at height must be minimised by effective work planning and using safer means of access consistent with the hierarchy of risk control (e.g. MEWPs, scissor lifts, scaffold towers, podium steps and working platforms). Custom-built timber ladders made on site without appropriate tread are not permitted to be used. All stair treads shall be assessed for anti-slip surfaces.

vii) Maintain three points of contact at all times including when entering and leaving access equipment and when using a ladder to prevent exposure to a fall.

viii) Climbing up the outside of a scaffold is prohibited.

4.1.4 Management of Penetrations, Risers and Shafts

Control

Effective measures must be in place to prevent the fall of people or materials down penetrations, risers and shafts.

Performance Standard

i) Construct all lift and elevator shafts to physically protect both those carrying out the construction and those below carrying out the lift installation. Provide safe working platforms for all those working in lift shafts.

ii) Fully protect openings to lift shafts with a secure full height system that prevents unauthorised entry and the risk of falls of people or materials. Shaft opening protection must remain in place until a safe working platform is provided or the lift doors are in place.

iii) Check penetrations and risers have either a structural mesh cast in during construction or are fitted with other protection such as metal guard rails or covers.

iv) All floor openings and pit covers are to be mechanically fixed (i.e. screwed or bolted, not nailed) and have clearly labelled covers. Covers must be constructed to minimise the risk of a trip hazard.

v) All covers to floor openings and pits are to have adequate load bearing where the cover is to be subjected to mobile plant or other significant loads other than people.

vi) Remove protective measures only when work is taking place in the opening and prevent the potential fall of a person or fall of material whilst the work is taking place and replace the protective measures when work is completed.

vii) Permanent balustrades or fencing around voids in public areas must be climb resistant (e.g. with top rails angled away from the void or similar).

viii) Climbable material or equipment must not be placed within 1m/3.3ft of the balustrade or fencing, unless the balustrade or fencing is extended in height to account for the material or equipment in close proximity.

ix) Physical barriers must be in place to prevent persons falling into exposed holes or excavations as a result of piling operations.

4.1.5 Use of a Safety Harness

Control

Any safety harness in use must be an approved type with fit for purpose anchor points.

Performance Standard

i) A safety harness must not be used as a primary means of fall prevention unless required for maintenance of assets, plant or equipment where physical barriers have not been installed. In these circumstances where a harness is being used as the primary means of falls prevention a full body safety harness must be used to provide either fall restraint (preferred) or fall arrest (least preferred) protection. If a full body safety harness is being used as the primary means of fall protection verification of competency in use is required.

ii) Any safety harness in use must be attached to an appropriate anchor/tie-off point(s) by means of a compatible connector that provides either sufficient fall restraint protection or incorporates a decelerator to provide appropriate fall restraint/arrest. All of these components must be fit for purpose, properly inspected, tested, tagged and maintained in line with the manufacturer's guidelines or related standards and be used only by a person with the proof of competency to do so.

iii) Any construction activity requiring the use of a safety harness as the primary means of fall prevention must have approval from the Region Head of Health & Safety.

iv) Workers wearing a safety harness must be attached to a loadbearing element or structure through an approved anchor or tie-off point(s) installed by a person with qualifications or proof of competency per the manufacturer's specification and installation requirements.

v) As part of the approval process, the design of the system and its load bearing adequacy (of the anchor/tie-off point) must be verified by a qualified independent engineer, consistent with GMR4.9 and an emergency fall arrest retrieval plan must be in place.

vi) Approval must also verify the fall arrest system has a compatible twin or y-shaped lanyard and energy absorber to provide appropriate fall arrest protection. Workers using a safety harness as a primary means of fall protection must remain attached to the loadbearing element or structure at all times and must never remove both tails of the lanyard at any time.

vii) Where a safety harness is configured to either fall arrest or fall restraint the related free fall distance and potential for the pendulum effect must be reviewed as part of the approval for use and the safety harness.

Risk Event Mitigating Controls and Performance Standards

4.1.6 Secondary Fall Protection

Control

Secondary fall arrest measures must be in place where the fall of person risk exists.

Performance Standard

i) Any work at height where all work faces cannot be enclosed must have in place a horizontal catch net (e.g. a diaper net, catch fan, horizontally projecting net or any other structurally designed element) as a secondary measure to prevent a fall of person risk. Where work is conducted outside of the building envelope (e.g. where a person is positioned in an articulated MEWP basket beyond the building envelope and the MEWP is positioned to within 3m/9.8ft of the edge and is perpendicular to the edge) measures must be implemented to prevent both the MEWP and the person from falling (e.g. tethering the MEWP back to the structure using an engineered tie or using engineered wheel stops). All people working in the basket are to be harnessed to the MEWP at all times.

ii) Fall protection netting must always be a minimum of one bay ahead of the area of work with the exception of the last bay when edge protection has already been fitted.

iii) A safety harness in use as a primary means of fall protection must be fitted with suspension trauma straps.

4.1.7 Rescue Procedures

Control

Rescue procedures must be in place before work commences for the recovery of any fall of person and arrest/suspension in a harness or in netting.

Performance Standard

i) Rescue and recovery protocols must be in place to recover any person who has fallen into a secondary fall protection element (e.g. horizontal netting or catch fan).

ii) For all circumstances where a safety harness is in use and configured to either fall arrest or fall restraint a recovery plan must be established that addresses the requirement to reach any person suspended promptly (within 10 minutes) to minimise the risk of death from suspension trauma and that the rescue team are trained in dealing with suspension trauma.

4.2 FALL OF MATERIAL/OBJECT

Description

These critical controls and performance standards apply to events caused by work from an edge of a floor not fully enclosed, inadequate design or installation, high wind, work outside edge protection, inappropriate storage of items, disturbance or demolition leading to a falling object and/or failure of a load. This event is inclusive of works on penetrations/voids, MEWPs, building maintenance works, temporary working platforms (scaffold), demolition, deconstruction, abatement or structural alteration works where the potential for material or objects to fall has been identified. Note: GMRs 4.6 crane and hoisting equipment incident and 4.17 failure of fixtures or fittings address related events.

Potential Causes

- A Worker drops an object
- B Object is knocked from an elevated work area and falls
- C Non-fixed object falls or topples during high wind event
- D Unplanned or uncontrolled fall or toppling of material
- E Fall of an object due to improper design, installation, storage, maintenance or use
- F Demolition causes an uncontrolled fall of material

Fall of Material/Object

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Preventative Controls (4.2.1 – 4.2.4)

4.2.1 Enclosure of Work Areas
Elevated work areas must be enclosed with robust containment material to prevent a fall of material impacting people below

4.2.2 Tool and Equipment Tethers/Lanyards
Tethers or lanyards must be used where the work area at height is not fully enclosed, or where tools or objects are required for use outside of the perimeter protection

4.2.3 Wind and Toppling Exposure
All objects that are not fixed and could be toppled, blown or uplifted from any location must be relocated to an unexposed area or secured appropriately

4.2.4 Structural Alterations
Adjustments to structures must assess the fall of material risk

Mitigating Controls (4.2.5 – 4.2.6)

4.2.5 Exclusion Zones
An adequate exclusion zone must be in place whenever overhead work has the potential for tools, materials, objects or equipment to fall

4.2.6 Secondary Protection or Catch Measures
Overhead protection must be installed where the risk of falling object exists and wherever a public interface on site exists

Risk Event Preventative Controls and Performance Standards

4.2.1 Enclosure of Work Areas

Control

Elevated work areas, including stair towers, must be enclosed with robust containment material to prevent a fall of material impacting people below.

Performance Standard

i) Perimeter protection addressing the fall of person risk must also address the fall of material risk posed by stored or handled tools, materials, objects or equipment to prevent these from being kicked, knocked or bumped through openings or gaps.

ii) Any means of containment enclosure must address risks posed by the lateral movement of the largest (weight) and smallest (dimension) items used within any permanent and temporary enclosures. Any enclosure solutions must be installed prior to further work being conducted.

iii) The fall of material risk associated with temporary voids, penetrations, openings or gaps must be managed. Covers must be designed and securely fastened with warning signage displayed. Covers must be able to sustain the largest weight and prevent penetration by the smallest object.

iv) For all vertical progressive construction, full height (floor to soffit) edge containment protection must be deployed and in place on multi-storey structures under construction prior to the installation of the facade or permanently designed edge protection solutions. For all auxiliary elements (e.g. scaffolds, hoists, MEWPs, perimeter screens or climbing formwork) a strict 'no gaps' policy must be adopted for both horizontal and vertical gaps. Designed solutions relative to these scenarios must be deployed and maintained to prevent the fall of tools, equipment and materials at all times (e.g. fully boarded out platforms, rubber seals, proprietary engineered hinged flaps and appropriately designed mesh).

4.2.2 Tool and Equipment Tethers/Lanyards

Control

Tethers or lanyards must be used where the work area at height is not fully enclosed, or where tools or objects are required for use outside of the perimeter protection.

Performance Standard

i) Identify scenarios where tools or objects are required to be used outside of an enclosed work area and prescribe associated controls.

ii) A tether or lanyard must be used to separately secure each individual tool or object in use beyond any form of edge protection or enclosure. The object must be secured prior to crossing through the edge protection or enclosure.

iii) Each tether or lanyard and its sub-components securing an object beyond the encapsulation must be fit for purpose and manufactured to resist the falling object's forces.

4.2.3 Wind and Toppling Exposure

Control

All objects that are not fixed and could topple or be blown or uplifted from any location must be relocated to an unexposed area or secured appropriately.

Performance Standard

i) Stored materials, temporary barriers, fencing and signage must be assessed for the risk of toppling through assessing appropriate storage locations for the relevant material type. Consideration must be given to storage heights, equipment racks, exclusion zones, and the suitability of materials used to keep stored loads or materials stable. Risks of toppling from wind, vibration, or impacts from people, plant or equipment must be used to determine the appropriateness of any storage location and methodology.

ii) Storage solutions for large items that have been assessed as presenting a toppling risk (e.g. trusses, large glazing panels, heavy equipment with a height to base ratio of greater than 3 to 1) shall be reviewed by an engineer.

iii) All operations must have information available relating to maximum wind gusts and the placement of objects, either temporary or permanent, and must consider the risk of objects being blown or uplifted by wind from any elevated position. Provide early weather warning systems for operations where there is the risk of windblown falls of materials.

iv) All objects that could be blown from elevated positions must be firmly fixed, secured or relocated to a less exposed area.

v) Provide protocols to cease work activity at height when wind thresholds are exceeded, with protocols inclusive of the need to monitor components located at height such as any pulleys, guide rollers, swing gates or maintenance units.

vi) Activities and equipment that can release materials from height (e.g. spoil from piling operations) must be assessed with physical controls on the equipment or exclusion zones in place.

4.2.4 Structural Alterations

Control

Adjustments to structures must assess the fall of material risk.

Performance Standard

i) All structural alteration work or structural change work must have a building and services survey completed by a qualified and registered structural engineer to determine the sequence of works and assess the risk of failure of structure or fall of material.

ii) In the event of any proposed changes to the planned activity or sequence, a documented review must be completed to assess how the structural alterations could be affected.

Risk Event Mitigating Controls and Performance Standards

4.2.5 Exclusion Zones

Control

An adequate exclusion zone must be in place whenever overhead work has the potential for tools, materials, objects or equipment to fall.

Performance Standard

i) Exclusion zones must be established below or around all areas where there is a risk of people being struck by falling materials (e.g. below works on the cladding of a building, around mobile crane works, loading/unloading activities, atriums and MEWPs in use).

ii) Exclusion zones must be of adequate size, take into account the risks such as potential arc of fall, deflections and bounce distances, be delineated by physical barriers and have clear signage prohibiting unauthorised entry. The integrity of any exclusion zones must be regularly checked.

iii) Under no circumstance may a person enter an exclusion zone whilst work is being carried out overhead.

4.2.6 Secondary Protection or Catch Measures

Control

Overhead protection must be installed where the risk of falling objects exists and wherever a public interface on site exists.

Performance Standard

i) Identify in construction and asset works any scenarios where overhead protection must be installed, particularly where an engineering control preventing the fall of material cannot be implemented, people below cannot be completely excluded, enclosure or tether/lanyard requirements cannot be met, or where an object's mass, positioning or height from next floor level could cause a fatal injury if it fell onto a person.

ii) For all structural work on any vertical progressive multi-storey construction, a secondary catch system (e.g. a diaper net, catch fan, horizontally projecting net or any other structurally designed element) must be positioned immediately below any areas where this work is being undertaken above (e.g. at the level just below the screens) and the application must consider the arc of any potential fall of material.

iii) Where there is the potential for members of the public and/or workers to be impacted by a fall of material, a designed and engineered overhead protection (e.g. crash deck) must be appropriately positioned and of adequate strength and coverage taking into account potential material types and the arc of any potential fall of material.

iv) Overhead protection or catch systems must be designed to avoid failure due to impact with the object it will intercept as a result of over spilling, puncture holes, melting by hot objects, corrosion or overload by weather events (e.g. seasonal maximum wind, rain, hail or snow).

v) Provide details of how the safe retrieval of a fallen object from overhead protection or catch systems will be achieved.

4.3 VEHICLE AND PLANT INCIDENT (WORK SITES)

Description

These critical controls and performance standards apply to the operation and movement of all vehicles in defined construction zones and include heavy equipment and fixed and mobile plant where the impacts of an event could result in a fatality. It does not cover traffic on Lendlease assets (e.g. retail, residential or commercial) or the use of Lendlease light vehicles on public roads.

Potential Causes

A Operator error (e.g. competency, impairment or fatigue) or use in an unsafe manner (e.g. high speeds and distractions such as spotters, failure of ground or structure)

B Mechanical failure (e.g. tyres and brakes)

C Inadequate planning and methodology (e.g. lack of segregation, public transport interfaces, plant/personnel, loss of control, miscommunication and traffic control including entry/exit to sites)

D Sub-standard road, environmental and weather conditions (e.g. turning points, fog, unclear pedestrian/vehicle, unstable ground or structure, interface/management, restricted views, blind spots, poor lighting or visibility, poor road markings and obstacles)

E Vehicle or equipment is unfit for purpose (e.g. through lack of maintenance, poor procurement, structural fatigue and exceeding the design life)

F Third party event (e.g. member of public error or misuse, visitor error, animal error, unplanned medical event, co-worker error, sabotage, theft and contact with other equipment)

G Improper assembly or disassembly

Vehicle and plant incident (work sites)

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (e.g. spilt fuels)

Mitigating Controls (4.3.8)

4.3.8 High Visibility Clothing
All people working on or adjacent to traffic routes and vehicles operating on Lendlease operations must have sufficient high visibility clothing and reflective visible markings

Preventative Controls (4.3.1 – 4.3.7)

4.3.1 Traffic Management
Vehicle routes on construction and haul roads must effectively manage the risks to vehicles and people

4.3.2 Pedestrian and Vehicle Segregation
All operations must assess the risks presented by the movement of pedestrians, materials and vehicles and implement appropriate safety measures to eliminate or minimise these risks

4.3.3 Parking and Traffic Routes
Traffic routes and parking arrangements must be in place to avoid vehicle-to-vehicle and vehicle-to-pedestrian conflict

4.3.4 Use of Light Vehicles on Site
Lendlease tool of trade vehicles operating in defined construction or engineering zones must be in good working order and operated in a safe manner

4.3.5 Use of Plant, Equipment and Vehicles
Effective controls must be in place for managing the use of all mobile plant, equipment and vehicles used for ground and civil works, including skid-steer loaders, excavators, backhoes, graders, scrapers, bulldozers, dump trucks, rollers and compactors

4.3.6 Installation, Inspection, Maintenance and Dismantling
Fixed and mobile plant must be installed, erected, adjusted, inspected, maintained and dismantled in safe locations, in accordance with the manufacturer's requirements and by qualified personnel

4.3.7 Vehicle and Plant Recovery and Rescue
Effective measures must be in place for the recovery of vehicles and plant immobilised or bogged in mud, sand or other type of similar traction resistant ground conditions

Risk Event Preventative Controls and Performance Standards

4.3.1 Traffic Management

Control

Vehicle routes on construction and haul roads must effectively manage the risks to vehicles and people.

Performance Standard

i) Traffic management plans must address the interface with public roads and provide effective controls addressing prohibited vehicles, height and weight restrictions, path of travel, access points, pedestrian access routes, routes for different vehicles or plant, reversing requirements, signs and traffic control aids, technology application, site traffic maintenance and protected position(s) of the traffic controllers ensuring an escape route is available in the event of an emergency.

ii) Traffic management or vehicle movement plans must be current and define the engineering controls to prevent vehicles striking another vehicle, structure or pedestrian.

iii) Separate traffic plans are needed for each stage and area of the operation when the discrete phases of work result in changes to the operating and traffic environment.

iv) Vehicle routes must facilitate the safe movement of the types of vehicles and levels of traffic likely to use them. This must be achieved by avoiding hazards such as steep inclines, tight bends, requirements to reverse in confined areas, inadequate lane widths and any issues related to roundabouts, one-way routes and signage.

v) Regular inspections are required to determine that the implementation of the controls is consistent with the traffic management plan, have not been altered or changed or degraded in condition over time.

4.3.2 Pedestrian and Vehicle Segregation

Control

All operations must assess the risks presented by the movement of pedestrians, materials and vehicles and implement appropriate safety measures to eliminate or minimise these risks.

Performance Standard

i) Pedestrians are to be separated from dedicated vehicle, plant and equipment routes by appropriate physical barriers designed to mitigate any potential impacts.

ii) Light and heavy equipment and plant must be separated using appropriate measures such as physical barriers or earth berms and demarcated using visible signage indicating routes and directions to prevent interaction.

iii) Activities such as plant maintenance or refuelling must be undertaken in areas specifically designed to provide barriers between workers and other heavy equipment.

iv) Route sightlines must be unobstructed and adequately lit to provide good visibility. Blind spots and corners are to be avoided, or where they do exist, have mirrors installed or other technology installed that effectively eliminate sight restrictions. Plant, equipment or materials must not be placed at vehicle entries/exits to operations and therefore creating obstructed route sightlines.

v) Signage and road markings must provide clear instructions to pedestrian and vehicle route users and be located in positions which allow users to see them and have time to respond. Signs and road markings must be constructed and located so as not to present hazards to drivers or pedestrians.

vi) Loading and unloading areas must be clearly defined. These areas must be separate from parking or access routes for private vehicles and away from pedestrian routes. If reversing cannot be eliminated, then it must be controlled by establishing pedestrian exclusion zones.

vii) Speed limits must be set to reduce the risks associated with pedestrian movements. Speed calming measures such as raised crossings, humps on approach to crossings and rumble strips must be implemented in areas where pedestrians and vehicles could interface.

viii) Construction sites must provide separate site entrance and exit points for pedestrians and vehicles. When vehicles and pedestrians are in close proximity due to nearby locations such as security entrance points or where doors open directly onto vehicle routes, engineering controls must be provided to keep pedestrians and vehicles apart (e.g. by fitting physical barriers or providing separate routes).

ix) The use of people as traffic signallers must be eliminated wherever possible, particularly around heavy equipment operations. Where the use of people as traffic signallers are required such as for pedestrian access areas or to manage public road interface, only trained traffic signallers are to be used. In these instances, a risk assessment must be undertaken to identify where technology can be implemented to replace or remove the signaller. Any traffic signallers must have a designated safe zone to stand in whilst directing traffic movements.

x) Implement safety measures where work is undertaken next to active roads, train lines or similar, to protect workers from impacts with moving vehicles, trains or associated debris. For large sites, physical barriers or truck mounted attenuators must be used to protect workers from road traffic. Where this cannot be achieved, low speed limits must be in place (less than or equal to 40km per hour [25mph]) in combination with traffic calming measures, hazard signage, demarcation lines and barriers to minimise risk for workers and the public.

4.3.3 Parking and Traffic Routes

Control

Traffic routes and parking arrangements must be in place to avoid vehicle-to-vehicle and vehicle-to-pedestrian conflict.

Performance Standard

i) Provide clear signage in carparks, along traffic routes and foot traffic areas to indicate location information, speed limits, hazards and precautions.

ii) Provide clearly defined pedestrian routes in safe zones using hard barriers, flagging and other visual delineation to facilitate safe access and egress.

iii) Locate height bars and signage to entrances to warn drivers of any applicable height limits. Provide safe exit routes for oversized vehicles.

iv) Where amenities are provided, delineated stable, weather-resistant car parking must be provided.

4.3.4 Use of Light Vehicles on Site

Control

Lendlease tool of trade vehicles operating in defined construction zones must be in good working order and operated in a safe manner.

Performance Standard

i) Vehicles used as a tool of trade by Lendlease personnel must be operated in a safe manner at all times.

ii) Light vehicles on operations must be of a high visibility colour (e.g. white) and have reflective taping, flashing lights, a first aid kit, a fire extinguisher, a spill kit and survival or emergency equipment suitable for the operating environment.

iii) Vehicles proposed for hire or purchase must have a recognised national new car safety rating (e.g. five-star Australasian New Car Assessment Program (ANCAP) rating or equivalent national standard).

iv) Vehicles provided by Lendlease as a tool of trade shall be fitted with in-vehicle management systems, reversing cameras and hand brake warning systems.

v) Seatbelts must be used at all times by all occupants and drivers of vehicles whilst the vehicle is moving.

vi) Mobile phones must only be used by the driver of a tool of trade vehicle whilst the vehicle is stationary and in a parked safe location. The exception to this is for emergency and incident response vehicles, using hands free communications in a response situation, where alternative communication methods are not available.

vii) All drivers must be appropriately licensed for the vehicle being operated.

viii) Drivers must be fit for work (i.e. not affected by medication, drugs or alcohol).

ix) When parked, all vehicles must be fundamentally stable (i.e. the vehicle will not move even with the vehicle in neutral and with no brakes applied) with the handbrake effectively applied, placed in gear and on level ground. Wheels must be situated in spoon drains, gutters or against wheel stops. If fundamentally stable parking cannot be achieved appropriately sized wheel chocks must be available and implemented.

x) All Lendlease vehicles must have inspection and maintenance protocols in place for all safety related items such as wheels and tyres, steering, suspension and braking systems, seats and seat belts, lamps, indicators, mirrors and reflectors, windscreen and windows including windscreen wipers and washers, the vehicle structure itself and any other safety related item on the vehicle body, chassis or engine including instrumentation.

xi) Pre-start inspections must be completed to determine that the lighting and braking systems are in proper working order.

xii) Vehicles must not be used above the manufacturer defined maximum load limit and loads must be suitably restrained so the load remains stable on the vehicle during normal driving conditions. Loads must not protrude from the vehicle in a way that could injure people, damage property or obstruct others' paths.

xiii) Wheel nut indicators must be fitted to all vehicle wheels where not precluded by the design.

4.3.5 Use of Plant, Equipment and Vehicles

Control

Effective controls must be in place for managing the use of all mobile plant, equipment and vehicles used for ground and civil works, including skid-steer loader, excavators, backhoes, graders, scrapers, bulldozers, dump trucks, rollers and compactors.

Performance Standard

i) All mobile plant in use on Lendlease operations must have been subject to a risk assessment conducted by the supplier/manufacturer in accordance with regional legislation and codes or standards with the risk assessment remaining with the plant. Inspections must be conducted in accordance with regional legislation, codes or standards and the manufacturers recommendations.

ii) Any modifications made to plant and equipment, such as retrofitting additional safety systems, must be completed by qualified persons and following consultation with the manufacturer to determine that any proposed changes will not introduce new risks.

iii) Operating mobile plant and equipment must have seat belts for all occupants, adequate lighting (e.g. headlights, tail, turn, brake, strobe and flashing lights), identified isolation or lockout points, adequate walkways, railing, steps or grab handle combinations and boarding facilities. Where possible, mobile plant with alternative emergency egress from the cabin should be provided. Additional items such as reversing alarms, wheel chocks, a horn, a handbrake alarm and effective windscreen wipers must also be in place and functioning as intended.

iv) Technological advances must be considered for collision avoidance, fatigue management, pedestrian proximity notification and visibility improvement, particularly where personnel are required to enter the potential impact zone of operating plant, vehicles and equipment.

v) All mobile plant and equipment must have protection where there is a risk of rollover, tip over or impact by falling objects (e.g. loading or unloading, work on stockpiles or steep inclines, work below other material or activities or where manufacturer's specifications require it). Any modifications made to plant and equipment, such as retrofitting additional safety systems, must be completed by qualified persons and following consultation with the manufacturer to determine that any proposed changes will not introduce new risks.

vi) Replace or re-certify protection equipment and fixtures after a rollover, tip over or falling object damage and before further use.

vii) Prohibit the use of mobile phones when the plant or equipment is in use.

viii) Protocols must be provided for the use of plant and equipment on slopes and batters to avoid vehicle rollovers. Technology solutions must be in place, where available, to provide warning for the potential of safe working angles to be exceeded or the loss of traction.

ix) Clearly identify minimum clearance distances for overhead cables and establish controls to prevent plant or equipment coming into contact with these cables.

x) If personnel are required to enter the potential impact zone of operating plant, vehicles and equipment without a physical barrier, positive eye contact, signals or radio contact must be made with the operator to cease operation and lower implements such as dipper arms, buckets and blades to the ground before entry.

xi) Establish and maintain pedestrian exclusion zones around operating plant and equipment where there is a risk of workers being struck. Clearly identify specific exclusion zones for stationary but operating plant or equipment (e.g. an excavator with its bucket in use) for each type of plant or equipment and implement an appropriate exclusion zone, preferably a physical barrier.

xii) When parked all plant and equipment must be fundamentally stable with the engine turned off, handbrake effectively applied, placed in gear and on level ground and secured from unauthorised use. Wheels must be situated in spoon drains, gutters or against wheel stops. Implements and attachments such as dipper arms, buckets and blades must be lowered to the ground. If fundamentally stable parking cannot be achieved appropriately sized wheel chocks must be available.

xiii) Vehicles (heavy or light) must not be used above the manufacturer defined maximum load limit and loads must be suitably restrained so the load remains stable on the vehicle. Loads must not protrude from the vehicle in a way that could injure people, damage property or obstruct others' paths.

xiv) Mobile Elevated Work Platforms (MEWP's) should be fitted with secondary anti crush devices to guard against the potential crush risk of the operator between the MEWP & surrounding structure. These anti crush devices may be physical devices fitted to the MEWP or electronic limiting devices that stop movement when impending crush risk is detected. Where these devices are not supplied by the manufacturer of the MEWP, the device must be certified as being compliant by a suitably qualified and experienced person.

4.3.6 Installation, Inspection, Maintenance and Dismantling

Control

Fixed and mobile plant must be installed, erected, adjusted, inspected, maintained and dismantled in safe locations, in accordance with the manufacturer's requirements and by qualified personnel.

Performance Standard

i) Proposed installation, inspection, maintenance and dismantling of major plant or equipment on a project must be risk assessed to determine if the works can be undertaken off the project. Where this is not possible, all works must prevent workers being struck by components from stored energy, rotation, overturning, toppling or other forces. Controls must include addressing the isolation and lock-out of stored energy, stabilisation, and temporary or permanent structural support of the plant or equipment (or components). Where there is a risk of workers being struck, establish and maintain physical exclusion zones around plant that is being installed, modified or dismantled.

ii) Where fixed and mobile plant is provided to Lendlease, suppliers must provide a complete set of the manufacturer's operating and maintenance instructions. Inspection and maintenance records must be kept with the plant and conform to the requirements of the standards applicable to the region of operation and as per the manufacturer's requirements.

iii) All plant must be installed, inspected, maintained and dismantled by qualified personnel in accordance with the manufacturer's instructions.

4.3.7 Vehicle and Plant Recovery and Rescue

Control

Effective measures must be in place for the recovery of vehicles and plant immobilised or bogged in mud, sand or other type of similar traction resistant ground conditions.

Performance Standard

i) Before an attempt is made to recover a bogged vehicle or plant either through freeing up or digging out the obstructions and/or via the aid of recovery boards and planks to facilitate grip and traction, an assessment of risk must be carried out.

ii) Towing of bogged vehicles and plant can only be undertaken when engineering attachment points and/or other methods are identified and verified.

iii) The suitability of recovery equipment such as cables, winches and hooks used to tow vehicles and plant must be fit for purpose and verified by an engineer.

iv) Only approved rated recovery equipment can be used. Snatch straps and other equipment such as chains, webbing slings, load resistant slings and rope must not be used for the recovery of vehicles and plant.

Risk Event Mitigating Controls and Performance Standards

4.3.8 High Visibility Clothing

Control

All people working on or adjacent to traffic routes and vehicles operating on Lendlease operations must have sufficient high visibility clothing and reflective visible markings.

Performance Standard

i) All people working adjacent to traffic routes or engaged in traffic management activities must wear high visibility clothing that meets applicable regulatory or industry standards.

ii) All reflective markings on vehicles or plant on Lendlease operations must be in good condition and comply with regulatory or industry standards.

iii) When working at night, provide suitable high visibility clothing (e.g. effective retroreflective stripes).

4.4 UNCONTROLLED RELEASE OF ELECTRICAL ENERGY

Description

These critical controls and performance standards apply to high voltage (HV) and low voltage (LV) electrical work where there is the risk of a fatality or serious injury from a person being electrocuted or burned by the uncontrolled release of electrical energy. They do not apply to work such as unplugging sockets and installing dry cell batteries.

Potential Causes

A Unintentional contact with or close proximity to live exposed electrical source – HV or LV

B Unintentional contact with or close proximity to live overhead power lines

C Unintentional contact with or close proximity to live buried electrical services

D Unintentional contact with electricity by a qualified electrician when performing work on known live electrical services

Uncontrolled Release of Electrical Energy

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (fire)

Preventative Controls (4.4.1 – 4.4.8)

4.4.1 Identification and Schematics
All electrical circuits, fixed and construction wiring, including overhead and underground services are fully identified and recorded in schematics. Procedures exist for safe work

4.4.2 Appropriate Electrical Equipment
All electrical equipment including insulated MEWPs, tools and PPE must be fit for purpose and compliant with local standards

4.4.3 Electrical Supply
All temporary electrical supply panels and boards must be sufficient in number and located in close proximity to work areas to minimise trailing cables. Permanent and temporary power sources must be secured to prevent unauthorised access

4.4.4 Isolation
De-energise, isolate, test and prove for dead prior to any work on electrically powered items

4.4.5 Live Work
Live work is authorised, planned and communicated and prohibits lone working

4.4.6 Fault Finding
When investigating any electrical equipment to identify and rectify faults, all items must be treated as live until the fault is located

4.4.7 Overhead Conductors
Prevent inadvertent overhead services contact by equipment or operational activity

4.4.8 Underground Services
Prior to ground disturbance, underground electrical services must be positively located with work planned accordingly

Mitigating Controls (4.4.9)

4.4.9 Emergency Response
Appropriate first aid and rescue equipment must be available and nearby

Risk Event Preventative Controls and Performance Standards

4.4.1 Identification and Schematics

Control

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

Performance Standard

i) Identify all electrical circuits and include in schematics and/or plans, irrespective of whether the power supply arrangements are permanent or temporary.

ii) Following installation or removal of any service, provide comprehensive records (e.g. photographs, test results, updated Single Line Diagrams and/or plans endorsed by persons with appropriate competency requirements).

iii) All underground and concealed electrical services (in floors, wall, columns, etc.) must be properly recorded through as-built drawings (including dimensions) for future reference in the event that excavation, coring or demolition work is required. Verification of the live electrical service must be conducted by review of updated drawings and/or detection/scanning works by a qualified person prior to excavation, coring or demolition works.

4.4.2 Appropriate Electrical Equipment

Control

All electrical equipment including insulated MEWPs, tools and PPE must be fit for purpose and compliant with local standards.

Performance Standard

i) Determine that nationally recognised standards of manufacture and installation of electrical equipment are identified with the assistance of qualified electrical professionals.

ii) Check all electrical equipment supplied to Lendlease operations includes documentation confirming it meets the manufacturing standard identified in the procurement list.

iii) Provide insulating mats for risers and plant rooms that address any regulatory or applicable national or international codes or standards.

iv) Provide assurance post installation that any electrical systems circuits are installed as designed.

v) All electrical tools and equipment (except battery operated tools) in the operation must be regularly inspected, tested, tagged and marked safe for use by a qualified electrical professional.

4.4.3 Electrical Supply

Control

All temporary electrical supply panels and boards must be sufficient in number and located in close proximity to work areas to minimise trailing cables. Permanent and temporary power sources must be secured to prevent unauthorised access.

Performance Standard

i) Electrical risks associated with the temporary or permanent supply of electricity to electrical equipment through a socket outlet, including mobile generator sources, or where appliances, luminaires and other electrical equipment are supplied from a final sub-circuit of a permanent electrical installation, must be protected against by a tested earth leakage circuit breaker (ELCB), residual current device (RCD) or ground fault circuit interrupter (GFCI).

ii) Determine that all electrical supply boards, cables, cords, plugs and sockets are safe by design for use, appropriate for where it is to be used and located to avoid physical damage by vehicles or water (e.g. by elevation or mechanical protection).

iii) Implement a comprehensive inspection, testing and preventative maintenance regime covering all temporary electrical supplies, including supply panels, circuits, cables, cords, plugs and sockets. Include a process to record and remedy any identified deficiencies and align with any manufacturers' guidelines.

4.4.4 Isolation

Control

De-energise, isolate, test and prove for dead prior to any work on electrically powered items.

Performance Standard

i) Use a qualified electrical worker to undertake any work on electrically powered items.

ii) De-energise circuits and isolate using lock out tag out (LOTO) systems with personal locks prior to any work.

iii) Power sources such as uninterruptable power supplies (UPS), batteries, capacitors, solar power and generators must be identified. Once identified they must be de-energised and securely isolated at the energy source before works commence.

iv) Develop a group isolation procedure with support equipment when multiple isolations involve multiple people.

v) Prior to any work commencing electrical power must be tested with a known working and calibrated meter and proven as dead.

4.4.5 Live Work

Control

Live work is authorised, planned and communicated and prohibits lone working.

Performance Standard

i) All operations to determine if work on live conductors is required before any investment or contract approvals.

ii) Work on live electrical systems is only permissible in circumstances where deemed necessary by an electrical technician for testing, fault finding and/or commissioning work, or where the electrical supply cannot be interrupted (e.g. hospital life support systems and critical utilities).

iii) Live work on critical utilities such as distribution and/or transmission networks can only be undertaken as directed by the utility provider, or their approved live line contractor. Any directive to undertake such activities must be supported by documented safe systems of work and in line with legislated practices.

iv) Earthing and short-circuiting systems must meet applicable national and/or international codes or regulations.

v) Task specific PPE must be in use and meets applicable national and/or international codes or regulations.

vi) Assess the risk of electrical fires and implement appropriate precautions (e.g. fire watch, appropriate extinguishers and fire blankets).

vii) A dedicated and appropriately qualified frontline leader must be present and managing any live works relating to testing, fault finding and/or commissioning.

4.4.6 Fault Finding

Control

When investigating any electrical equipment to identify and rectify faults, all items must be treated as live until the fault is located.

Performance Standard

i) Prior to any fault-finding work commencing, all elements of the circuit must be de-energised, isolated and tested for dead.

ii) Locating and rectification of faults must only be conducted whilst the circuit is isolated. These works must include the use of insulating tools, gloves and insulating mats.

iii) Re-energise to determine if the fault has been fixed following any test for dead.

iv) If the fault continues, fault finding live work procedures must be followed including the use of insulating tools and gloves, insulating mats and a qualified electrical spotter trained in cardiopulmonary resuscitation (CPR).

4.4.7 Overhead Conductors

Control

Prevent inadvertent overhead services contact by equipment or operational activity.

Performance Standard

i) Use one of the following control options to prevent a fatality:

- Redirect power distribution (e.g. underground)
- Power off and isolated, with power proven as dead
- Power off part time
- Power on in conjunction with controlled movement or operations

ii) Minimum clearance distances for overhead cables must be clearly identified with items such as visual warning, barriers, flagging or other controls in place to prevent plant coming into contact with these cables.

iii) For vehicles passing under energised conductors, the power on option requires a crossing point that includes advance warning signs with signed height clearance, non-conductive goal posts and a clearly visible height line set to a safe clearance distance.

4.4.8 Underground Services

Control

Prior to ground disturbance, underground electrical services must be positively located with work planned accordingly.

Performance Standard

i) A register must be in place for buried electrical services on Lendlease controlled operations. The register must include a plot drawing of the route of the electrical service with grid references, description of the depth and type of service, the voltage and any auxiliary protection.

ii) Prior to the disturbance of ground where underground network assets such as electrical or gas may be present, Lendlease operations must provide valid diagrams and plans obtained from the relevant authority. Existing drawings and/or a Cable Avoidance Tool (CAT) scanner, ground penetrating radar or any other suitable tool must be used to locate and mark underground services before work commences.

iii) Where any uncertainty exists regarding the location of underground services, hand digging and/or vacuum excavation must be used to identify and expose the services.

iv) Where Lendlease installs or oversees buried electrical services work for its own assets or projects, compile an as-built record of the service locations including:

- Photographic reference of the asset before back filling to show cable type, depth and route.
- In trench signage, both tape and boards at least 250mm (9.8 inches) above the service.
- Datum signs indicating service at building ingress and every 50m (164 feet) over open ground.
- Service markers on ground level showing service types and all changes in direction.
- For removed services, photographic reference of the empty trench and positive permanent disconnection from supply. All relevant plans must be updated to reflect any changes/removals of services.

Risk Event Mitigating Controls and Performance Standards

4.4.9 Emergency Response

Control

Appropriate first aid and rescue equipment must be available and nearby.

Performance Standard

i) For work activities where risk of electrocution exists (e.g. live work), provide non-conductive rescue equipment to allow separation of a person safely from an electrical supply, resuscitation and treatment of burns. Such equipment with trained rescue personnel or first aiders must be readily accessible when undertaking work.

ii) Train all workers involved in the work and site first aiders where appropriate to use the rescue equipment.

iii) HV and live work permits must include the provision of rescue equipment.

4.5 FIRE AND EXPLOSION

Description

These critical controls and performance standards apply to operations where a fire may result in the fatality of one or more people. They apply to fire systems, both technical and administrative, buildings under construction, managed operating assets, offices and underground works and are inclusive of hot works in any setting.

Potential Causes

- A Plant, equipment or vehicle on fire due to inadequate maintenance, improper use or being unfit for purpose
- B Unsafe and non-conformant hot works
- C Ignition of flammable materials (e.g. gas, liquid or solids)
- D Self-combustion of gases, chemicals and strata
- E Unplanned sudden release of stored flammable materials (e.g. rupture)
- F Failure of component or system
- G Frictional ignition from equipment
- H Unauthorised smoking and other open flame ignition sources
- I Unsafe blasting activities
- J Unsafe re-fuelling activities
- K Utilities, electrical system or cable overheating
- L Poor housekeeping and unsafe storage of combustible materials
- M Intentional third-party activities (e.g. arson)
- N Adverse weather conditions
- O Unintentional third party activities

Fire and Explosion

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage

Mitigating Controls (4.5.8 – 4.5.10)

4.5.8 Fire Alarm Systems
Fire alarm systems that detect and warn of smoke and fire emergencies must be in place

4.5.9 Means of Escape
Provide clear means of escape

4.5.10 Fire Fighting Equipment
Provision of adequate and suitable firefighting equipment

Preventative Controls (4.5.1 – 4.5.7)

4.5.1 Prioritisation of Non-Combustible Materials
Substitute or minimise use of combustible materials with non-combustible or lowest combustible materials wherever possible

4.5.2 Ignition Sources
Identify, minimise and manage ignition sources

4.5.3 Inspection and Maintenance
Inspect and maintain fire monitoring and mitigation systems and equipment

4.5.4 Hot Work
Permits to work must be in place for all hot works activities

4.5.5 Refuelling Equipment
Controlled refuelling areas and procedures for refuelling large equipment, plant, machinery and vehicles

4.5.6 Excavations and Tunnelling
Geotechnical investigations must identify gas or trapped hydrocarbons

4.5.7 Behavioural Controls
Adequate policies, procedures and rules must be in place to limit unwanted behaviours

Risk Event Preventative Controls and Performance Standards

4.5.1 Prioritisation of Non-Combustible Materials

Control

Substitute or minimise use of combustible materials with non-combustible or lowest combustible materials wherever possible.

Performance Standard

i) Where a business unit requires a particular product for construction, the product treatment and management practices must demonstrate that combustibility properties meet all local building regulations and material selection standards.

ii) Operations must comply with local building regulations and material selection standards for design and procurement applied by the business unit.

iii) The potential for fire at each stage of construction and asset operations, including fire from an adjoining property, must be assessed given any changes to material requirements and storage.

iv) Storage of combustible or flammable materials must be minimised at all times. Selection of storage locations should consider potential impacts from fire risks and must comply with local legislation, standards and/or codes. Storage locations and requirements for all combustible material, dangerous goods and hazardous substances must be identified and marked on site plans and at the storage location.

v) Where there is a requirement to use explosives on site, a blast management plan or similar must be in place outlining the storage, handling, methods of use, licencing, training and emergency response requirements for the use of these.

4.5.2 Ignition Sources

Control

Identify, minimise and manage ignition sources.

Performance Standard

i) Design and operational reviews must assess the potential for plant and equipment to be a fire ignition source (e.g. from high heat in normal mode, overheating in fault condition, arcing, substandard electrical plugs, static, overloading or faults, or spontaneous combustion from floor stain-soaked rags) so that ignition sources can be eliminated or minimalised.

ii) Provide lightning protection during each stage of construction and asset operations where the risk of a strike is deemed high due to prevalence of electrical storms or data made available via meteorological agencies.

iii) Any portable fuelled space heaters used for the curing of material (e.g. concrete) must be fit for purpose with any heating operations monitored to determine that equipment is functioning properly, a safe atmosphere (e.g. carbon monoxide, natural gas) is maintained, and that clearance from any combustible material is provided.

4.5.3 Inspection and Maintenance

Control

Inspect and maintain fire monitoring and mitigation systems and equipment.

Performance Standard

i) Identify all fixed and portable systems and equipment that monitors fire initiation and mitigates fire propagation (e.g. Active Fire Systems).

ii) Implement a testing and maintenance regime that meets statutory guidelines, manufacturer's guidelines and any applicable codes or legislative requirements.

4.5.4 Hot Work

Control

Permits to work must be in place for all hot works activities.

Performance Standard

i) A Hot Works Permit is required for all work operations that produce sparks, super-heated by-products (e.g. metals), or open flames. These hot work operations include, but are not limited to welding, torch cutting, grinding, and brazing.

ii) A Hot Work Permit is to be applicable for no more than one shift, with the authorising person(s) to check site conditions and specified risk controls.

iii) During hot works, the fire watch person as identified on a hot works permit must have oversight and remain at the location of hot works at all times and until all ignition or heat sources are eliminated.

iv) Permits are only to be issued to individuals who are fluent in the language the permit is written in or who have been inducted in the permit requirements by an interpreter.

4.5.5 Refuelling Equipment

Control

Controlled refuelling areas and procedures for refuelling large equipment, plant, machinery and vehicles.

Performance Standard

i) Off-site refuelling is preferred. However, where on-site re-fuelling facilities provide the only practicable alternative, the following applies:

- Minimise the quantity of fuel stored and the number of re-fuelling facilities.
- A spill kit(s) must be provided and maintained in all workplaces with contents consistent with the type, nature and scale of the potential spills that could occur, and key personnel must be trained in spill response.
- Storage of fuel or other vessels containing hydrocarbons must be in a bunded area with an impervious floor that contains as a minimum 110% loss of the largest container in the bunded area in the event of a spill.
- An accountable frontline leader for the area must always be in place and accompanied by those trained in response requirements (e.g. spill and fire response), protected by physical barriers.
- Emergency fuel flow shut off capability must be in place for bulk fuel supplies.

ii) Refuelling of items that are operating (i.e. engine still running) at the time of refuelling is not permitted.

4.5.6 Excavations and Tunnelling

Control

Geotechnical investigations must identify gas or trapped hydrocarbons.

Performance Standard

i) Identify geo-technical or subsurface hazards caused by flammable substances before designing, procuring or commencing any excavation or tunnel. This includes physically checking the operational site.

ii) For tunnelling and excavations where flammable gases or hydrocarbons exist, the International Electrotechnical Commission (IEC) 60079 series of explosive atmosphere standards must be applied.

iii) Where other gas or hydrocarbon hazards are identified that cannot be fully mitigated using IEC60079, additional controls must be clearly identified.

4.5.7 Behavioural Controls

Control

Adequate policies, procedures and rules must be in place to limit unwanted behaviours.

Performance Standard

i) Document and communicate a site protocol addressing required behaviours of any person entering the operation or construction site as it relates to fire prevention and emergency response addressing:

- Prohibition of smoking unless designated areas are prescribed that do not pose a fire or explosion risk.
- Fire prevention protocols (e.g. hot works, combustible materials and storage).
- Preservation of fire sensors and alarms, firefighting equipment and emergency routes.
- Accountabilities and emergency response protocols during a fire response.

ii) A separate procedure is required for handling of explosives use for rock blasting.

Risk Event Mitigating Controls and Performance Standards

4.5.8 Fire Alarm Systems

Control

Fire alarm systems that detect and warn of smoke and fire emergencies must be in place.

Performance Standard

i) Effective means for early detection and warning of the presence of fire must be in place that are appropriate for the level of risk. This may range from fully automated wireless or wired systems to the use of manual bells, horns or sirens with people assigned to fire watch duties. All offices and welfare areas must have fire alarm systems installed. Alarms must deliver effective warning (audible and visual) in all areas where people may be present.

ii All fire alarm systems must be checked and tested, including when they are moved, in line with manufacturer guidelines and applicable codes or regulations to confirm they are functional, and the results recorded.

4.5.9 Means of Escape

Control

Provide clear means of escape.

Performance Standard

i) Effective means of escape must be provided and maintained. A means of escape must be provided that does not require the use of passenger lifts and escalators and which is suitable for the number and specific needs of all people likely to use it.

ii) For construction operations, two means of escape by foot (excluding hoists or lifts) must be maintained for general construction floors. The means of escape from low density residential dwellings under construction with a small floor size and enclosed areas such as jump forms, risers, lift shafts must be risk assessed to determine the appropriate means of escape. Where two means of escape cannot be achieved, (e.g. roof access), approval must be sought from the Regional Head of Health and Safety.

iii) Emergency escape routes must be easily identifiable, of adequate width, kept free from obstruction and not used for storage and have emergency lighting including directional signs and exit points marked using pictograms and lights.

iv) Operations under construction or temporary structures must plan emergency routes that offer the highest fire level protection possible.

4.5.10 Fire Fighting Equipment

Control

Provision of adequate and suitable firefighting equipment.

Performance Standard

i) Sufficient firefighting equipment (e.g. fire extinguishers, hose reels, fire blankets and risers) must be provided that is appropriate for the site and works and which complies with any applicable codes or regulations.

ii) All firefighting equipment must be correctly located, readily accessible, unobstructed, clearly signed and have clear instructions on its correct use.

iii) In all structures where risers/standpipes are required, or where standpipes exist in any structures being altered, the standpipes must be brought up or installed in on all levels/floors as soon as possible and as a minimum in accordance with applicable laws and be maintained as construction progresses.

iv) At a minimum, a standpipe riser hose outlet must be available for use within 12m/40ft of the construction floor being formed in a concrete building or highest decked floor in a steel building under construction. The standpipe system shall be under constant pressure and tested to assure structural integrity and required functionality with an alarm fitted advising of any drop in pressure and must include an air pressure relief valve at the top of the riser to release any trapped air.

v) All standpipe and sprinkler systems must be installed and maintained in accordance with local requirements.

vi) Connections for the Fire Authority must satisfy the local requirements. In exceptional circumstances where it is impracticable to provide coverage from risers and hose reels, effective means for extinguishing fires must be provided that address the risk and satisfy regulatory requirements (e.g. drench drums, fire pails and additional fire extinguishers).

vii) All firefighting equipment must be checked and serviced regularly, including testing of pump sets of wet risers and firefighting lift controls by a technically qualified person in accordance with manufacturer guidelines or any applicable codes or regulations and the results recorded. A regular visual check must be carried out on all firefighting equipment to confirm they have not been damaged, discharged or removed.

viii) Adequate access must be maintained and kept free from any obstructions at all times for emergency services vehicles.

4.6 CRANE AND HOISTING EQUIPMENT INCIDENT

Description

These critical controls and performance standards apply to all activities where loads are raised by tower and mobile cranes, barge cranes, recovery cranes, derrick/stiff-legged cranes, mast climbers, goods and passenger hoists, spider type small cranes, gantry cranes, hoisting with excavators, gin poles (telecommunication tower erection), forklifts and telehandler type material lifting equipment where a failure of the equipment or operation could result in a fatality or other injuries. They do not apply to lower weight hoisting activities such as concrete placing booms and pallet trucks.

Potential Causes

- A Failure of base, foundation or support (crane tower) including gantry rails, tie-backs and fixing points
- B Crane and lifting equipment overload from inappropriate or poor planning
- C Crane and lifting equipment collision (e.g. jibs)
- D Improper assembly or disassembly including crane jumping
- E Crane and lifting equipment is procured, used incorrectly or not to standard (e.g. insufficient locks and limit devices)
- F Adverse conditions (e.g. extreme weather conditions, slopes and ground conditions, moisture, rain, wind and lightning)
- G Operator misuse or incompetence
- H Operator fatigue or impairment (e.g. as a result of drug and/or alcohol use)
- I Inappropriate state of equipment resulting in component failure (e.g. age, lack of maintenance and base metal fatigue)
- J Impact from other plant or equipment
- K Fire on crane and lifting equipment
- L Overload of structure e.g. spider crane on floor plate
- M Sabotage

Crane and Hoisting Equipment Incident

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage

Mitigating Controls (4.6.10 – 4.6.11)

4.6.10 Exclusion Zones
Robust and controlled exclusion zones must be established, tested and approved

4.6.11 Post Incident Response
Independent verification of the safe status of crane and hoisting equipment must be undertaken following an incident and before re-use

Preventative Controls (4.6.1 – 4.6.9)

4.6.1 Cranes and Hoisting Equipment in Use
Only use lifting and hoisting equipment that addresses all applicable usage and operating requirements

4.6.2 Lift Plans
All crane and hoisting equipment must be in accordance with any lift plans

4.6.3 Installation, Inspection, Maintenance and Dismantling
Cranes and other hoisting equipment must be installed, erected, adjusted, climbed, inspected, maintained and dismantled in accordance with the manufacturer's requirements

4.6.4 Oversight
All crane and hoisting equipment must be maintained and operated in accordance with the manufacturer's operating instructions

4.6.5 Tower Crane Access and Security
Security precautions must guard against unauthorised access to tower cranes

4.6.6 Ground Conditions
All cranes must be established and set up on approved ground conditions

4.6.7 Fatigue Management
A fatigue management program must be in place for crane/hoist operators, riggers/signallers and crane installers

4.6.8 Preventing Plant Collisions
Install hard barriers (tower crane), exclusion zones (mobile crane) or other barriers to prevent plant collisions

4.6.9 Handling Objects
Uncontrolled movement of objects must not occur

Risk Event Preventative Controls and Performance Standards

4.6.1 Cranes and Hoisting Equipment in Use

Control

Only use lifting and hoisting equipment that addresses all applicable legislation, standards, usage and operating requirements.

Performance Standard

i) Cranes and any of the crane components (e.g. ties, tower sections and yokes) on all operations must not exceed 20 years of age since manufacture at any point during the project to limit the risk of structural failure from base metal fatigue.

ii) Diesel tower cranes are not to be used on any Lendlease operations and electric tower cranes must be in use. (In exceptional circumstances where diesel tower cranes are required, sign off is required from the Region CEO.)

iii) All crane & hoists structural components are to be Original Equipment Manufacturer (OEM) excluding building ties, yokes or collars which must be designed to suit the specific crane or hoist by a qualified engineer.

iv) All crane and hoisting equipment in operational service must be fitted with limit switches and alarms that initiate at no greater than 90% of the original manufacturer's rated lift capacity and cease operation at 100% of the manufacturer's rated lift capacity. Note: This is not a further reduction on any regulated de-limiting applicable on cranes in some jurisdictions and only refers to the original manufacturer's lift capacity rating.

v) Tower cranes must be fitted with automated anti-collision devices when operating in close proximity to other tower cranes and a secondary independent brake must be fitted on hoist and luffing winches. Visual warning devices or an alert process must be implemented should the automated anti-collision devices be disabled or switched off for any approved duration (e.g. arising from a maintenance or crane climbing operation).

vi) The crane boom/jib safe operating envelope must be identified for each item of crane hoisting equipment on a crane radius plan/range diagram.

vii) All crane rotating hoisting equipment must be adequately guarded by physical barriers to prevent the potential for entanglement.

viii) Computerised monitoring systems must be fitted on all cranes. Real time data must be made available where the crane monitoring system has that capability (e.g. wind speed, overloading, start and end of lift, the weight of the load, angle of the boom, safe working load, radius of the lift).

ix) Crane towers must be fitted with lighting for safe access to the full height of the tower during early morning or evening hours. For tower cranes that are tied into a structure, an intermediate access ramp must be provided.

x) Where a work box/work basket is proposed for use to elevate people using a crane, a risk assessment must be undertaken to review safer alternatives. Where the use of a work box/work basket is determined as the only suitable means of access, the activity must be controlled by a permit to work. Any tower crane that uses a work box/work basket to elevate people must be fitted with a secondary independent brake (on all winches) and must be inspected by a qualified person prior to use.

xi) Where a mobile crane is proposed for use to elevate people using a work box / work basket an alternative secondary independent braking mechanism must be available in the event of the failure of the primary winch (e.g. emergency mechanical brake activated in the event of a hydraulic failure in the primary winch). Where a mobile crane is not fitted with an alternative secondary independent braking mechanism, the approval for use of a work box/work basket must be obtained from the Region Head of Health & Safety.

xii) All tower cranes and mobile cranes undertaking lifting operations out of the sightlines of the crane operator (e.g. 'blind picks/lifts') must be assessed for suitability to attach a hook camera as a supporting aid to enhance crane lifting safety and avoid total reliance on the directions provided by signallers.

xiii) Where excavators, telehandlers, forklifts or gin poles (e.g. used in telecommunications) are proposed for hoisting (with a suspended load), a risk assessment must be undertaken to verify that other alternative types of lifting equipment (e.g. cranes) cannot be used to perform the activity. Any approved plan to use these types of plant must provide the following:

- Confirmation anti burst/drop valves are fitted to lifting hydraulic cylinders.
- Manufacturer or OEM approved / rated attachment point.
- Safe working load of the plant is identified on the lifting arm(s).
- Loads lifted by appropriate lifting equipment.
- Buckets and other attachments are positively attached.
- An operation manual provided by the manufacturer for the hoisting of loads.
- Load capacity charts relevant to the specific hoisting attachment.
- Safety devices and limit switches in working condition.
- Identification of the lifting coordinator for the planning and oversight of the lifting activity.

4.6.2 Lift Plans

Control

All crane and hoisting equipment must be in accordance with items identified in any lift plans.

Performance Standard

i) A lift plan, approved by a qualified engineer, must be developed for any lift that requires a crane to operate at greater than 90% of the original manufacturer's rated capacity. Note: This is not a further reduction on any regulated de-limiting applicable on cranes in some jurisdictions and only refers to the original manufacturer's lift capacity rating. Lift plans must capture crane load capacity specific to crane configuration, load dimensions and weight and rigging details.

ii) Where there is a requirement for special lift, an independent qualified engineer (identified as an 'Appointed Person' in some jurisdictions) is required to review the lift plan and, where required, supervise the execution of a lift. This third party review must cover the planning, lifting methodology and requires detailed schematics, communication plans and assessment of ground or other applicable conditions. This includes the following lift types:

- Any lifts that require the crane to operate between 90% and 100% of the original manufacturer's rated capacity.
- Any abnormal loads that due to their centre of gravity, unusual shape or density may be adversely affected by wind during a lift.
- Any lifting operation that requires the load to slew or travel over public or private properties or infrastructure that requires closure or evacuation of these areas.
- Any load that requires more than one crane (e.g. dual or tandem lifts).
- Multiple lifting of steel members during steel erection.
- Any crane that operates on a floating vessel or barge.
- Any lift requiring the use of a work box to carry a person(s) (excluding the routine use of a work box for crane maintenance, inspection or other activities as part of a tower crane or hoists installation, alteration or dismantling and the use of a workbox in an emergency).

iii) No operational lifting is to be permitted that is above 100% of the original manufacturer's crane and hoisting equipment lifting capacity.

4.6.3 Installation, Inspection, Maintenance and Dismantling

Control

Cranes and other hoisting equipment must be installed, erected, adjusted, climbed or lowered, inspected, maintained and dismantled in accordance with the manufacturer's requirements.

Performance Standard

i) The installation commissioning, climbing or lowering or other significant structural alterations of any crane or other hoisting equipment requiring assembly must be reviewed and approved by a third-party independent inspector prior to the first operational lift. This does not include minor modifications post installation or assembly (e.g. counterweight placement on mobile cranes).

ii) A third-party inspection program must be implemented for selected lifting and hoisting equipment (for example, tower cranes, derrick cranes, large mobile cranes and hoists) and included in the supply agreement. Where crane or other hoisting equipment is provided to Lendlease, suppliers must provide a complete set of the manufacturer's operating and maintenance instructions. Inspection and maintenance records must be kept with the equipment and conform to the requirements of the standards applicable to the region of operation and as per the manufacturer's requirements. All cranes and hoisting equipment must be installed, erected, adjusted, climbed, inspected, maintained and dismantled by a qualified person and in accordance with the manufacturer's instructions.

iii) Any panelling or modification for access or for weather protection to the crane or hoisting equipment (e.g. personnel and material hoists) shall be designed for internal fixing application only. The panelling modifications must be engineered by a qualified person. The modifications must be installed and verified by the manufacturer or its representative.

iv) Where a twin hoist operates on a single tower, both hoists must be taken out of service while the hoist is being climbed or serviced.

v) All installations, climbing, adjusting (climbing up/down) and recovery of cranes or hoists (including service and maintenance) must take place in daylight hours only.

vi) Any item attached to a tower crane (e.g. signs, banners, lights, or anti-climb screens) must be considered at the early stages of the crane base engineering, and with prior approval from the original equipment manufacturer. Magnetic fixing of any item attached to a tower crane (e.g. movement sensors/lights) is not permitted.

4.6.4 Oversight

Control

All crane and hoisting equipment must be maintained and operated in accordance with the manufacturer's operating instructions.

Performance Standard

i) A hoisting or crane lifting coordinator must oversee and manage the use of all crane and hoisting equipment including passenger/material hoists at the operation. The hoisting or crane lifting coordinator can be a Lendlease employee or supplier's employee or a member of the crane crew appointed by Lendlease. More than one coordinator may be required at a large site.

ii) All operations with tower cranes or multiple cranes in use are required to provide a crane management plan that outlines all crane operations on a project including crane locations, operating radius, exclusion zones, loading zones, overhead protection, crane climbs and the appointment of a hoisting or crane lifting coordinator to oversee inspection and maintenance to the requirements of the standards applicable to the region of operation.

iii) All hoisting or crane lifting coordinators must have formal training in lifting and rigging applicable to their region of operation and a minimum of two years' experience as a hoisting or crane lifting coordinator. A verification of competency must be obtained prior to commencement.

iv) The manufacturer's operating instructions must be readily available to the operator (i.e. in operator's cabin or electronically accessible from the cab) for all crane and hoisting equipment.

4.6.5 Tower Crane Access and Security

Control

Security precautions must guard against unauthorised access to tower cranes.

Performance Standard

i) Access systems for all procured tower cranes must have offset caged ladders with intermediate landings designed to prevent the fall from height by a person whilst climbing or descending a tower crane.

ii) Tower cranes and crane access towers or ramps must have security measures to guard against unauthorised access from ground level or other elevations, including anti-climb (i.e. no hand or foot holds such as plywood or fine mesh panelling) and hoarding to a minimum height of 3m/10ft at the base.

iii) A self-closing access door or gate must be in place with a combination lock or other security locks for secure access. The door or gate access lock is to be operable from the inside without a key to enable safe egress in an emergency and have minimal gaps to the access frame surround to prevent levering and compromising the locking mechanism at the base or other intermediate access locations.

iv) Movement detectors must be fitted to the crane tower with operable intruder strobe lights and back to base monitoring, camera and text message alert including a backup battery in the event of a power failure.

v) Anti-climb mesh to a minimum height of 3m/10ft in the vertical plane and to the full width of the tower opening in the horizontal plane must be installed on commissioning to guard against unauthorised access.

vi) Any basement or floor levels where a tower crane penetration exists must include full floor to soffit protection.

4.6.6 Ground Conditions

Control

All cranes must be established and set up on approved ground conditions or structures.

Performance Standard

i) Tower cranes, derrick cranes and hoists require an engineer to design the base and to complete any interim checks during installation, provide approval for the crane/hoists to be installed and provide written confirmation that the base is fit for purpose. The crane/hoist installation design must then be reviewed and certified by a third party independent engineer.

ii) Adequacy of ground condition's bearing capacity for lifting operations involving any mobile cranes and other hoisting equipment must be verified and confirmed by a qualified person. Where necessary, the California bearing ratio (CBR) or equivalent testing certified by a geotechnical engineer, must be completed and the results communicated and confirmed by the supplier before the lift.

iii) If a severe weather or other event occurs (e.g. significant rainfall within 48 hours of the mobile crane lift, ground subsidence, earthquake or flood) the adequacy of the ground conditions must be re-assessed and verified by a qualified person, and the CBR or equivalent test repeated if necessary, with results communicated and the lift delayed until this is complete.

iv) Changes to the configuration of any crane or hoist from manufacturer's recommendation requires an engineering review that includes a reassessment of risk, with a re-evaluation of the safe working load. The review includes all stakeholders, including the manufacturer.

4.6.7 Fatigue Management

Control

A fatigue management program must be in place for crane/hoist operators, riggers/signallers, hoist and crane installers, and plant maintenance personnel.

Performance Standard

i) For all crane and hoisting equipment, suppliers or employers must outline how the potential for fatigue will be managed regarding the operator of the equipment and all fatigue management plans must be outline how all local regulations will be addressed. In normal operating circumstances the operator's working hours must not exceed 60 hours per week and rest periods between shifts must not be less than 12 hours per day.

ii) Details must be provided in relation to the operating hours per day and rest breaks consistent with not exceeding a 10-hour day (exclusive of breaks). Fatigue recognition technology should be employed where available.

iii) Where a shift exceeds the parameters outlined above, fatigue management controls can include shift rotation, split shifts, late starts and additional time off. A record must be kept for all operators and rigger / signalman to confirm individuals fatigue management requirements and protocols are in place.

4.6.8 Preventing Plant Collisions

Control

Install hard barriers (tower crane), exclusion zones (mobile crane) or other barriers to prevent plant collisions.

Performance Standard

i) Provide engineered barrier protection for cranes or hoists that are risk assessed as having the potential to be struck by mobile plant or vehicles. The energy involved in any potential collision with that barrier must be absorbed or deflected, with traffic controls to be deployed where the potential impact cannot be reasonably deflected or absorbed.

ii) Effective measures (e.g. zoning, spotters or a combination of these and other controls) must be implemented to prevent cranes coming into contact with overhead power lines or underground services, other cranes or structures.

iii) Automated anti-collision systems must be installed on tower cranes and gantry cranes when multiple cranes are in use and their lifting radius interface or overlap with other cranes, or when encroachment over a protected area such as a rail corridor or public interface must be prevented.

iv) For Lendlease operations where an adjacent construction project is not managed or controlled by Lendlease, any crane(s) that could encroach the operating radius of a crane(s) on the Lendlease operation should result in arrangements between the project teams to agree and implement preventative controls (e.g. zoning or other controls) to prevent the potential for crane to crane collision.

v) A third-party independent engineer must review and approve the out of service storage requirements for all large mobile cranes (greater than 200 tonnes), derrick cranes and tower cranes. These out of service requirements must comply with the guidelines of the manufacturer and must be available at the site to prepare for a weather-related event.

4.6.9 Handling Objects

Control

Uncontrolled movement of objects must not occur.

Performance Standard

i) All loads to be slung, hoisted, lifted, transported, stored or unloaded must have no uncontrolled movement or loss of the load. This can involve engineered containment for small objects.

ii) Slinging methods must manage any expected dynamic load forces (e.g. wind or sudden crane halt).

iii) Lifting bags designed as 'single use bags' can only be lifted form a truck tray and placed into an engineered container, onto a pallet for forklift handling or, placed onto the ground for unloading.

iv) All hoisting or lifting must be completed with the slung object's centre of gravity lower than the sling attachment points where practicable.

v) All loads suspended by hoisting or lifting equipment must be landed onto an adequate load bearing surface and be stable (i.e. cannot roll or fall) before unslinging the hoisting or lifting gear.

vi) Objects transported through any Lendlease operation must be adequately restrained to the manufacturer's recommendations and local regulations to prevent uncontrolled movement.

vii) Deliveries where the load has the potential to fall or roll when unshackled must be inspected by a person with competency in material handling and movement related to lifting activities (i.e. rigger or equivalent) and restrained before removal (e.g. chocked or slung with hoisting or lifting gear).

viii) All lifting gear and tackle (e.g. chains, wire ropes, slings and rubbish removal containers) must be inspected before use and must be structurally sound, fit for purpose, engineered for lifting with certified lifting points and the rated capacity or safe working load clearly displayed. All lifting gear and tackle must comply with all national regulations, standards and codes.

ix) Where engineered containment is used internal objects must be secured against movement in transit to prevent uncontrolled movement when the containment is opened.

x) All engineered containment must be clearly marked to show that it is a secondary means and to demonstrate what object it is designed to be used with.

xi) Dual or multiple independent loads or separately linked slung loads where the loads are distributed along different lengths of the wire rope (i.e. one load is more than 500mm above another load) are not permitted except where legislation allows for two items of bundled rebar or where two steel frame elements are to be lifted and installed in sequential order. In this case, the method utilised for the structural steel must be considered as a 'Special Lift' (as per GMR 4.6.2) and the steel elements members must have engineered lift points that afford a positive connection. The rigging procedure and engineered lift points must be subject to a review by a subject matter expert during the methodology review as per GMR 2.3.3.

xii) Gravity latches are prohibited on the hook of all crane types. Positive locking (self-locking) safety latches are required for all tower crane hooks.

Risk Event Mitigating Controls and Performance Standards

4.6.10 Exclusion Zones

Control

Robust and controlled exclusion zones must be established, tested and approved.

Performance Standard

i) The requirement for exclusion/no person zones for lifting or hoisting operations must be identified and included in the crane management plan.

ii) The exclusion zone for all cranes and hoisting equipment must consider the location of personnel, members of the public, and neighbouring structures and infrastructure in determining the preferred radius to be applied.

iii) Personnel must not work or walk under suspended loads.

iv) For tower crane erection or jumping activities, all people (including members of the public) must be clear of works through the application of exclusion/no person zones that includes the area below the jib along its length and the direction in which it is positioned.

4.6.11 Post Incident Response

Control

Independent verification of the safe status of crane and hoisting equipment must be undertaken following an incident and before re-use.

Performance Standard

i) Crane or other hoisting equipment must be removed from service, re-inspected and re-tested by a suitably qualified person before any other lift is completed when it:

- Strikes a structure, other piece of hoisting equipment while in use.
- Is struck by mobile equipment.
- Any failure of a load bearing part whilst in use.
- Is identified as operating without completing maintenance and inspections to the manufacturer's requirements or applicable standards to the region of operation.
- Struck by lightning or after a considerable natural event such as a major storm, seismic event, etc.

4.7 IMPACT FROM MOVING PARTS OF MACHINES

Description

These critical controls and performance standards apply to hazardous equipment (i.e. mobile, fixed, large or portable) in Lendlease operations where people could be fatally injured if they come into contact with moving parts of that machine (e.g. moving tracks and large conveyors). This applies for exposure to equipment during operation, maintenance and troubleshooting e.g. escalator and lift motors.

Potential Causes

A Mechanical failure (e.g. hydraulics)

B Tampering or sabotage (e.g. tampering with guarding and bypassing interlocking)

C Equipment is unfit for purpose (e.g. lack of or irregular maintenance, inadequate guarding or interlocking)

D Inadequate planning (e.g. poor instructions on safe use and lack of segregation)

E Operator error (e.g. competency and fatigue)

F Uncontrolled release of stored energy

Preventative Controls (4.7.1 – 4.7.3)

4.7.1 Guarding

Implement robust machine operating guarding standards for hazardous equipment

4.7.2 Preventing Access

Appropriate physical and non-physical security must be in place to prevent access to specific areas with hazardous equipment where guarding cannot be provided, and maintenance activities are being undertaken

4.7.3 Large Mobile Equipment Maintenance

Implement and monitor an appropriate maintenance regime for the equipment

Impact from Moving Parts of Machines

Potential Impacts
What's the worst that could happen?

People

Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial

Financial/commercial damage (insurance claims, return to work costs)

Business continuity

Business continuity and disruption

Reputation

Reputational damage

Legal/regulatory

Legal/regulatory damage

Mitigating Controls (4.7.4)

4.7.4 Activations (Controls) and Emergency Stops

Equipment must be of a design that allows emergency stopping by trip devices and has manual controls that prevent hazardous and inadvertent machine operation

Risk Event Preventative Controls and Performance Standards

4.7.1 Guarding

Control

Implement robust machine operating guarding standards for hazardous equipment.

Performance Standard

i) All moving parts of hazardous equipment must be fitted with suitable guards. Guards are to be retained by fasteners that adequately secure the guarding and prevents accidental dislodgement.

ii) Support maintenance and troubleshooting must be inclusive of a documented safe system of work, including isolation systems involving personal isolation locks with routine inspections carried out to identify if guarding is fitted and functional and in good working order.

iii) Check that guarding fully protects any moving parts and can withstand applied forces without dislodgement.

iv) Identify and assess the risk of fault-finding, cleaning and maintenance tasks that bring people in proximity to exposed energised machine components.

4.7.2 Preventing Access

Control

Appropriate physical and non-physical security must be in place to prevent access to specific areas with hazardous equipment where guarding cannot be provided, and operations and maintenance activities are being undertaken.

Performance Standard

i) Identify energy sources with the potential for fatal outcomes that are unable to be guarded prior to commencing the operation. Identify, implement, communicate and verify alternate controls (e.g. interlocked physical barriers and light curtains).

ii) Check exclusion zones use suitable physical distance, barrier types, and stability to prevent inadvertent, accidental, unintended and casual interaction with the moving parts.

iii) Lock access to equipment with moving parts and energy sources representing a fatality risk when usage for that day or shift ceases. This includes preventing access to mobile plant.

iv) Operational personnel with responsibility for access administration (e.g. security) must have a list of authorised key users. Check equipment is locked and has the capacity to prevent equipment use if found unlocked.

4.7.3 Large Mobile Equipment Maintenance

Control

Implement and monitor an appropriate maintenance regime for the equipment.

Performance Standard

i) All equipment must be registered using unique identifiers.

ii) Maintenance must be in accordance with manufacturer's recommendations or at shorter intervals if required, with maintenance manuals provided prior to the equipment arriving on site and the inspection records remaining with the machine.

iii) If earthmoving equipment is being operated with quick hitch devices there must be a safe system of work adopted. It is essential that physical mechanical locking pins are used to prevent uncontrolled release.

Risk Event Mitigating Controls and Performance Standards

4.7.4 Activations (Controls) and Emergency Stops

Control

Equipment must be of a design that allows emergency stopping by trip devices and has manual controls that prevent hazardous and inadvertent machine operation.

Performance Standard

i) Review equipment brought to site to determine if it is equipped with a suitable number, type and location of trip devices or emergency stops.

ii) Manual controls must be:

- Clearly visible, identifiable, marked and positioned in a suitable location.
- Their movement is consistent with their effect on machine operation.
- In the appropriate language.

iii) Establish an audible warning signal of sufficient duration and intensity for start-up where it is not possible to see all danger zones from the operator's console.

iv) Check the design of machine controls to prevent inadvertent or unexpected start-up.

v) Routinely test emergency stop or trip devices.

4.8 EXCAVATION AND STOCKPILE COLLAPSE

Description

These critical controls and performance standards must apply to all ground/soil disturbance activities that can create accidental collapse of an excavation or stockpile resulting in a fatality on a Lendlease operation.

Potential Causes

A Incorrect construction working methods (e.g. poor sequencing, not following support standards leading to failure of the temporary or permanent support and inappropriate stockpiling)

B Surcharge resulting from fixed and moving loads (e.g. vehicles, water ingress, adjacent work activities and vibration)

C Adverse weather and natural disasters, including water ingress

D Unexpected ground conditions (e.g. voids, ground or water pressure)

E Inadequate design, procurement, planning, maintenance and inspection of excavation or stockpile including absence, failure or incorrect installation of support leading to failure of support

F Inadequate awareness, skills and competency of workers and frontline leaders

Excavation and Stockpile Collapse

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (flooding, sediment and erosion)

Preventative Controls (4.8.1 – 4.8.3)

4.8.1 Ground Conditions
All excavations and stockpiles must be managed in accordance with known geological conditions. Check before entering excavations for stability.

4.8.2 Excavation Management
All excavations must consider safe angles, access and structural integrity

4.8.3 Stockpile Management
All stockpiles must consider safe angles, access and structural integrity. Check stockpiles daily, especially after significant weather conditions (long term sun and heavy rain).

Mitigating Controls (4.8.4 – 4.8.5)

4.8.4 Rollover Protection and Falling Object Protective Structure
Use of Rollover Protection Structure (ROPS) on plant and equipment

4.8.5 Emergency Response
Provide an effective local emergency and response capability

Risk Event Preventative Controls and Performance Standards

4.8.1 Ground Conditions

Control

All excavations and stockpiles must be managed in accordance with known geological conditions. Check before entering excavations for stability.

Performance Standard

i) Identify ground and underlying conditions and hazards and provide geotechnical engineered solutions for excavations >1.5m/4.9 ft in depth.

ii) Assess the area for any underground services and identify as per GMRs 4.4.8 underground services and 4.15.5 underground services (non-electrical).

iii) Agree a comprehensive plan prior to beginning physical works. The plan must cover construction methodology, support mechanisms, sequencing, use of plant and equipment to provide stability of excavations and stockpiles.

4.8.2 Excavation Management

Control

All excavations must consider safe angles, access and structural integrity.

Performance Standard

i) All excavations greater than 1.5 metres (4.9 feet) must be benched, shored, battered back or sloped to a safe angle as determined by a geotechnical engineer in the excavation design process. An angle with a ratio of 1 vertical to 2 horizontal repose must not be exceeded unless designed and certified by a geotechnical engineer. Where benching or battering is not possible, trenches and excavations must be mechanically shored to prevent collapse.

ii) Adjacent structures, roads and sidewalks must be supported or protected where necessary to prevent collapse. Structural monitoring of adjacent properties/structures by a third-party must be conducted and reports provided for the duration of the activity (e.g. excavation, underpinning, blasting, dewatering).

iii) Materials and equipment must be placed at a safe distance from the edge of excavations.

iv) Adequate signage, physical barriers and lighting must be provided to prevent falls into excavations, especially for equipment working on those excavations and vehicles or equipment from adjacent thoroughfares. Safe access (e.g. temporary stairs) must be installed to provide access into excavations where appropriate.

v) Water ingress into excavations must be controlled to provide stability and, where water is present, in deep excavations an appropriate dewatering program must be in place.

vi) Daily and/or pre-shift inspections of all excavations must be undertaken and documented by a person with appropriate competency requirements, including after every rainfall or other adverse weather condition that is likely to impact the stability of excavations.

vii) Workers within an excavation zone must not be within reach of the operating radius of the excavation equipment and an exclusion zone must be established. Equipment must be stopped if survey or other verification work is required within the equipment operating zones or if workers are controlling a load with a tag line or positioning items within the excavation. The surrounding construction loads imposed adjacent to mass excavations must be identified and engineered as part of the shoring design for the excavation. All construction loads for the life cycle of the performance of the shoring must be confirmed in the engineering documents.

4.8.3 Stockpile Management

Control

All stockpiles must consider safe angles, access and structural integrity. Check stockpiles daily, especially after significant weather conditions (long term sun and heavy rain).

Performance Standard

i) Maximum stockpile height must be determined by an engineer and not exceeded.

ii) All people must be excluded from the active loading or dumping area.

iii) Loading and dumping area ground stability must be approved by an engineer prior to commencement.

iv) Equipment operators are not to leave the cabin while loading or dumping is in progress.

v) For a linear stockpile excavation must proceed along the working face and for a conical stockpile it must proceed around the toe. The working face must never be undercut or left with a hollow in it.

vi) Barriers and berms must not be moved or altered, and the crest must only be approached by a loader or bulldozer at a right angle (90 degrees) to keep the weight of the equipment away from the edge. Prevent access from an unauthorised vehicle or person that could damage critical infrastructure or where the unauthorised person could be fatally injured due to the hazards within the operational area. Install physical barriers if required.

vii) All stockpiles to have sediment and erosion control devices implemented and maintained. Stockpiles must be inspected following change events that could compromise stability (rain, storm).

Risk Event Mitigating Controls and Performance Standards

4.8.4 Rollover Protection and Falling Object Protective Structure

Control

Use of Rollover Protection Structure (ROPS) on plant and equipment.

Performance Standard

i) Fit ROPS to all earthmoving equipment working beside or in the vicinity of excavations ensuring the cabin and canopy meet ISO 3471:2008 and excavator ROPS to ISO12117.2:2008 and applicable local authority requirements.

ii) A seat belt must be fitted to all occupant positions and worn by the occupant while the plant or equipment is in operation.

iii) Decoupling technology for dog and trailers and cabin stability technology is to be implemented.

4.8.5 Emergency Response

Control

Provide effective local emergency and response capability.

Performance Standard

i) The emergency response plan must be developed prior to work commencing and be resourced, implemented, verified and reviewed quarterly.

ii) The plan must address specific failure scenarios (e.g. recovery of an injured person from a deep excavation), recovery equipment and training requirements.

iii) Local Emergency response team/resources must be identified and contact information available (e.g. technical rescue, utilities emergency numbers).

4.9 FAILURE OF STRUCTURES (TEMPORARY OR PERMANENT)

Description

These critical controls and performance standards apply to a structural failure on any temporary (e.g. hoarding, access gates. scaffold, formwork, temporary works or access platforms) or permanent structure (e.g. completed structure, precast concrete, structural steel or demolition works) that could cause a fatality.

Potential Causes

A Inadequate design relating to ground stability, foundations and structure

B Inadequate construction, workmanship and installation (e.g. overloading, incorrect sequencing, not following design or unauthorised alteration)

C Impact by third party activities (e.g. struck by vehicle or plant, third party activities, weather affecting ground stability or leading to the undermining or erosion of adjacent ground and sabotage)

D Inadequate maintenance, inspection and testing, including stability of permanent structures supporting the temporary works

E Operator incompetence

Failure of Structures (Temporary or Permanent)

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage

Preventative Controls (4.9.1 – 4.9.2)

4.9.1 Structural Integrity
Appropriate methods for adjusting temporary and permanent structures must be in place

4.9.2 Installation
The installation of structural elements must be subject to quality management rigour and certification

Mitigating Controls (4.9.3)

4.9.3 Exclusion Zones/Overhead Protection
An adequate exclusion zone or overhead protection must be in place for demolition works or any other controlled method of structural deconstruction where there is a risk of structural collapse beyond the applicable area

Risk Event Preventative Controls and Performance Standards

4.9.1 Structural Integrity

Control

Appropriate methods for adjusting temporary and permanent structures must be in place.

Performance Standard

i) Designers, suppliers and installers of both temporary and permanent structures are to provide site specific engineering solutions that provide the highest degree of certainty relating to structural integrity and have it independently verified by a qualified and registered structural engineer.

ii) Implement methodologies, systems, technology or equipment that provides early warning of an impending structural failure (e.g. movement detectors, survey points or other system/ equipment to monitor structural movement).

iii) Proprietary or engineered systems certified by a qualified and registered structural engineer must always be used for the erection of temporary or permanent structures. All elements must be installed without variance to any agreed methodology and engineering tolerances and must be based on manufacturer's specifications and recommendations. The temporary structure fixing details and loading on the permanent structure must be clearly specified on the temporary structure design documentation.

iv) Temporary and permanent multi-storey structures must take into consideration all climatic possibilities, ground conditions and geology including earthquake risk in the design and methodology.

v) A Demolition management plan approved by an appropriately qualified engineer must be developed to determine that each element of the overall methodology does not inadvertently place workers or members of public at risk from uncontrolled collapse.

4.9.2 Installation

Control

The installation of structural elements must be subject to quality management rigour and certification.

Performance Standard

i) All temporary works must be designed by a qualified and registered engineer according to the intended use. As per the methodology review process outlined in GMR 2.3.3, the design of the temporary works must be independently reviewed by a qualified and registered engineer (but not by any person working on the original design). Once installed, erected or after a change to the design the temporary works must be verified by a qualified and registered engineer to determine that the design intent is met for all temporary works where there is a risk of a fatal event occurring.

ii) All proprietary systems must be used or assembled/dismantled in accordance with the manufacturer's recommendations and the designed purpose. The mixing of components from different proprietary systems is not permitted unless the system is approved by a qualified and registered structural engineer.

iii) Any calculations and drawings must clearly communicate requirements to those checking, constructing and using temporary works, including safe loading limits.

iv) Design load calculations must consider the maximum applicable loads that will be experienced on each floor during the construction phase (e.g. from material storage, lifting operations and waste). Where construction loads may exceed the design load for the permanent structure in use, the structure must be propped to cater for any additional loading.

v) All scaffolds must be stable and secure to prevent movement and collapse. Scaffolding must be plumb, have adequate cross-bracing, and sound footings. Freestanding scaffolds shall be laterally braced as designed. Before use, scaffolds must be inspected by a qualified scaffolder and be tagged to show the inspection status.

vi) All temporary works platforms and associated access must be planned and documented by a person with appropriate technical competencies to determine that the equipment is appropriate for the specific use and is erected, altered or dismantled by persons with the appropriate competencies following safe methods of work.

vii) All demolition work involving structural removal must be documented through a demolition plan and subject to approval from a structural engineer where any structural elements are proposed to be removed or temporary storage of demolition debris. This includes the review of the methodology and demolition sequence. The methodology must minimise the number of workers permitted in the demolition area.

viii) All temporary works must be protected to prevent impact from vehicles and plant.

ix) Under no circumstances must any temporary works structure be modified without going through the same process as outlined in this performance standard.

x) Temporary works designs, and calculations must include details on the safe sequence and methodology of erection and dismantling methodology to mitigate risks of failure during all stages.

Risk Event Mitigating Controls and Performance Standards

4.9.3 Exclusion Zones/Overhead Protection

Control

An adequate exclusion zone or overhead protection must be in place for construction demolition works or any other controlled method of structural deconstruction where there is a risk of structural collapse beyond the applicable area.

Performance Standard

i) Exclusion zones for construction or demolition works must be of adequate size, taking into account the risks including potential arc of fall, deflections and bounce distances, are delineated by physical barriers and have clear signage prohibiting unauthorised entry where there is a likely risk of harm. The integrity of any exclusion zones must be regularly checked.

ii) Planning for both construction and asset works must identify any scenarios where overhead protection is to be installed, particularly where people below cannot be completely excluded. Overhead protection must be engineered by design and put in place before the activity begins. Any overhead protection cannot allow for failure due to the impact from an object it is designed to intercept.

4.10 OCCUPATIONAL HEALTH EXPOSURE

Description

These critical controls and performance standards apply to any Lendlease operation where there is a risk of occupational exposure to hazardous substances, asbestos, diesel particulates, respirable dusts such as silica, noise, vibration, extreme temperatures, flora, fauna or allergens that could realistically result in the death of one or more people.

Potential Causes

A Exposure to identified or unidentified hazardous substances

B Ineffective management of known hazardous substances

C Existing structures containing asbestos and other hazardous materials are disturbed during inspection, maintenance, cleaning, demolition or renovation

D Asbestos air monitoring is ineffective

E Clothing or PPE is inappropriate or not used during exposure whilst working

F Level and duration of exposure to natural/artificial temperatures including unexpected temperature changes

G Inadequate or inappropriate clothing

H Excessive physical activity and duration

I Pre-existing illness or medical conditions

J Failure of cooling, heating or ventilation systems

K Insufficient consumption of water and food

L Falling elements (e.g. trees or tree limbs whilst clearing or working underneath)

M Contact with flora or fauna (e.g. toxic flora, spiders, snakes, fire ants, dogs, urine or faecal matter)

Occupational Health Exposure

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (contamination, pollution events, habitat destruction)

Mitigating Controls (4.10.8)

4.10.8 Occupational Health Exposure Response
Response mechanisms must be in place should an occupational health exposure event occur

Preventative Controls (4.10.1 – 4.10.7)

4.10.1 Occupational Health and Hygiene Management
Lendlease shall effectively anticipate, recognise, evaluate and control risks to health arising from occupational exposure to chemical, physical and biological hazards

4.10.2 Hazardous Substance and Hazardous Materials Identification
Lendlease must determine or be informed of hazardous substances or hazardous materials and the implications for future management of the asset

4.10.3 Storage and Minimisation
Hazardous substances, dangerous goods and hazardous materials must not be stored on site except for small volumes in purpose built structures

4.10.4 Asbestos Register and Maintenance Plan
Lendlease must be aware of the extent of asbestos so that an informed decision can be made on the acquisition and future management of the asset

4.10.5 Health Monitoring
Health monitoring, in accordance with legislation, must be completed for all workers specifically handling or removing ACM, NOA or other hazardous material

4.10.6 Work in Extreme Temperatures
Any work conducted in a natural or artificial environment of extreme temperatures must be proactively managed to eliminate the risk of temperature related injury or illness

4.10.7 Interaction With Flora, Fauna and Allergens
Risks associated with potential interaction with dangerous plants and animals must be managed to minimise the risk of harm

Risk Event Preventative Controls and Performance Standards

4.10.1 Occupational Health and Hygiene Management

Control

Lendlease shall effectively anticipate, recognise, evaluate and control risks to health arising from occupational exposure to chemical, physical and biological hazards.

Performance Standard

i) Projects in delivery shall maintain an Occupational Health and Hygiene Plan, which describes training related to occupational exposure hazards, implementation and verification of control measures, exposure and health monitoring, and reporting of monitoring results for the following hazards:

- Airborne contaminants including, but not limited to respirable crystalline silica, dusts and aerosols, fibres, hazardous chemicals, diesel and petrol engine exhaust emissions, and welding fumes
- Noise
- Vibration
- Thermal stress
- Solar radiation
- Hazardous manual tasks and sedentary work
- Biological hazards
- Fatigue and Fitness for work

ii) Occupational health exposure prevention controls must be implemented in accordance with the hierarchy of risk control and evaluated by monitoring or other suitable processes to determine that risks are effectively managed.

iii) Exposure to airborne contaminants shall be measured and compared against applicable legislative requirements to establish the efficacy of implemented control measures and to inform the continuous improvement process.

iv) Where respiratory protective equipment (RPE) is used use as part of an exposure control strategy a respiratory protection program must be implemented in accordance with regional standards and shall include fit testing and the requirement for being clean shaven when using tight fitting RPE.

v) Projects shall implement a hearing protection program in accordance with regional standards and legislative requirements, which includes measurement and assessment of noise emission and exposure, noise control management, hearing protective devices and audiometric assessment.

vi) Biological exposure monitoring shall be undertaken where there is a risk of exposure to lead, polycyclic aromatic hydrocarbons (PAHs), or other chemicals where there is a risk of exposure through ingestion and/or absorption through the skin and mucous membranes.

vii) Where ventilation systems are used to manage airborne contaminants, they must be designed and their installation as per design verified by a Ventilation Engineer. There must be a protocol in place to monitor and maintain the ventilation system performance in accordance with the design and controlling the hazard.

viii) Works associated with thermal extremes shall be risk assessed and must consider:

- Presence of hot or cold surfaces
- Exposure period
- Confined space
- Task complexity
- Physical activity during the work
- Availability of respite and hydration
- Clothing worn and impacts of PPE and RPE
- Air movement
- Acclimatisation
- Training and instruction of thermal strain risk
- Physical fitness and impacts of prescription medication

4.10.2 Hazardous Substance and Hazardous Materials Identification

Control

Lendlease must be aware of any known hazardous chemicals, hazardous substances or hazardous products/materials and the implications for future management of the asset.

Performance Standard

i) When acquiring an asset, or prior to commencement of construction activities, identify retained hazardous substances and hazardous materials on site and the need for their use in managing the asset or construction operation.

ii) Identify in pre-construction reviews any hazardous chemicals (products, materials or substances) proposed for construction or final use. Only accept hazardous chemicals where no effective less hazardous alternative can be demonstrated.

iii) Recycled granular (aggregate) material sourced from demolition or other building waste streams is not to be used as the likelihood of asbestos fragments or other unexpected finds is high.

iv) The following products, substances and materials are hazardous, and their use, handling or storage is not permitted in new designs. Any of these products, materials or substances must be treated as high risk if encountered:

- Asbestos or asbestos containing materials (ACM)
- Lead, or materials containing lead that may be ingested, inhaled or absorbed
- Paints or treatments that contain arsenic, lead, copper or chromium
- Equipment or components containing Chlorofluorocarbons (CFCs), Hydro chlorofluorocarbons (HCFCs) or Halons
- Pesticides or herbicides containing organophosphate or organochlorins
- Pentachlorophenol or timber treated with Pentachlorophenol
- Polychlorinated Biphenyls (PCBs) and Polychlorinated Terphenyls (PCTs)
- Synthetic mineral fibres
- Lindane (gamma-HCH)
- Tributyltin (TBT)

- Antimony
- Arsenic
- Benzene
- Beryllium
- Cadmium
- Carbon disulphide
- Chromate
- Chromium
- Cobalt
- Free silica
- Tetrachloroethane
- PFAS (poly-fluoroalkyl substances)
- Low bio solubility man-made mineral fibres (MMMF) or man-made vitreous fibres (MMVF) and refractory ceramic fibres (RCF)
- Other hazardous materials, substances and chemicals banned or restricted by law

v) All works involving materials that contain respirable dusts hazardous to human health, e.g. crystalline silica, must implement control measures to eliminate or minimise the generation of dust. Uncontrolled dry cutting, drilling, grinding or abrading of masonry, products or stone resulting in exposure to airborne contaminants hazardous to human health is prohibited. Where water suppression cannot be used (e.g. due to an electrical hazard) local exhaust ventilation with HEPA filtration must be used to manage dust (with air quality monitoring in place).

vi) Compressed air and sweeping must not be used for removing respirable dust, e.g. crystalline silica, only wet methods or vacuums shall be used.

vii) Where the operation identifies that exposure to mineral silicates is possible, requirements for ensuring that dust is controlled and breathing equipment is provided must be in place.

4.10.3 Storage and Minimisation

Control

Hazardous chemicals, products, materials, substances and dangerous goods must not be stored on operations except for small volumes sufficient for immediate use and must be stored in purpose built structures segregated from incompatible materials.

Performance Standard

i) Hazardous chemicals, products, materials, substances and dangerous still required to be on site following design, procurement and methodology reviews must only be supplied in minimal amounts. Suppliers must verify that there is no suitable less hazardous alternative, what the minimum amount to be supplied is and provide the full Safety Data Sheet (SDS).

ii) Hazardous chemicals, products, materials, substances and dangerous goods (e.g. fuels, oils, chemicals, solvents, pesticides and fertilisers) must not be stored on the Operation except for small volumes stored within a well ventilated, purpose built structure with roof cover and be segregated from incompatible materials. The store must have a concrete sealed or equivalent impervious floor with bunding, isolated and/or contained drainage (e.g. triple interceptors), signage and security fencing. Position hazardous chemicals, products, materials, substances and dangerous goods storage at locations away from high traffic areas, pedestrian zones and environmentally sensitive areas such as waterways or natural habitats.

iii) All operations with hazardous chemicals, products, materials, substances and dangerous goods storage must have appropriate spill kit materials, hazard specific PPE, emergency response equipment, including firefighting equipment, an SDS/MSDS readily available for each along with adequately trained safety and first aid personnel.

iv) New 'in ground' bulk fuel storage tanks are not to be installed on Lendlease owned sites. Existing redundant underground storage tanks and above ground storage tanks must be decommissioned and removed by an appropriately licensed contractor in accordance with regulatory requirements.

v) Identify, secure and maintain existing underground or above ground fuel tanks still in use on the site in accordance with regulatory requirements.

4.10.4 Asbestos Register and Maintenance Plan

Control

Lendlease must be aware of the location, nature and extent of asbestos so that an informed decision can be made on the acquisition and future management of the asset.

Performance Standard

i) A hazardous materials survey must be carried out for all assets prior to acquisition.

ii) An asbestos register and asbestos management plan for asbestos containing material (ACM) must be readily available to all inspection and maintenance people, tenants or other groups, is in place before commencement of works at the operation and is reviewed and updated annually.

iii) Where NOA/ACM is present, all workers must receive awareness training that addresses the type, quantity and location of NOA/ACM and its health effects, safe working practices including PPE and the combined effects of smoking and asbestos.

iv) Where NOA/ACM is present and a risk of exposure to respirable fibres is possible, air monitoring must be in place, including personal monitors for workers that may be exposed.

v) Appropriate licences for the location and regulatory requirements must be held for personnel involved in repair, maintenance and removal where needed.

vi) All people working on ACM must be explicitly authorised, either by Lendlease or a supplier. The design of processes for working with ACM must include methods to prevent the creation of airborne fibres.

vii) Where a product is identified that may contain ACM, precautions to prevent disturbance must be in place until a registered hygienist or independent testing authority confirms the absence of asbestos or recommends an appropriate management strategy.

viii) Suppliers proposed to work on or remove naturally occurring asbestos (NOA) or ACM must demonstrate experience relating to the volume of NOA/ACM to be removed, location sensitivity (i.e. proximity to people), type of NOA/ACM to be removed and the size of the site where the scale of one or more of these determinants creates the need for particular asbestos management or asbestos removal experience.

ix) A clearance certificate from a registered hygienist or independent testing authority whenever ACM and NOA is being removed.

4.10.5 Health Monitoring

Control

Health monitoring must be completed for all workers conducting works associated with asbestos or where there is a significant risk of injury or illness from exposure to silica, styrene, toluene, xylene, noise, or any other hazardous chemical required by law.

Performance Standard

i) Health monitoring for asbestos must be undertaken before starting work with asbestos and biannually while the work continues.

ii) Health monitoring for all hazardous chemicals other than asbestos must be undertaken before starting work, at suitable intervals as determined by the medical practitioner and at the cessation of the work.

iii) Where workers are required to frequently use a hearing protective device as part of a control for noise that exceeds the exposure standard, audiometry testing must be undertaken in accordance with the local legislative requirements (or biannually if there are no local legislative requirements applied).

iv) Uncontrolled exposure of an airborne contaminant that exceeds an established occupational workplace exposure standard/limit that exceeds the protection factor of the RPE used must be reported as an incident, and involves a review of controls, behaviours and follow up monitoring.

4.10.6 Work in Extreme Temperatures

Control

Any work conducted in a natural or artificial environment of extreme temperatures must be proactively managed to eliminate the risk of temperature related injury or illness.

Performance Standard

i) For areas or equipment where extreme temperatures are planned (e.g. freezers or boiler rooms) adequate security and controlled access must be in place.

ii) Establish and implement a maintenance, inspection and testing program for heating, ventilation and cooling equipment.

iii) For work in extreme temperatures consider remote or robotic working, equipment and materials that could artificially alter the surrounding temperature, minimising exposure to extreme temperatures (e.g. rest breaks), job rotation, undertaking work at cooler or warmer times, emergency contact and alarm systems, heat or cold risk assessments, monitoring of environmental conditions and weather and providing adequate clothing that protects from the elements.

4.10.7 Interaction With Flora, Fauna and Allergens

Control

Risks associated with potential interaction with dangerous plants and animals must be managed to minimise the risk of harm.

Performance Standard

i) Before acquiring an asset or business, or agreeing a contract for construction, areas must be reviewed where people could be exposed to dangerous plants and animals. The review must include both desktop and physical inspections on site.

ii) Where practicable, remove any dangerous plants and animals before commencing the work such as clearing poisonous plants before demolition.

iii) Where dangerous plants or animals have been identified and cannot be removed (e.g. known poisonous snake habitats) consider relocation of fauna where possible, exclusion of some work areas including blocking off (e.g. long grass areas where snakes may be present) correct selection and use of PPE such as overalls and general education to reduce risk of exposure.

Risk Event Mitigating Controls and Performance Standards

4.10.8 Occupational Health Exposure Response

Control

Response mechanisms must be in place should an occupational health exposure event occur.

Performance Standard

i) Emergency response and first aid requirements must be in place with trained first aiders available.

ii) Appropriate facilities must be in place for washing and decontamination where such risks apply.

iii) Contingency plans must be in place should an occupational health exposure event occur.

4.11 PUBLIC HEALTH EXPOSURE

Description

These critical controls apply to any Lendlease operation where there is potential to adversely impact worker and public health through fatal exposure to; a foodborne illness resulting from contamination caused by bacteria, viruses, parasites or chemical substances; contamination with Legionella bacteria (e.g. cooling towers, evaporative condensers, hot and cold water systems and fountains) overcrowding as a result of a large number of people gathering in a specified area or for a specified event or exposure to a disease outbreak.

Potential Causes

- A Food contamination from poor food safety practices
- B High risk food (e.g. seafood, dairy and poultry)
- C Inadequate design for waterborne organisms (e.g. dead legs, cooling towers and water systems)
- D Water borne, air borne, or soil borne contamination (e.g. sewers, drift and adjacent exhausts)
- E Overcrowding
- F Equipment failure (e.g. escalator reversal)
- G Inadequate design (e.g. incorrect floor loading)
- H Outbreak
- I Poor sanitation
- J Natural disaster
- K Biological or radioactive incident
- L Sabotage, terrorism or conflict
- M Inadequate investment in public health

Preventative Controls (4.11.1 – 4.1.3)

- **4.11.1 Food Poisoning**
- **4.11.2 Legionella and Waterborne Organism Control**
- **4.11.3 Avoidance of Crush From Crowds**

Public Health Exposure

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (contamination, pollution events, habitat destruction)

Mitigating Controls (4.11.4)

- **4.11.4 Disease/Pandemic Exposure**
- **4.11.5 Natural Disaster Response**

Risk Event Preventative Controls and Performance Standards

4.11.1 Food Poisoning

i) Where higher standards of hygiene are required such as in food preparation areas, medical care and treatment areas effective infection control cleaning regimes must be implemented with clear responsibilities assigned, training provided, accurate records kept, and regular audits undertaken. Basic catering such as workplace BBQs must maintain general hygiene standards and food safety precautions such as adequate refrigeration of high-risk foods, use of gloves and other general hygiene precautions.

ii) Procure food and food provision services from suppliers who have recognised local or international food safety standards certification (e.g. from the local authority, HACCP or ISO 22000). This includes chain of custody food safety provisions where operations provide high risk food and drink as part of employee or customer entertainment in external venues.

iii) Commercial operations supplying food prepared and stored by Lendlease, and the staff handling the food, must directly hold a current third-party certified food safety/hygiene certification.

4.11.2 Legionella and Waterborne Organism Control

i) Where city, state or national regulations or standards apply, the relevant statutory risk assessment must be carried out at the frequency determined by the regulation or code or standard. This also applies to areas where Lendlease is the tenant.

ii) Water supply systems must minimise the health risks from waterborne organisms in water systems (e.g. by avoiding any unused portion of piping such as dead legs where there is potential for the formation of biofilm).

iii) Wet cooling towers must be located away from publicly accessible areas and be assessed with consideration of the surrounding areas to avoid vulnerable groups (e.g. playgrounds, aged care facilities and hospitals).

iv) All water systems must be maintained, upgraded and monitored to prevent the growth and spread of waterborne organisms such as Legionella through regular dosing, inspection, cleaning, disinfection and temperature control. A water quality testing regime consistent with local legislative requirements must be implemented with appropriate records maintained.

v) All monitoring and maintenance must be planned and conducted by a person with appropriate technical competencies familiar with Legionella and other waterborne organisms. Effective protective clothing or equipment must be used, and the correct plant maintenance safety procedures must be observed. Adverse test results must be recorded as an incident in the EH&S reporting system, acted on immediately and re-tested until safe tolerances are achieved.

vi) Where a third party has been designated as the authorised entity and nominated to carry out testing/maintenance on behalf of Lendlease, the responsible Lendlease employee/manager must have completed Legionella awareness training, maintain compliance oversight of the system on a regular basis and report on abnormal plate (bacteria) count.

4.11.3 Avoidance of Crush From Crowds

i) All buildings must have enough space for the anticipated number of people.

ii) Minimise pinch points and bottlenecks for the movement of people and demonstrate as suitable for the building or event.

iii) All operations allowing public access must have effective means of safely keeping people outside the building and securing access.

iv) Identify doors and equipment that are needed to manage crowds. Proactively check for correct function and that they are on a planned preventative maintenance schedule.

v) Train security staff in emergency response for crowd management, de-escalation of aggressive or violent visitors and the first aid treatment of crush and overheating injuries.

vi) Operations leaders must subscribe to available alert systems for local public events that may have an impact on the operation such as road closures, terrorist incidents, large public events, planned protests, riots or other.

Risk Event Mitigating Controls and Performance Standards

4.11.4 Disease/Pandemic Exposure

i) Subscribe to available international alert systems (e.g. International SOS) to monitor any outbreak of a potentially fatal pathogen.

ii) Where the origin of a potentially fatal pathogen has been declared in the same country as any operation, create a specific local management plan to minimise the risk of exposure to all workers including at risk workers such as those who are immunity deficient or pregnant.

iii) Provide general awareness information about the signs and symptoms of local seasonal pathogens and outbreaks of other public health issues such as potentially fatal pathogens from overseas that could impact operations and those required to travel.

iv) Communicate specific steps to be taken should people suffer from symptoms of potentially fatal pathogens and provide workers with education to recognise signs and symptoms in others.

4.11.5 Natural Disaster Response

i) Subscribe to available alert systems such as fire, cyclone, hurricane, earthquake, flooding and tsunami alerts for the applicable local area.

ii) Emergency preparedness and response plans for the operation must cover all possible scenarios applicable to the local area.

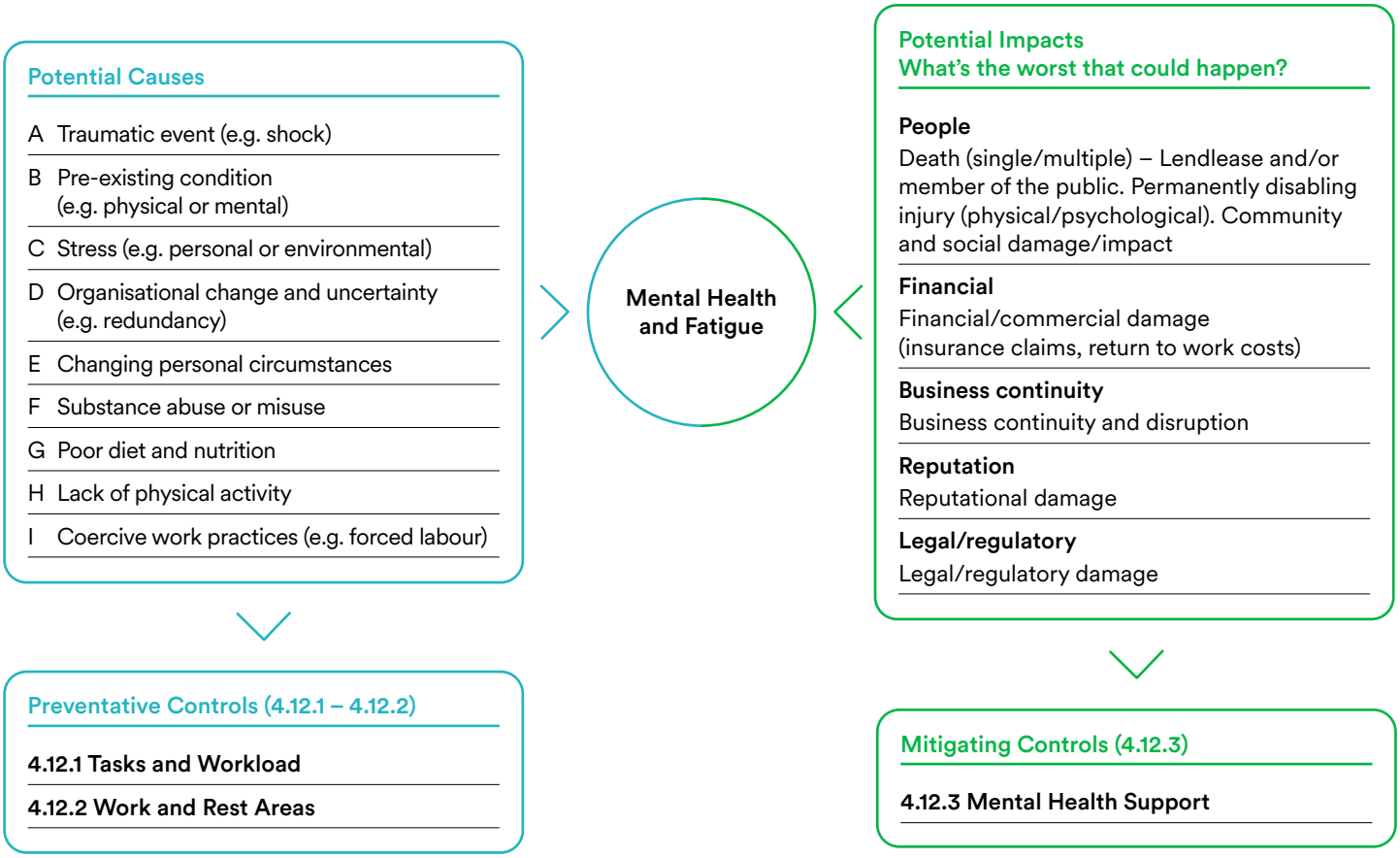
iii) Plans for how to contact all personnel to confirm their safety are to be in place in case of a natural disaster.

iv) Emergency muster areas must consider the type and duration of a natural disaster affecting the project and the number of personnel that may need to shelter there.

4.12 MENTAL HEALTH AND FATIGUE

Description

These critical controls apply to any Lendlease operation where people may experience undue physical or mental pressures that result in an adverse impact on their ability to undertake their daily activities. For example, as a result of ongoing working hours more than six days per week, over 60 hours per week or shifts of more than 12 hours per day or continuous night shift work.



Risk Event Preventative Controls and Performance Standards

4.12.1 Tasks and Workload

i) Establish the numbers of personnel, both Lendlease and suppliers, required for the safe and effective management of all activities within the operation so that the required workload does not exceed 60 hours per week for an individual worker. All overtime must be voluntary and appropriate safeguards must be in place to protect the physical and mental health and wellbeing of workers at all times. This limit includes office based and frontline personnel. Further consideration must be given to any additional time spent working while commuting or driving between workplaces or sites. For remote projects on a fly in/fly out (FIFO) roster, the maximum work hours are not to exceed an average of 60 hours per week assessed over the whole roster cycle.

ii) Identify fatigue risks that could lead to errors and could cause fatal injury of any person/s. Specify clear limits on weekly and daily working hours for such tasks and what rest breaks are required. Where fatigue risks are identified provide fatigue related programs (e.g. sleep, nutrition, wellbeing and resilience programs) aligned with the Lendlease health and wellbeing framework.

iii) Actively monitor actual hours spent working. Implement strategies to reduce excessive working hours.

iv) Specify and procure fatigue detection equipment where available for any vehicle, mobile plant and equipment.

4.12.2 Work and Rest Areas

i) Provide suitable working areas to minimise fatigue, including but not limited to the provision of sufficient light, ventilation and air and ergonomically suitable furniture for work tasks.

ii) Provide suitable rest areas to minimise fatigue, including but not limited to placement away from the work task in a quiet, heated or cooled (as appropriate) area clearly marked as a breakout/rest area with sufficient seating and rest areas for peak numbers of workers.

Risk Event Mitigating Controls and Performance Standards

4.12.3 Mental Health Support

i) Provide an Employee Assistance Program (EAP), independent counselling and support for employees feeling stressed or suffering from other mental health issues.

ii) Under the Lendlease Health and Wellbeing Framework or equivalent, provide mental health induction or general awareness (e.g. mental health campaigns) of mental health to employees, contractors and suppliers working for Lendlease as appropriate to their role and duration of employment.

iii) Trained Mental Health First Aiders (MHFA) or equivalent employees should be available on every Lendlease operation during normal working hours. The names of any trained MHFA officers or equivalent must be displayed in a prominent location. Processes must be in place to monitor and assist the MHFA should they be impacted by the information they receive during the service/guidance they provide to others.

iv) Where the risk exists, consider modern slavery awareness campaigns and education, to reduce possible impacts on mental health, including information on access to Ethics Point (refer to Supplier Code of Conduct and Modern Slavery Guide).

4.13 DEGRADATION OR POLLUTION OF THE ENVIRONMENT

Description

These critical controls apply to any Lendlease operation where, without effective measures in place, activities being undertaken could lead to significant pollution and environmental degradation outcomes.

Potential Causes

A Inadequate implementation and maintenance of stormwater, sediment and erosion control devices, systems and solutions

B Inappropriate or unplanned wastewater discharge

C Uncontrolled release of noise, exhaust or other emissions and pollutants into the atmosphere

D Unplanned disturbance and failure to manage known contaminants, soils or groundwater

E Unplanned disturbance of biodiversity and natural habitats

F Unplanned disturbance of areas and items of cultural or archaeological heritage

G Unplanned or poorly planned biosecurity measures

H Poorly planned or uncontrolled water extraction

Preventative Controls (4.13.1 – 4.13.5)

4.13.1 Stormwater, Sediment and Erosion Control

4.13.2 Air, Noise and Vibration Emissions

4.13.3 Soils and Groundwater Contamination

4.13.4 Biodiversity and Natural Habitats

4.13.5 Heritage and Artefacts

Degradation or Pollution of the Environment

Potential Impacts
What's the worst that could happen?

People
Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (contamination, pollution events, habitat destruction)

Mitigating Controls (4.12.3)

To be assessed by region, business unit or operation as appropriate.

Risk Event Preventative Controls and Performance Standards

4.13.1 Stormwater, Sediment and Erosion Control

i) Where land is cleared, excavated, disturbed or filled, the operation must have sediment and erosion control devices and associated monitoring equipment implemented and maintained in an operable condition until the area is stabilised.

ii) Manage stormwater erosion and sedimentation by designing, installing, reviewing and maintaining controls that eliminate or minimise land degradation, soil loss and the risk of downstream pollution.

iii) Implement adequate controls in all operations to prevent stormwater containing sediments and any pollutants from entering any watercourses, water bodies, bays or other marine environments and stormwater systems through uncontrolled discharges.

iv) Control the discharge of stormwater from an operation and address the requirements of all applicable approvals, licences and guidelines for water quality, so they are understood and adhered to. Maintain all water quality testing and discharge records.

v) Control the abstraction of all water in line with current local applicable licences. Maintain records of water quality and volumes abstracted.

vi) Where local regulatory requirements exist, all trade effluent discharges must satisfy applicable licences. Records must be maintained of quality and volume of discharge.

4.13.2 Air, Noise and Vibration Emissions

i) Determine preventative controls for all activities involving excavation, rock hammering/sawing/cutting, disturbance of soils or vegetation and then implement physical controls such as covering of stockpiles or water spraying to eliminate or minimise the generation of dust and to eliminate or minimise dust being introduced to the atmosphere. Continual monitoring systems must be installed if required as part of any conditions of consent from regulatory authorities or if required by law.

ii) Assess and implement preventative and mitigation measures to reduce potential impact on or to occupants, visitors, surrounding activities, owners, infrastructure, and neighbours to minimise adverse impacts on sensitive structures, environments and habitats (including clear provisions for the times of the day activities can be undertaken). This includes all indirect emissions from products and services from our supply chain partners.

iii) All industrial process facilities or site-based plant and equipment must be serviced regularly in accordance with local legal, manufacturer guidelines so that noise, exhaust or other emissions generated are within the specified standards to prevent harm to people and the environment.

iv) Consider the use of electric powered plant or equipment powered by renewable energy where possible.

v) All relevant approvals and certifications must be held by personnel engaged in the maintenance/de-gas of fluorinated gas systems.

4.13.3 Soils and Groundwater Contamination

i) Identify, signpost and segregate from site activities any known contaminated soils or groundwater on the site likely to cause risk to health, safety or the environment. Erect physical barriers to prevent unauthorised entry, exposure and cross contamination and cover with suitable materials to prevent stockpile erosion.

ii) Cease any site activities that involve soil or groundwater disturbance where the contamination levels of the soil and groundwater are either unknown or where evidence of possible contamination is presented, until a technically qualified person is able to determine the contamination status or risk.

iii) Plan and conduct all excavation, (including piling), movement, treatment, processing or remediation of contaminated soils, materials or groundwater in accordance with the requirements of high-risk activities.

iv) All site remediation activities are to be conducted in accordance with regulatory requirements including provision for any decontamination and wash/disposal facilities. All contaminated waste must be delivered to an approved licensed facility and documentary evidence is maintained by the operations.

4.13.4 Biodiversity and Natural Habitats

i) Where required by law, all ecological surveys must be completed prior to works commencing.

ii) Areas designated by regulatory authorities as protected habitats, including water bodies and designated habitats or wildlife corridors within the area of any operations, must be identified, signposted and protected from operational activity, including uncontrolled pedestrian access, and all local biosecurity requirements satisfied.

iii) All operations within or immediately adjacent to areas of protected habitat must be planned and conducted in accordance with the requirements for high risk activities and include a risk assessment and description of any actions required to protect flora and fauna consistent with the findings of any ecological site assessment and regulatory requirements.

iv) All landscaping and site grounds must be appropriately managed to prevent uncontrolled discharges and land degradation including avoiding the spread of weeds or invasive species. Where invasive species exist, physical removal or isolation is the preferred option, rather than the use of non-toxic herbicides. Toxic herbicides must be avoided.

v) Prevent the introduction and spread of weeds, and invasive plants and fauna by selecting appropriate landscape species, cleaning of plant and equipment in controlled areas, preventing land degradation and uncontrolled stormwater discharges. Where weed or invasive species are identified, physically remove or isolate the vegetation rather than using herbicides.

vi) Where invasive species require removal by law, the removal, transport and disposal must be undertaken by contractors holding all required licencing and/or certification and/or proof of competency. Any waste or disposal facility must hold the required licencing to accept the material.

4.13.5 Heritage and Artefacts

i) All items of heritage, cultural or archaeological significance must be included on construction plans, signposted and protected to prevent unauthorised entry in accordance with regulatory requirements. Plan and conduct all activities potentially impacting known areas in accordance with the requirements of high risk activities.

ii) Any excavations, intrusive works or other operations that have the potential to impact areas of known heritage, cultural or archaeological significance must be performed in accordance with a heritage assessment and any regulatory requirements. This may include a dilapidation survey, supervision of works and vibration monitoring.

iii) Cease any activities that involve the discovery of items that may be of cultural or archaeological significance until a person qualified in this field of work is able to determine the status of any potential artefact(s).

Risk Event Mitigating Controls and Performance Standards

To be assessed by region, business unit or operation as appropriate.

4.14 VEHICLE AND PLANT INCIDENT (PUBLIC AREAS)

Description

These critical controls apply to the movement of both public and Lendlease vehicles on any Lendlease controlled operating asset (e.g. retail, residential, commercial parking and public vehicle access areas). They also include the use of any Lendlease tool of trade vehicles on public roads where a fatality could occur. They do not cover construction site vehicle traffic or Lendlease heavy equipment. They also do not include personal small vehicles such as bicycles, customer low speed car park manoeuvres or single drop delivery drivers. Where the operation has exposure to risks of vehicle and plant incidents on the work sites (including temporary sites on roadsides) as well as public interface, refer also to the requirements of GMR 4.3).

Potential Causes

A Driver error (e.g. competency, impairment, fatigue or used in an unsafe manner and distractions such as spotters)

B Mechanical failure (e.g. tyres and brakes)

C Inadequate planning and methodology (e.g. lack of segregation, public transport interfaces, plant/personnel, loss of control, miscommunication and traffic control including entry/exit to sites)

D Sub-standard road, environmental and weather conditions (e.g. turning points, fog, unclear pedestrian/vehicle interface/management, restricted views, blind spots, poor lighting or visibility, poor road markings and obstacles)

E Vehicle or equipment is unfit for purpose (e.g. through lack of maintenance, poor procurement, structural fatigue and exceeding the design life)

F Third party event (e.g. member of public error or misuse, visitor error, animal error, unplanned medical event, co-worker error, sabotage, theft and contact with other equipment)

Preventative Controls (4.14.1 – 4.14.4)

4.14.1 Traffic Planning

4.14.2 Pedestrian and Vehicle Segregation

4.14.3 Parking and Traffic Routes

4.14.4 Safe Vehicle Usage

Vehicle and plant incident (public areas)

Potential Impacts
What's the worst that could happen?

People
Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial
Financial/commercial damage (insurance claims, return to work costs)

Business continuity
Business continuity and disruption

Reputation
Reputational damage

Legal/regulatory
Legal/regulatory damage

Environment
Environmental damage (e.g. spilt fuels)

Mitigating Controls

To be assessed by region, business unit or operation as appropriate.

Risk Event Preventative Controls and Performance Standards

4.14.1 Traffic Planning

i) All applicable traffic management plans or regulatory required traffic management protocols must be current and define the controls to minimise the risk of vehicles striking another vehicle, structure or pedestrian.

ii) Controls to manage any interface with public roads must provide effective signs and traffic control aids addressing prohibited vehicles, access points, routes for different vehicles types and reversing requirements.

iii) Operations must establish methodologies for the safe installation before work and removal of the traffic controls when work finishes.

iv) Planning for offloading methodology and material movement must be done prior to arrival on site and coordinated with the site logistics plan.

4.14.2 Pedestrian and Vehicle Segregation

i) All locations must assess the risks presented by the movement of pedestrians and vehicles around or next to the site and implement appropriate controls to eliminate or minimise these risks.

ii) Route sightlines must be unobstructed and adequately lit to provide good visibility. Blind spots and corners must be avoided, or where they do exist, have mirrors or other controls installed.

iii) Signage and road markings must be compliant to the relevant authority standards and must provide clear instructions to pedestrian and vehicle route users and be located in positions which allow users to see them and have time to respond.

iv) Loading and unloading areas for commercial vehicles (e.g. delivery trucks) must be clearly defined for loading or unloading. Risk control measures (i.e. exclusion zones) must be implemented and managed.

v) Speed limits must be determined to reduce the risks associated with pedestrian movements, the local environment and authority standards. Speed calming measures such as raised crossings, humps on approach to crossings and rumble strips must be implemented in areas where pedestrians and vehicles could interface.

vi) In locations where vehicles and pedestrians are in close proximity (e.g. security entrance points or where doors open directly onto vehicle routes) engineering controls must be provided to keep pedestrians and vehicles apart (e.g. by fitting physical barriers or providing separate routes).

vii) Where shared zones for traffic and pedestrians are in place, speed limits must be reduced to less than 10km per hour (6 mph) and signage and traffic calming devices must be in place where building entry and exit points lead onto any area where vehicles can operate.

viii) Adequate lighting must be in place for any specified loading and unloading areas or for trafficable areas in close proximity to members of the public.

4.14.3 Parking and Traffic Routes

i) Traffic routes and parking arrangements must be in place to avoid vehicle-to-vehicle and vehicle-to-pedestrian conflicts.

ii) Provide clear signage in car parks to indicate location information, speed limits, operating hours and conditions and any other hazards and precautions.

iii) Provide clearly defined pedestrian routes within car parks to facilitate safe access and egress.

iv) Locate height bars and signage to car park entrances to warn drivers of height limits. Provide safe exit routes for oversize vehicles.

v) Use controls to manage reversing for trucks and delivery vehicles where through flow or one-way systems cannot be achieved. Where reversing needs to occur, use suitable controls in response to the level of risk encountered including pedestrian exclusion zones, mirrors, reversing camera's or traffic signallers. Traffic signallers must only be used as a last resort.

4.14.4 Safe Vehicle Usage

i) Vehicles used as a tool of trade by Lendlease personnel must be operated in a safe manner at all times.

ii) Based on assessment of use, light vehicles on operations should be of a high visibility colour (e.g. white) and have reflective taping, flashing lights, a first aid kit, a fire extinguisher, a spill kit and survival or emergency equipment suitable for the operating environment.

iii) Vehicles proposed for hire or purchase must have a minimum five-star Australasian New Car Assessment Program (ANCAP) rating or equivalent national standard.

iv) Vehicles provided by Lendlease as a tool of trade shall be fitted with in vehicle management systems, reversing cameras and parking brake warning systems.

v) Seatbelts must be used at all times by all occupants and drivers of vehicles.

vi) Vehicle journeys of two hours or more continual driving must be planned so as to provide adequate rest breaks are in place and that there is provision to manage fatigue.

vii) Mobile devices (e.g. phones, tablets etc), whether hands free or not, must only be used by the driver of a tool of trade vehicle whilst the vehicle is stationary and in a parked safe location (unless local laws prevents this). The exception to this is for emergency and incident response vehicles, using hands free communications in a response situation, where alternative communication methods are not available.

viii) All drivers must be appropriately licensed for the vehicle being operated and be fit for work (i.e. not impaired by medication, drugs or alcohol).

ix) When parked all vehicles must be fundamentally stable with the engine turned off, handbrake effectively applied, placed in gear and on level ground. Wheels should be situated in spoon drains, gutters or against wheel stops. If fundamentally stable parking cannot be achieved appropriately sized wheel chocks must be available and implemented.

x) All Lendlease vehicles must have inspection and maintenance protocols in place for all safety related items such as wheels and tyres, steering, suspension and braking systems, seats and seat belts, lamps, indicators, mirrors and reflectors, windscreen and windows including windscreen wipers and washers, the vehicle structure itself and any other safety related item on the vehicle body, chassis or engine including instrumentation.

xi) Pre-start inspections must be completed to determine if the lighting and braking systems are in proper working order.

xii) Vehicles must not be used above the manufacturer defined maximum load limit.

xiii) Wheel nut indicators must be fitted to all heavy vehicle wheels (i.e. heavy goods vehicles, busses, tractor trailers), where not precluded by design.

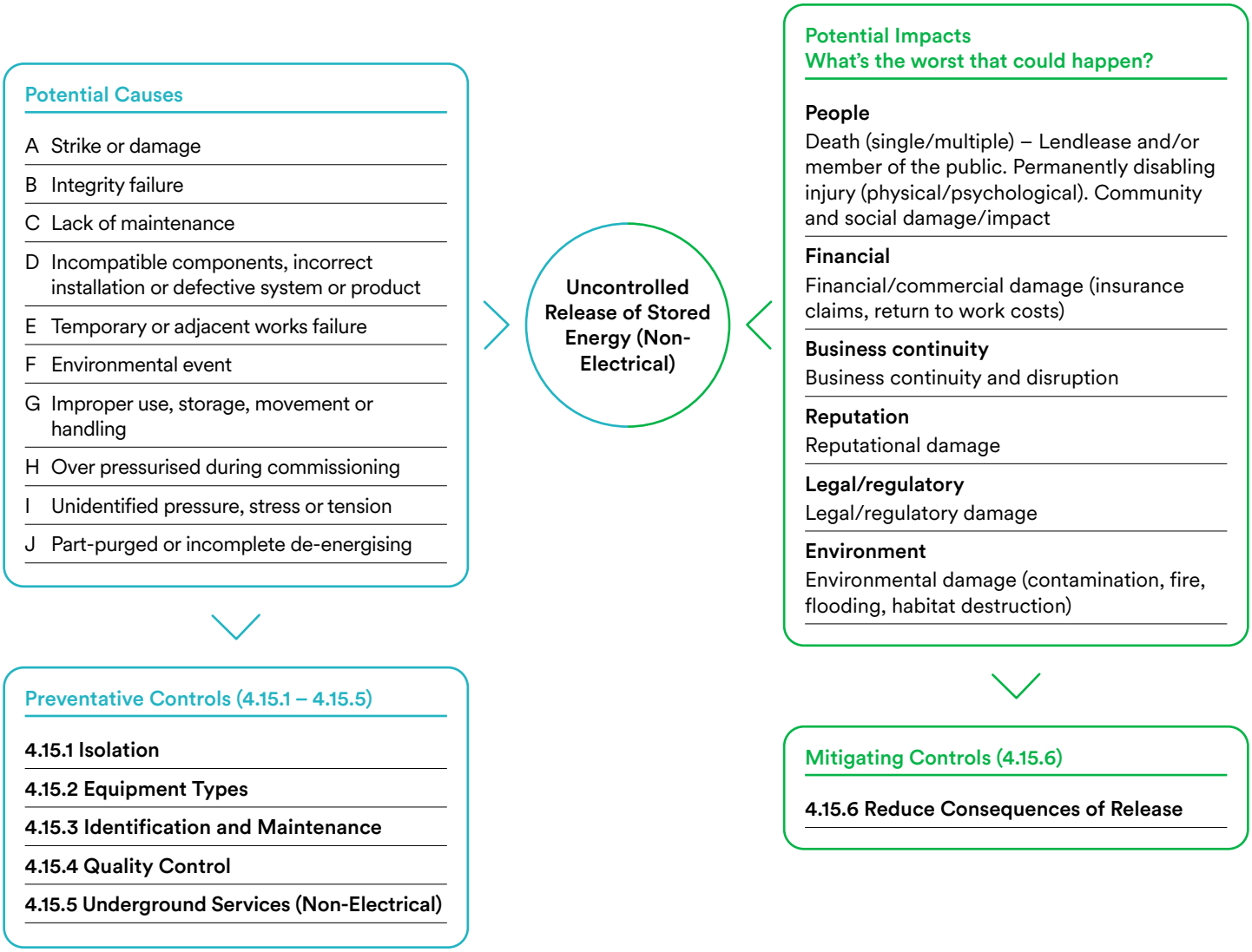
Risk Event Mitigating Controls and Performance Standards

To be assessed by region, business unit or operation as appropriate.

4.15 UNCONTROLLED RELEASE OF STORED ENERGY (NON-ELECTRICAL)

Description

These critical controls apply to any Lendlease operation containing plant, machinery, equipment or infrastructure that provides or generates energy and which, if released, could result in a permanently disabling injury, single fatality or multiple fatalities or environmental harm. This includes pipework located where leakage could cause catastrophic collapse of a structure (e.g. ceiling), storage where failure could cause inundation of an area (e.g. a public area), asphyxiation or pollution. Energy includes water, fuels, heat, gases, steam, fluids under pressure (e.g. hydraulic oil), stored energy (static, kinetic and potential), structural tension and radiation). It is not intended to apply to supportive elements such as crane hydraulics.



Risk Event Preventative Controls and Performance Standards

4.15.1 Isolation

i) Before undertaking work on systems that contain stored energy, or in close proximity to a system that may be affected by the works, the energy must be released (e.g. draining fluids from pipes and releasing tension in belt systems).

ii) To prevent inadvertent or unintentional movement of mechanical systems a hazard and risk analysis must be performed to identify sources of hazardous energy and isolation and de-energisation locations. Appropriately experienced and qualified persons must be involved in the risk analysis. Lock out systems such as, but not limited to keyed padlocks, belt clamps or the use of chains to secure items against movement must be implemented.

iii) Isolation of hydraulic and gas systems is required using a physical keyed lock out isolation system and a danger tag/out of service tag with personal locks on all valves. Consider the installation of additional strategically placed valves if multiple isolations are likely during an activity.

4.15.2 Equipment Types

i) Use the smallest available unit that can complete the task when procuring portable or temporary systems (e.g. portable compressors).

ii) Systems must be assessed to be able to withstand specific local environmental conditions and hazards.

iii) Select technology that provides the highest level of structural and mechanical integrity for containment of stored energy.

iv) Common stored energy systems used on Lendlease operations (e.g. piling operations, high pressure water pumping/ circulation systems, concrete pumps, charged fire risers) must be inspected and maintained to the manufacturer's instructions and removed from service if immediately if any defects are detected (e.g. leaks, metal fatigue, deformation, weld failures) or if the system in use has been altered (e.g. compressed air added to water pumping systems).

4.15.3 Identification and Maintenance

i) Before acquiring an asset, identify all stored energy systems and demonstrate their current condition and safety status. Where no records are available or where they are incomplete project lead for the transaction should perform testing to ascertain the reliability of the system during the Due Diligence period. If the system is proven to be unreliable and warrants replacement, recommendation shall be highlighted so that plan developed, and cost considered for the transaction.

ii) Develop a maintenance and mechanical integrity program for all stored energy systems suitable for install, use and testing of the system in line with local legislation and/or manufacturers recommendations, or more frequently, as assessed, when installed or used in conditions which may result in any deterioration. This includes portable storage systems under the control of the operation.

iii) Perform maintenance of portable stored energy systems in a safe location away from the workforce.

iv) Undertake a review of all stored energy systems to identify and implement controls required to reduce the likelihood of uncontrolled release. Consider all third party external risks or events that could impact the stored energy system. Written procedures must be in place for the operation and maintenance of stored energy systems, including arrangements for undertaking work in the vicinity of these systems, (e.g. radio frequency emitting devices).

v) Procedures must include methods for safe energy discharge, isolation and demonstration that energy has been removed before invasive maintenance takes place.

vi) A process or system must be in place to prevent foreign products or excess air entering into a pressurised system that could cause imbalance to normal capacity when in operation (e.g. preventing air entering into a concrete pump hopper system when levels of concrete get too low). Similarly, supplied products utilised within a pressurised system should be of a consistent mix or viscosity and be within the limits specified requirements (e.g. concrete or shotcrete mixes when being pumped).

4.15.4 Quality Control

i) Implement a commissioning and pressure testing process approved by a suitably qualified 3rd party engineer (as per the requirements of GMR 2.3.3). The documented process should include but not be limited to, the method of pressure testing, fault finding, make up pieces and the risks associated with releases of stored energy during the commissioning process. Implement quality control and quality assurance for the procurement and installation of any stored energy system as a means of meeting design requirements.

ii) Implement quality control of the design and engineering of stored energy systems to warrant that the design is fit for purpose.

iii) All stored energy systems must be designed by a qualified and registered engineer according to its intended use. If the system is part of an acute high risk activity as per GMR 2.3.3 then an independent engineer must review the design and/ or methodology. Once installed, erected or after a change to the design the stored energy system must be verified by a qualified and registered engineer to certify that the design intent is met.

iv) Any pneumatic (e.g. air) testing during commissioning of pipework above 50kPa/7 psi requires a detailed methodology approved by a suitably qualified services engineer.

v) No person shall be in the defined line of fire of pressurised plant/equipment during initial set up, maintenance, repairs or re-pressurisation of the system (e.g. concrete pumps). Consideration for additional controls (i.e. whip checks) to be installed on all pressurised lines where risk of uncontrolled release of energy exists. No person shall operate or undertake activities on a pressurised system of plant or equipment without appropriate training and competency.

4.15.5 Underground Services (Non-Electrical)

i) A register must be in place for all buried services across all Lendlease controlled operations (e.g. gas). The register must include a plot drawing of the route of the service with grid references or other recognised location references, description of the depth and type of service and any auxiliary protection.

ii) Existing drawings and suitable location tools must be used to locate and mark underground services before works commence. Where any uncertainty exists regarding the location of underground services hand digging such as pot holing must be implemented to positively identify and expose the services.

iii) Prior to the disturbance of ground where underground network assets such as gas, water or sewerage or communications may be present, Lendlease operations must identify that current diagrams and plans are available, obtained from the relevant authority and are valid. Existing drawings and a Cable Avoidance Tool (CAT) scanner and any other suitable tools or processes including hand digging or vacuum excavation, must be used to locate and mark underground services before ground disturbance work by machine commences.

iv) The locations of underground services less than 3m/10ft of the designed excavation requires hand digging and/or vacuum excavation to identify the services.

Risk Event Mitigating Controls and Performance Standards

4.15.6 Reduce Consequences of Release

i) Take all necessary actions to reduce the consequences of an uncontrolled release of stored energy (e.g. relocating the hazard, installing barriers or secondary containment).

4.16 TUNNEL COLLAPSE

Description

These critical controls apply where any Lendlease operation could result in the unplanned collapse of a tunnel resulting in an injury or fatality. Tunnels will be designed in accordance with GMR 2.

Potential Causes

A Incorrect construction working methods (e.g. poor sequencing and not following support standards leading to failure of the temporary or permanent support)

B Surcharge resulting from fixed and moving loads (e.g. vehicles, water ingress, adjacent work activities and vibration)

C Adverse weather and natural disasters, including water ingress or resulting in vibration

D Unexpected ground conditions (e.g. voids, ground or water pressure)

E Inadequate design, procurement, planning, maintenance and inspection of tunnel

F Fire and explosion (e.g. blasting resulting in vibration)

G Vehicle impact creating surcharge in excavation and damage to tunnel support structure

Preventative Controls (4.16.1 – 4.16.3)

4.16.1 Geological Hazards

4.16.2 Monitoring and Inspection

4.16.3 Unauthorised Access

Tunnel Collapse

Potential Impacts
What's the worst that could happen?

People

Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial

Financial/commercial damage (insurance claims, return to work costs)

Business continuity

Business continuity and disruption

Reputation

Reputational damage

Legal/regulatory

Legal/regulatory damage

Environment

Environmental damage (contamination, fire, flooding, habitat destruction)

Mitigating Controls (4.16.4 – 4.16.6)

4.16.4 Falling Object Protective Structure

4.16.5 Rescue Chambers/Self-Rescuers

4.16.6 Emergency Response

Risk Event Preventative Controls and Performance Standards

4.16.1 Geological Hazards

i) Identify geological hazards and provide geotechnical engineered solutions comparable with the risk.

ii) Contractors, service providers or JV partners must identify the plant and equipment intended for use.

iii) During procurement contractors, service providers or JV partners must demonstrate how their plan minimises the exposure of people to potential collapse events.

4.16.2 Monitoring and Inspection

i) Ground support plans must address geotechnical issues, describe and illustrate methods of ground support, clarify roles and responsibilities and address inspection regimes.

ii) Engineered monitoring and warning systems must be in place for tunnels where failure of the sides or roof could lead to the entrapment of people.

iii) Engineered monitoring and warning systems are supported by trained personnel to make relevant geotechnical observations of impending failure.

iv) Tunnels must be regularly inspected against the design and as-built plans to verify all controls are in place and that working conditions are appropriate. This includes air quality and temperature monitoring as well as the implementation of all task and emergency lighting.

4.16.3 Unauthorised Access

i) All work involving tunnels must identify the people, vehicles, plant or equipment authorised to access the tunnel. Risk assessments must address unauthorised access.

ii) Prevent access wherever an unauthorised vehicle or person could damage critical infrastructure or where the unauthorised person could be fatally injured due to the hazards within the operational area. Install physical barriers at operational perimeters and within discrete areas of the operation if required.

Risk Event Mitigating Controls and Performance Standards

4.16.4 Falling Object Protective Structure

ii) Install Falling Object Protective Structure (FOPS) to all mobile plant and equipment working in tunnels, meeting ISO 3449:2005 Level 1 or 2 or equivalent.

4.16.5 Rescue Chambers/Self-Rescuers

i) The emergency response plan for tunnelling includes self-rescuers and rescue chambers.

ii) Prepare emergency response plans with the assistance of specific expertise. Plans must address the rescue equipment required, location plans of equipment in the tunnel, rescue chamber capacity including power, water, oxygen and food requirements, training, inspection and maintenance regimes.

4.16.6 Emergency Response

i) The emergency response plan must be developed prior to work commencing and be resourced, implemented, verified and reviewed quarterly.

ii) The plan must address failure scenarios such as specific recovery equipment (e.g. type and location) and training requirements.

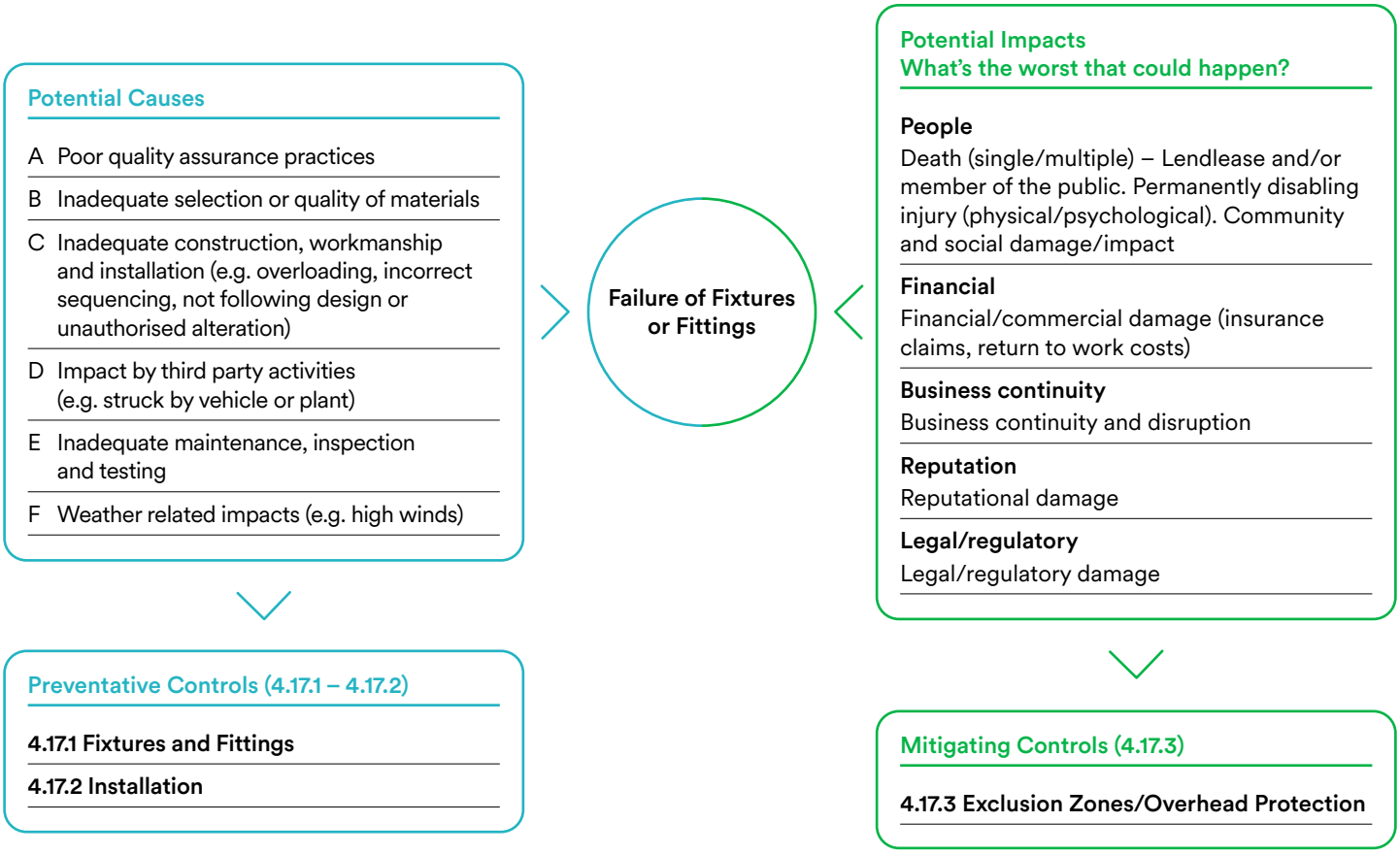
iii) Inductions must address the knowledge and skills of exposed workers to the emergency scenario.

iv) Emergency response plans are to be regularly practiced and evaluated.

4.17 FAILURE OF FIXTURES OR FITTINGS

Description

These critical controls apply where a failure of any item fixed to an external wall or facade (e.g. signs, lights and architectural features), internal walls (e.g. screens, signs and brackets) or ceilings (e.g. glass or other ceiling panels and mounted projectors) or floors (e.g. warehouse racks and shelving) could fall and result in an injury or a fatal outcome.



Risk Event Preventative Controls and Performance Standards

4.17.1 Fixtures and Fittings

i) Where a tested and certified system is not provided the supplier must provide appropriate engineering due diligence to prove the suitability of the fixing system used. This should include manufacturers literature, designed load calculations and test data proving capability of the fixings proposed.

ii) If a building element could fall from any fixed position at height, the fixing methodology must be adequately designed, selected and reviewed by a qualified engineer. The design should nominate manufacturing and installation fixture hold points. Where available, a tested proprietary system certified for its intended use should be selected as a preferred design option. Any overhead structurally bonded materials (e.g. glued or taped) must also have a residual mechanical restraint that is engineered and approved by an independent engineer to prevent fall of material.

4.17.2 Installation

i) Install all elements without variance against agreed methodology and engineering tolerances. Provide full and complete records of the fixing or fixing system that covers the specification, installation and testing of installed items.

ii) Quality Management processes (e.g. Inspection and Test Plans and Inspection records) must be implemented to determine that structural components including fittings and fixtures are installed using the documented methodology and components, are adequately tensioned or fixed, are defect free and include the allocated number and type of specified fasteners. Records of inspection and testing must be provided to the Lendlease Operation and be available for audit or other assurance processes.

iii) Confirm and complete inspection and testing plans where work or re-work requires approved activities to be conducted out of sequence from the original plan. This includes previously installed elements associated with or adjacent to the work area and ensuring that structural integrity has not been compromised.

iv) Properties of the substrate being fixed to are to be considered and factored into all fixing designs. (e.g. concrete wall, composite block, gypsum wall, timber hoarding)

Risk Event Mitigating Controls and Performance Standards

4.17.3 Exclusion Zones/Overhead Protection

i) Exclusion zones must be of adequate size taking into account the risks including potential arc of fall, deflections and bounce distances, are delineated by physical barriers and have clear warning signage prohibiting unauthorised entry where there is a likely risk of harm. The integrity of any exclusion zones must be regularly checked.

ii) Planning for both construction and asset works identifies any scenarios where overhead protection must be installed, particularly where people below cannot be completely excluded. Overhead protection must be in place before the activity begins.

4.18 DROWNING

Description

These critical controls apply to any Lendlease operation situated on or adjacent to water into which someone could fall with the fatal risk of drowning.

Potential Causes

A Contact with water (e.g. fall into excavation/ pile, driving plant into water, water ingress into workspace or sinking of vessel)

B Inability to swim

C Inappropriate PPE, lack of or no PPE available

D Inappropriate work processes (e.g. lone working or unknown tidal information)

E Flooding

F Inappropriate diving operations (e.g. faulty gear or incorrect air mix)

Preventative Controls (4.18.1 – 4.18.4)

4.18.1 Work In, above, or Adjacent to Water

4.18.2 Systems of Work

4.18.3 Management and Creation of Water Bodies

4.18.4 Swimming Pools

Drowning

Potential Impacts
What's the worst that could happen?

People

Death (single/multiple) – Lendlease and/or member of the public. Permanently disabling injury (physical/psychological). Community and social damage/impact

Financial

Financial/commercial damage (insurance claims, return to work costs)

Business continuity

Business continuity and disruption

Reputation

Reputational damage

Legal/regulatory

Legal/regulatory damage

Mitigating Controls (4.18.5)

4.18.5 Rescue and Resuscitation Protocols

Risk Event Preventative Controls and Performance Standards

4.18.1 Work In, Above, Below or Adjacent to Water

i) Work activities above, below, in or adjacent to water or liquid masses (e.g. diving, work within stormwater and sewer systems, water body maintenance, boating or maritime operations, dredging, bridge and pier construction) are high risk activities and represent a drowning or other associated risk to human life in the marine environment. Worker exposure to water or liquid masses must be assessed and minimised with work practices aligned to all applicable codes and regulatory requirements.

ii) Proof of competency for divers and all maritime plant and equipment operators must be provided.

iii) Work activities must be reliant on favourable climatic conditions, (e.g. giving consideration to tides, storms or high flow events). Work within water and sewerage treatment facilities must have flow shut-off protocols and monitoring equipment and protocols. The proposed works must not proceed if safeguards are compromised in any way.

iv) All excavations, including piling operations, must be inspected after significant rainfall events (i.e. greater than 20mm [0.8 inches] in 24 hours) to safeguard that water ingress does not present a drowning risk. No further work is to proceed until the risk is eliminated and the removal of the excess water is complete.

4.18.2 Systems of Work

i) Develop and communicate a set of procedures for drowning prevention for all operations on or near water, e.g. lake, harbour, reservoir, river, stream, swimming pool. As a minimum, procedures must cover:

- Working and prefabricating components away from water wherever possible.
- Secondary barriers or nets to prevent contact with water or other maritime environments shall be in place if the normal barriers have to be worked upon, below or adjacent to.
- Purpose designed and suitable gantries for safe transport of workers from vessel to vessel.
- Fit for purpose methods for the transfer of equipment and materials to and from vessels.
- Use of a spotter or buddy system when working near or over water or other maritime environments and never allowing lone working near or in water and other maritime environment.
- All workers wearing fully functioning personal floatation devices when working near or over water. Personal floatation devices must meet local regulations and standards.
- Determine if all workers are able to swim. For those who are unable to swim, a risk assessment must determine controls that eliminate any potential to fall into the water.
- Guidelines for crossing roads flooded with moving water and identifying driving protocols where this activity is proposed to be carried out.
- Diving operations, including tools, equipment, qualifications and decompression arrangements.
- Monitoring of tides, weather and water conditions.

ii) Workers conducting Diving Operations, Hyperbaric Tunnel or Chamber Work, must undertake the work to the relevant diving certification standards, hold relevant qualifications with a professional association of the Region of Operation and must as a minimum have:

- Dive plans and emergency dive rescue plans.
- Trained divers, diving supervisors (e.g. Dive Master) and stand-by divers with rescue diver or equivalent certification.
- All divers and hyperbaric workers must be physically fit and have undertaken routine annual medical assessments before diving operations can begin.

4.18.3 Management and Creation of Water Bodies

i) All natural bodies of water (e.g. wetlands, lakes, watercourses, rivers or creeks) and non-natural bodies of liquid (sewer, water tanks, man-made structures containing fluid or semi-fluid where work is to be performed) must be the subject of a risk assessment to determine if modifications are required to their surroundings to minimise risks to people, especially children or the elderly, or whether it would be more appropriate to preserve the natural surroundings.

ii) Purpose built structures interfacing with these water bodies such as bridges, walkways and boardwalks must provide protection against the fall of a person into the water. Where fencing or balustrades are installed, they must not be climbable.

iii) The surroundings of all-purpose built water bodies (e.g. artificial lakes or storm water reservoirs) must be designed or modified to minimise risks to people, especially children or the elderly. This must include controls to prevent public access if necessary.

iv) Water depths at the edges of artificial water bodies must be minimised by incorporating safety benches. These safety benches must have a water depth of 0.3 to 0.6 metres (one to two feet) and extend at least three metres from the edge of the normal surface level of the water, except where transitions to culverts and other structures occur or where the water body is tidal.

v) All boardwalks, piers, bridges, jetties and harbour edges higher than one metre (3.3 feet) from the water surface must be risk assessed to determine if handrails should be installed.

vi) Signage communicating warnings, prohibitions and general EH&S related information must be provided using easily comprehensible words and pictograms. The placement and detail of signs must be based on a risk assessment and signage must be provided to alert people of the water hazard and the need for active supervision.

vii) All waterbodies adjacent an operation must be assessed for the potential for flooding of that operation and controls implemented to prevent this from occurring.

4.18.4 Swimming Pools

i) Swimming pools and spas must be surrounded by a non-climbable child-resistant fences of regulated height with self-closing gates and child resistant latches.

ii) Windows and doors that open onto the swimming pool area must be self-closing and have lockable child resistant safety latches.

iii) These barriers and their associated locks and latches must always be well maintained and in working order and comply with all applicable local codes, standards and legislative requirements.

iv) Warning signage and notices which give a supervision warning and the details of resuscitation techniques and emergency contact numbers must be displayed in a prominent position within the immediate vicinity of a swimming pool.

v) Filtration systems must be fitted with clearly defined and easily accessible emergency stop buttons or switches and their intakes guarded to eliminate the risk of entrapment.

Risk Event Mitigating Controls and Performance Standards

4.18.5 Rescue and Resuscitation Protocols

i) Design and provide exits with handles, ladders, rails or other elements to allow divers to readily access or egress the marine environment.

ii) Standby emergency flotation devices must be readily available. At a minimum, ring buoys with a minimum of 27m/90ft of line to be readily available, with the distance between ring buoys not to exceed 60m/200ft.

iii) Assess the requirement for the presence of professional life saving personnel when large numbers of workers or members of the public are in the water.

iv) Emergency response contacts and protocols must be made available.

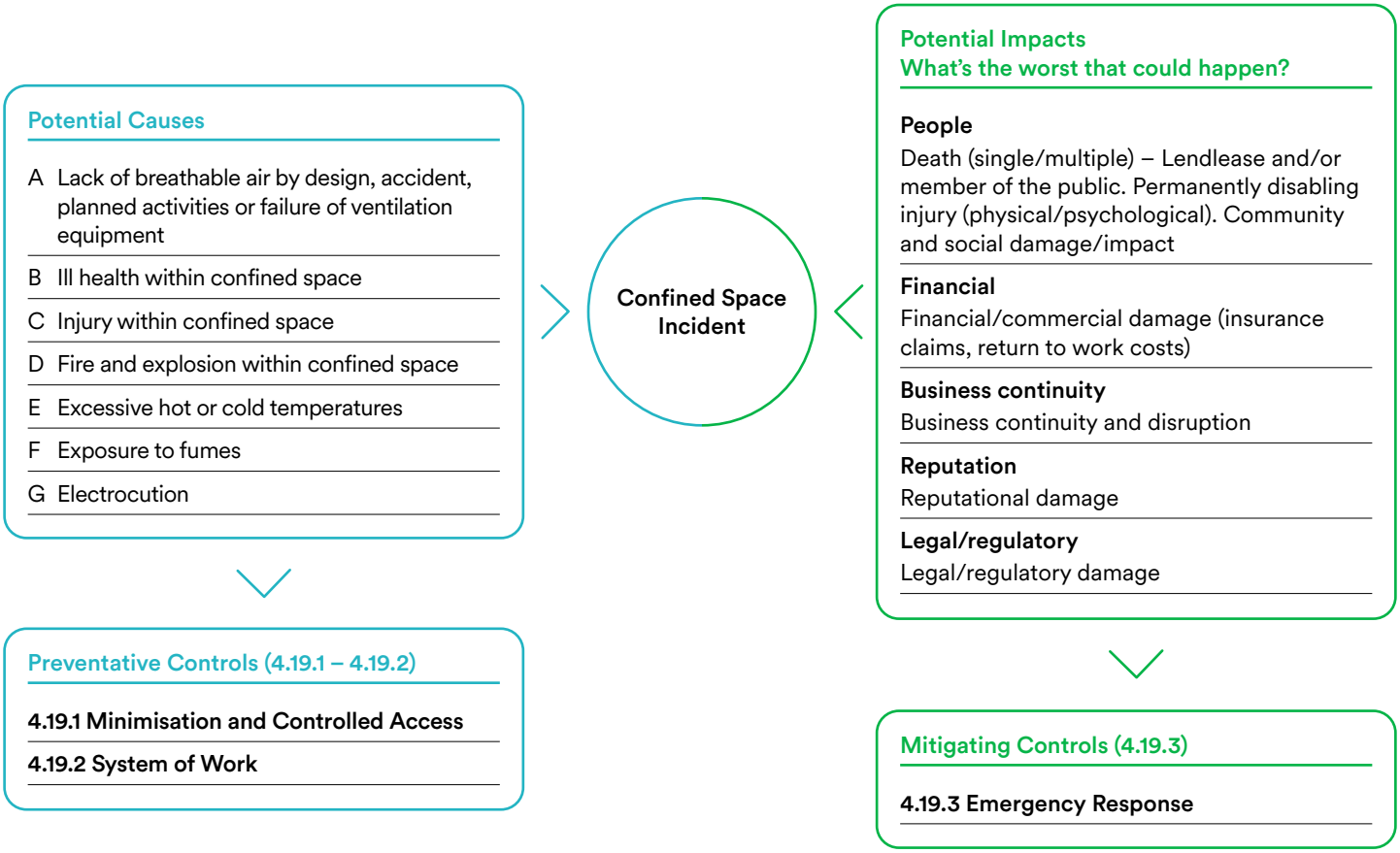
v) Establish an effective communication system, such as two-way radios, between workers, supervisors, the emergency skiff operator and rescue personnel.

vi) Conduct drills to train workers and supervisors to prepare for an effective emergency response.

4.19 CONFINED SPACE INCIDENT

Description

These critical controls apply to any Lendlease operation which includes any enclosed or partially enclosed space where there is a risk of death or permanently disabling injury from any reasonably foreseeable specified risks (e.g. fire and explosion, increase in body temperature, asphyxiation from gas, fumes, vapour or lack of oxygen, drowning from increase in liquid levels, asphyxiation from free flowing solids). It is important to verify the definition of a confined space in accordance with local legislation and regulations (e.g. sewers, culverts, tunnels, chambers, tanks, vessels, silos and excavations) before work commences.



Risk Event Preventative Controls and Performance Standards

4.19.1 Minimisation and Controlled Access

i) Identify at the acquisition of any asset any confined spaces or enclosed areas where hazards could cause the death of any person entering that area. Create and maintain the currency of a single register for future management of the asset.

ii) A person who installs or constructs a plant or structure, must eliminate the need to enter a confined space and eliminate the risk of inadvertent entry so far as is reasonably practicable. If either is not reasonably practicable, then:

- The need for any person to enter the space and the risk of a person inadvertently entering the space must be minimised so far as is reasonably practicable.
- The space must be designed with a safe means of entry and exit.
- Risk to the health and safety of any person who enters the space must be eliminated or minimised so far as is reasonably practicable.

iii) Control access to all confined spaces, install and maintain physical locks to all confined space access points and display warning signs in prominent locations stipulating no unauthorised entry.

iv) Any new equipment and appliances requiring access for maintenance must not be installed in a confined space. The requirement to access confined spaces must be eliminated.

v) Priority must be given to avoid work inside a confined space through the design and use of alternative work methodologies such as the use of remote cameras for inspections. Where work in a confined space cannot be avoided, the operation must put in place a system of work that includes risk assessments, atmospheric monitoring, training, procedures, permits, PPE requirements, rescue and monitoring arrangements and equipment specifications which are recorded via a permit system.

vi) All potentially hazardous plant and services should be isolated prior to any person entering the confined space to prevent the following:

- Introduction of hazardous contaminants or conditions through piping, ducts, vents, drains, conveyors, service pipes and fire protection equipment.
- Activation or energising of machinery in the confined space.
- Activation of plant or services outside the confined space that could adversely affect the space (for example heating or refrigerating methods).
- Release of any stored or potential energy in plant.
- Inadvertent use of electrical equipment.

4.19.2 System of Work

i) Where any confined space is present there must be a physical barrier to prevent unauthorised access.

ii) Confined space entry must only be utilised when all other practical and safer alternatives have been exhausted. All work in confined spaces must be conducted by personnel who have current training in confined spaces, including atmospheric monitoring and the use of the safety equipment needed to conduct the required task.

iii) The confined space procedure and confined space entry permit must be strictly implemented by a trained person with the required competencies and followed to effectively control any planned confined space work. Permits are to be valid for a maximum of one shift and require the following precautions to be checked and confirmed as in place before works commence:

- Appropriate measures to control entry and exit and which account for each person entering or leaving the space.
- Atmospheric monitoring and rescue equipment appropriate for the situation and that is in good working order.
- A person with the required competencies remaining on watch always when any person remains in a confined space to raise the alarm and aid if needed and only if safe to do so.
- On completion of the works a process is in place ensuring the confined space is closed, secured and the permit is signed off and closed-out by the issuer.

ii) All works which are planned within the immediate vicinity and/or which have the potential to contaminate the air within the confined space are to be added to the risk assessment of the confined task. (e.g. carbon monoxide emissions from a heavy traffic area beside the confined space).

iii) The weather for the day and duration needs to be considered during the risk assessment. (i.e. Wind - dust/other contaminants, Rain - water entering effect on emergency response etc).

iv) The weather and its duration must be considered during the risk assessment. (e.g. flooding of the space from upstream rainfall; and dust/other contaminants from wind.

Risk Event Mitigating Controls and Performance Standards

4.19.3 Emergency Response

i) First aid and rescue procedures must be implemented in an emergency. Workers must routinely practice rescue procedures to confirm they are efficient and effective. First aid and rescue procedures must be initiated from outside the confined space as soon as practicable in an emergency.

ii) Openings for entry and exit must be sized to allow emergency access, must not be obstructed, and any plant, equipment, personal protective equipment (PPE) provided for first aid or emergency rescue must be maintained in good working order and be nearby and readily accessible to the works.

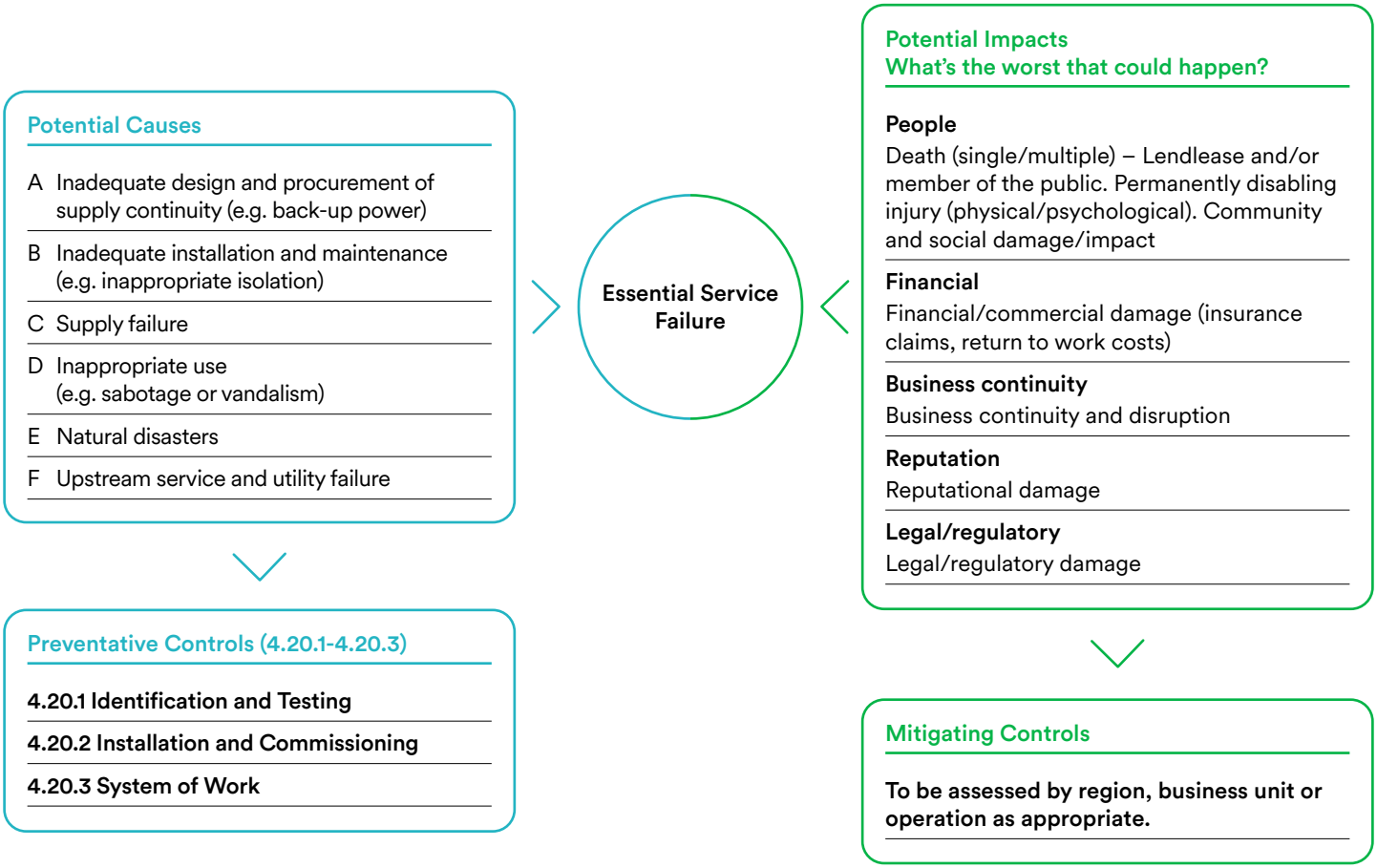
iii) When establishing emergency procedures, the following factors must be considered to manage risks associated with confined spaces:

- Whether the work can be carried out without entering the confined space because of the nature of the confined space any changes in hazards associated with the concentration of oxygen or the concentration of airborne contaminants in the confined space.
- Any changes in hazards associated with the concentration of oxygen or other airborne contaminants within the confined space.
- The work to be carried out in the confined space, the range of methods by which the work can be carried out and the proposed method of work.
- The type of emergency and rescue procedures required.

4.20 ESSENTIAL SERVICE FAILURE

Description

These critical controls apply to both essential services in operating assets and where essential services are required for ongoing construction operations and interruption could lead to fatal outcomes. It is not intended to apply to circumstances where the consequence of interruption to the essential service results in business continuity or reputational disruption only.



Risk Event Preventative Controls and Performance Standards

4.20.1 Identification and Testing

i) All services that could pose a risk to life in the event of failure (e.g. electricity in hospitals and emergency lighting in offices, fire detection systems in a building, fire suppression systems (dousing) in a hanger or a commercial kitchen) must be assessed and a back-up plan developed. An assessment of the type of facility must be conducted to consider what is an essential life service. Back-up systems (e.g. diesel generators) must be designed and installed for critical/essential services.

ii) Before acquiring an asset, identify all essential services and back-up systems and verify their current condition and reliability. Where no records are available, or they are incomplete, project lead for the transaction should perform testing to ascertain the reliability of the system during the Due Diligence period. If the system is proven to be unreliable and warrants replacement, recommendations shall be highlighted so that a plan can be developed inclusive of the cost considerations for the transaction.

iii) Maintenance and testing programs must be in place for all essential services and that the back-up system(s) is suitable, including periodic third-party inspection and examination.

4.20.2 Installation and Commissioning

i) Procure only from suppliers who can demonstrate a positive EH&S performance record for installation and commissioning of the type of system required.

ii) The design of essential service systems must be in accordance local legislative requirements. Where required, they must be subjected to 3rd Party reviews.

iii) Essential service systems are installed as per their design and engineering. There must be a suitable quality plan that includes how staff are to be adequately trained to operate the system in the event alarms/warning system for failure, or in the event of an actual failure.

4.20.3 System of Work

i) Manage the safety of maintenance and testing of essential services by following the controls specified in alignment with GMR 4.4 uncontrolled release of electrical energy and 4.15 uncontrolled release of stored energy (non-electrical). Such maintenance and testing protocols must be in compliance with local legislative requirements.

Risk Event Mitigating Controls

To be assessed by region, business unit or operation as appropriate.

BUILDING INFORMATION MODELLING (BIM) REQUIREMENTS

The Project is to be fully designed using Building Information Modelling (BIM) and it will require the Subcontractors to fully participate with the Employer in achieving that objective. The Trade Contractors will be required to provide the necessary skills and resources to be able to cooperate fully with the Project Team in using a fully integrated collaborative project model for design, but also in connection with creating a model for the future running and management of the buildings forming part of the Project.

BASELINE PERSONAL SECURITY STANDARD (BPSS) REQUIREMENTS

Please note that there is a minimum of Ministry of Defence (MOD) Baseline Personal Security Standard (BPSS) required for this work package. This will need to be evidenced within 4 (four) weeks of the return of the Expression of Interest documentation.