FATAL AND SEVERE RISKS CRITICAL CONTROLS

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CONTENTS

INTRODUCTION

The Fatal and Severe Risks Control Standard (this document) plays a crucial role in the Laing O'Rourke Health, Safety and Environmental Management System (HSEMS). The Fatal and Severe Risks (FSR) and Severe Environmental Risks (SER) provide clarity on our expectations and clear guidance on how to control high consequence risk across all workplaces where Laing O'Rourke Australia operates. The standard applies to all personnel, supply chain partners and visitors involved in Laing O'Rourke related activities, including where we partner with other organisations to deliver works.

At Laing O'Rourke we have identified a number of Safety and Environmental risks that we believe would have significant consequence if not managed appropriately. For each FSR and SER there are a number of mandatory controls that describe the minimum requirements that must be in place and demonstrated to be working effectively to manage the risk. The controls in the FSRs and SERs are supported by Primary Standards within our HSEMS. The FSR Controls Standard is reviewed at a minimum of six monthly intervals to ensure it incorporates important lessons events, changes to overall scope of work and consultation.

FSRs and SERs apply across the entire lifecycle of a Laing O'Rourke project. As such, personnel across the life cycle of a project are required to establish suitable methods to plan, assess, check and review the management of high consequence risks utilising this FSR Controls Standard.

The controls are split into two categories – critical controls and standard controls – each requiring different actions.

Critical Controls

Critical Controls are mandatory and must be in place for the effective management of the associated FSR and SER. These are controls whose failure would potentially trigger a significant event.

The FSR Assessment Tool is used to plan for the implementation of Critical Controls as well as determining whether they are in place (also known as a FSR Review). Criteria for each Critical Control are included within the FSR Assessment Tool. All criteria must be met and in place for a Critical Control to be considered as working effectively.

An FSR Review should be repeated a number of times across the lifecycle of a project (i.e. work winning, design, procurement, delivery and maintenance) as well as within each phase.

Go / No Go

Our FSR tools have 3 options to choose from when completing the control description questions, they are "Go", "No Go" and "No Go Immediate Rectification". "Go" meaning Critical Controls are verified as resourced or in place and working effectively.

Where Critical Controls cannot be verified as resourced or in place and working effectively, the activity is considered "No Go" and is not to commence or is to cease immediately. The activity may only restart when the required Critical Control is resourced or verified as effectively implemented. The "No Go" finding is to be shared across the site so that a review of associated activities can be conducted to ensure the required Critical Controls are in place.

If the identified critical control gaps can be immediately rectified during the check and verified as effective, then it is recorded as a "No Go" using "No Go Immediate Rectification".

Recording the outcome and evidence of your assessment findings allows the business to identify innovation, trends and opportunities for improvement. We can confirm when we have a control well understood and actioned, or when we may need to do a review to identify an improved way to manage the risk such as an engineering control.

Standard Controls

Standard Controls (also known as local controls) are mandatory and support the Critical Controls, providing a measure of compliance with the relevant Primary Standards. In assessing Standard Controls, sites will determine if the controls are in place and working effectively. Where a Standard Control is not in place, a corrective action is to be developed and implemented for future assessment.

Primary Standard

For each FSR and SER a primary standard is provided to communicate to all staff, workers, Clients and supply chain partners requirements to manage risks to eliminate or minimise risk of fatalities, injuries and events arising at Laing O'Rourke workplaces.

The primary standard documents the critical controls, standard controls, roles & responsibilities, additional information, regulation, codes, standards, forms and templates to manage the specific risk.

Application

The Fatal and Severe Risk Controls identified in this document are to be used across the life cycle of a project.

Risk Management

When assessing and managing risk and applying the hierarchy of controls, elimination of high consequence risk should be the first priority. Where elimination is not feasible the operation must consider the Critical Controls throughout all aspects of the risk management cycle.

Workplaces must demonstrate how FSRs and SERs have been considered and planned for in:

- Work Winning/Tendering methodologies
- Safety in Design and Constructability Reviews
- Project/Workplace Risk Assessments with reference to the program and scope of works
- Methodologies and/or Work Packs
- Safe Work Method Statements

FSR Assessment Tool

The FSR Assessment Tool includes all the critical and standard controls as well as the defined criteria that is used in planning for the activity to ensure all controls are to be implemented prior to works commencing and for review of effective implementation of controls. As required, the criteria must be clearly defined for the local conditions of the workplace (i.e. made site specific).

Controls consist of several activities which provide a safe system which detail planning, equipment and people required of the task. These activities occur both in the office and in the field (work site). The assessment tool has been detailed into two sections to enable reviews of these activities to implement the controls:

1. System reviews i.e. office-based review of the controls
2. Field reviews of the controls

When developing work packs and methodologies, in consultation with applicable contractors, those planning the works will review the planned works using the FSR Assessment Tool. Where No Go's are identified in the planning phase, work will not commence until rectified. Where all critical controls are assessed as Go, the works will be approved to commence as planned.

Risk Review

The FSR Assessment Tool is also used to conduct FSR Reviews at the commencement of and during the execution of high risk work activities. The frequency of FSR Reviews should be established at the workplace based on the forecasted risks for the coming period.

During high risk working activities Critical Controls must be reviewed as part of Leadership Engagement visits and by those supervising the work. This is to ensure that all identified criteria are in place and working effectively to manage FSRs and SERs.

Where Critical Controls have been identified and assessed as not working effectively, the activity is considered "No Go" and is to cease immediately. The activity may only restart when the required Critical Control is effectively implemented.

System and Field Checks

The assessment and implementation of Critical and Standard controls is separated into System and Field checks. System checks are a desk top review on controls that should be completed at the planning stage, or before the work is undertaken. Field checks are field verifications to confirm that the control has been implemented as required by the FSR. The monitoring frequency will be defined by the Project 30 ,60, 90 Day Risk Management process. Where No-Go's are identified works must cease until the deficiencies are rectified.

Continuous Improvement

The results of FSR and SER Reviews are electronically recorded within the Intelex Management System. The reviews are conducted in a standardised format throughout the Australia Hub. This allow for workplaces and the Hub to interrogate, review and target areas for improvement.

Workplace teams should ensure that results of FSR and SER Reviews are regularly reviewed and that improvements are identified and communicated. Results are also reviewed at a Hub level to ensure that all identified criteria are in place and working effectively to manage the FSRs and SERs. They are also reviewed to ensure that the company is learning and continually improving to excel in the management of high consequence risk.

FSR EXCAVATION

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from excavations

CONTROLS

Critical Controls

- Temporary works associated with excavations are effectively managed.
- A permit to manage excavations is in place.
- The location, depth and/or height of services is positively identified prior to works commencing.
- Excavations are controlled to effectively manage temporary works, access, egress, stability and traffic interactions.
- Shoring and benching/battering are in place as per the geotechnical design.
- Handover/interface with following trades is effectively managed.
- Backfill of excavation are effectively managed.

Standard Controls

- Condition inspections of service and structures.

Primary Standard References

- PS Excavations.
- PS Utilities and Services.
- PS Permit to work.

FSR
PLANT AND EQUIPMENT

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from the interaction of plant, equipment, vehicles and people.

CONTROLS

Critical Controls

- Temporary works, stability and ground bearing pressure are verified for plant set up operation and completed access routes for heavy plant and materials.
- Plant is inspected before mobilisation and before use.
- Operators are verified as competent for the specific item of plant.
- Plant and people are separated, defined exclusion zones are maintained, and entry to work areas is controlled.
- Safe access for pedestrian movements.
- A Vehicle Movement Plan or equivalent is in place.
- Heavy vehicles and light vehicles are segregated wherever possible.
- Rules are established and enacted for plant following plant or overtaking manoeuvres.
- Dedicated refuelling and servicing rules and locations are established.
- Plant and vehicles are parked in a fundamentally stable condition where there is a possibility of run away.

Standard Controls

- Loading/offloading and Chain of Responsibility activities are planned and monitored.
- Plant is maintained and serviced as required in accordance with Original Equipment Manufacturer (OEM) maintenance schedules.
- The site perimeter is secured and access is controlled against unauthorised entry.
- Light Vehicles are fit for purpose for site requirements.

Primary Standard References

- PS Plant and equipment.
- PS Rail operations.
- PS Traffic management.
- PS Site establishment and logistics.

FSR
CRANES AND LIFTING

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from the use of cranes and lifting equipment.

CONTROLS

Critical Controls

- A crane appointed person is in place.
- A crane supervisor is appointed.
- A crane lift plan in place.
- Temporary works, stability and ground bearing pressure and verified for crane use (including suspended slabs / floors).
- Coordination arrangements are in place to effectively manage multiple crane operations.
- Cranes and lifting equipment inspected and certified before mobilisation and use.
- Soft slings are not in use.
- Personnel involved in lifting operations are trained and competent.
- Lifting operations are effectively managed.
- Plant is operated in a safe manner.
- Lifting gear is certified and fit for use.
- A tower crane anti-collision system is operational where there is radius overlap.

Standard Controls

- Earthmoving equipment is used as a crane only under the following conditions (as per criteria).

Primary Standard References

PS Cranes and lifting.

FSR
WORKING AT HEIGHTS

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from working at height and using elevated work platforms. Working at Heights is defined as works where the requirement exists to wear a fall arrest/restraint harness.

CONTROLS

Critical Controls

- Working-at-heights activities are identified at the work planning stage.
- Ground conditions are assessed for EWP operations.
- Fall and edge protection equipment is fit for use.
- EWP (including scissor lift) operators are verified as competent for specific items of plant.
- Personnel working at heights are trained and competent.
- A Working at Heights Permit is in place when there is a likelihood of a fall and risk of harm to personnel.
- Controls such as lanyards, screens and barriers are in place to prevent and manage dropped objects.
- Working at Heights Exclusion and Drop Zones such as physical barriers, barricading and lockouts to prevent entry by persons are installed directly beneath and immediately adjacent to areas where work is occurring above.
- Permit to Work in place to manage removal of permanent guardrails and grid mesh.
- Operation of plant used for work at heights is effectively managed i.e. EWP, scissor lift, mast climbers, swing stage etc.
- A rescue plan for working at heights is in place and resources are available.
- Anchor points and barriers used during working at heights are fit for purpose.
- Penetrations are effectively managed.

Standard Controls

- Safe access is in place to working at height areas.

Primary Standard References

- PS Working at heights.
- PS Plant and equipment.
- PS Permit to work.

FSR
SCAFFOLDING

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from erecting, altering, dismantling and using scaffolding.

CONTROLS

Critical Controls

- Engineer certified design drawings are available for scaffolding with risk of fall over 4 metres in height or of a complex nature.
- Temporary works associated with scaffolding is effectively managed.
- Scaffolding is erected / altered / dismantled by trained and competent (and licensed where required) personnel.
- Changes in design are documented and approved by the certifying engineer.
- Protection in place around scaffolding.
- All required guardrails are in place during erection and dismantling in accordance with the 1m lift requirement.
- Incomplete scaffolding is controlled and entry prohibited.
- Controls in place to manage dropped objects.
- Formal periodic inspections are carried out by certified scaffolders or qualified persons.

Standard Controls

- A scaffolding handover certificate is produced for all installations and alterations.

Primary Standard References

- PS Scaffolding.

FSR
PLANT AND EQUIPMENT ISOLATIONS AND LOCKOUTS

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from energised plant at installation, testing, commissioning, and decommissioning phases of operation.

CONTROLS

Critical Controls

- All potential harmful energy sources requiring isolation and appropriate isolation methods are identified by competent persons.
- Isolation (LOTO) training and competency system in place.
- Isolation procedures are specific to the needs of the worksite, as determined by the risk assessment.
- Roles are appointed – Authorised Isolator, Permit Issuer and Permit Holder.
- Unless tested for dead, all wires and equipment are to be considered and treated as live.
- Isolation permits are in place.
- Isolation integrity includes physical try test (check for dead).
- Restricted Access Control is in place where equipment cannot be fully isolated to zero energy.
- Isolations are in place for servicing and maintenance work.

Standard Controls

- Suitable isolation devices, locks and equipment are readily available.
- System in place to manage complex isolations and commission activities.

Primary Standard References

- PS Plant and equipment isolations and lockouts.
- PS Permit to work.
- General electrical.

FSR
GENERAL ELECTRICAL SAFETY

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from onsite electrical installations and the use of electrical equipment.

CONTROLS

Critical Controls

- Personnel undertaking electrical work are trained and competent.
- Temporary electrical works are compliant to Australian Standards.
- Work in and around electrical infrastructure is effectively managed.
- Current electrical drawings and electrical system data are readily available.
- Unless tested for dead, all wires and equipment are to be considered and treated as live.
- All circuits and powered equipment have RCD protection.
- Switchboards are compliant and secured.
- All energy sources are clearly identified and marked.
- Live cabling is protected from mechanical damage.
- Generators and welders are correctly earthed and staked as per the OEM manual.

Standard Controls

- Access egress and equipment lighting meets Australian Standards.
- Access to Switch rooms are controlled effectively.
- Electrical works are managed effectively.

Primary Standard References

- PS General electrical safety.
- PS Permit to work.

FSR
CONFINED SPACES

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from work in confined spaces.

CONTROLS

Critical Controls

- A specific risk assessment is conducted for each confined space by competent persons.
- Workers, stand-by person and supervisors are appropriately trained, certified and competent.
- Entry controlled by a permit system.
- A stand-by person is in place at all times when there are people inside a confined space.
- Air monitoring program is in place.
- Emergency Plan in place.

Standard Controls

- N/A

Primary Standard References

- PS Confined spaces.
- PS Permit to work.
- PS Utilities & Services

FSR
FORMWORK AND FALSEWORK

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from erection and dismantling of formwork and falsework.

CONTROLS

Critical Controls

- Formwork and falsework design is completed and managed via temporary works system.
- Engineer inspection is completed prior to placing concrete and any discrepancies addressed.
- Slip and jump form design is completed and managed via temporary work system
- Formwork screen systems selected and designed to prevent persons and objects falling
- Safe placement of concrete.
- Safe erection and stripping.

Standard Controls

- Works are erected in accordance with all relevant drawings and specifications.
- Formwork and falsework materials are in sound condition.

Primary Standard References

- PS Formwork and falsework.

FSR DEMOLITION

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from demolition work.

CONTROLS

Critical Controls

- The demolition methodology is verified.
- Hazardous materials assessment is undertaken prior to work commencing.
- Asbestos is identified and removed by a licensed asbestos contractor prior to demolition commencing.
- Trained and competent personnel plan and undertake the works.
- Engineer's sequence and temporary works required for the demolition is understood, followed and monitored.
- All services identified for removal are disconnected prior to works commencing.
- Exclusion zones established.

Standard Controls

- A Demolition Management Plan is developed to AS 2601 and communicated.
- A licensed demolition contractor is engaged and has the correct licence.
- Demolition notification is submitted to the regulator as required.
- Monitoring devices are installed where required – dust, noise and vibration.

Primary Standard References

- PS General electrical safety.
- PS Demolition.
- PS Asbestos.

FSR ASBESTOS

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from the management, removal and disposal of asbestos.

CONTROLS

Critical Controls

- Where asbestos or ACM is likely to be or has been identified, an Asbestos Management Plan is developed, communicated and regularly reviewed.
- Trained and competent personnel (licensed asbestos removers and company).
- Health monitoring is undertaken for workers carrying out asbestos work.
- Air monitoring compliance.
- All types of asbestos and asbestos containing material (ACM) is identified on a register.
- Safe removal and disposal of asbestos material.
- Asbestos removal work is undertaken in accordance with the Asbestos Management Plan.
- Appropriate decontamination facilities are available and material is decontaminated or sealed before removal.

Standard Controls

- N/A

Primary Standard References

- PS Asbestos.
- PS Permit to work.

FSR
PRECAST AND TILT-UP CONCRETE

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from precast and tilt up concrete work.

CONTROLS

Critical Controls

- There is a certified design for precast and tilt-up concrete.
- Safe storage and erection system.
- An approved stripping methodology is available.
- Changes to panel and support system design are approved by the designer.
- The lifting clutch is compatible with the cast-in lifting point.
- Exclusion zones are in place during erection.
- Precast elements stored safely prior to installation.
- Safe installation of precast.

Standard Controls

- Safe installation of concrete elements.
- Inspection program in place to monitor panel support systems and temporary barriers.

Primary Standard References

- PS Precast and tilt-up concrete.

FSR
WORK IN, OVER OR ADJACENT TO WATER

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from work over or adjacent to water and diving work.

CONTROLS

Critical Controls

- Temporary works associated with works adjacent to or over water are effectively managed.
- Personnel are trained and competent and where required, licensed for diving work and vessel operation (e.g. boatswain's or coxswain's qualifications).
- Emergency plans and equipment in place.
- Risk of falling into water is managed.
- Vessel management.
- Personal flotation devices are worn over or adjacent to water.

Standard Controls

- Approved life buoys and lifelines are secured and correctly positioned.
- Dive safety logs are kept for each dive.

Primary Standard References

- PS Work over water.

FSR
RAIL OPERATIONS

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from rail operations.

CONTROLS

Critical Controls

- Safe working systems applied to protect personnel and plant.
- Work site delineation planned to protect workers from other railway operations of impact.
- Safe systems of work applied when plant and personnel required to work in electrified area or close to services.
- All rolling stock to be operated to the network/owners operators standards.
- Personnel are fit for work.
- Rail personnel are verified as competent.
- Communication methods in place.
- Track conditions are fit for purpose.

Standard Controls

- N/A

Primary Standard References

- PS Rail operations.
- PS Fitness for work.

FSR
TRAFFIC MANAGEMENT

INTENT: To eliminate or minimise the risk of fatalities, injuries and events arising from working in close proximity to passing traffic and other road users.

CONTROLS

Critical Controls

- Planning of works must apply the hierarchy of controls and seek to eliminate the interface between people and live traffic flows.
- All licences and approval are in place with Asset Owner.
- A competent traffic management representative is appointed to oversee the application of the traffic controls.
- Traffic management plan(s) is approved, implemented and monitored by competent traffic management personnel.
- Traffic work zones are to be risk assessed and work zones are isolated with approved safety barrier treatment.
- Traffic controllers must be trained and competent and hold the correct ticket or licence.
- Designed construction access points are provided and managed to prevent risk to workers or road users.
- Where appropriate and road conditions can house automatic and remote devices, then traffic controllers must be replaced.
- Physical protection and safe escape routes are in place for traffic control personnel interacting with live traffic.
- Traffic control, including signage and devices are in place to effectively warn, inform and guide road users.
- The use of electronic signage is applied.

Standard Controls

- N/A

Primary Standard References

- PS Traffic management.

FSR
PILING

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from piling operations.

CONTROLS

Critical Controls

- Certified piling platform is in place, suitable for equipment being used.
- For working on water, a barge stability report has prepared.
- Lifting operations effectively managed.
- Working Platform Certificate (WPC) is in place prior to work commencing. The WPC ensures that the piling platform is designed by a competent person.
- When working on water, barge stability report is available to review.
- Where required, a current manbox and or working-at- heights permit is in place.
- Current permit to manage excavations in place, services identified, and available for review.
- Plant and people are separated, defined exclusion zones are maintained, and entry to work areas is controlled.
- Controls such as tool lanyards, barricading and signage in place to prevent and manage the risk of dropped objects where works are occurring above or adjacent.
- Changes of process, equipment, temporary and permanent works design re-assessed by competent persons with controls in place and understood by the work crew.
- Plant and/or equipment to be used must conform with Laing O'Rourke's Plant and Equipment Minimum Standard.
- Regular inspections are completed and recorded on a Temporary Work Control Register determined by the appointed Temporary Work Coordinator.

Standard Controls

- N/A

Primary Standard References

- PS Excavations.
- PS Utilities and Services.
- PS Plant and equipment.
- PS Cranes and lifting.
- PS Working at heights.
- PS General electrical safety.
- PS Work over water.
- PS Piling.

FSR
UTILITIES AND SERVICES

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from underground and overhead services.

CONTROLS

Critical Controls

- A permit to manage utilities and services is in place.
- Services are positively identified, and delineated, with exclusion zones prior to works commencing.
- Temporary works associated with utilities and services are effectively managed.
- Live services are isolated where required (e.g. electricity, gas, fire, water, etc.).
- Work near utilities and services are effectively controlled.
- Relevant Asset Owner or Network Operator requirements are known.

Primary Standard References

PS Excavations.

PS Plant and equipment.

PS Cranes and lifting.

PS Working at heights.

PS General electrical safety.

FSR
CHAIN OF RESPONSIBILITY

INTENT: To eliminate or minimise the risks of fatalities, injuries and events arising from transport tasks (Logistics) at Laing O'Rourke worksites.

CONTROLS

Critical Controls

- CoR Risk Assessment conducted and included in Project or Supply Chain Project Risk Assessment.
- CoR Safe Systems of Work developed and implemented (e.g. Plans, Procedures, SWMS, Work Instructions - Site or Supply Chain developed).
- Assurance and reporting activities are implemented and monitored.
- Roles and responsibilities are defined and communicated.
- Training needs analysed and training conducted.
- CoR requirements communicated.
- Vehicles speeds are monitored and reviewed for compliance.
- Operators fatigue is being managed (over 11 seats including driver or > greater than 12 T) consistent with the site fatigue management requirements.
- Load mass and dimensions within vehicles combination limits.
- Load restraint is effective and adequate for the load being transported. Minimum compliance 2018 National Transport Commission Load Restraint-(NTC LR) Guide.
- Vehicles are road worthy (defect free and maintenance current).

Standard Controls

- CoR requirements communicated.
- Suitable provisions are available for drivers to manage adequate breaks.

Primary Standard References

- PS Site Establishment.
- PS Logistics.
- PS Plant and equipment.

SEVERE ENVIRONMENTAL RISKS (SER)

Laing O'Rourke has identified a number of Severe Environmental Risks (SER). A SER is an activity if not managed effectively, severe environmental impacts could eventuate, resulting in permanent or long-term damage to the environment that is not easily rectified. They would substantially alter the receiving environment and result in a significant impact on the project's and Laing O'Rourke's environmental policy and objectives.

Each SER provides clear guidance on the requirements and control measures that when implemented are intended to manage these risks. They describe the critical controls that must be in place, demonstrated and working effectively such that severe environmental impacts are prevented.

The SERs identified by Laing O'Rourke are:

- SER Biodiversity
- SER Air Quality and Dust
- SER Biosecurity
- SER Contamination Management
- SER Cultural and European Heritage
- SER Dangerous Goods Chemical Management
- SER Erosion and Sediment Control
- SER Groundwater Dewatering
- SER Groundwater Management
- SER Noise and Vibration
- SER Spoil and Waste Management
- SER Surface Water Management
- SER Temporary Waterway Structures

The SERs are available on the Laing O'Rourke HSEMS website at **lorhsems.com/environmental_category/severe-environmental-risks-sers/**

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