

## Contents

<b>1.</b>	<b>Introduction.....</b>	<b>2</b>
1.1	Purpose .....	2
<b>2.</b>	<b>Definitions .....</b>	<b>2</b>
<b>3.</b>	<b>Safety In Design Legislation .....</b>	<b>4</b>
<b>4.</b>	<b>SAFETY Framework.....</b>	<b>4</b>
4.1	Next Gear.....	4
4.2	Safety Management System .....	5
4.2.1	Fatal and Severe Risk Control Standard.....	5
4.2.2	System Requirements .....	5
4.2.3	Primary Standards .....	5
<b>5.</b>	<b>Laing O'Rourke's Safety in Design System.....</b>	<b>5</b>
5.1	Roles, Responsibilities and Competence .....	6
5.1.1	5.1.1 Key Roles and Duties.....	6
5.1.2	Competence Standards .....	8
5.2	Safety in Design Process Overview .....	9
5.2.1	Safety in Design Risk Assessment Process.....	9
5.2.2	Establish the context.....	10
5.2.3	Identify and Assess risks .....	10
5.2.4	Mitigate and Control Risks.....	10
5.2.5	Communicating Safety in Design Information.....	11
5.2.6	Consultation Obligations .....	12
5.2.7	Guidance on Risk Treatment .....	13
5.3	Safety in Design and the Project Lifecycle.....	13
5.4	Review and Audit .....	14
5.4.1	SiD Workplace Inspections .....	14
5.4.2	Consultant SiD Performance .....	14
5.4.3	Assessment, Audits and Phase Reviews .....	14
5.4.4	Other Standards .....	14
5.4.5	SMS References Applicable .....	14
	APPENDIX A - SAFETY IN DESIGN PROCESS FLOW CHART (Design Phase) .....	15
	APPENDIX B - SAFETY IN DESIGN (SiD) REGISTER TEMPLATE.....	16
	APPENDIX C - GUIDANCE ON FATAL AND SEVERE RISK (FSR) TREATMENT .....	17



# 1. Introduction

Laing O'Rourke is committed to achieving the highest possible standards on its projects to deliver value and certainty for our clients. In order to do this effectively, it is of paramount importance that our supply chain partners fully support and commit to the same aims and objectives. We believe that through working closely with our supply chain, and jointly focussing on common objectives, we can achieve measurable and sustainable improvement in performance.

Among our partners, suppliers and collaborators, Designers and Consultants have an unparalleled influence on the technical performance of our projects. Accordingly, Laing O'Rourke is committed to working closely with them to ensure our projects are safe to construct, operate, maintain, decommission, demolish and dispose.

## 1.1 Purpose

This Guideline introduces our Safety in Design (SiD) system with the aim to assist Designers and Consultants to understand our expectations in respect of the associated processes.

This guideline highlights our approach to Safety in Design, as well as identify those responsibilities that will be managed by Designers and Consultants.

The contents apply to both our internal engineering teams, externally engaged Designers and Consultants, and any subcontractor who is responsible for design.

This document is to be applied in conjunction with:

- Design Management Plan, if applicable to describe the methods, responsibilities and tools that will be used to ensure that the design efficiently fulfils the project objectives; and
- SiD Action Plan, which details how SiD will be undertaken across program and scope of individual's project

This document serves as a subordinate to support other requirements contained in legislation, Code of Practice, the Project Health and Safety Plan or contract documents.

Laing O'Rourke requires each of its Designers and Consultants to be issued this document and comply with the SiD system prescribed. Where Designers and Consultants have their own SiD process, this may only be used with written agreement from Laing O'Rourke.

## 2. Definitions

Act: The Work Health and Safety Act as implemented in the relevant State or Territory (or Country).

As Low As Reasonably Practicable (ALARP): A risk management objective widely adopted in safety management systems by organisations across industries worldwide. It is a principle that assures no risk in the 'Tolerability Region', a region of risk between broadly acceptable and unacceptable, can be accepted unless reduced to as low as reasonably practicable. It is a common practice to demonstrate compliance with legal criteria for acceptable risk.

Designers and Consultants: A person conducting a business or undertaking (PCBU) whose profession, trade, business or agency involves them in expert or professional services that include but are not necessarily limited to the following fields:- architecture, engineering, planning, management, development, safety, access and certification, including managers of these services.

Commissioner of Design: The PCBU who commissions a design, which can be a Client, Principal Contractor, Consultant, or essentially another PCBU who requests, requires, asks for the design to be completed. Depending on the form of contract, this may be Laing O'Rourke.

Contractor: Reference to 'contractor' within this document shall, where relevant, be construed to mean any Subcontractor.



Design: In relation to plant or structure will include:

- Design of part of the plant or structure
- Redesign or modification of a design

Fatal & Severe Risk (FSR): an activity that is considered to have high consequences to people if not managed appropriately.

Hazard: A source of potential harm or a situation with the potential to cause loss.

Hierarchy of Control: A range of hazard control methods arranged in order of implementation preference, ranked from highest level of protection and reliability to the lowest.

The hierarchy of control model is as follows:

- Eliminate
- Substitute
- Isolate
- Engineering
- Administrative
- Personal Protective Equipment

Laing O'Rourke: References within this document will include all Laing O'Rourke Group Companies including but are not necessarily limited to: Select, Austrak, and Laing O'Rourke Australia Construction.

Central Engineering: Laing O'Rourke's internal design team.

Persons Conducting Business or Undertaking (PCBU): A person conducts a business or undertaking:

- Whether the person conducts the business or undertaking alone or with others.
- Whether or not the business or undertaking is conducted for profit or gain.

This includes a business or undertaking by a partnership or an unincorporated association.

Reasonably Practicable: Deciding what is 'reasonably practicable' requires taking into account and assessing all relevant matters including:

- Likelihood of the hazard or the risk occurring.
- Degree of harm that might result from the hazard or the risk.
- Knowledge about the hazard or risk, and ways of eliminating or minimising the risk.
- Availability and suitability of ways to eliminate or minimise the risk.
- Costs associated with eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

Reference is made in the legislation to risks being reduced to as low as reasonably practicable (ALARP).

Risk: This is the chance that either an expected outcome will not be achieved, or that an unforeseen event will occur. It is measured in terms of consequences and likelihood.

Safety in Design (SiD): The integration of control measures early in the design process to eliminate or, if this is not reasonably practicable, minimise 'as low as reasonably practicable', risks to health and safety throughout the life of the plant or structures being designed.

So Far As Is Reasonably Practicable (SFAIRP) is a legal approach processed by the courts in Australia, depending on the jurisdictions and laws of individual states, to assess whether or not a duty holder



adequately performs his or her duty of care to eliminate, or where not practicable, to minimise risk to ensure health and safety of a person.

### 3. Safety In Design Legislation

Laing O'Rourke's SiD procedures address the requirements of the harmonised Work Health and Safety Act 2011 and its Regulations 2011. These procedures are applicable across all Laing O'Rourke jurisdictions throughout the Australian Hub.

Designers and Consultants must also take into consideration relevant local legislation in respect of their SiD Obligations.

Additionally, Safe Work Australia has established a Code of Practice titled 'Safe Design of Building and Structures'. This document should be referenced for principles of Safe Design.

Designers' and Consultants' key obligations under the harmonised Work Health and Safety Act 2011 include a duty to:

- Identify health and safety risks in relation to their design through consultation across the entire life of the plant or structures being designed.
- Manage hazards through the implementation of a systematic risk management process, utilising the hierarchy of control model in order to mitigate the health and safety risks associated with the design to ALARP.
- Maintain control measures.
- Review control measures through consultation.
- Communicate SiD information to all parties who interact with the design.

So far as is reasonably practicable, all PCBUs have a legal duty to ensure employees, other workers and other persons (including the public) are not exposed to health and safety risks arising from the business or undertaking.

Similarly, a PCBU that designs plant or structure must ensure that the plant or structure is designed to be without risk to the health and safety of various persons, who would carry out reasonably foreseeable tasks in relation to the design or are exposed to health and safety risks arising from that design.

Although some States have not yet signed the harmonised legislation, the Laing O'Rourke SiD System applies across all jurisdictions to ensure consistency throughout the regions in which Laing O'Rourke operates.

WA is currently governed by the Occupational Health and Safety Act 1984 but is expected to harmonise with the national legislation. Victoria has indicated their intention to manage their SiD requirements under the Occupational Health and Safety Act 2004.

In addition there are Acts that cover specific industries and states, such as the Rail Safety Act NSW 2008, and the Mines Safety and Inspection Act WA 1994. As such, Designers and Consultants must take into consideration relevant local legislation in respect of their SiD obligations.

## 4. SAFETY Framework

### 4.1 Next Gear

A FORWARD THINKING APPROACH TO SAFETY

Next Gear is our agenda that builds safety resilience into the organisation, founded on engagement and trust. Where we place our people at the heart of safety decision making and where safety performance focusses on understanding success and the many things that go right.



Next Gear challenges us to move beyond traditional safety practices and measures, by applying a framework described in the three principles:

1. People are the solution (as opposed to people are the problem).
2. Safety in the presence of positives (as opposed to safety is the absence of negatives).
3. Safety is an ethical responsibility (as opposed to safety is a bureaucratic activity).

These are supported through a number of tactics which bring the principles to life across our workplaces:

- (a) Focusing on high consequence risks
- (b) Investigating for success
- (c) Reducing bureaucracy and simplifying systems
- (d) Empowering our workforce through engagement and trust
- (e) Leadership that challenges traditional thinking.

## **4.2 Safety Management System**

Laing O'Rourke implements a Safety Management System (SMS) across all of its operations. The SMS comprises management plans, procedures and other documents that describe and control our activities with respect to safety. They are categorised into the following:

### **4.2.1 Fatal and Severe Risk Control Standard**

The Fatal and Severe Risks (FSR's) identified within the SMS provide clear guidance regarding the various minimum mandatory requirements that must be in place, demonstrated and working effectively with the intent of managing FSR's within our operations. It is an important element of the Laing O'Rourke Safety Management framework.

This is the primary document for our supply chain partners to be familiar with. This approach allows project teams to operate and make decisions within a more rigorous and straightforward framework, focussing attention away from some of the bureaucratic processes.

The Fatal and Severe Risk Control Standard is designed to be used at all stages of construction. Whilst it can be used as an audit tool after an activity to confirm the critical controls were in place, it is more important to use the tool throughout the other cycles of design, planning, procurement and delivery.

### **4.2.2 System Requirements**

Procedural controls monitor the performance and the application of the System Standards of the overall health and safety management system. This includes the Safety in Design system.

### **4.2.3 Primary Standards**

The primary standards are construction task-specific minimum requirements to ensure that the objectives of the System Requirements and standards are met. These documents detail requirements for design, as well as construction activity and a full list is provided in the SMS. All personnel, including Designers and Consultants, are to comply with the SMS, across all Laing O'Rourke projects.

Copies of System Requirements, Primary Standards and Elements will be provided by the SiD Coordinator or Design Leader, or are available on the SMS website (<https://nextgearsms.com/>).

## **5. Laing O'Rourke's Safety in Design System**

As part of the SMS, Laing O'Rourke deploys a specific SiD system on all projects to ensure that, so far as is reasonably practicable, employees, other workers and other persons (including the public) are not



exposed to health and safety risks arising from our business. The SiD system applies at any point where design is being undertaken or changes to design have occurred.

Laing O'Rourke trains its supervisors, engineers, commercial and procurement staff in the implementation of its SiD system to ensure that safety is considered during all phases of the project.

This includes the bid, design development, construction, operation, maintenance and demolition phases, with particular focus on design change, and its implications.

Designers can expect Laing O'Rourke personnel to be engaged and informed in relation to SiD activities. Specific SiD documents have been developed and implemented in support of our personnel, to capture and record useful information and details to assist.

In addition to this guideline, these key SiD documents are:

- Safety in Design Procedure
- SiD Action Plan Template
- SiD Register Template, and
- SiD Report Template

Procedures, guidelines and templates associated with the SiD process will be provided by the SiD Coordinator or Design Leader, as required. Training in this process can also be offered as needed.

## **5.1 Roles, Responsibilities and Competence**

Consultants, designers, constructors, suppliers and clients will be required to cooperate fully with the SiD Coordinator, Design Leaders and all other Designers and/or PCBUs as required by the Act and Regulation.

### **5.1.1 5.1.1 Key Roles and Duties**

The SiD system nominates a small number of key roles to be held by Laing O'Rourke, Designers and Consultants. Depending on the size and complexity of the project, these may be part-time or full-time appointments.

The key roles and responsibilities of those involved in the SiD process have been outlined below.

#### **5.1.1.1 Safety in Design Coordinator**

For each project, Laing O'Rourke will appoint a SiD Coordinator from within its team. They will be responsible for:

- Working with all internal and external design consultants to facilitate the implementation of SiD requirements.
- Confirming Laing O'Rourke's SiD Requirements to all PCBUs.
- Scheduling SiD meetings and workshops and distributing resultant correspondence from these meetings.
- Receiving and reviewing SiD reports, method statements and risk registers submitted by Designers and Consultants.
- Establishing, reviewing and updating, communicating and verifying signoff and completion of tasks in the SiD Register.

Laing O'Rourke's review of the project's SiD process and SiD documentation does not imply that Laing O'Rourke is accepting or becoming responsible for the claims, statements, calculations, analysis, testing or observations made within that documentation.



As such, the project SiD Coordinator is to ensure accuracy and compliance of SiD documentation remains with the provider.

The Appointment of SiD Coordinator template provides a complete list of the roles and responsibilities of this role. This can be provided through the SiD Coordinator for the projects.

#### 5.1.1.2 Designers and Consultants SiD Representative

Design consultants shall nominate a SiD Representative from within its project team to ensure its SiD obligations are fulfilled. If a designer operates across a number of disciplines, that firm may need to appoint a SiD Representative per discipline. The SiD Representative may have other roles in the design team.

Key consultant SiD obligations include:

- Ensuring risk management is conducted in relation to their design and SiD process is undertaken in accordance with Laing O'Rourke's minimum and relevant legislative requirements.
- Consulting with all relevant project stakeholders throughout the design development, including facilitating SiD meetings and workshops as necessary.
- Conducting risk management in regards to their design, including:
  - Carrying out or arranging the carrying out of any calculation, analysis, testing or examination that may be necessary.
  - Identifying health and safety risks in relation to their design through consultation.
  - Assessing these risks
  - Mitigating risks through the implementation of the Hierarchy of Control.
- Communicating to the relevant project stakeholders all SiD information in relation to their design.

Designers and consultants will provide any calculations, analysis, testing, or examination in relation to plant or structures, including any hazardous properties identified by testing.

They must also provide Laing O'Rourke with details of their verification plan, including a register of relevant calculations relating to their design and verification of their calculations.

#### 5.1.1.3 Laing O'Rourke Design Leader

The Laing O'Rourke's Design Leader of a project, amongst other duties towards safety in design, will be responsible for:

- Initiating the SiD process on a project by completing the Project SiD Action Plan.
- Ensuring the Action Plan is followed throughout the project.
- Communicating Laing O'Rourke's SiD requirements and ensuring all Designers and Consultants have been issued the 'Safety in Design – Designers and Consultants' guideline.
- Facilitating consultation between all relevant stakeholders of the project.
- Mentoring and supporting Designers and Consultants to ensure they are appropriately implementing the SiD Process.
- Managing the SiD process to ensure it is conducted in line with the iGMS.
- Ensuring that the recording and communication of SiD information to all relevant project stakeholders is managed.
- Importing Laing O'Rourke's SiD lessons learnt where relevant.



- Compiling a SiD handover package and communicate the projects SiD information to the construction team, owners, operators, users and maintainers.
- Communicating to all stakeholders their SiD responsibilities under Laing O'Rourke's SiD procedure.
- Managing the competency assessment and verification of personnel with SiD duties.
- Monitoring and reviewing SiD controls through consultation.
- Requesting Designers and Consultants to provide information confirming that calculations, analysis, testing or examination has been conducted and the results have been verified. Typical documentation that should be provided is a calculations register supported by the relevant Consultant's verification forms.
- Reviewing Designers and Consultants verification documentation regarding calculations, analysis, testing or examination in relation to plant or structures.
- Communicating to the relevant stakeholders all SiD information in relation to the project and the designs included within as supported by designers' and consultants' SiD details.

For most projects, the Design Leader will carry dual roles and be appointed as the SiD Coordinator and in such cases, will perform the duties described in 5.1.1.1 as well as those listed in 5.1.1.3.

In the absence of a project Design Leader, a nominated representative from Laing O'Rourke's delivery team shall be appointed SiD Co-ordinator to facilitate these duties.

#### 5.1.1.4 Suppliers, Manufacturers, Importers, Subcontractors

Suppliers, manufacturers, importers and subcontractors shall participate in consultation during the design development of a project.

Where a supplier or subcontractor is engaged under Design and Construct or Design and Supply arrangements, they will be required to nominate a SiD Representative and fulfil the responsibilities of a Designer through a SiD Representative, as described in 5.1.1.2.

#### 5.1.1.5 Construction Team Members

The Construction team members of a project shall take part in all activities to support SiD. They will be responsible for:

- Providing expert advice regarding construction methodology and hazards.
- Participating in consultation during the design development of a project.
- Implementing, monitoring and reviewing all assigned construction phase control measures.
- Ensuring that changes on site are managed through an official change process whereby any recommendations or proposals affecting the design are reviewed by the relevant designer responsible for that element of work.

Note: A person who alters or modifies a design without consulting the original or subsequent Designer will assume the duties of a Designer, regardless of whether their role in the project is specifically identified as a design role.

### 5.1.2 **Competence Standards**

#### 5.1.2.1 Knowledge and Capability

Laing O'Rourke seeks to ensure that all people working on our projects are competent to carry out their particular duties and tasks. Competence is achieved through a combination of knowledge, training and experience.

Laing O'Rourke requires Designers and Consultants to demonstrate that their organisations have staff with appropriate health and safety knowledge, technical professional knowledge, and the capability



to manage design hazards through a formal system for the identification, elimination, and minimisation of risks.

Laing O'Rourke also requires evidence to be provided where particular qualifications are required by legislation as being a prerequisite to particular professional services.

In addition to core design capabilities relevant to the Designer's role, a Designer should have:

- Knowledge of work health and safety legislation, codes of practice and other regulatory requirements.
- Understanding of the intended purpose of the plant, structure or construction element.
- Knowledge of risk management processes.
- Knowledge of technical design and construction standards.
- Understanding of construction methods and their impact on the design.
- The ability to source and apply relevant data on human dimensions, capacities and behaviours.

Many projects involve a broad range of design disciplines. Various persons with specific skills and expertise may need to be included in the design team or consulted during the design process to fill any knowledge gaps, including ergonomists, engineers and occupational hygienists.

### 5.1.2.2 Communication

Laing O'Rourke requires all designers and contractors to display effective communication at all levels of the projects. This includes maintaining a transparent communication channel such that everyone will have access to information required at any stage of the project.

Communication excellence can be achieved through effective documentation control, efficient transfer of information and a definitive approach for consultation.

## 5.2 Safety in Design Process Overview

The primary goal of SiD is to ensure, so far as is reasonably practicable, that the design of plant or structures is executed in a manner that ensures persons involved in the construction, operation and maintenance, decommissioning, demolition and disposal are not exposed to any reasonably foreseeable health and safety risks.

A summary of this process is detailed in Appendix A - SiD Process Flow Chart.

### 5.2.1 Safety in Design Risk Assessment Process

Laing O'Rourke manages design risk through a continual and iterative process as the design proceeds throughout the life of a project. This is demonstrated in Figure 1 below.

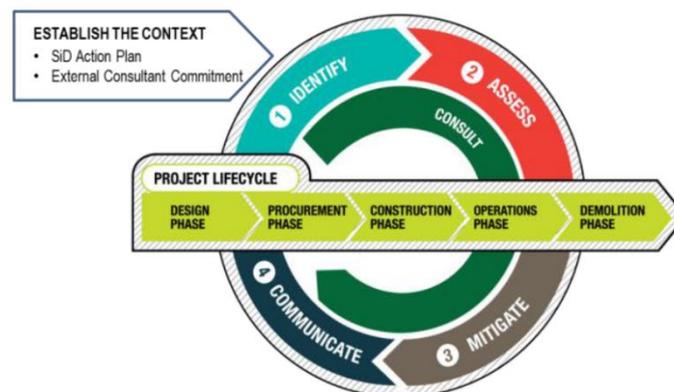


Figure 1: SiD Risk Assessment Process



Designers and Consultants of both permanent and temporary works must apply a SiD system covering their risk assessment process. This is to ensure design solutions are assessed for all reasonably foreseeable hazards that may occur as the structure is built, commissioned, used, maintained, modified, decommissioned, demolished and disposed or recycled.

The Laing O'Rourke SiD system provides the process and tools to enable a thorough review process. Unless otherwise approved by Laing O'Rourke's Design Leader, Laing O'Rourke's SiD templates are to be used for all SiD reviews, record keeping and reporting. Details of these templates can be provided by the SiD Coordinator.

For further details regarding the SiD Process, please refer to the Safety in Design procedure.

### **5.2.2 Establish the context**

Laing O'Rourke's Design Leader will initiate and establish a SiD Action Plan while the nominated SiD Coordinator will ensure implementation of the Action Plan. The SiD Action Plan will be in accordance with the requirements set out in the Safety in Design procedure, including any client, sector or local legislative requirements. It defines the key stakeholders, scope being assessed, timeframes and review milestones. The SiD Action Plan template is designed to allow planning of SiD activities to suit the particular needs of the project, taking into consideration:

- Physical scope of the project
- Design staging
- Stakeholder participation
- Design team organisation

The SiD Action Plan will describe in detail the methods for addressing the following stages of the SiD process.

### **5.2.3 Identify and Assess risks**

Reviews and workshops are undertaken to identify and assess risks to the design throughout the project lifecycle. As design packages are complete, it is necessary to review the design to determine if there are changes to the associated risk. These reviews also apply following any changes to the design.

SiD reviews will be conducted through consultation of the relevant project stakeholders and the project team and will typically be facilitated through a series of SiD workshops. A number of prompt lists are available as separate worksheets in the SiD Register to assist in the risk identification process. In addition, outputs from other assessments, for examples HAZOPS, HAZIDs, SILs, must be reviewed to determine if there are any relevant hazards to be included in the SiD assessment. The Fatal & Severe Risks Control Standard must also be reviewed as part of the assessment.

Risks are assessed using the SiD Risk Matrix, also found in the SiD Register Template. The matrix provides a consistent approach to the assessment of the risks, with descriptions to help users rate the risks. The combined rating of the probability and consequences produces a red, amber or green rating.

Following all SiD Reviews/Workshops, the SiD Register together with a SiD Report is compiled or updated to communicate the outcomes of the review and other relevant SiD information to the relevant stakeholders using the SiD Report Template.

The minimum details and formatting requirements for health and safety information provided by Designers and Consultants to Laing O'Rourke are detailed in Appendix B – SiD Register.

### **5.2.4 Mitigate and Control Risks**

Designers and consultants are to ensure all control measures they propose are fit for purpose and must be reviewed and adjusted through consultation and communication with all necessary parties. This includes ensuring that critical controls are able to be implemented at the construction & commissioning phases.



The Hierarchy of Risk Control: risk control measures, as shown in Figure 2 below, are categorised and ranked from the highest level of protection and reliability to the lowest.

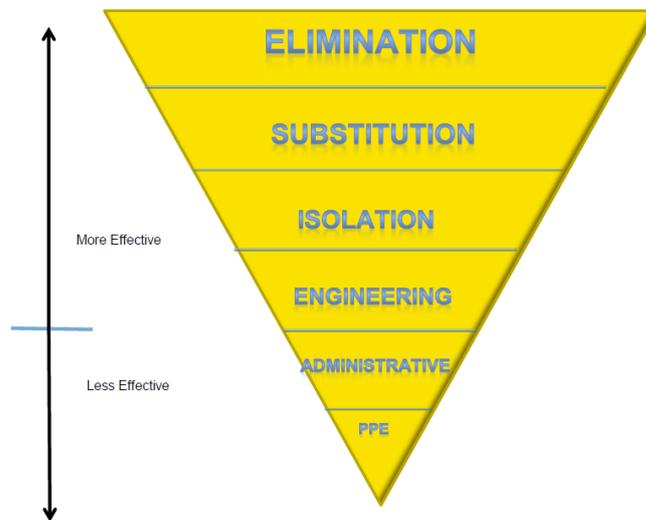


Figure 2: Hierarchy of risk control

Designers and consultants must adhere to the following hierarchy when implementing controls:

- Elimination: Involves eliminating the hazard and associated risk.

If it is not reasonably practicable to eliminate a hazard, the following should be considered:

- Substitution: Replace a hazardous process or material with one that is less hazardous
- Isolation: Separate the hazard from people
- Engineering: Use engineering control measures to minimise the risk e.g. permanent anchorage points
- Administrative: When engineering controls cannot reduce the risk sufficiently, administrative controls should be employed e.g. SWMS, warning signs
- Personal Protective Equipment: Use to protect workers from any residual risks e.g. ear muffs.

All this information is captured and maintained in the SiD Register.

### **5.2.5 Communicating Safety in Design Information**

Designers and Consultants must give adequate information to those who interact with the design regarding:

- Each purpose for which the plant or structure was designed (e.g. safe working loads)
- The results of any calculations, analysis, testing or examination in relation to plant or structures, including any hazardous properties identified by testing. Designers and Consultants must also provide Laing O'Rourke with details of their verification plan, including a register of relevant calculations relating to their design and verification of these calculations
- The mitigations and actions necessary to ensure that SFAIRP the plant or structure reasonably limits risks to health and safety when used for a purpose for which it was designed, including:
  - Construction methods and techniques that were assumed and form the basis of the design (e.g. erection sequences)
  - Operating methods and maintenance techniques that were assumed and form the basis of the design
- Decommissioning and demolition of the works



- Consideration of any reasonably foreseeable misuse.
- Residual safety hazards and risks relevant to construction, operation, maintenance, decommissioning, demolition and disposal must be clearly recorded and effectively communicated to those who interact with the design. Information regarding residual risks must include information as to how the residual risk is to be managed.

Throughout the life cycle of the project it is important that SiD information is updated as required and communicated well between the project team and other key stakeholders. Information is updated as required and the communication of it is critical to ensuring the project meets its SiD obligations.

At the point of handover, any residual risks must be provided to the Client/Operator/maintainer, through a final version of the SiD Register and SiD Report.

SiD information may be documented and communicated in a combination of formats. The type and number of documents will vary depending on the project and would typically entail:

- Drawings featuring design details, including assumed construction methodologies.
- Specifications.
- Design Reports, including SiD Reports.
- SiD Register.
- Operations and Maintenance Manuals.

#### **5.2.6 Consultation Obligations**

Consultation between those involved across the project lifecycle aids in design decisions which can eliminate or minimise risks from the construction and operation of structures and plant. Consultation can take many forms from formal workshop settings to more informal meetings and reviews.

Consultation obligations include interactions with the following key parties:

- Persons (or safety representative of those persons) who are, or who are likely to be, directly affected by a work health and safety matter in relation to the design.
- Persons who have a safety duty with the design and its outcome.
- Persons who commission the design work.
- Persons who commission the construction work.
- Persons involved in the operation and maintenance of plant or a structure.
- Persons involved with the demolition, dismantling and disposal of plant or a structure.

Some of the meetings include:

- Pre-start and progress meetings, including any SiD kick off meeting
- Design coordination meetings and reviews
- SiD workshops
- Safety Committee meetings

All parties are obliged to consult freely and ensure there is an unrestricted flow of SiD information between all involved parties.

A Designer of a plant or structure must give additional information in relation to SiD, as prescribed by the Regulations, including:

- Features that minimise/eliminate hazardous manual tasks.



- Noise emissions and measurement.
- Provision of information to the manufacturer.

Key parties to whom SiD information should be communicated include:

- Other Designers and Consultants.
- Constructors (including subcontractors).
- Commissioners.
- Operators and maintainers
- Facility users (where possible).
- Demolishers

### **5.2.7 Guidance on Risk Treatment**

To assist our partner Designers & Consultants understand:

- The balance between good design and constructability, and;
- Laing O'Rourke's preference around avoidance, reduction, transfer or acceptance of risk post-design phase,

we have produced more specific guidance around the preferred risk treatments aligned to the Fatal and Severe Risks (FSRs) noted in our Safety Management System. It is expected that our Designers and Consultants will consider these elements in their assessment of risks in the design phase.

The detailed risk treatments and guidelines are contained in Appendix C.

## **5.3 Safety in Design and the Project Lifecycle**

As identified in the SiD Process Overview diagram the process applies throughout the project lifecycle.

This includes the following:

**Project Bid Phase:** While a project is in the bid phase, high level SiD reviews and assessments will be undertaken to ensure any key SiD risks can be identified and mitigated

**Design Phase:** As design packages are completed or changes are made SiD reviews and assessments are undertaken on a regular basis

**Procurement Phase:** Any design changes during the procurement phase are reviewed to ensure there is no additional risk introduced. For example, materials scoped in the original design may not be available and changes may be required that would then prompt a review of the SiD risks

**Construction Phase:** During the construction phase there may be some elements of temporary works design or other design packages that require a SiD review. In addition, changes to the design may be required as more information becomes available on site. Any changes should be checked with the designer to ensure they do not introduce any additional risk

**Operations Phase:** Any residual risks from the construction phase should be reviewed and understood for operations and maintenance.

**Demolition Phase:** Any residual risks or risks introduced during the previous project phases should be considered in the demolition phase.



## **5.4 Review and Audit**

Projects often move through project phases at different rates and in parallel. There is the need for the ongoing involvement of designers to ensure changes that arise throughout the life of the project are assessed to determine their impact on the overall safety of the design.

### **5.4.1 SiD Workplace Inspections**

Laing O'Rourke's Design Leader will monitor the overall design programme for compliance during project delivery. Inspections will be carried out to verify that the control measures established in the SiD Register are maintained, and implemented correctly.

Both designers / consultants and Laing O'Rourke have a shared duty for the monitoring and review of control measures. Reviews of controls should be done so through consultation of persons exposed to the control as well as those who implemented the control. Monitor and review responsibilities must be established in the projects SiD Register upon implementing the control measure.

A programme of required inspections is to be submitted to Laing O'Rourke for approval. Additionally, these inspections will be carried out to review the control measured implemented. This review may result in the revision of the control following consultation, direction by a health and safety representative, identification of a new hazard or a change in the work method.

### **5.4.2 Consultant SiD Performance**

An appraisal of Designers and Consultants SiD performance may be conducted by the Laing O'Rourke Design Leader on a monthly basis as part of Laing O'Rourke's Consultant Feedback System (CFS).

### **5.4.3 Assessment, Audits and Phase Reviews**

During the course of design development, Laing O'Rourke will undertake audits and reviews of Designer's and Consultant's activities and records as described in E-T-7-0310 Design Execution Plan. These audits and reviews will include assessment of SiD activities and records.

### **5.4.4 Other Standards**

Where Laing O'Rourke does not have an overriding standard, the requirements of the following should be implemented as a minimum:

- The National Construction Code
- The Work Health and Safety Acts and accompanying Regulations
- Mine Safety Acts and accompanying Regulations
- Codes of Practice
- Australian Standards and other recognised International Standards
- Rail Safety Acts and accompanying Regulations.

### **5.4.5 SMS References Applicable**

- SR 01 Risk Assessment and SiD



## APPENDIX A - SAFETY IN DESIGN PROCESS FLOW CHART (Design Phase)

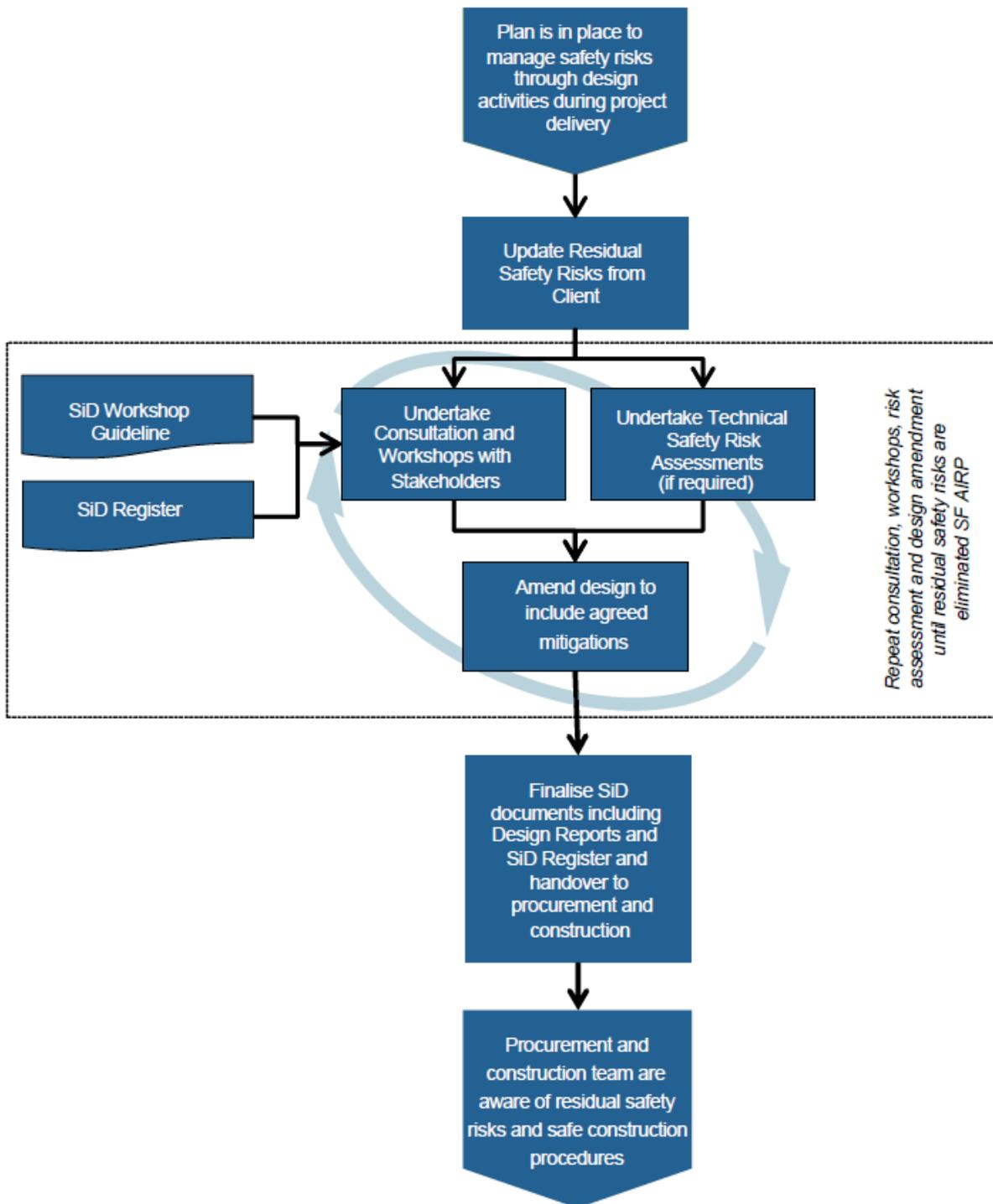


Figure 3 – Safety in Design Process Flow Chart (Design Stage)



# APPENDIX B - SAFETY IN DESIGN (SiD) REGISTER TEMPLATE

The SiD Register forms the basis for managing SiD. The expectation is that Designers and Consultants will forward their SiD registers and accompanying records to Laing O'Rourke, for consolidation into Laing O'Rourke's SiD Register. Therefore, data will need to be formatted as per register according to the following.

- Designers and Consultants must ensure all fields are completed in full and issued to Laing O'Rourke as part of their respective SiD Submission
- To facilitate data entry into the hazard category field Laing O'Rourke recommends that a series of checklists be established. These checklists will assist in ensuring that relevant hazards are considered as applying for the particular design that is under review. A range of checklists and prompts is available as separate worksheets in the SiD register

GLOBAL INFORMATION		HAZARD INFORMATION					CURRENT ARRANGEMENT		MITIGATIONS / RESIDUAL RISK					REVIEW								
Ref No.	Date Raised / Edited	Project Stage / Order Review	Design Package, Work Package, Area, Discipline	Work Process, Plant, Substance	Hazard Description	Consequences	Possible Cause	People Affected	Probability	Consequence	Risk	Control Measure (Improvements)	Design Action Required	Risk Control Method	Probability	Consequence	Risk	Comment / Task (Justification of expected mitigation)	Residual Risk Description	Responsible Party for Residual Risk	Date Residual Risk Reviewed	Status
FABRICATION AND MANUFACTURE PHASE																						
CONSTRUCTION PHASE																						
OPERATION AND MAINTENANCE PHASE																						
DECOMMISSIONING / DEMOLITION / DISASSEMBLY PHASE																						

Figure 4 – Screenshot of template E-T-3-0393 SiD Register



## APPENDIX C - GUIDANCE ON FATAL AND SEVERE RISK (FSR) TREATMENT

FSR	Description	Preferred Risk Treatment / Design Consideration to Address Constructability Risk (Note: All suggestions to be considered so far as is reasonably practicable)
1	Temporary Works, Excavations and Underground & Overhead Services	<p>Minimise deep excavations</p> <p>Assess preliminary temporary works schemes, advising Laing O'Rourke of complex or unusual methodologies.</p> <p>Eliminate or reduce overhead and/or underground services interfaces.</p> <p>Agree load-bearing requirements with Laing O'Rourke.</p> <p>Agree methodology for erection of steelwork and stability of structures with Laing O'Rourke</p>
2	Plant & Equipment	<p>Eliminate or reduce plant and people interaction through design and methodology.</p> <p>Maintain defined exclusion zones.</p> <p>Consider stability &amp; ground bearing pressure required for plant set up &amp; operation.</p>
3	Cranes & Lifting	<p>Agree preliminary crane type / positioning and lift plans with Laing O'Rourke.</p> <p><b>Design to consider soft slings as prohibited with Laing O'Rourke.</b></p> <p><b>Eliminate or reduce pick and carry operations – "Franna" type cranes are prohibited</b></p>
4	Working at Height	<p>Eliminate or reduce working at height via construction techniques on ground.</p> <p>Consider engineered edge, penetration &amp; falling object protection.</p> <p>Eliminate or reduce work in harness under fall protection or restraint.</p> <p>Consider location of any required fall arrest anchor points.</p> <p>Eliminate or reduce exposed penetrations.</p> <p>Consider accessibility of equipment and emergency retrieval (EWP etc)</p>
5	Scaffolding	<p>Eliminate or reduce the need for scaffolding, particularly complex arrangements.</p> <p>Agree preliminary scaffolding arrangement with Laing O'Rourke.</p>
6	Energised Plant, Isolations & Lockouts	<p>Eliminate work on or around energised plant.</p> <p>Consider isolations and lockout systems for any augmented live services</p>
7	Electrical Safety	<p>Consider the protection / layout of temporary &amp; permanent power to reduce the risk of interface with people &amp; plant.</p> <p>Agree preliminary commissioning procedures with Laing O'Rourke.</p>
8	Confined Spaces	<p>Eliminate temporary and/or permanent confined spaces.</p> <p>Ensure access to temporary confined spaces can be restricted &amp; controlled</p>
9	Formwork	<p>Agree preliminary formwork arrangement with Laing O'Rourke.</p> <p>Design formwork to integrate with screens and form systems to provide encapsulation.</p> <p>Eliminate or reduce working at height via construction techniques on ground.</p>
10	Demolition	<p>Agree preliminary demolition methodology &amp; exclusion zones with Laing O'Rourke (including any potential hazardous materials and services).</p> <p>Reduce personnel required for demolition work through proposed methodology</p>
11	Asbestos	<p>Notify Laing O'Rourke of any known asbestos in existing infrastructure.</p>
12	Precast & Tilt-up Concrete	<p>Agree preliminary construction methodology (including preliminary propping schemes) with Laing O'Rourke.</p> <p>Consider storage requirements for pre-cast &amp; tilt-up concrete elements.</p>
13	Work Over Water	<p>Eliminate work over water where possible, else agree methodology with Laing O'Rourke.</p>



		Consider placement of & accessibility of emergency retrieval equipment
14	Railway Operations	Eliminate or reduce the exposure times of personnel and plant working on and/or near rail corridors, taking into consideration the complexity of the rail network systems. Consider preliminary rail corridor occupation & possession plans, especially coincident working congestion. Agree safe working systems with Laing O'Rourke to protect personnel, plant & rail network.
15	Traffic Management	Eliminate the interface with live traffic flows. Consider the use of side-tracks, safety barriers, road closures and/or detours. Eliminate the requirement for traffic control personnel interface with public vehicles.
16	Piling	Eliminate work requiring temporary confined spaces. Agree preliminary piling rig type / positioning and methodology with Laing O'Rourke. Eliminate or reduce overhead and/or underground services interfaces and consider headroom for piling operations. Consider barricading and exclusion zone locations to separate people from plant and vehicles Avoid water-based piling operations
17	Other Hazardous Substances	Eliminate exposure to hazardous substances & materials including insulation & decorative materials, volatile organic compounds and off gassing through the use of composite wood products or paints, exposure to irritant dust and fumes. Consider the need for storage and use of hazardous chemicals, including cleaning products.
18	Other Risk Areas Determined via Risk Assessment	