

Safety in Design Process

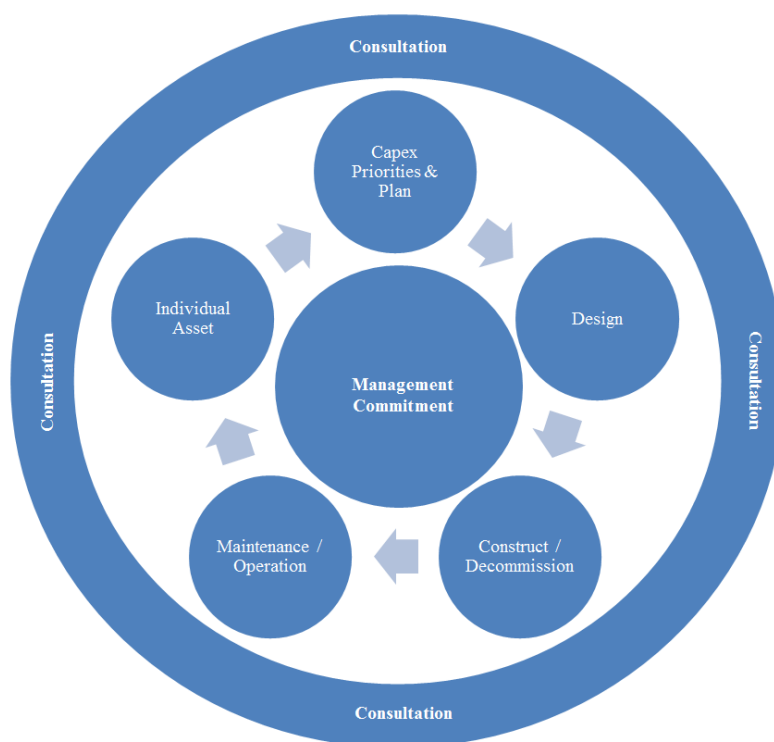
1. Policies

1.1. Safety in Design

Wellington Water is committed to improving the safety performance of the organisation as a whole, including its full supply chain and assets it manages. As such, health and safety will be a priority of leadership during all planning and design phases.

In order to eliminate, or if this is not reasonably practicable, minimise the risks to health and safety throughout the life of the structure being designed, control measures must be integrated early in the asset management and design processes.

The diagram below illustrates the steps within the asset lifecycle at which safety must be considered and the frameworks which are integral to their success:



1.2. Health and Safety At Work Act 2015

The Safety in Design process is intended to align Wellington Water practices to meet all legislated requirements for Safety in Design in New Zealand under the Health and Safety at Work Act 2015. Wellington Water must, *so far as is reasonably practicable*, ensure that any plant, substance or structure is designed to be without risks to the health and safety of persons who use or interact with the plant, substance or structure. This needs to consider all phases including construction, normal and abnormal use, maintenance and demolition.

2. Process

The purpose of this process is to provide guidance regarding Safety in Design (SID) obligations to Asset Managers, Investigators, Designers, Project Managers, Operators, Maintainers, Contractors and other workers involved in design and asset management activities.

This process applies where significant changes to plant, substance or structure are planned in maintaining, reinstating, upgrading, decommissioning and other activities involving Wellington Water managed assets and services. As such this procedure applies in any of the following situations:

- changing work practices, procedures or the work environment;
- purchasing new or used equipment or using new substances;
- planning to improve productivity or reduce costs; and
- designing and planning significant changes to a plant, substance or structure

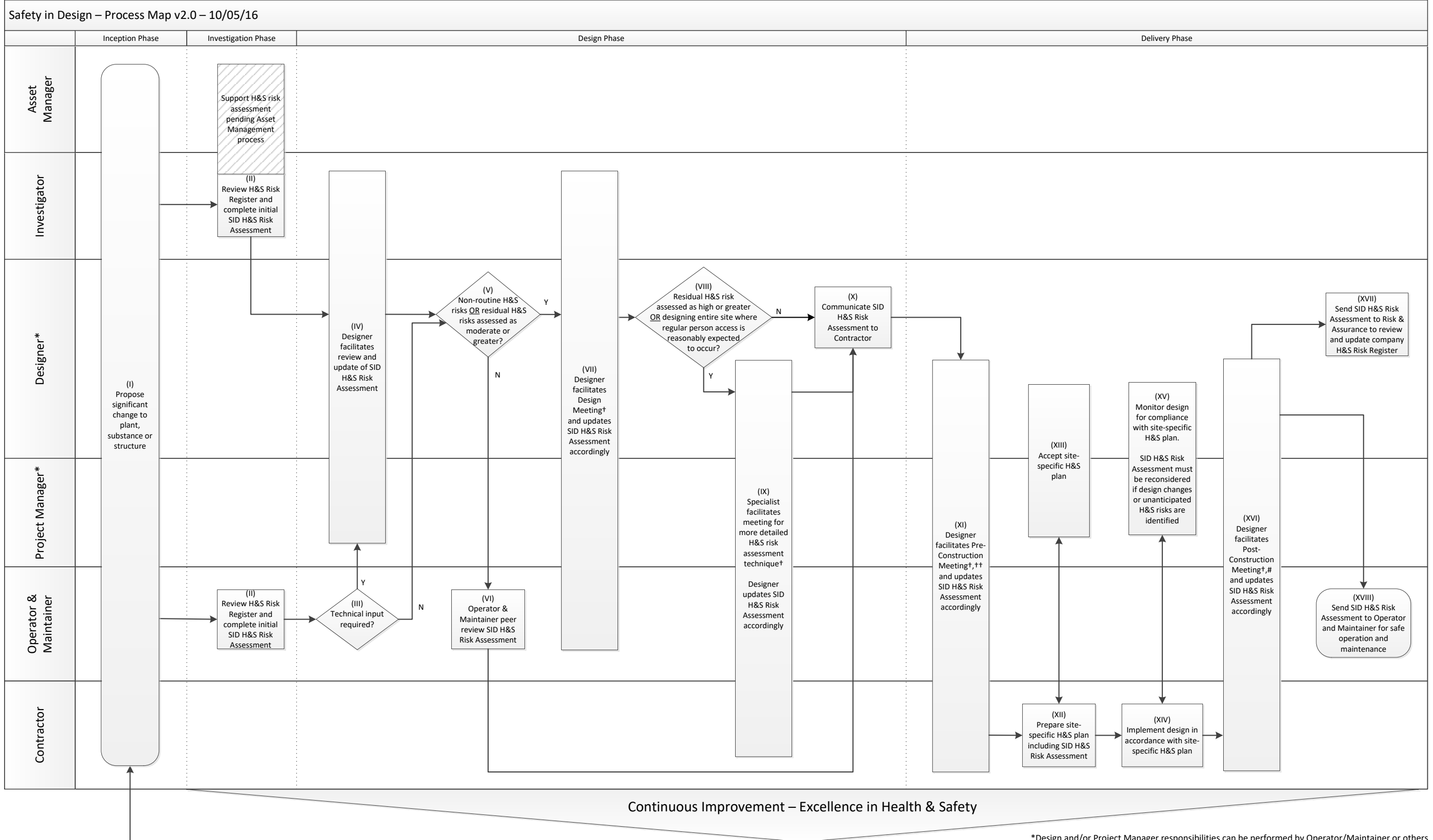
The Safety in Design Process is defined in Section 2.1 (Process Map) and accompanying Section 2.2 (Process Steps).

For key definitions, refer Wellington Water Health & Safety Definitions. Key definitions include:

- CHAIR
- Designer
- HAZOPS
- Plant
- SFAIRP (So Far As Is Reasonably Practicable)
- Structure
- Substance
- Worker

For Safety in Design training requirements, refer Wellington Water Health & Safety Training Summary.

2.1. Process Map



*Design and/or Project Manager responsibilities can be performed by Operator/Maintainer or others
 † Include Contracts Officer and input from Property Owner/Representative and any other affected party
 †† Only Designer & Contractor required where Design meeting not required (routine/low risk)
 # Only Designer, Contractor, Operator/Maintainer required where Design meeting not required (routine/low risk)

2.2. Process Steps

Step #	Step Name	Step Description
I.	Propose significant change to plant, substance or structure	<p>Any proposal for a significant change to plant, substance or structure managed by Wellington Water must consider health and safety risks.</p> <p>Any significant change requires a Safety in Design Health & Safety Risk Assessment and must follow the Wellington Water Safety in Design process.</p>
II.	Review H&S Risk Register and complete initial SID H&S Risk Assessment	<p>The Asset Manager and Investigator (typical for Capex projects) or Operator/Maintainer (typical for Opex projects) shall first review the Wellington Water Health & Safety Risk Register¹ and any previous H&S risk assessments/JSEAs. They shall determine if there are any known Health & Safety risks associated with this asset, or similar infrastructure, that need to be considered.</p> <p>The Asset Manager and Investigator or Operator/Maintainer then prepares initial Safety in Design Health & Safety Risk Assessment.^{2 3 4}</p>
III.	Technical input required?	The Operator/Maintainer shall consider if technical input is required from others (Investigator, Designer, Project Manager) to help design the significant change.
IV.	Designer facilitates review and update of SID H&S Risk Assessment	<p>When a design brief is generated and a job is issued to a Designer, the Designer shall review the initial Safety in Design Health & Safety Risk Assessment and further develop it in consultation with the Investigator and Project Manager.^{2 4}</p> <p>The Designer shall circulate the Safety in Design Health & Safety Risk Assessment to all stakeholders involved.</p>
V.	Non-routine H&S risks OR residual H&S risks assessed as moderate or greater?	If, during the course of the design, the Designer identifies non-routine Health & Safety risks or residual Health & Safety risks that cannot be reduced to below a moderate risk rating, additional consultation shall be

¹ Refer Wellington Water Health & Safety Risk Register

² Refer Wellington Water Safety in Design Health & Safety Risk Assessment Instruction

³ Refer Wellington Water Risk Assessment Process

⁴ If, at any step in the Safety in Design process, a Health and Safety risk is identified that is not recorded in the Wellington Water Health & Safety Risk Register, the Designer must immediately provide the corresponding Safety in Design Health and Safety Risk Assessment to Risk & Assurance for inclusion in the Health & Safety Risk Register.

		<p>sought via a Design meeting (Step #VII).</p> <p>If the Designer determines all Health & Safety risks to be routine and residual Health & Safety risk ratings as less than moderate, the designer shall instead seek Operator/Maintainer review (Step #VI).</p> <p>The Designer is to record justification for decision in the Safety in Design Health & Safety Risk Assessment.</p>
VI.	Operator & Maintainer peer review SID H&S Risk Assessment	<p>The Operator/Maintainer must peer review the Designer's Safety in Design Health & Safety Risk Assessment prior to the Designer communicating the Safety in Design Health & Safety Risk Assessment to the Contractor.^{2 4}</p>
VII.	Designer facilitates Design meeting and updates SID H&S Risk Assessment accordingly	<p>For projects with non-routine Health & Safety risks or residual Health & Safety risks assessed as moderate or greater, the Designer shall facilitate a meeting with relevant stakeholders, including: Investigator, Project Manager, Operator/Maintainer, and Contracts Officer. Input from the Property Owner/Representative and any other affected party must be considered (e.g., local school board, business owner, etc.)</p> <p>As part of the meeting, establish the design context (considering industry experience; history of the plant, substance or structure and location; intended function and interaction with other plant, substances or structures; and known site or unusual design risks).</p> <p>Complete a site visit as part of this meeting.</p> <p>The purpose of the meeting is to eliminate or minimise, SFAIRP, risks to Health & Safety. The Designer shall update the Safety in Design Health & Safety Risk Assessment accordingly and circulate it to all stakeholders involved.^{2 4}</p>
VIII.	Residual H&S risk assessed as high or greater <u>OR</u> designing entire site where regular person access is reasonably expected to occur?	<p>The Designer shall engage specialist services to facilitate a more detailed Health & Safety risk assessment when designing an entire site where regular person access is reasonably expected to occur or where the stakeholders in the Design Meeting (Step #VII) cannot identify reasonably practicable steps to reduce the risk below high (Step #IX). (e.g., design for a pump station with a dry well, but not design for a standard manhole).</p> <p>In addition, a more detailed Health and Safety risk assessment should be done when:</p> <ul style="list-style-type: none"> • there is uncertainty about how a hazard may result in injury or illness; • the work activity involves a number of different hazards and there is a lack of understanding about

		<p>how the hazards may interact with each other to produce new or greater risks;</p> <ul style="list-style-type: none"> • changes at the workplace occur that may impact on the effectiveness of control measures; or • existing Standards and Codes are inadequate to address a risk. <p>The Designer is to record justification for decision in the Safety in Design Health & Safety Risk Assessment.</p>
IX.	<p>Specialist facilitates meeting for more detailed H&S risk assessment technique.</p> <p>Designer updates SID H&S Risk Assessment accordingly.</p>	<p>A specialist shall facilitate a meeting using a more detailed risk assessment and management process (e.g, HAZOP or other appropriate technique) to ensure the H&S risks can be reduced SFAIRP.</p> <p>The specialist must demonstrate relevant experience and formal training or qualifications, such as:</p> <ul style="list-style-type: none"> • Post graduate training in risk management and/or Safety in Design; • Demonstrated experience or training in the selection, application and/or facilitation of risk management tools and techniques (e.g, CHAIR, HAZOP, etc.) <p>The meeting shall include relevant stakeholders including: Designer, Project Manager, Operator/Maintainer, Property Owner/Representative, Contracts Officer, Contractor and any other relevant affected party.</p> <p>Complete a site visit as part of the meeting.</p> <p>The Designer shall update the Safety in Design Health & Safety Risk Assessment based on the review in this meeting and circulate it to all stakeholders involved. ^{2 4}</p>
X.	<p>Communicate SID H&S Risk Assessment to Contractor</p>	<p>During or immediately following the Contractor selection process, the Designer shall communicate the Safety in Design Health & Safety Risk Assessment, including residual risks, to the Contractor.</p>
XI.	<p>Designer facilitates Pre-Construction meeting and updates SID H&S Risk Assessment accordingly</p>	<p>The Designer shall facilitate a Pre-Construction meeting, including: Project Manager, Operator/Maintainer, Contracts Officer and Contractor as appropriate. Input from the Property Owner/Representative and any other affected party must be considered.</p> <p>(Note: for projects where residual Health & Safety risks are assessed as low and routine, the Designer only needs to meet with the Contractor).</p> <p>Complete a site visit as part of the meeting.</p> <p>The purpose of this meeting is to review and update the</p>

		H&S Risk Assessment and to discuss the construction methodology as it relates to the design, confirming that it can be constructed safely. The designer shall update the Safety in Design Health & Safety Risk Assessment based on the review in this meeting and circulate it to all stakeholders involved. ^{2 4}
XII.	Prepare site-specific H&S plan including SID H&S Risk Assessment	The Contractor shall review the Safety in Design Health & Safety Risk Assessment and prepare a site-specific Health & Safety plan for construction, including proposed method for control of, as a minimum, residual Health & Safety risks identified on the Safety in Design Health & Safety Risk Assessment received from the Designer.
XIII.	Accept site-specific H&S plan	The Designer and Project Manager shall review the adequacy of the Contractor's site-specific Health & Safety plan prior to the Contractor commencing construction, and raise any concerns with the Contractor.
XIV.	Implement design in accordance with site-specific H&S plan	The Contractor is responsible for completing the design in accordance with site-specific Health & Safety plan.
XV.	Monitor design for compliance with site-specific H&S plan SID H&S Risk Assessment must be reconsidered if design changes or unanticipated H&S risks are identified	The Designer, Project Manager and Contracts Officer shall monitor the implementation of the design for compliance with the site-specific Health & Safety plan. For any design changes or unanticipated Health & Safety risks, the Contractor, Designer, Project Manager and Contracts Officer should reconsider the Safety in Design Health & Safety Risk Assessment, including any requirement to revisit a step in the Safety in Design process. All relevant stakeholders, such as Operator/Maintainer, must be included as necessary and provided with any updated Safety in Design Health & Safety Risk Assessment. ^{2 4}
XVI.	Designer facilitates Post-Construction meeting and updates SID H&S Risk Assessment accordingly	Where appropriate, the Designer shall facilitate a Post-Construction meeting, including the Project Manager, Operator/Maintainer, Contracts Officer and Contractor. Where appropriate, input from the Property Owner/Representative and any other affected party must be considered. (Note: for projects where residual Health & Safety risks are assessed as low and routine, the Designer only needs to meet with the Contractor and Operator/Maintainer). The purpose of the Post-Construction meeting is to review and update the Safety in Design Health & Safety Risk Assessment and determine if any residual risks remain, following implementation of the design.

		The Designer shall update the Safety in Design Health & Safety Risk Assessment following completion of the meeting to ensure any relevant residual Health & Safety risks are recorded and circulate it to all stakeholders involved. ²
XVII.	Send SID H&S Risk Assessment to Risk & Assurance to review and update company H&S Risk Register	<p>The Designer shall submit the updated Safety in Design Health & Safety Risk Assessment to the Risk & Assurance team.</p> <p>The Risk & Assurance team is responsible for analysing Safety in Design Health & Safety Risk Assessments to determine if new risks need to be added to the company Health & Safety Risk Register (facilitating a feedback loop process for continuous improvement).</p>
XVIII.	Send SID H&S Risk Assessment to Operator and Maintainer for safe operation and maintenance	<p>The Designer shall submit the updated Safety in Design Health & Safety Risk Assessment to the Operations team.</p> <p>The Operations team is then responsible for the ongoing safe operation of asset, including control of any residual risk.</p> <p>In addition to the Safety in Design Health & Safety Risk Assessment, the designer must provide further detail if it is necessary for the safe use, operation, maintenance or decommissioning of the plant, substance or structure:</p> <ul style="list-style-type: none"> • each purpose for which the plant, substance, or structure was designed; and • the results of any calculations, analysis testing or examination including, in relation to a substance, any hazardous properties of the substance identified by testing; and • any conditions necessary to ensure that the plant, substance or structure is without risks to health and safety when used for a purpose for which it was designed or when carrying out any activity.
XIX.	Send SID H&S Risk Assessment to Information Directorate to maintain with as-built information.	<p>The Designer shall submit the updated Safety in Design Health & Safety Risk Assessment to the Information Directorate.</p> <p>The Information Directorate is then responsible for ensuring the Safety in Design Health & Safety Risk Assessment is maintained with the asset as-built information.</p>

3. Related Documents

- Wellington Water Safety in Design Health & Safety Risk Assessment Instruction
- Wellington Water Health & Safety Risk Register
- Wellington Water Risk Management Process
- Wellington Water Health & Safety Risk Management Process
- Wellington Water Health & Safety Definitions
- Wellington Water Health & Safety Training Summary

4. References

- Health and Safety at Work Act of 2015
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- Health and Safety at Work (Worker Engagement, Participation and Representation) Regulations 2016
- Australian Model Code of Practice: Safe Design of Structures (24 July 2012)
- Australian Model Code of Practice: How to Manage Work Health and Safety Risks (7 December 2011)