



**Management Plan**

**Engineering**

# **Major Land Developments Safety in Design Management Plan**

**Version:** 1.0

**Date:** 14/04/2022

**Status:** Issued

**Document ID:** SAWG-ENG-0521

© 2022 SA Water Corporation. All rights reserved. This document may contain confidential information of SA Water Corporation. Disclosure or dissemination to unauthorised individuals is strictly prohibited. Uncontrolled when printed or downloaded.



**Government of  
South Australia**

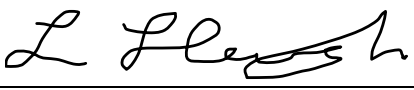

## Document Controls

### Version History

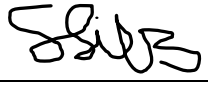

Version	Date	Author	Comments
0.1	17/01/2022	John Patiniotis	First draft.
0.20	8/04/2022	Lana Haigh	Updating Draft
1.0	14/02/2022	Lana Haigh	Issued for signatures

Template: Document - Long Version 4.4 22/11/19

### Approver

Role	Signature and Date
Lana Haigh SiD Specialist Engineering SA Water	14/04/2022  X  _____ Signer's Name  Signed by: HA003652
Matthew Davis Manager Engineering – Quality and Innovation Engineering SA Water	14/04/2022  X  _____ Signer's Name  Signed by: DA003681

### Endorsers

Role	Signature and Date
Sally Silz Manager Development Services Customer Growth SA Water	18/04/2022  X  _____ Signer's Name  Signed by: SI001470
Ben Seal Construction Technical Manager Program Delivery SA Water	14/04/2022  X  _____ Signer's Name  Signed by: SE001342

### Reviewers

Role	Name	Version	Review Date
SiD specialist	Lana Haigh	0.01	4/02/22
MLD WWPS SiD Process Meeting	Attendees	0.09	24/03/22
Manager Engineering – Quality and Innovation	Matthew Davis	0.15	6/04/22

Account Manager Development Services	Alex Wilkinson	0.15	6/04/22
Construction Technical Officer	Danny Boylan	0.15	6/04/22
Construction Technical Manager	Ben Seal	0.19	13/4/22
Manager Development Services	Sally Silz	0.19	13/4/22

## Distribution

<b>Role / Department / Organisation</b>	<b>Name</b>
SA Waters Accredited Consultants	As per Consultants Accreditation Rating List on the SA Water website.
Available on SA Water Website	<a href="http://www.sawater.com.au">www.sawater.com.au</a> - Building, developing and plumbing - Developments - Consultant engineers

## Contents

<b>1</b>	<b>Introduction.....</b>	<b>5</b>
1.1	Purpose .....	5
1.2	Glossary .....	5
1.3	References .....	6
<b>2</b>	<b>SA Water documents.....</b>	<b>7</b>
<b>3</b>	<b>Scope .....</b>	<b>7</b>
<b>4</b>	<b>Process .....</b>	<b>8</b>
4.1	Initiate / Preliminary Enquiry .....	8
4.1.1	Developer's study.....	8
4.1.2	SA Water recommendations .....	8
4.2	Concept Design.....	8
4.3	Detailed Design.....	9
4.3.1	Detail Design Development .....	9
4.3.2	SiD Hazard Review Workshop (SiD2) .....	9
4.3.3	Detail Design Audit.....	10
4.4	Development Agreement Formal Instrument (DAFI) .....	10
4.5	Construction.....	10
4.5.1	Construction Start-up Meeting.....	10
4.5.2	Construction and Commissioning.....	11
4.6	Certificate of Practical Completion .....	11
4.7	Certificate of Final Completion .....	12
4.8	Future Works .....	12
<b>5</b>	<b>SiD Activities.....</b>	<b>14</b>
<b>6</b>	<b>Documents.....</b>	<b>15</b>

### List of figures

Figure 3-1	Typical life cycle of an asset .....	7
Figure 4-1	Major Land Development SiD Management Planning Process.....	13

### List of tables

Table 6-1	Required SiD Documents and Updates .....	15
-----------	--	----

# 1 Introduction

SA Water is responsible for operation and maintenance of an extensive amount of engineering infrastructure. This plan has been developed to assist in the safe design, modification, maintenance, construction, and management of infrastructure delivered under development agreement. Safety in Design is defined as “the integration of hazard identification and control measures early in the design process to eliminate or, if this is not reasonably practicable, minimise risk to health and safety throughout the life of the structure being design” Adapted from the Code of practice safe design of structures.

## 1.1 Purpose

This plan specifies the minimum mandatory requirements of SA Water Safety in Design process (TS0101) as pertaining to the assets delivered under development agreement. This Plan specifies the process and minimum requirements that SA Water considers necessary to ensure that:

- SA Water and its partners deliver on its key corporate value of “Putting Safety Above All Else”
- SA Water and its partners, meets its WHS legislative obligations as a “person conducting a business or undertaking” (PCBU) under the WHS legislation.
- Consideration and working toward meeting of WHS Legislative requirements for PCBU, Designer, manufacturer, supplier.

This plan is to enable key stakeholders to collectively identify and reduce health and safety risks associated with the design of assets for whole of life, including construction, installation, commissioning, operation, maintenance, repair, demolition, and recycling.

## 1.2 Glossary

The following glossary items are used in this document:

Term	Description
CAD	Computer aided design.
Concept Plan (design)	A package of information provided to a Designer by the Water Agency to enable the appropriate planning / design of major water system components to be performed. (WSAA definition)
Construction Services Technical Officer CSTO	Position within SA Water that support the construction and completions activities including but not limited to hold/witness points, inspections and walkovers.
Constructor	The organisation responsible for constructing and installing infrastructure.
Contract / Account Number	The number SA Water allocates for a land development. The generation of this number is triggered when the Major Land Developer notifies SA Water they will be progressing with the development. This number is used as a reference for all associated working files and communication
Designer	The organisation responsible for designing infrastructure for SA Water. In the case of major land development this will be one of the SA Water Accredited Consultants.
Developer	The entity developing the land who is undertaking the development works including the design and supply of water and/or wastewater services on the land.

Major Land Development (MLD)	Developer's work on large property developments or large subdivisions. Major Land developments will often involve construction of roads. They may also include extensions of mains.
PCBU	Persons Conducting Business or undertaking. The meaning of a PCBU is set out in section 5 of the WHS Act SA 2012.
Recommendation Letter	Tool used to communicate to the developer or their representative the infrastructure requirements to service the proposed land development based on system planning recommendations and memorandum.
SA Water (SAW)	South Australian Water Corporation
SA Water System Planning	Department within SA Water that undertake hydraulic modelling and other analysis to determined requirements, capacity check, augmentation requirements, nominate pipe sizing and infrastructure required while also identifying limitations of the network to support the development.
Safety in Design (SiD)	The process applied to designs tom support the production of safe designs so far as is reasonably practicable for whole of life of the infrastructure and contribute toward meeting WHS Legislative requirements.
SAW Audit	Accredited consultant design audit – is carried out on the submitted design (~100% design status) against SA Water and WSA standards and system planning requirements.
SiD (Safety) Report	SA Water templated document that supports meeting WHS Regulation 295 and WHS Act Section 22 and aligned with the Safe Work Australia model code of practice safe design of structures.
SiD Hazard Register	An SA Water templated document that captures the interface hazards of a design for whole of life, records the controls, status and any actions.
Surveyor as constructed drawing audit	Audit against detail design, SA Water and WSAA Standards and system planning requirements.
Water Design and Sewer Design checklists	Check list provided by SA Water to support Developers and their Designers to ensure all appropriate documentation is available and provided to SA Water when submitting detail designs for auditing. Check lists are available in the Consultant Engineers section of the SA Water internet.
Water Services Association of Australia (WSAA)	The peak industry body representing the urban water industry.

### 1.3 References

The following table identifies the documents and/or articles that are referenced in this document:

Title/URL	Version	Date
Work Health and Safety Act 2012 (SA)	3.10.2019	
Work Health and Safety Regulations 2012 (SA)	1.7.2021	
Safe work Australia, Model code of practice safe design of structures 2018	ISBN 978-0-642-78546-6 [PDF]	2018
SA Water Safety in Design Technical Standard TS0101 available on the SA Water web page under Engineering Standards	2.0	Jan 2020
Consultant Accreditation Information	2.0	22/03/2022
Building Development and Plumbing section on the SA Water Internet		22/03/2022

## 2 SA Water documents

The following table identifies the standards, documents and/or articles that are referenced in this document. They are available through the SA Water Website or by contacting the SA Water Major Land Development team:

Number	Title
TS 0101	Technical Standard - Safety in Design
SAWT-ENG-0003	Safety in Design Report Template
SAWT-ENG-0007_MLD Assessment Plan	SA Water SiD Assessment Plan template for Major Land Developments
SAWT-ENG-0008_MLD SiD Hazard Register	Safety in Design Hazard Register template for Major Land Developments

## 3 Scope

This Management Plan is applicable to all Major Land Development design projects where infrastructure is delivered under development agreement. It is applicable for infrastructure designed, constructed, modified, decommissioned or demolished by or for SA Water (e.g. design activities performed by operations, design activities carried out for an external party etc.) and applies to project delivery either internal or external to SA Water and infrastructure including structures, plant and equipment, permanent, temporary, fixed or mobile.

This document specifies the minimum mandatory requirements of SA Water Safety in Design process, TS0101, to eliminate hazards and where this is not reasonably practicable to minimise so far as is reasonably practicable the risk to health and safety of workers and those in the vicinity of the design.



**Figure 3-1 Typical life cycle of an asset**

There is a duty of care for PCBU involved in any of the phases of the lifecycle of an asset with regard to whole of life safety and Safety in Design. SA Water personnel, contractors, subcontractors, designers, developers and their employees who perform work shall comply with the requirements of this Management Plan. Compliance with this Management Plan (and other SA Water Safety in Design (SiD) documents) will not, in itself, ensure compliance with WHS legislation or SA Water corporate WHS objectives. It is the designer's responsibility to ensure that designs comply with the WHS legislation.

## 4 Process

### 4.1 Initiate / Preliminary Enquiry

#### 4.1.1 Developer's study

The developer undertakes a feasibility study. The Developer requests SA Water network requirements from SA Water Major Land Development Team.

Developers provide to SA Water for the purpose of SA Water System Planning department scoping network requirements:

- Relevant plans and reports
- CAD files of the development layout and surface contour information
- Other information as required

#### 4.1.2 SA Water recommendations

Having engaged SA Water System Planning team, SA Water will provide the developer with a Recommendation Letter containing:

- Infrastructure requirements to service the development,
- Potential connection points
- Details on easement requirements

### 4.2 Concept Design

The developer requests through Plan SA, contract and drawing numbers from SA Water. The SA Water Major Land Development Team request SA Water Reticulation Networks team prepare a concept design based on SA Water System Planning recommendations and information provided by the developer and their representatives. Information required to carry out the concept design include:

- Systems planning report - Internal SA Water document
- Feasibility study or relevant preliminary information - provided by developer or representative
- Updated SAWT-ENG-0007\_MLD Assessment Plan including, Lessons Learned and A-typical hazard Identification, provided by the Developer Design Consultant or representative

The SA Water Reticulation Networks team perform activities such as the following:

- Review feasibility study information and hazard identification and lessons learned information.
- Refer to system planning for network requirements or limitations, potential connection points and details on easement requirements
- Check aerial imagery, GIS information and Dial Before You Dig for hazards and unique features
- Consider service alignment, link in locations and constructability
- Prepare concept plan
- Using SAWT-ENG-0008\_MLD SiD Hazard Register Template developed in consultation with stakeholders a desk top SiD1 (as defined by TS0101) hazard review.



- Send concept design/plan through internal review and verification process
- Upload concept design and updated SiD Hazard Register to MLD system

The SiD hazard register will be updated with concept design SiD1 review information and provided with the design or plan.

SA Water Major Land Development email the concept design and safe design information to the developer or their allocated representative

## 4.3 Detailed Design

The Developers Accredited Designer, the Designer, commences detail design.

### 4.3.1 Detail Design Development

The following as a minimum is required to take place be communicated and transmitted:

- The Designer has an internal kick-off meeting prior to commencing the detailed design to discuss the Safety in Design information available and timing of SiD activities. This can be an agenda item on the project kick off, team meeting or a dedicated meeting.
- Completed and signed off SAWT-ENG-0007\_MLD Assessment Plan(including Lessons Learned from any previous stages or developments and A-typical hazard Identification)
- Detailed design is prepared
- Detail Design SiD Hazard Review Workshop (SiD2) occurs after designers detail design review. See below 4.3.2 for more detail. An updated SiD Hazard register is the output from the SiD review Workshop. The design is updated to address actions following the workshop.
- Nearing completion of the Detail Design complete section 7 – SiD Audit of the SiD Assessment Plan ensuring all relevant activities and action items in the SiD Hazard Register are closed out.
- Design consultant will prepare the SiD safety report using the SA Water template SA Water Template SAWT-ENG-0003. A copy of this report is to be provided to SA Water with the design for audit.

### 4.3.2 SiD Hazard Review Workshop (SiD2)

- All detail designs must go through a hazard identification process and information updated in the design SiD Hazard Register.
- A SiD2 Hazard Review Workshop must occur following Designer's detail design review and prior to submitting designed to Reticulation Network for Audit.
- A SiD2 Hazard Review Workshop must occur where there are electrical or mechanical components within the MLD design, such as wastewater pump station (WWPS), pressure relief valve (PRV's), Tankering Facilities, Vacuum network, Low Pressure network and other. Other triggers for such engagement will be dependent on Atypical Hazards within the location or of the design.
- A **minimum** of three weeks, **15 working days**, prior the Designer will send an email to [SiDworkshops@sawater.com.au](mailto:SiDworkshops@sawater.com.au) to request engagement of SA Water personnel for a SiD2 workshop. Information required in this request is the proposed date of workshop, design manager contact details, location of major land development, list of key pieces of infrastructure. SA Water will work with the designer to develop attendance list, the workshop power point presentation and other information for the workshop. SA Water will provide a facilitator for the Workshop unless otherwise arranged.

- A 4hr time slot should be allowed for the workshop (the actual time may vary depending on the complexity of the design and features of the location).
- The Designer is to provide a scribe for the workshop unless otherwise arranged.
- An SA Water SiD facilitator will facilitate the workshop with the support of the designer to collate relevant information and workshop slide package.
- The designer is to identify and coordinate attendance of other required stakeholders. SA Water will organise attendance by relevant Operations and Maintenance representatives. 3 weeks minimum notice is required schedule their attendance.
- During the SiD workshop details of identified interface hazards and proposed controls will be updated or captured in the hazard register. The updated SiD Hazard Register will be circulated to attendees by the Designer for review and confirmation the notes correctly represent the workshop.
- The Designer will update the detail design addressing actions following the SiD workshop and prior to submission for audit.

### 4.3.3 Detail Design Audit

The audit will not commence until all required information is received by SA Water Reticulation Networks team. Where SiD information isn't provided a "re-submission" as described in the Consultant Accreditation Information document, will be recorded against the Accredited Designer.

Detailed designs and associated design plans and information are emailed directly to SA Water Reticulation Network team for auditing. This includes all relevant geotechnical reports, road layout plans, SiD (safety) Report, SiD Hazard Register and other relevant documents required to complete the audit. The following steps take place:

- SA Water will audit the design
- SA Water will review/audit SiD information
- SA Water will sign the design drawings as received when they are compliant with SA Water standards (including Safety in Design), system planning requirements and WSA requirements.

SA Water reticulation team uploads approved designs (including SiD Docs) into the system and emails information directly to the Designer. The system notifies MLD and an email is sent to Construction Services Technical Officer (CSTO) team. The CSTO resource for the construction phase will be allocated.

## 4.4 Development Agreement Formal Instrument (DAFI)

Once the audit is complete and drawings issued for construction, Major Land Development Team complete a DAFI, the DAFI is issued along with the agreement to the Developers for sign off.

The DAFI is signed, and invoice is paid and the construction start up meeting is coordinated by the Major Land Development team.

## 4.5 Construction

### 4.5.1 Construction Start-up Meeting

Prior to the start-up meeting the Construction Contractor will be issued with any design basis, IFC drawings and SiD (Safety) Report.

The start-up meeting is a facilitated meeting that contains an agenda and minutes with any action items. In attendance to the meeting are:

- Developer
- Superintendent
- Designer (if not Superintendent)
- Construction contractor
- SA Water Personnel including representatives from Major Land Development and Construction Technical Services.

At the start up meeting the following are some of the items discussed:

- Hazards and SiD information, including but not limited to Atypical Hazards, residual hazards, and their proposed controls.
- What is being constructed and delivered
- Time frames
- Other issued or items of note or concern.

## 4.5.2 Construction and Commissioning

The Construction Contractor executes construction of the design. The following steps are to take place.

- The design consultant will provide the construction contractor with the signed designs, the SiD hazard register and the SiD (safety) Report as per 4.5.1.
- The constructor will carry out a construction Risk Assessment and develop a construction management plan (or equivalent) addressing actions from the SiD Report.
- The constructor raises any clarifications or requests for design revision with the Superintendent and if required back to the designer. SA Water will be consulted when required.
- The Superintendent will manage changes including identification and recording of controls of hazards in the SiD hazard register during construction and commissioning.
- SA Waters CSTO's will attend site and witness construction at pre-determined hold/witness points as noted in the Inspection Test Plans (ITP'S) and may attend site at other times to monitor works. Inspection reports are distributed to SA Water MLD and the site Superintendent for actioning when applicable.
- It is the Superintendents responsibility to manage any changes that occur, including identification and record of any hazards and controls and inclusion of lessons learned in the SiD report.
- The designer will provide the constructor with the latest detailed design CAD files for the constructor's surveyor to updated to as built drawings.
- The constructor's surveyor will lodge the accepted as constructed drawing information to the automated assessment portal until validated.
- SA Water will audit the as constructed drawings.
- SA Water and the constructor will complete the site walkover. The SiD hazard register will be updated through the site superintendent with support from the designer as required.

## 4.6 Certificate of Practical Completion

When works are nearing completions and at completion, the following steps take place.

- Completions' activities including PC walkover by CSTO
- As constructed drawings are reviewed on site

- Finalise completion's checklist
- Handover documents as per O&M manual including in appendix G the updated SiD (Safety) Report and SiD Hazard Register.

## 4.7 Certificate of Final Completion

A Final Completions Walk over is carried out by CSTO prior to 12 month following certificate of Practical Completions. Any Hazard identified or actions outstanding in the SiD hazard Register should be closed out.

Following CSTO Final Completions walk over and the works satisfactory, the Certificate of Final Completion (CFC) is issued to the Developer and Security Bond returned.

## 4.8 Future Works

Additional stages of development are to use Safety in Design Lessons Learned and apply the same process for future works. The Developer should provide this information to designers.

The developer will have record of this information from the SiD Safety report and should be distributed for future stages either from the Developer or the Developers Representative.

# MLD SiD Management Process

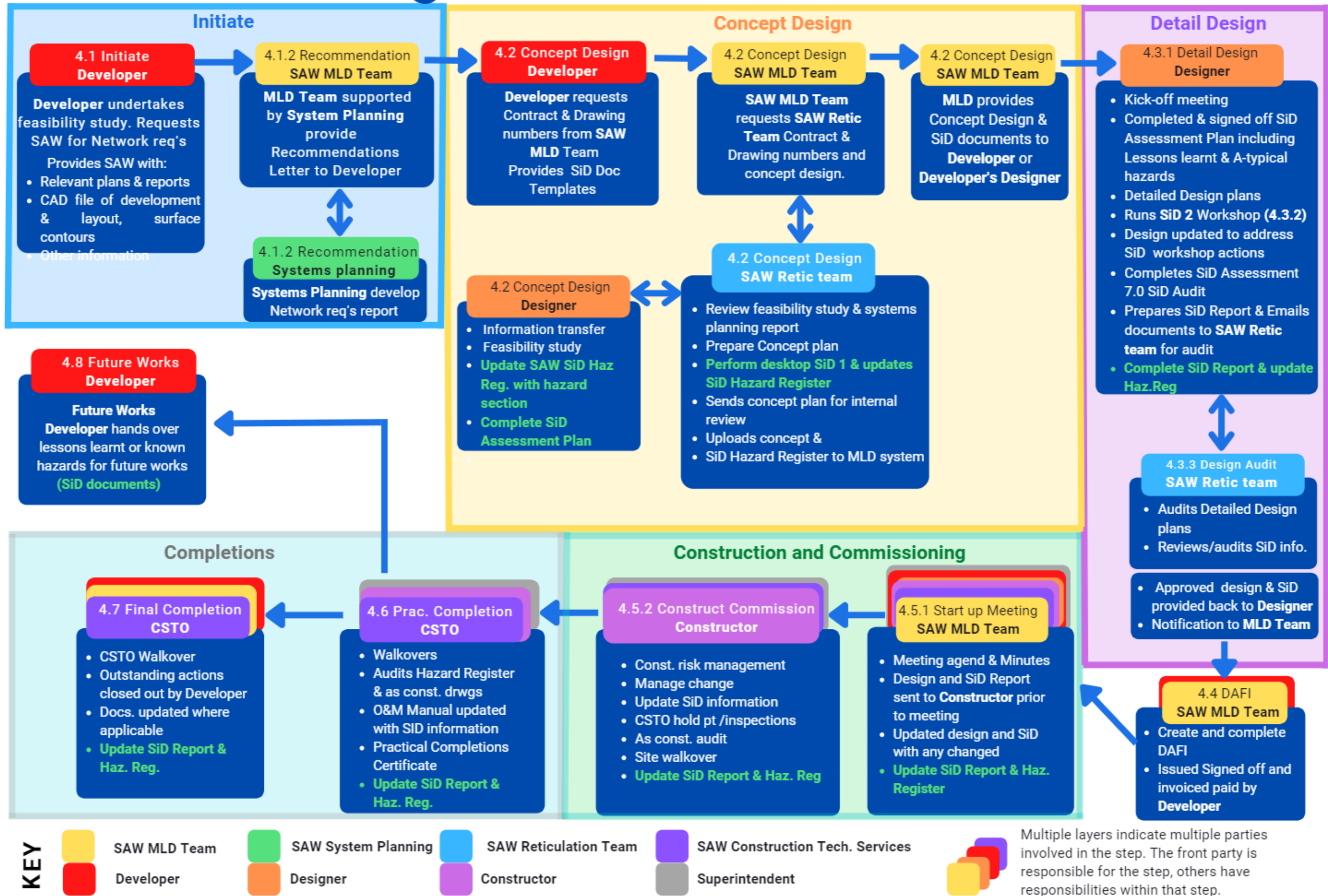


Figure 4-1 Major Land Development SiD Management Planning Process

## 5 SiD Activities

SA water has developed a Major Land Development Specific SAWT-ENG-0007\_MLD Assessment Plan. This document is to be reviewed and completed by the Developer or their representative to include activities as appropriate for the site and design including but not limited to the

- Identification, consultation, and cooperation of Stakeholders
- Identification, consultation, and cooperation with PCBU
- SiD Hazard Review workshop as per 4.3.2



## 6 Documents

As a minimum the required documents associated with MLD designs and when they are submitted as per Table 6-1 below and outlined in the Process is section 4.0 Process.

SA Water Engineering will issue the MLD SiD templates to the accredited designers for commencement of use. The document information and current revision number will be available on the SA Water Website for Consultant Engineers. Copies of the templates can be requested through emailing MLD, [majorld@sawater.com.au](mailto:majorld@sawater.com.au), stating the templates you require, development being worked on and the Accredited Consultant name.

Documents are to be labelled using "HXXXX" number reference, prefixing the document title. Eg H1234567 SiDReportVxx, H1234567SiDHazardRegisterVxx and H1234567SiDAssessmentPlanVxx

**Table 6-1 Required SiD Documents and Updates**

<b>SiD Assessment Plan (SAWT-ENG-0007_MLD SiD Assessment Plan v 1.0)</b>		
<b>When</b>	<b>Activity by Whom</b>	<b>Transmission Method</b>
Prior to 4.2 Concept Design	SA Water issued blank template to Developer & Accredited Designer.	Email Major Land Development and request for document details on SA Water Website.
4.2 Concept Design	Developer or representative review and update for specific development and submitted with request for concept design	Email to Reticulation Network at concept design phase
4.3.3 Detail Design Audit	Developer provide SAW with design SiD Assessment Plan, including section 7 – audit complete, with information following request for Design Audit.	Email to Reticulation Network
<b>SiD Hazard Register (SAWT-ENG-0008_MLD SiD Hazard Register v1.0)</b>		
<b>When</b>	<b>Activity by Whom</b>	<b>Transmission Method</b>
	SA Water to developer and Accredited Designers.	Email and request for document details on SA Water Web
4.2 Concept Design	At concept design request, Developer / Detail Designer provide reviewed and updated MLD SiD Hazard Register with site specific hazard and Lessons Learned	Email to Reticulation Network at concept design phase.
4.2 Concept Design	SAW to Developer – updated site SiD Hazard Register with Concept Design hazards	Reticulation network provide to Doc for MLD Account manager to issue with concept design.

4.3.1 Detail Design 4.3.2 SiD Hazard Review Workshop	Accredited Designer identifies hazards and controls during detail design. Updates site SiD hazard register during SiD2 workshop and issues to attendees for review.	SiD2 Hazard Register issued to attendees for review and comment via email.
4.3.2 Detail Design	SiD Hazard register actions are closed out and document distributed to SA Water Reticulation Network with IFC and other documents required for audit.	Detail Designer Emails with IFC and audit documents
4.3.3 Detail Design Audit	SA Water Reticulation Network complete audit of IFC, SiD and other documents.	Designer notified via email audit complete
Prior to 4.5.1 Construction Start-up meeting	SiD Hazard register issued with SiD report to Constructor as part of IFC documents	Designer issues to Constructor
4.5 Construction and Commissioning	SiD Hazard Register update is managed by Superintendent for Practical Completions	Superintendent internal process
4.6 Certificate of Practical Completion	SiD Hazard register reviewed and used for Practical Completions Walk Over.	Most recent version emailed to CSTO for use in Walk Over.
4.6 Certificate of Practical Completion	Issue updated SiD register with SiD Report in Appendix G of O&M Manual	Construction contractor issues O&M Manual
<b>SiD (safety) Report (SAWT-ENG-003 SiD Safety Report)</b>		
<b>When</b>	<b>Activity by Whom</b>	<b>Transmission Method</b>
At or prior to 4.3 Detail Design	SA water email template to developer and Accredited Designers. Accredited Designer requests documents as above	Email and request for document details on SA Water Web
4.3 Detail Design	Detail Designer complete and supply IFC documents including SiD Report and SiD Hazard Register as a native document for SA Water Reticulation Network Audit	Designer Email SA Water Reticulation Network for inclusion with Audit.
4.5 Construction and Commissioning	Superintendent manages reviews and updates with input by construction and commissioning teams.	Superintendent internal process



4.6 Practical Completion	As Constructed review issued with O&M Manual as appendix G (Native files)	Construction contractor issues O&M Manual
<b>Other activities and associated documents relating to Safety in Design</b>		
<b>When</b>	<b>Activity by Whom</b>	<b>Transmission Method</b>
As outlined in the SiD Impact Plan or relevant to the design and or infrastructure development	Other documents as identified in the SiD Assessment Plan to be closed out and provided in phases as indicated in the document.	Provided to relevant parties at a minimum within SiD report.