Glenbrook Industrial Site
ITA Stormwater and Process Water

Water Quality Management Plan

Rev 4 Draft (April 2024):
Proposed Consents

Revision and Circulation Register

Prepared by: NZ Steel Environment Manager

Revision No.	Issue Date	Purpose / Key Changes	Circulation
Draft Rev 1	June 2021	Prepared to support the Glenbrook resource consent application, incorporating reference to existing Management Plans required under ITA Stormwater Consents (issued 2012) and of other resource consents.	NZ Steel (document control system) Tonkin+Taylor and Auckland Council (consent application)
Draft Rev 2	October 2022	Updated for the addition of procedures, drawings and sections on • Critical Water Quality Controls • Establishing Trigger Investigation Levels Updated to reflect Section 92 responses	NZ Steel (document control system) Tonkin+Taylor and Auckland Council (consent application)
Draft Rev 3	January 2023	Updated to include revised Trigger Level tables	NZ Steel (document control system) Tonkin+Taylor and Auckland Council (consent application)
Draft Rev 4	April 2024	Updated to include Electric Arc Furnace application and Trigger Level tables	NZ Steel (document control system) Tonkin+Taylor and Auckland Council (consent application)

Table of Contents

Definitions and Abbreviations

Term	Definition	Abbreviation
Ancillary activities	Supporting activities, including movement of molten iron and steel products between manufacturing plants; stockpiling and processing of raw materials, co-products and waste; tipping of slag, iron and RPCC; and all supporting vehicle movements.	
Closed Landfill Management Plan	*To be set out in replacement Resource Consent (2022). The CLMP will be appended to the WQMP.*	CLMP
Coastal Birds Management Plan	*To be set out in replacement Resource Consent (2022). The CBMP will be appended to the WQMP.*	CBMP
Consented Mixing Zone	The consented mixing zone in the coastal marine area defined in the Northside and Southside Outfall discharge permits (Consents 21575 and 21576).	
Contaminant	Defined in section 2(1) of the Resource Management Act 1991 (RMA), as: *"including any substance (including gases, odorous compounds, liquids, solids, and micro— organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy, or heat—* *(a) when discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or* *(b) when discharged onto or into land or into air, changes or is likely to change the physical, chemical or biological condition of the land or air onto or into which it is discharged."* Section 5 outlines key contaminants of relevance to NZ Steel's activities and the Operational Area.	
Environmentally Hazardous Substances	Means any material, chemical or substance in sufficient quantity or concentration that may result in more than minor adverse effects when released to the receiving environments.	
Ferrous Scrap Management Plan	Management plan with detail relating to management of contaminants arising from externally sourced ferrous scrap (i.e. not generated at Glenbrook Site). The FSMP will be appended to this WQMP.	FSMP
Industrial and Trade Activity	An Industrial or Trade Activity (ITA) consent manages the discharge of contaminants (including environmentally hazardous substances) from an industrial or trade activity site.	ITA

ITA Area (overlaps with Operational Area)	The ITA Area is the area within the NZ Steel property, from which the treated ITA stormwater and process water is discharged. It includes all ITA activities (and some provisional areas for potential future expansion). The area is bound to the north by Brookside Road, to the east by Mission Bush Road and to the west by the Waiuku Estuary.	
ITA Stormwater Discharges	Rainfall runoff from the ITA Area	
Leachate	Water that has percolated through the waste within the active East and closed West Landfill. The water (leachate) is collected within the landfill sub-soil drainage layers then directed to the leachate collection ponds prior to its discharge to the Northside Ponds for treatment. The leachate is significantly different to leachate from municipal landfills due to the nature of the waste.	
Managing Risk and Safety	NZ Steel's proprietary system for recording and reporting safety, environmental incidents, risk scenarios, audits and complaints and related information.	MARS
Material Change	In relation to Resource Consents, a material change would be where the intensity or nature of the activity changes, such that the nature or quality of the authorised discharge from the Site would, or may potentially, alter the environmental effect in the receiving environment.	
Mean High Water Springs	The average of each pair of successive high waters during that period of about 24 hours in each semi-lunation (approximately every 14 days), when the range of the tide is greatest.	MHWS
North Drain	The North Drain is a constructed drain that was constructed in the 1980s to convey Steel Mill discharges and is an artificial watercourse in accordance with the Auckland Unitary Plan definition. The North Drain flows entirely within the ITA Area and discharges into the Lower North Stream, north of Brookside Road.	
Operational Area (overlaps with ITA Area)	The area within the wider NZ Steel ~550 hectare property that is used for Steel Mill operations. This area does not include areas that are farmed, or the area currently used as a landfill for waste materials generated at the **Operational Area**. For the purposes of the resource consent application the term **ITA Area** (industrial and trade activity) may be used. For the purposes of the WQMP the two areas are nominally the same.	
Outfall Structure	Outfall structures are engineered structures associated with a water discharge. These may consist of a stilling	

	basin, weir, stairs and platforms and erosion protection (such as concrete apron or rip rap).	
Process water	Process water is water that is used for a variety of manufacturing processes at the Steel Mill. For the purposes of this document, discharged process water may be referred to as treated process water or wastewater, which includes both waste process water and landfill leachate. Note that grey water from showers, toilets and kitchen waste is not included in this definition, as this is sent to Watercare Services Waiuku for treatment.	
Rain event	A 'rain event' is when water is discharged through the NZ Steel stormwater system at a rate of generally greater than 15 mm in 24 hours or 6 mm in an hour.	
Raw Water Raw Water Dam and Treatment Plant	Raw water is the supply sourced from the Waikato River and pumped to the Raw Water Dam on the Glenbrook Site. The Raw Water Treatment Plant treats the water to meet water quality requirements of the NZS manufacturing processes:- • Secondary water • Filtered water • Demineralised water	
Recycle water	Recycle water can be sourced from a number of locations and includes:- • Treated process and storm water, pumped from the outfalls; • Process water that has been used in one part of the manufacturing process and is cascaded to another process without treatment.	
Secondary water	Secondary water is supplied from the NZ Steel raw water treatment plant.	
Site	Means all of the land owned by NZ Steel (including the farmland which provides a buffer around the ITA Area).	
Total Suspended Solids	Total suspended solids is the total amount of particulate matter that is suspended in the water column, that is not dissolved and therefore can be trapped by a filter.	TSS
Trigger Investigation Levels	A Trigger Investigation Levels is a numerical value (established condition) above which an investigation will be undertaken. Trigger Investigation Levels have been established for most ITA stormwater discharges under Resource Consents as set out in this Water Quality Management Plan.	TIL
Turbidity	Turbidity is a measure of the clarity of the water. A measurement is taken of the amount of light scattered	

	by suspended particles present in the water when a light is shined through the water. The higher the total suspended particles in the water, the murkier it can appear and the higher the turbidity	
Water treatment facilities	Generic term that includes:- Wastewater treatment plants (WWTP) Settling ponds Recycle ponds Cooling towers Drainage systems Chemical treatment systems Vegetated filter strips Catch-pits, sumps, filters	
Wastewater Treatment Plant	A wastewater treatment plant is a facility in which a combination of various processes (physical, chemical and biological) are used to treat industrial wastewater and remove pollutants. There are multiple industrial wastewater treatment plants at the Steel Mill to treat process water discharges from a variety of plant. The processes used are dependent on the characteristics of the wastewater at each plant. WWTP's are part of the NZ Steel Water Treatment Facilities.	WWTP
Wastewater	Same definition as for Process Water	
Wetlands Management Plan	*To be set out in replacement Resource Consent (2022). The WMP will be appended to the WQMP.*	WMP

1 Overview of WQMP

The Glenbrook Steel Mill holds a suite of resource consents associated with the collection, treatment and discharge of stormwater and process water. Resource consents are a requirement of the Resource Management Act to ensure adverse environmental effects are avoided, minimised or mitigated.

1.1 Purpose and Scope

Resource Consents issued to NZ Steel set out a requirement for the development of a Water Quality Management Plan (WQMP) and for an environmental management system to be maintained. An overview of resource consents is included in **Section 1.2**.

Overall, the objective of this Water Quality Management Plan (WQMP) is to:

- Describe key practices and procedures to be adopted to ensure compliance with Resource Consent conditions;
- Describe the key responsibilities for NZ Steel personnel and service providers;
- Identify key controlled documents, such as procedures and drawings; and
- Describe management practices, including the maintenance program and contingency measures, which support NZ Steel to ensure ongoing compliance with consent conditions. This WQMP will therefore be one element for training Managers and Superintendents.

The framework for managing all the environmental aspects of our operations, is our environmental management system (EMS).

1.2 How to use this WQMP

As the operation and maintenance of Steel Mill water treatment systems are complex, the WQMP can only provide an overview of the management systems and practices. Specific operational procedures and drawings (both are controlled documents) are referenced at the end of each Section and throughout the WQMP. These procedures are also the basis of operator training and will be reviewed at a specified frequency.

Further, as NZ Steel's maintenance systems are in the form of a database (SAP) where preventative checks, inspections, part replacement and other maintenance protocols are detailed and scheduled, the extent of maintenance practices cannot be included in the WQMP. Therefore, an overview is provided, with reference made throughout the WQMP, as appropriate. The maintenance system will cover the range of water treatment equipment on Site and associated instrumentation, including control and monitoring equipment.

1.3 Structure of the WQMP

There are 14 sections in the WQMP, based on the requirements of Condition 9 [as proposed - to be updated when new consent issued].

Consent XXXX /conditions 10 and 11 [to be updated when new consent issued] set out that the activities authorised by the consent must be managed in accordance with the WQMP, a copy of the WQMP must be held on the Site at all times and made readily available to all personnel with responsibilities defined in the WQMP.

The basis for NZ Steel's management of the environmental effects associated with Site activities, is our environmental management system (EMS) an overview of the EMS is provided in **Section 1.4**. The following sections of the WQMP are embedded within NZ Steel's management systems.

Section 2 sets out protocols for managing material changes, including requirements for review of the WQMP.

Section 3 outlines the key responsibilities and training for the NZS operational, maintenance and support teams, as well as other resources available to support implementation of this WQMP. Section 4 provides an overview of the Operational Area and the receiving environment (natural waterways) for the Steel Mill's water discharges, in order to provide context for how our water systems are managed. As an overview, **Section 5** identifies key water contaminants and the main environmental effects associated with each contaminant.

Sections 6, 7, 8 and 9 outline the operational and maintenance controls for process water and ITA stormwater treatment facilities. Where standard operating and maintenance procedures (SOPs) and water system schematics provide further detail on these controls, these are listed in a table. NZ Steel procedures have a specified owner within the business, they are regularly reviewed and updated to ensure currency and effectiveness.

Section 10 outlines the maintenance program for Water Treatment Facilities and Outfall Structures. **Section 11** provides an overview of the measurement and monitoring program requirements, to verify that Resource Consent Limits are being met and to enable a response on Trigger Investigation Limits.

Section 12 outlines controls for hazardous substances use, storage, disposal and **Section 13** outlines the emergency spill plan. **Section 14** covers auditing of key controls for water treatment and management practices to ensure ongoing compliance.

Response to incidents which could lead to an actual or potential non-compliance is identified in **Section 15**. Compliance reporting to Auckland Council is outlined in **Section 16**.

1.4 Resource Consents

Resource Consents granted by Auckland Regional Council (in 2004 and 2014), are listed in **Table 1.1**. These cover all treated Process Water and ITA stormwater discharges to natural waterways from the Operational Area. The Resource Consents cover discharges of treated water, as follows:-

- Process Water, originating from NZ Steel manufacturing plants and associated activities;
- ITA Stormwater, which is rainfall runoff from the ITA Area; and
- Leachate from NZ Steel landfills.

The receiving environment of these treated discharges is the:-

- Waiuku Estuary (part of Manukau Harbour);
- Kahawai Stream
- Ruakohua Stream
- North Stream

Consent water quality limits (Consent Limits) and Trigger Investigation Levels need to be achieved for all discharges from the Operational Area, to ensure:

- Compliance with Resource Consents (legal requirements); and
- To ensure adverse effects in natural waterways are minimised to protect the ecology and human health.

A table of Consent Limits and Trigger Investigation Levels is included in **Attachment 3**. These monitored parameters are selected by Council to ensure that adverse environmental effects in the Waiuku Estuary and freshwater streams to which Steel Mill discharges flow, are avoided and minimised. (Refer to Section 5 for a brief description of the key contaminants associated with Steel Mill discharges.)

Consent Limits for discharges of Process Water and ITA Stormwater to natural waterways must be met at all times. Trigger Investigation Levels are specified for contaminants for ITA Stormwater discharges to three streams, where an investigation is initiated when TILs are elevated. Any exceedances of Consent Limits and

elevated Trigger Investigation Levels must be reported to Auckland Council and investigated, as set out in **Sections 14 and 15**.

Table 1.1 Resource Consents [to be updated following issue of new consents]

Common name	Consent reference	Description	Expiry

1.5 Associated Management Plans

There are management plans associated with the Resource Consents, as follows:-

- Closed Landfill (West) Management Plan
- East Landfill Management Plan
- Coastal Birds Management Plan
- Wetlands Management Plan
- Ferrous Scrap Management Plan

As leachate from NZ Steel's closed and operational landfills is pumped to the Northside Ponds for treatment, the Resource Consents associated with the West and East Landfills are relevant to this WQMP. The associated Landfill Management Plans may therefore be cross-referenced in this WQMP.

A Coastal Birds Management Plan (CBMP)) is required by Resource Consent to address the residual environmental effects of the Site discharges on coastal birds. A draft CBMP was provided with the consent application, and a final version will be submitted to Council for Certification following grant of consent.

A draft Wetland Management Plan (WMP) was provided with the consent application for providing positive effects on wetland habitats. A final version will be submitted to Council for information following grant of consent.

After Council certification of the CBMP the WQMP will be updated to reflect the roles and responsibilities for various activities associated with these two management plans. [When the new consent is issued **Attachment 8** will contain the Wetlands Management Plan and **Attachment 7** will contain the certified Coastal Birds Management Plan and **Attachment 9** will contain the Ferrous Scrap Management Plan.]

1.6 Environmental Management System

NZ Steel has established an Environmental Management System (EMS), which is certified to the international standard ISO14001 (since 2003). Conditions of resource consents [condition numbers to be added on issue of new consents] specifically reference our Environmental Management System, as a key aspect of managing all the requirements of the consents for ongoing compliance.

The foundation of our EMS is our mature quality management system (certified to ISO9001 since 1980's). The quality management system includes the following components which collectively form the Integrated Management System for our business.

- **Leadership and commitment:**
  NZ Steel's leadership team are responsible for ensuring that the published Bluescope Environmental

Policy and associated objectives are aligned with strategic policies and overall direction of our business. This will include provision of resources, correct support, training and guidance to complete tasks effectively. Communication is also critical from a leadership perspective for internal and external interested parties.

- **Roles, responsibilities and authorities:**
  NZ Steel's leadership team must ensure roles, responsibilities and authorities are delegated and communicated effectively.
- **Risks and opportunities**:
  Risks and opportunities must be considered in respect of the needs and expectations of interested parties, legal and regulatory obligations and the positive and negative environmental effects of the activities of the Steel Mill. This includes determining any possible emergency situations with potential for an adverse environmental effect, conducting risk assessments for activities associated with the manufacturing facility and identifying opportunities for improvement and assessment of any proposed change to an activity authorised by Resource Consents or associated environmental effects;
- **Procedures and controlled documents:**
  Integrated Management System (IMS) manuals are issued for each Manufacturing Plant and Support Services Team. The IMS manual is aligned to requirements of both quality (ISO9001) and environmental (ISO14001) management systems. Procedures form part of NZ Steel's Integrated Management System (IMS). Procedures identified in the WQMP are controlled documents, where content is verified by suitable qualified and experienced people and there is a specified owner authorising the content and issue of the procedure with a specified review period.
- **Training:**
  Programs for training at various levels of the business are established around procedures and a general level of environmental awareness is important across the entire workforce, including embedded contractors. Operational procedures will have associated, periodic competency checks.
- **Continual improvement:**

  This is a process approach, which is critical to an effective EMS and to minimise environmental risk. Typically, this follows the Plan-Do-Check-Act cycle, where the results of measurement, monitoring, incident investigation and auditing provide data and information which then may lead to decisions to revise or adjust activities and operational processes (**Figure 1.1**). In this regard, any new projects need to be managed under the management of change process, so that the impact on the environment is suitably managed. For example, any project design work and purchasing of new equipment needs to be assessed against the Mars scenario previously mentioned.

- **Records:**
  A range of key records associated with the WMQP are to be maintained to demonstrate compliance with consent conditions and to assist with auditing (both internal and external audits which includes Council Compliance Officers).

Figure 1.1 Schematic of Plan-Do-Check-Act cycle (source: advisera.com)

2 Management of Change and WQMP Review

Resource Consents issued to NZ Steel are based on the range of environmental studies undertaken to assess the effects of the water discharges from the Site. The conditions set out in the Resource Consents are therefore based on the documentation submitted to Council and assessed by their technical experts.

2.1 Management of Change

Prior to any material changes to activities, processes, operational controls, maintenance practices, roles and responsibilities the proposed change must therefore be thoroughly reviewed to determine if:-

- Resource Consent conditions can continue to be met;
- Variation to existing conditions, or a new Resource Consent is required;
- Appropriate controls can be implemented or constructed to ensure ongoing compliance; and
- Council is in agreement with NZ Steel's assessment of any material change.

The WQMP may be required to be updated to reflect these changes.

Established NZ Steel processes for change management must be followed and the NZPI Environment Manager and Utilities Superintendent is to be engaged in the process. This is applicable to both Capital Projects and operational or maintenance changes related to water quality or water supply management.

The assessment shall be documented to adequately show the risks assessed and the outcome of the assessment.

The NZPI Environment Manager is responsible to communicating with Council, where this is required.

2.2 WQMP Review Process

A full review of this WQMP will occur at a minimum of every 5 years, or sooner for the following reasons:-

- A significant water quality incident; or
- Any material change(s) to an activity, including materials which may affect discharge water quality; and
- At the request of Auckland Council.

The NZPI Environmental Manager will lead the review and involve the relevant operational and maintenance Superintendents, as outlined in procedure EV−7600.080.

On completion of the review set out above, any proposed modifications will be outlined and discussed with Council prior to issue of a revised WQMP. Where procedures or drawings are referenced in this WQMP, they will be reviewed to confirm that they remain consistent with WQMP.

For clarification, the following will not trigger a review of the WQMP:-

- Modification to a procedure listed in this WQMP, unless a material change is made that could potentially affect compliance with the WQMP or Resource Consents;
- Revision to the Trigger Investigation Levels, which will be notified to Auckland Council and updated in the WQMP as a minor revision.

3 Responsibilities, Training and Key Resources

This section provides an overview of key personnel with responsibility for ensuring compliance with Resource Consents and the WQMP. In addition, key resources to assist in compliance with this WQMP and the conditions of resource consents are outlined.

3.1 Responsibilities

Specific responsibilities are identified in the NZ Steel procedures that are referenced in this WQMP and associated training documents. Indicative catchments relating to the Resource Consents are identified in **Attachment 2** figures.

Table 3.1 outlines the responsible team and position accountable for ensuring Resource Consent conditions are met for Process Water and ITA Stormwater discharges. In some cases, more than one Superintendent or Manager may have responsibility for environmental controls in a catchment. (Further information about the catchments and associated receiving waterways is included in **Sections 4 and 5.**)

The housekeeping areas identified in the NZS Housekeeping Areas Drawing included in **Attachment 1**, is also a useful reference to identify personnel responsible for an area.

Table 3.1 Overview of Positions Responsible for Water Treatment Controls and Maintenance

Main Activity by Catchment	Responsible Team	Position of Responsibility
Northern Catchment		
Coal and PC processing and stockpiling yards	Iron Plant	Kilns Operations and Maintenance Superintendents
Aggregate processing and stockpiling yards	SteelServ	SteelServ Operations and Maintenance Manager
Primary Plants wastewater treatment plant	Utilities	Utilities Superintendent
Northside and SRNZ settling ponds	Utilities	Utilities Superintendent
Sludge dewatering ponds (1 to 5)	Utilities	Utilities Superintendent
East and West Landfill leachate	Utilities	Utilities Superintendent
North Stream Catchment		
Ironsand dewatering treatment plant and settling ponds	Iron Plant	Kilns Operations and Maintenance Superintendent
Coal stockpiling yard settling ponds	Iron Plant	Kilns Superintendent
East and West Landfill access road settling ponds	Environment	Environment Manager
Kahawai Stream Catchment		
Metal Cutting Yard	SteelServ	SteelServ Manager

Southern Catchment		
Rolling Mills wastewater treatment	Utilities	Utilities Superintendent
Southside settling ponds	Utilities	Utilities Superintendent
ARP wastewater treatment plant	Utilities	Utilities Superintendent
Ruakohua Stream Catchment		
Southern contractors yard filtration beds	Environment	Environment Manager
Yards 31 A, B and C settling ponds	Distribution and Materials	Distribution and Materials Manager

3.1.1 Managers and Superintendents

Key responsibilities for Managers and Superintendents of operational, maintenance and support service teams, including Alinta and site-based contracting businesses, are outlined in this WQMP. In summary, to ensure the requirements of this WQMP and Resource Consent conditions are always met these responsibilities include:

- Procedures prepared and maintained, detailing operational and maintenance activities and tasks for water treatment systems and operating plant to ;
- Employees and service providers receive training on the content of the WQMP and associated procedures, to ensure the requirements of this WQMP are met, with regular competency reviews;
- Hazardous substances procedures are followed for assessment of new substances prior to introduction and ensuring substances are stored, handled and disposed correctly;
- Environmental hazardous substances, which includes most raw materials and co-products, are appropriately stored and runoff from yards is controlled and treated correctly;
- Job Safety and Environmental Assessments (JSEA's), when required, set out appropriate controls to ensure Resource Consent conditions are always met;
- Prior to implementing any proposed operational changes with potential to affect water consumption or quality, compliance with the Resource Consents, or other governance requirements need to be discussed with the NZPI Environment and Utilities Teams;
- Schedule and lead audits of key water quality controls, outlined in WQMP (**Section 14**), to ensure compliance and identify opportunities to reduce risk to the environment and people;
- Incidents and complaints are investigated and reported, with corrective actions identified and assigned for timely completion.

3.1.2 Utilities Team

The NZ Steel Utilities Team - consisting of wastewater treatment plant operators, maintenance engineers and technicians and process engineers - are responsible for process water and stormwater treatment across the two largest catchments - Northside and Southside Catchments.

The Utilities Team operate and maintain the four larger wastewater treatment plants and the six larger settling ponds on site. Utilities are also responsible for the Waikato River water pumping system and Raw Water Treatment Plant.

As such, in addition to the responsibilities of the Utilities' Superintendent outlined in 3.1.1, the Utilities Team has a broad range of responsibilities, which include ensuring:

- Ongoing compliance with the Resource Consents by continuous monitoring of wastewater treatment plant conditions and discharge water quality
- Undertaking regular inspections and checks to ensure correct operating conditions are maintained to meet Resource Consent conditions and requirements of this WQMP;
- Maximising recycling of water, within manufacturing plants, the settling ponds and the Ruakohua Dam;
- Scheduling and undertaking maintenance of wastewater treatment plants, cooling towers, settling ponds and other associated facilities for the water treatment system;
- Responding to and leading investigations into non-compliances or increasing trends which could lead to a non-compliance.
- Regular interfacing with the manufacturing teams, to review the conditions of any ancillary wastewater treatment systems within that manufacturing plant;
- Directing and coordinating service provider tasks and activities, to support the cleaning and maintenance of water treatment facilities within the Utilities Team control, including settling ponds, catch-pits, drains and sumps.

3.1.3 NZPI Environment Team

Responsibilities for the Environment Team include:

- Support Superintendents, the Utilities Team, plant personnel and contactors to implement this WQMP;
- Ensure water monitoring is undertaken as specified by the Resource Consents;
- Review compliance monitoring results and support compliance and incident investigations;
- Support review of proposed operational changes with potential to affect water consumption or quality, compliance with the Resource Consents, or other governance requirements;
- Prepare compliance reports for Council and NZ Steel;
- Lead Council compliance reviews and liaison with Council ;
- Monitor and review proposals for changes to water treatment systems, to ensure ongoing compliance.
- Guide maintenance of and improvements to the EMS, as part of the Integrated Management System;
- Support regular audits to ensure this WQMP is followed and identify opportunities to reduce risk to the environment and people;
- Respond to and lead investigation of complaints relating to environmental matters; and
- Support any revision to the WQMP and submit revisions to Council for approval, as required;

3.1.4 Laboratory Team

The responsibilities of the NZ Steel Chemistry Laboratory Supervisor and their Team, include:

- Timely collection, analysis and reporting of water discharge samples;
- Ensure integrity of data and testing provided by the NZ Steel Laboratory and external resources supplying services to NZ Steel;
- Assistance with incident investigation, as requested.

3.2 Training and Competency

Manufacturing teams and the Utilities team maintain procedures which set out the details of operating and maintaining water treatment facilities within their area of responsibility.

Training methods for Operators generally include:-

- Written training modules (DocBase)
  In many cases this documentation is criterion-referenced instruction, where procedures and other key information is identified in the document and specific competency checks are included;
- On-the-job instruction
  This is likely to involve the new operator being shadowed by an experienced operator

This WQMP is one element of training for Superintendents, Managers, contractors, service providers and operational personnel, to ensure our business minimises harm to people and the surrounding natural environment. Procedures and training materials should cross-reference, as relevant, to

Operators in the manufacturing plants and the Utilities Team, will benefit from understanding the context for the range of procedures they are trained in and this is provided through the WQMP. Training specific to a Water Treatment Facility may also be provided to Operators. The current criterion-referenced-instruction (CRI) training documents are listed in **Table 3.2**.

Table 3.2 Associated Procedures

Reference	Title	Area and Owner
Procedures		
IP–9010.020	Dewatering Plant (operator CRI training)	Iron Plant
	Additional documents available and being transferred to DocBase	

3.3 Key Tools and Other Resources

Key resources are utilised for management of environmental aspects across the business and the WQMP and are listed in **Table 3.3**.

All employees and embedded contractors should be familiar with the function of these resources and know when they should be used or referenced.

Superintendents and Managers should provide adequate training to their direct reports and service providers on each of these key resources and provide access to them as appropriate or assign a resource to assist with access.

Table 3.3 – Key management systems tools and resources supporting the WQMP

Resource	Tools
Audit and Inspection Checksheets	Critical water quality control check sheets Area procedures will also include Inspection Sheets, which may be used during a shift, daily or at other regular frequencies Post-Storm Inspection Sheet
Change Management (MOC) System	Procedure SL−8213.008 outlines the requirements for managing and approving changes
DocBase Database for control, editing and issue or procedures	<u>Procedures</u> (SOPs) - Environmental - Quality - Safety <u>IMS Manuals</u>
MARS Database for internal reporting, including recording actions	Incident Reports Complaint Reports Risk scenarios Auditing Record of Change Management (MOC)
PIPELINE Database used for management of improvement activities	Recording project ideas Project approval and management
NZS Intranet Various resources (database, documents, certificates) are available on the following pages	<u>Environmental Management</u> - Permits and Resource Consents schedule - Waste declaration - Coach and Audit Sheets <u>Technical Publications</u> <u>IMS - Integrated Management System</u> ISO14001 and ISO9001 Certificates IMS internal audit reports Resources for internal IMS auditors External certification audit reports IMS Level 1 and 2 Manuals

4 Operational Area and Environmental Setting

The Steel Mill uses a large quantity of fresh water for manufacturing and ancillary operations, which includes the following uses:-

- equipment cooling
- waste gas cleaning (air pollution control)
- product rinsing and descaling
- chemical processes
- heat exchange
- steam generation
- aggregate and scrap washing
- transport of Primary Concentrate (PC) as a slurry
- general cleaning

4.1 Water Sources

The source of process water is the Waikato River, treated stormwater and recycling of treated process water. With a high level of water recycling and also use of treated stormwater, only about 2% of the Process Water in circulation at any time throughout the manufacturing process is discharged to natural waterways.

The supply of water for the Steel Mill is covered by other resource consents and management plans.

4.2 Catchments

Within the Operational Area, there are five main catchments - shown in Attachment 2 figures – with treated process and storm water discharging directly to the Waiuku Estuary at two locations and five discharge locations to freshwater streams.

An outline of the receiving environment and Site catchments is described in **Sections 4.6** and further in **Section 5**.

4.3 Treatment

To ensure discharge water quality meets resource consent conditions there are seven Wastewater Treatment Plants (WWTP) for treating Process Water. The four largest are operated and maintained by the Utilities Team.

The Slurry Dewatering Plant has a separate WWTP for treating PC slurry transport water and this is operated and maintained by the Iron Plant. In addition, there are a number of settling ponds associated with the raw materials yards which provide treatment for discharges to the North Stream (referred to in resource consents as ITA Stormwater).

The remaining two WWTP's are in the Metal Coating Line and the Paint Line. They provide primary treatment before discharging to the main settling ponds managed by the Utilities Team.

The full Site monitoring program is described in **Sections 6 to 9** and maintenance of this equipment and devices in **Section 10**.

4.4 Monitoring

Each discharge location has an associated monitoring program, as set out in the Resource Consents and this WQMP. Monitoring assists the Utility operators and the Dewatering Plant operators to maintain the required discharge water quality (referred to as compliance monitoring). Compliance monitoring provides data that is reported to the Council to demonstrate compliance with consent conditions and trends associated with Trigger Investigation Levels.

These monitored parameters are selected by Council to ensure that adverse environmental effects in the Waiuku Estuary and freshwater streams to which Steel Mill discharges flow, are avoided and minimised. The full Site monitoring program is described in **Section 1.4**.

4.5 Management System

NZ Steel's environmental management system – certified to ISO14001 and audited annually – is integral to ensuring a high level of compliance to resource consent conditions. The EMS is described in **Section 1.4**.

The WQMP should be read in conjunction with the following documents:-

- Resource Consents (issued by Auckland Council);
- Procedures, drawings and other documents identified in this WQMP;
- Area-specific Integrated Management System (IMS) manuals (outlined **Section 1.4**);
- MARS Scenario Risk - Water 50006610;
- Associated management plans (**Section 1.3**).

4.6 Overview of Operational Area

Approximately 190 hectares of the Site is used for the operational aspects of the Steel Mill (defined in **Figure 4.1**, as the 'Operational Area'). Resource consents have been granted by Auckland Council authorising discharges to water, as a result of Steel Mill activities (listed in **Table 1.1** and full copies available on the NZS intranet).

For the purposes of managing Process Water and ITA stormwater from the Operational Area there are five defined catchments, where appropriate water treatment is provided before discharges occur to either freshwater streams or the Waiuku Estuary. The catchments are indicated in the figures included in **Attachment 2**.

- Northside Outfall
- Southside Outfall
- North Stream
- Kahawai Stream
- Ruakohua Stream

The northern portion of the Operational Area is where the majority of the raw materials in the iron and steel making process are stockpiled, including coal and Primary Concentrate (PC). The central part of the Operational Area comprises the Iron and Steel Plants. To the east and south of the Iron and Steel Plants are the Finishing Plants, Rolling Mills, storage yards and administration offices.

Within the wider Site, NZ Steel owns land to the north, east and south of the Operational Area which is farmed. This area also contains three landfills – an operational landfill (East Landfill), a closed landfill (West Landfill) and a historical landfill (North Landfill). The East and West landfill are located north of the Operational Area. The North landfill lies immediately to the west. These landfills have, or are receiving, process waste from the Steel Mill only and are subject to separate resource consents. Leachate is pumped from the dedicated landfill leachate collection ponds at the East and West Landfill to the Northside Ponds for treatment.

4.7 Freshwater Streams

ITA Stormwater and Process Water from the Operational Area discharge to the North Stream, Kahawai Stream and the Ruakohua Stream as shown in **Figure 4.2** and in **Attachment 2**. The following sub-sections provide an overview of the receiving environments to provide context for this WQMP.

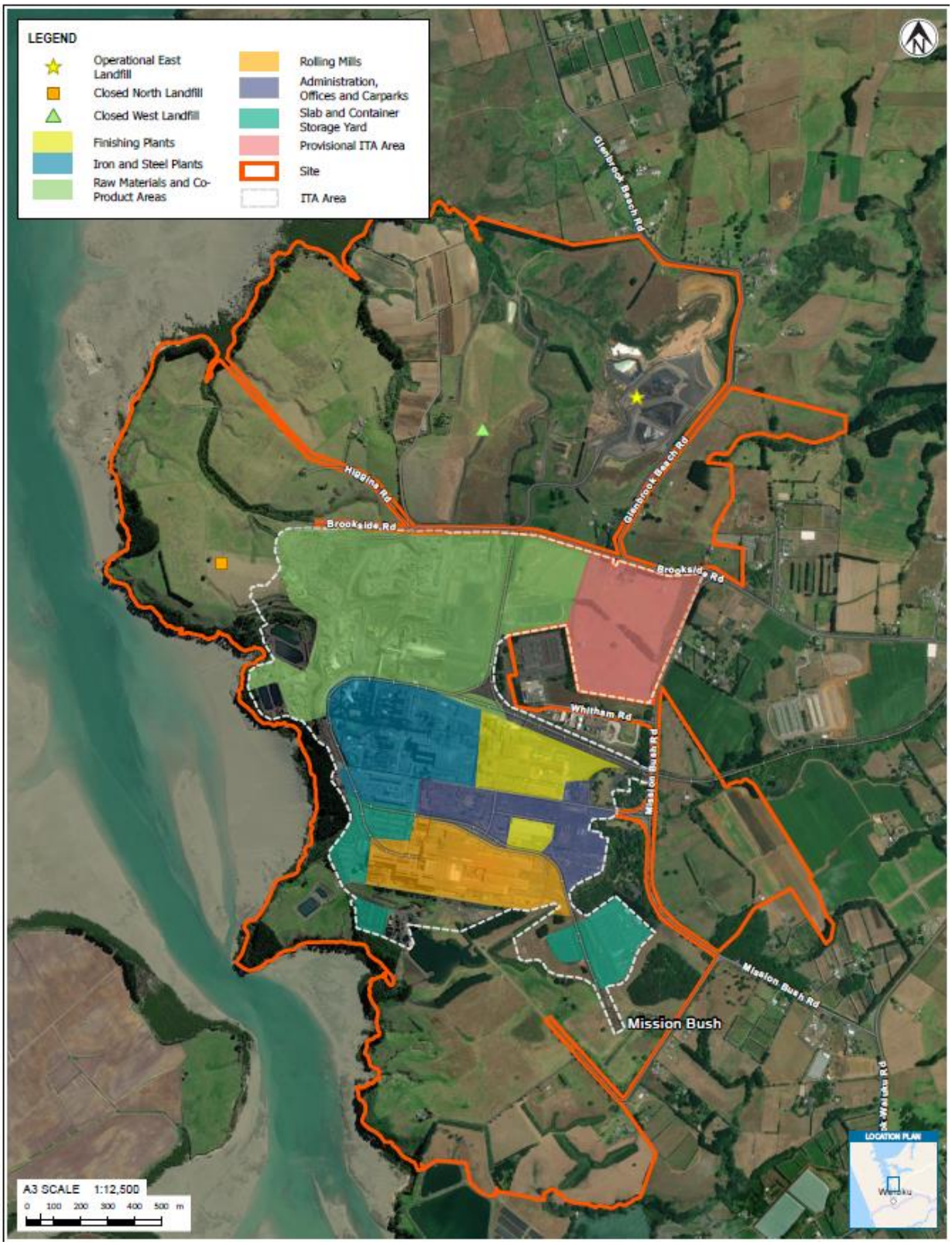


Figure 4.1: NZ Steel Operational Area (labelled as ITA Area) and indication of key activities (as at November 2023)

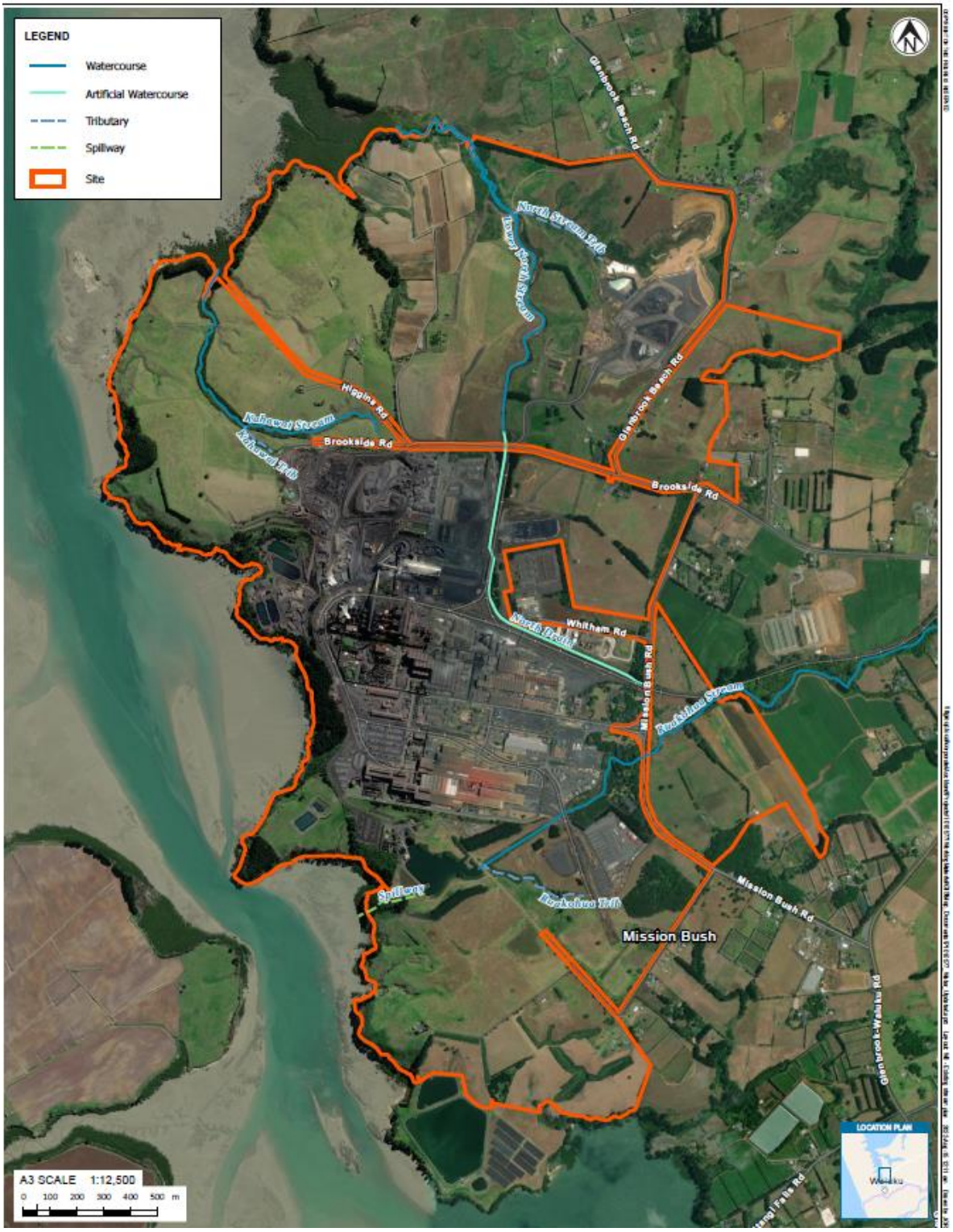


Figure 4.2: NZ Steel Site, showing natural streams

4.7.1 North Drain and Lower North Stream

The North Drain ITA catchment (refer to **Attachment 2- Figure W-ITA6**) discharges into the North Drain which flows into the Lower North Stream (approximately 65m north of Brookside Road). The Lower North Stream is located to the north of the Steel Mill and flows in north-westerly direction towards the Waiuku Estuary.

The North Drain receives stormwater from the Steel Mill raw materials yards and from the adjacent farmland within the ITA area; process water from the Ironsand Dewatering Plant and runoff from the Transpower switchyard and the BOC site[1]. During dry periods, flow is dominated by water from the Ironsand Dewatering Plant. Average flow from the Dewatering Plant is around 3,900 m^3/day.

The Lower North Stream comprises an unmodified (natural) lower section and a modified upper section with a total catchment of 195 ha. The Lower North Stream catchment historically extended to Brookside Road, at a location further west than the present-day channel. The development of the West Landfill resulted in modification and realignment of the Lower North Stream, with the channel shifted east of its original location.

Downstream of the Steel Mill and Brookside Road, the Lower North Stream flows between the East and West Landfills. The riparian margins of Lower North Stream have been planted with native vegetation. A small unnamed tributary at the base of the East Landfill flows into the Lower North Stream approximately 1 km downstream of Brookside Road. From this point the Lower North Stream continues for approximately 200 metres until it discharges to the Waiuku Estuary. The riparian margins in this lower section of stream have previously been fenced to exclude stock access and planted with native vegetation.

4.7.2 Ruakohua Stream

The Ruakohua Stream is approximately 4km long and flows in a south-westerly direction to the south of the Steel Mill (refer to Attachment 2- Figure W-ITA7). The Ruakohua Stream has been dammed at the Steel Mill to form a reservoir (Ruakohua Dam), which is used for Steel Mill process water and firefighting water. Other sources of water to the Ruakohua Dam reservoir are a tributary to the Ruakohua Stream (referred to as the Ruakohua Tributary), treated water from the Southside Ponds, and water supplied from the Waikato River into the Ruakohua Tributary.

The Ruakohua Stream drains a total catchment of approximately 325 ha, approximately 220 ha of that (80%) is upstream of NZ Steel's property boundary. This upper catchment land use is predominantly rural, including beef and dairy farming, and market gardens. The lower catchment land use includes the Steel Mill Operational Area totalling approximately 10.3 hectares. In this location the Ruakohua Stream has previously been riparian planted, and now includes a dense riparian zone.

4.7.3 Kahawai Stream

Kahawai Stream is north of the Steel Mill. It flows in a general north-westerly direction for approximately 1.2 kilometres before flowing into the Waiuku Estuary (refer to **Attachment 2**- Figure W-ITA8). The majority of the Kahawai Stream is fenced to exclude stock access and the riparian margins are planted along most of the stream. Kahawai Stream is surrounded mostly by agricultural land currently used for cattle grazing.

While no ITA activities are currently undertaken with the Kahawai Stream sub-catchment, future activities may be considered.

4.8 Waiuku Estuary

The Waiuku Estuary is the ultimate receiving environment of the ITA and stormwater discharges.

[1] This ITA consent application does not cover the BOC and Transpower sites.

It is one of the four main arms of the Manukau Harbour and extends about 11km from the Waiuku Township downstream to Clarks Beach. The Taihiki River estuary, which flows in a westerly direction to the mouth of the Waiuku Estuary, is a major offshoot of the Waiuku Estuary.

The Waiuku and Taihiki estuaries drain at low tide. They receive freshwater inputs from a catchment of approximately 300 km^2. The land use of the estuary is predominantly rural and includes Waiuku township, rural settlements and the NZ Steel Operational Area (also referred to as ITA Area).

Freshwater stream inlets enter the Waiuku Estuary along its length, including the Lower North Stream, Kahawai Stream and Ruakohua Stream (refer **to Attachment 2**- Figure W-ITA1).

5 Site Catchments and Key Contaminants

Each of the Manufacturing Plants are shown in **Figure 5.1**. The figures in **Attachment 2** provide an overview of catchments on Site (Figures W-ITA1 to W-ITA8) and indicate the discharge locations of the Process Water and ITA Stormwater discharges.

Section 6 provides an overview of the wastewater treatment plants (including chemical treatment programmes and secondary treatment in settling ponds), the real-time monitoring in the Wastewater Treatment Plants (WWTP) and for stormwater discharges to ensure ongoing compliance.

Figure 5.1- Overview of Operational Area, with Indication of Manufacturing Plants

Section 5.1 provides an overview of the key activities undertaken at the Steel Mill which are potential sources of contaminants to land and water, to provide context for the controls outlined in **Section 6**. An outline of key activities and the range of physical controls employed to manage the potential contaminants is contained in **Attachment 4**.

5.1 Water Quality Limits and Investigation Trigger Levels

Water quality monitoring parameters have been selected to ensure that adverse environmental effects in the Waiuku Estuary and freshwater streams to which Steel Mill discharges flow, are avoided and minimised. The NZ Steel monitoring program is outlined in **Section 11**.

Consent Limits for discharges of specific parameter to natural water bodies which must be met at all times.

Trigger Investigation Levels are specified for contaminants where historic monitoring has shown levels are consistent and below a level at which the potential for significant adverse effects are expected. The trigger levels are set to identify unexpected changes or upsets and opportunities for longer term improvements.

Any exceedances of Consent Limits must be reported to Auckland Council and investigated.

5.2 Environmentally Hazardous Substances

When not managed correctly, or where stormwater or process water is not treated correctly - as set out in this WQMP and associated procedures – the following materials and substances stored, used and handled have the potential to be an Environmentally Hazardous Substances (refer definition by Council):-

- Hazardous Substances (classified under Hazardous Substances and New Organisms Act)
- Coal
- Limestone
- Externally sourced scrap steel
- Waste hydrocarbons
- Dissolved metals, particularly zinc
- Manufacturing co-products, such as Steelmaking Slags and Blend
- Vehicle tyres

5.3 Contaminants

The water treatment controls set out in this WQMP (in particular in **Section 6**) and associated standard operating procedures are critical for ensuring compliance with Consent Conditions and minimising environmental harm.

Key water contaminants are routinely monitored at various locations and frequencies across the Site and for all ITA discharges. Long-term monitoring for the five metals - Arsenic, Chromium, Cobalt, Iron, and Nickel - indicate that concentrations are generally below the Australia New Zealand Water Quality Guidelines (2020) and as such, they have not been discussed in this Section.

Slag from Ironmaking and Steelmaking, coal, lime and other raw materials may contain levels of contaminants that require controls and treatment for run off. Auckland Council refer to these as Environmentally Hazardous Substances.

The potential environmental effects of the key contaminants likely to be associated with Steel Mill ITA discharges are summarised in the table below. The controls outlined in this WQMP are therefore important to minimise environmental harm from Steel Mill discharges. The following description is sourced from the T+T Report 2022 Water Discharges and Industrial and Trade Activity Assessment, which references the ANZWQG (2000).

Environmental contaminant	Steel Mill key controls
Suspended solids Suspended solids reduce water clarity and can discolour water. Cloudy water can reduce the ability for fish to see, interfering with	▪ At-source controls to reduce solids, where feasible

their ability to see prey or detect predators. It also lowers light penetration to aquatic plants, inhibiting or reducing their growth and, therefore, reducing their ability to act as an habitat, a food source, and a producer of oxygen (in the form of dissolved oxygen) for those species reliant on these plants. Suspended solids, given the right low flow conditions, may also settle out on the bed of the waterbody or coastal area. This can smother organisms that live on the bed, such as aquatic plants and benthic organisms.	▪ Settling Ponds ▪ Chemical treatment to aid settlement of solids ▪ Water treatment plants
Aluminium Aluminium has little known biological function, but is toxic to aquatic fish, invertebrates and plants. In Auckland Regional Council's TP227 *The Use of Flocculants and Coagulants to Aid the Settlement of Suspended Sediment in Earthworks Runoff: Trials, Methodology and Design* it is concluded that toxic aluminium ions from flocculants are rapidly precipitated out of flocculated water which minimises the toxicity to species.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants
Boron Boron is a natural constituent of minerals, in particular clay-rich sedimentary rocks, coal and shale. Boron is an essential nutrient for a range of species including plants. Boron in marine water plays an important role as a buffer in maintaining marine water pH. It typically exists as Boric acid (the predominant form of boron in natural freshwater). The influence of pH in toxicity is unclear, and boron is not impacted by changes in water hardness.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants
Copper Copper is a trace element that is essential to most aquatic organisms. While essential to most aquatic organisms, toxic concentrations are only slightly above copper concentrations required for the optimum growth of algae. The toxicity of copper can be influenced by the levels of dissolved organic matter, pH, water hardness, alkalinity and salinity. Copper forms complexes with dissolved organic matter, which can decrease the bioavailability, and therefore toxicity, of copper concentrations that may otherwise exceed guidelines. Generally, the uptake and toxicity of copper decreases with decreasing pH, however some studies have shown an increase in toxicity with decreasing pH below the pH range of 6.0 - 8.5. In freshwater organisms, toxicity generally decreases with increasing water hardness and alkalinity and generally increases as salinity decreases.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants
Iron Iron is one of the most abundant elements in the earth's crust. Iron is an essential trace element for both plants and animals and is required by most organisms for essential growth and development, with iron deficiency resulting in adverse biological effects. Some studies have shown that in the presence of oxygen, iron his found as ferric hydroxide which can have similar issues to suspended solids in terms of decreased light penetration and smothering of benthic organisms.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants

Vanadium Vanadium is an essential micronutrient for many organisms, stimulating growth in low concentrations. However, it is toxic to many aquatic plants, fish and invertebrates in very high concentrations. Vanadium can exist in two forms, vanadium (V) and vanadium (IV). Vanadium (V) is the form which is more toxic to aquatic life. Vanadium toxicity is primarily impacted by pH and water hardness, with the toxicity of vanadium high in the range of 6-9 and highest at a pH of 7. It is also generally observed that the toxicity of vanadium decreases with increased water hardness.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants
Zinc Whilst an essential element, zinc can also be toxic in freshwater higher concentrations, in particular to marine fish, invertebrate and plant species. Toxicity of zinc is influenced by several factors including the levels of dissolved organic matter, salinity and alkalinity of waters. In freshwater, zinc forms complexes with organic matter, decreasing the concentration available in the water. Zinc is found to decrease in toxicity with increasing salinity. The toxicity of zinc generally decreases with a pH below 8.	▪ At-source controls to reduce solids, where feasible ▪ Settling Ponds ▪ Chemical treatment to aid settlement of solid ▪ Water treatment plants
Salinity In estuarine and marine environments, salinity protects invertebrates against negative effects caused by metals. However, salinity in freshwater, estuarine and marine environments is harmful to organisms when concentrations are beyond the natural fluctuations for the organism within the specific environments as it exceeds their ability to balance salt concentrations, and therefore water, within their own internal fluids. This can affect the metabolic rates of these organisms.	▪ Blowdown from water circuits which will have higher salinity (than freshwater) are diluted in settling ponds with rainwater harvested from the ITA catchment ▪ WNH slurry water has variable salinity
pH Most organisms require a pH range between 6.5 and 9.0, with many organisms requiring the pH to be within a smaller subset range of this. pH exceeding the tolerable levels for aquatic species is lethal. As well as this, pH can affect the solubility and toxicity of many other chemicals and heavy metals.	▪ Dilution of wastewater streams ▪ pH adjustment with water treatment plants and ponds
Temperature Most aquatic species are cold-blooded and therefore their physiology is affected by the temperature of their surrounding environment. It affects their metabolic rate, and therefore their energy and behaviour. This includes their ability to obtain food and process it through digestion, nutrient absorption and excess energy storage. Temperature effects are dependent on timing, duration and exposure and are organism specific.	▪ Cooling towers ▪ Dilution with cooler water in settling ponds and water treatment plants
PAH's and TPH PAHs can be toxic to aquatic organisms and can accumulate in the tissues of fish, and other aquatic organisms. Effects can include development abnormalities, reproductive disorders and reduced	▪ Externally sourced scrap steel

growth and survival rates. Overall, elevated concentrations of PAHs in both freshwater and marine environments can result in impacts on the type and number of species present through increased mortality and reduced reproduction. PAHs refer to a range of different substances, with the main substances reported as Naphthalene, Anthracene, Phenanthrene, Fluoranthene and Benzo(a)pyrene.	

5.4 Volume

The current Resource Consents place limits on the volume of discharge from the Northisde and Southside outfalls, as well as the Dewatering Plant. Volume can affect the mass load of contaminants discharged into the Estuary and freshwater streams. Therefore, going forward, the focus from the Northside and Southside outfalls will be on the Consent Limits for concentration and mass load of zinc. Monitoring discharge volume will be a function of ensuring heavy metals are within the Consent Limits specified in the Resource Consent and Trigger Investigation Levels set out in the WQMP.

Dewatering Plant

The Dewatering Plant discharge volume is dependent on the WNH Mine pumping hours and in a normal production week, averages approximately 3,900m^3/day with a maximum of 7400m^3/day. The volume discharged can increase during periods of heavy rainfall, as most of the stormwater from the emergency (back-up) stockpile, also drains into the Dewatering settlement ponds. These ponds discharge to the North Drain.

6 Process Water to Northside Outfall

Treated Process Water discharged at the Northside Outfall, comes from the following sources:

- Iron Plant water treatment plant
- Steel Plant water treatment plant
- Metal Coating and Paint Line (Finishing Plants) water treatment plants
- Alinta and Utilities Cooling water systems
- Any water losses discharged in the plant

An overview of each of these systems is included in this section. This includes the chemical treatment program, the function of the settling ponds and key operational control practices, including real-time monitoring, shift inspections and contingency measures. Procedures and drawings listed in the **Table 6.2** (end of Section) are relevant to compliance with Resource Consents and implementation of this WQMP.

For context in reading this section, **Section 5** should be referred to in order to understand the range of contaminants treated and potential Environmentally Hazardous Substances. Roles and responsibilities are outlined in **Section 3** and the procedures listed in and associated with this WQMP. An overview of maintenance is provided in **Section 10** and the water quality monitoring program is outlined in **Section 11**.

6.1 Water Treatment Plants

Iron and Steel Plant Water Treatment

The Iron and Steel Plant wastewater systems account for approximately 30 percent of the treated Process Water that is discharged at the Northside Outfall. Both plants consist of large twin clarifiers (22 metre and 14 metre diameter) and associated pumping systems. These clarifiers treat the return water from their respective operating plants, before returning the "clarified water" back to the plant for reuse. In this way, at least 95% of the water is continually recycled back to the plant. The remaining five percent is either "lost" as:

- Blowdown from the clarifiers to maintain the required water chemistry,
- Liquid sludges which are pumped away for further processing,
- Periodic flushing of the clarifiers or overflows from the gas plant storage tanks.

The clarifiers are critical in managing the contaminates that are scrubbed from the MHF, Kilns, Melters and KOBM waste gas plants. By returning the plant water back to the clarifiers, this enables most of the contaminants to be removed as sludge and processed downstream before being transferred to the Landfill. If these contaminants are not treated in the clarifiers, but sent directly to the northside ponds, this significantly increases the loading on the ponds and reduces the water quality at the Northside outfall.

However, in the Iron Plant Wastewater Treatment Plant (IPWT), it is necessary for the clarified water system to operate with high blowdown rates, to maintain the Calcium Sulphate levels at specified levels. This blowdown is clarified and controlled by the Utilities operator. This is offset by the fact that the makeup water is recycled water.

In the Steel Plant Wastewater Treatment Plant (SPWT), there is minimal blowdown and no makeup water is added (Steel Plant scrubbers and the Melter scrubbers add a small amount of process water).

In both plants, the underflows (carrying the liquid sludges) are pumped to the Iron Plant Thickener where the sludges are concentrated and then pumped to two dewatering sludge ponds, were they are further dewatered, before being removed by truck to the Landfill.

Metal Coating Line Water Treatment

In the Metal Coating Line, process water is used for strip cleaning prior to coating the surface of the steel strip. Process wastewater flows into a holding tank, from which the discharge water is pumped to a larger tank for

pH adjustment. When a pH range of 6 - 9.5 is achieved, the water is discharged to the Operational Area drainage system, flowing to the Northside Ponds. The system includes capacity to recirculate the water until the target pH is achieved. The key control for this plant is to maintain the water chemistry within well-defined pH levels.

6.2 Cooling Water System

There are 18 cooling water towers and their purpose is to cool all the process water received from the plants. To maintain the required cooling water quality standards, every cooling tower must blowdown a small percentage of water and make up with clean process water. This blowdown is automatically controlled by monitoring the conductivity of the cooling water. As conductivity rises, there is a corresponding increase in blowdown rates and vice versa. If the conductivity falls below a set value, then the blowdown stops.

6.3 Recycling Water

To minimise the volume of water discharged at the Northside Outfall a large volume of treated Process Water, either from the Treatment Plant or Northside Ponds, is recycled to the:-

- Iron Plant as alternative to freshwater supply from the Site reservoir;
- product tipping banks, for cooling hot materials;
- water-cart filling tanks (for dust suppression;
- truck washing facility;
- water sprays for co-product processing facilities.

This recycling of water also ensures compliance with the discharge consent limits (volume and metals mass load) and in addition reduces the freshwater take from the Waikato River.

Within the Iron Plant and Steel Plant WWTP's the water is recirculated back into the process. However, the quality of this water needs to be carefully monitored, to ensure equipment integrity. So some water is "blown-down" (released back into the treatment plant or to Ponds) and "make-up" water added from the Site water supply circuit.

Multiple pumps are situated at the Northside Outfall to recycle water to the Iron Plant, the tipping banks and adjacent co-product facilities.

6.4 Settling Ponds

The Northside Ponds collect and treat the stormwater runoff from most of the northern catchment. This runoff is rain dependent and combines with the treated process water that is discharged from the treated process water systems from the Primary Plants and Finishing Plants.

These large ponds act as settlement ponds. They do this by settling out most of the contaminants which are in the form of suspended solids.

On any given day, there can be large variations in the receiving water in terms of quantity and volume. This is mostly influenced by rainfall but it can also be related to down days for maintenance in the Manufacturing Plants when evaporative losses and water recycling are reduced.

A detailed schematic of the site water systems is listed in the **Table 6.2** and can be obtained from the NZ Steel drawing system. An overview of the pond specifications is provided below.

	ITA Areas and land use	Primary stormwater treatment device(s)	Discharge and monitoring
Northside ITA Catchment	The **Northside ITA Catchment**: • Process buildings; • Administration buildings; • Bulk raw material stockpiling and handling; • Co-product production, storage and handling; • Slab cooling yards; and • Sealed and unsealed roads. • Future Externally sourced ferrous scrap yards Approximate area of 69 ha.	Northside Ponds comprise: • Two ponds, both have a capacity of 15,000 m^3; and • Ponds include additional treatment measures. Other treatment devices are pumped to the Northside Ponds.	The primary outflow is to the Manukau Harbour CMA, via a controlled discharge. Water quality is monitored at the outlet (daily grab and composite samples) and grab samples at one inlet location (chute). The outlet has real-time monitoring to control room.
		SRNZ ponds: • Comprise two ponds, with capacity of 8,000m3 and 5,000m3 (surge) • Water enters Pond 1 then flows to Pond 2. • Pond 2 has two Melter Aggregate filter walls providing additional treatment.	Pond 2 water either flows by gravity to Northside Ponds or is pumped to Southside Outfall. When pumped to Southside Outfall, the outfall continuous monitoring is monitored.

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

6.5 Chemical Treatment Program

6.5.1 Chemical Management

Suitability of chemicals selected for water treatment must be assessed prior to their introduction.

NZ Steel's chemical suppliers should be referred to for guidance on selection of chemicals. Generally, they will assist with chemical bench-testing using a sample(s) of the water quality in the system.

Management of Change (MoC) processes should be used for this process, as it provides a record of the proposed change, who is involved in the assessment and any actions required to progress the change. The MoC process also provides a record of change approval. Ensure a copy is retained in the area and preferably sent to the NZPI Environment Team for their centralised records.

6.5.2 Water Treatment Plants

The chemical treatment processes in the clarifiers are designed to treat the water, so that once clarified, the water can be reused within the manufacturing plants. For the most part, the chemical process consists of pH correction and flocculation. By clarifying the water, the contaminants in the water settle out in the base of the clarifiers and this resultant sludge is then pumped to the Iron Plant thickener.

In the Iron Plant Water Treatment Plant (IPWTP) and Steel Plant Water Treatment Plant (SPWTP) the pH is automatically controlled by continuous pH meter. The flocculant dosing is manually controlled.

6.5.3 Settling Ponds

The Northside stormwater settling ponds are continuously dosed with a coagulant and a flocculant. In the case of the coagulant, the dosing is in proportion to the turbidity at the Northside Outfall. The flocculant is manually controlled.

6.6 Operational Monitoring and Inspections

The Northside Outfall has continuous real-time monitoring for flowrate, pH, turbidity and temperature. Although this data is used for Compliance Reporting (**Section 16**) this data is also transmitted to the Utilities Monitoring System (UMS).

The UMS is a computerised system that provides a continuous trend of plant operating data and alarm monitoring, so that the Utility operator can monitor the operating plants and take corrective action as required. This is combined with regular plant inspections by the shift operator. The UMS is a powerful tool that also allows for historical trends to be stored and analysed. This data can then be used when detailed and thorough investigations are required for any environmental incident or near miss.

Contingency measures for discharge monitoring equipment are set out in **Section 6.7** and the associated Utilities procedures (**Table 6.2**).

There is an extensive library of Standard Operating Procedures (SOPs) relating to the Utility operations. These SOPs are reviewed every two to four years and updated as required. Ongoing training and assessments of the shift operators regularly occurs using the procedures as the reference material.

These procedures are very detailed and include every task that a shift operator performs as part of their shift duties. In the case of the Utility Team, every process alarm and subsequent corrective action (specific to each alarm) has been updated to reflect current best practice.

The following information is an overview of the key monitoring and controls that the operator preforms on a shift-by-shift basis. **Attachment 5** contains an example of a detailed Plant Check List used by the Utilities operators at the intervals specified (generally included in procedures). These plant checks are recorded in computerised logs and the Operator reports any issues to the Utilities Maintenance or Process Engineer.

6.7 Critical Water Quality Controls

The following lists are critical water quality controls, where an audit guide and frequency for conducting audits has been specified in plant procedures. Also outlined in **Attachment 4**.

Section 14 lists the procedures containing the check sheets for each audit and how audits are to be recorded. These listed standard controls are routinely carried out by the operators as part of their normal duties.

Maintenance of Water Treatment Facilities (and associated equipment) and outfall structures is outlined in **Section 10**. The maintenance programs are critical to ensuring that the facilities are fully operational and functioning correctly and provide adequate water treatment to meet consent limits.

Iron Plant Water Treatment Plant:

- Minimise the amount of flushing of the clarifier underflows, to reduce the water volume discharged and the solids loading on the Northside ponds.
- Maximise the amount of recycle water used, to minimise the consumption of makeup water.
- Control and monitor the water quality in the clarifiers in order to make necessary adjustments to the chemical dosing systems, to maintain the required water quality.
- Check the operation of the clarifiers, thickener and the waste gas settling ponds to ensure minimal solids loading to the ponds

Steel Plant Water Treatment Plant:

- Minimise the amount of flushing of the clarifier underflows to reduce the volume of water discharged and the solids loading on the northside ponds.
- Control and monitor the water quality in the clarifiers and make necessary adjustments to the chemical dosing systems to maintain the required water quality.

Cooling Towers:

- Check the water quality of the cooling water to ensure that the process make-up water is minimised.
- Water consumption is monitored via the UMS and regularly checked to ensure water consumption maintains the required water chemistry for the cooling systems.
- Monitor the water chemistry and adjust the chemical dosing systems as required.

Iron Plant and Steel Plant Gas Scrubbers:

- Minimise the amount of secondary water added into the plant waste gas systems.
- Check that the blowdown rates from the base of the scrubbers are within normal operational levels so that the recycle water consumption is within limits.
- Monitor secondary water make up volumes and ensure all the break tanks and the storage tanks do not overflow to the drainage system
- Check the operation of the wedge pits to ensure there is minimal solids carryover to the Northside ponds
- Maintain good housekeeping standards and ensure that when water blasting activities occur that the contaminants are contained and not discharged to the drainage system
- Respond to all environmental alarms and take corrective action

Northside Ponds:

- Ensure that the pond's floating baffles are correctly positioned to reduce the suspended solids and the turbidity at the Outfall
- Minimise the amount of sludge build up by regular removal of the accumulated sludge at the head of the pond
- Adjust the pond levels if flow balancing is required
- Adjust the chemical dosing rates to maintain the required discharge water quality
- Visually check the water discharge at the Northside Outfall for turbidity/colour, and flow volumes
- Visual confirmation that the instrumentation is working correctly.
- Respond to all environmental alarms and take corrective action

SRNZ Ponds:

- Visually check the overflow from these ponds to ensure that the water quality is not compromised
- Check the condition of the gravel weirs and baffles to ensure that the water quality is below 5 NTU

Metal Coating Line water treatment plant:

- Maintain the wastewater systems to ensure that the pH meet the consent conditions.
- Notify the Utilities Department if the wastewater operations deviate from outside of normal operations.

Table 6.1 Critical Water Quality Control Check Sheets

Reference	Title	Area and Owner
Procedures		
Currently in draft		

6.8 Contingency Response

Deterioration of water quality

Where Trigger Investigation Levels are set for monitoring parameters, should these be exceeded then an investigation into the source will be undertaken. This will follow the specific procedures for the inspections of areas or plants of possible sources including operational issues.

Until the source(s) is found contingency response options are outlined in Utilities and Iron Plant procedures for operators to implement (listed in **Table 6.2**). There are a range of options, including use of the surge pond for additional treatment (Northside and Southside Ponds), adjusting chemical dosing, spill containment within ponds and diversion of water (Northside Ponds and Acid Wastewater Treatment Plant only).

It should be noted that on some occasions multiple Trigger Investigation Levels may be exceeded as a result of one event or exceeded for a period of time related to the same cause. In the latter case a corrective action plan will be developed and implemented, with timeframes set to reduce values below Trigger Investigation Levels as soon as reasonably practical.

Monitoring equipment

In an event that any of the monitoring instrumentation fails, NZ Steel has shift-maintenance teams that can respond to resolve these events.

In relation to pH monitoring the Northside Outfall has two in-line pH meters to provide contingency. With regards to turbidity monitoring the operator has the ability to manually sample at intervals, until the in-line continuous turbidity meter is repaired.

The composite sampler would be repaired by the shift-maintenance team and if parts require replacing these are available on site for quick turnaround.

Chemical and hydrocarbon spills

Fire and Spill Response Plans have been prepared for hazardous substances used and stored on site. These outline instruction for plant operators on how to respond and requires notification of the Utilities team so that they are prepared to implement any necessary contingencies.

Section 13 outlines the notification requirements and minimum requirements for spill preparedness. Details are provided in associated procedures listed in **Table 13.1**.

6.9 Associated Procedures and Drawings

Table 6.2 lists key procedures and drawings that provide additional detail around the water systems and associated activities described in the WQMP.

Table 6.2 Associated Procedures and Drawings

Reference	Title	Area and Owner
Procedures		
EN-6114	Utilities - Primary Plants Manual *Several procedures are listed below*	Utilities
EN−6114.035	Northside Outfall Process Description and Procedure	Utilities
EN−6124.010	Primary Plants UMS Alarm Response	Utilities
EN−6131.080	Iron Plant Water Treatment Process Description and Operating Procedure	Utilities
EN−6133.040	Slabmaking Water Treatment Process Description and Procedure	Utilities
EN−6114.055	Northside Outfall High Volume Audit Checklist	Utilities
EN−6114.075	Suspended Solids Management at the Northside Outfall	Utilities
EN−6114.085	High Zinc Response	Utilities
EN−6114.201	North Side Pond Cleaning Procedure	Utilities
EN−6104.060	Reception and storage of chemicals	Utilities
EN-XXXX	Utilities – Rolling Mills Manual	Utilities
IP-6526-675	Kiln Scrubber Effluent and Clarified Water Lines Cleaning (Pigging)	Iron Plant
Drawings		
091/520/007/000/001	IPWT and ponds	Utilities
510/508/002/000/012	Steel Plant Utilities clarified water system	Utilities
510/508/001/000/002	Water system schematic	Utilities

7 Process Water to North Drain

There is a single Process Water discharge to the North Drain. This Process Water discharge is associated with the Ironsand Dewatering Plant (DEW plant), which separates PC from the slurry water used to transport PC from the WNH mine.

Procedures and drawings listed in **Table 7.2** at the end of this Section are relevant to compliance with Resource Consents and implementation of this WQMP.

For context in reading this section, **Section 5** should be referred to in order to understand the range of contaminants treated and potential Environmentally Hazardous Substances. Roles and responsibilities are outlined in **Section 3** and the procedures listed in and associated with this WQMP.

An overview of maintenance is provided in **Section 10** and the water quality monitoring program is outlined in **Section 11**.

7.1 Water Treatment Plant

The first stage of the Ironsand Dewatering Plant process involves the slurry pipeline discharging into the base of a Constant Density Tank (CD Tank). From the base, the PC and water is fed to twin cyclones.

This separates most of the water from the PC with the resultant liquid stream discharging off the top of the cyclone and returning to the CD tank. The PC discharges from the base of the hydro cyclones and drops down on to a vacuum filter belt. From there it is delivered to the PC stockpile.

Once the water returns to the CD tank, it is chemically treated and then fed (under gravity) to a high-rate thickener. The thickener (9-meter diameter) is designed to separate the clay slimes from the Process Water. The clay slimes settle to the base of the thickener and the underflow is pumped to the Centrifuge for further dewatering before being transferred to the landfill.

The wastewater overflows the clarifier and then is gravity fed to the North Drain. In the event that the water quality deteriorates there is an automatic diversion to the settling ponds to provide additional treatment. Should the discharge water quality still not be achieved over a 30 minute period, then ironsand slurry pumping is shut down so that the consent conditions are not breached. This shut-down procedure is set-out in the procedure listed in **Table 7.2**.

7.2 Settling Ponds

There are three settlement ponds that are designed to treat the wastewater arising from the normal operation. An overview of the pond specification, discharge location and monitoring, is provided below.

	ITA Areas and land use	Primary stormwater treatment device(s)	Discharge and monitoring
North Drain ITA Catchment	**East Pond sub-catchment:** • Coal Yard 5/6; • Coal Yard 1/2; and • Stores building roof. Approximate area of 5.4 ha.	East Pond: • Capacity of 1,310 m^3; and • Includes additional treatment measures. Additional devices generally provide conveyance.	The East Pond discharges to the North Drain. Water quality is monitored at the outlet (grab samples) following a rain event.
	Y56K Pond sub-catchment: • Aggregate stockpiling yard Approximate catchment area of 1.2 ha.	Y56K Pond: • Capacity of 230 m^3	Y56K pond outlets to the North Drain. Water quality is monitored at the outlet (grab sample) following a rain event.
	Coal Yard 19 sub-catchment: • Coal Yard 19. Approximate area of 3.3 ha.	CY19 Pond: • Approximate capacity of 745 m^3; and • Includes additional treatment measures.	At low turbidity it discharges to North Drain. Automatically diverts to the Northside Ponds for higher turbidity. Water quality is monitored at the outlet (grab sample) following a rain event.
	North contractors' yard sub-catchment: • Administrative building roofs; and • Car parks. Approximate area of 2.5 ha.	The sub-catchment does not incorporate a formal treatment device. ITA stormwater flows to North Drain via road ditch/swale.	Flows to the North Drain via a informal drain/swale. Water quality is monitored in the receiving North Drain (Site 1C) following a rain event.

	Rail siding sub-catchment: • Train movements; and • Rail car storage. Approximate area of 4.1 ha.	There is no formal stormwater device. There are underflow drains, majority of stormwater infiltrates to ground.	Flows to the North Drain. Water quality is monitored in the receiving North Drain (Site 1C) following a rain event.
	North Drain Future ITA sub-catchment: • pasture; and • future ITA use. Approximate area of 25.9 ha.	No formal stormwater device due to no current activities.	Flows to the North Drain via overland flow.

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

7.3 Chemical Treatment Program

7.3.1 Chemical Management

Suitability of chemicals selected for water treatment must be assessed prior to their introduction.

NZ Steel's chemical suppliers should be referred to for guidance on selection of chemicals. Generally, they will assist with chemical bench-testing using a sample(s) of the water quality in the system.

Management of Change (MoC) processes should be used for this process, as it provides a record of the proposed change, who is involved in the assessment and any actions required to progress the change. The MoC process also provides a record of change approval. Ensure a copy is retained in the area and preferably sent to the NZPI Environment Team for their centralised records.

7.3.2 Water Treatment Plant

The chemical treatment program consists of dosing with a coagulant and flocculant. The coagulant is dosed to the center-well of the CD tank, so that sufficient time is available for thorough mixing and chemical reaction. The flocculant is dosed at the CD launder through multiple injection points, to aid thorough mixing of the developing clay slimes.

7.3.3 Settling Pond

Chemical treatment in the entry of the settling pond is available for dosing when high solids loading is occurring. (Currently, upgrades to the system are under evaluation.)

7.4 Operational Monitoring and Inspections

In the CD tank, the quantity of clay slimes is monitored with a solids meter and this data is used to automatically adjust the coagulant dosing system. The flocculant dosing is controlled from a signal from a Clarometer. The Clarometer is a device that measures the settling time of the clay slimes.

Monitoring of the performance of the treatment plant is achieved with two on line turbidity meters. One of the turbidity meters measures the water quality at the discharge of the thickener and the second turbidity meter measures the discharge water at the V notch weir located at the northside stream. At the V-notch weir, the volume of water being discharged is also measured and recorded.

7.5 Critical Water Quality Controls

The following lists are critical water quality controls, where an audit guide and frequency for conducting audits has been specified in plant procedures.

Section 14 identifies the procedures containing the checksheets for each audit and how audits are to be recorded. These listed standard controls are routinely carried out by the operators as part of their normal duties.

Dewatering Treatment Plant:

- Currently in draft [references to be added]

Dewatering Plant settling ponds:

- Currently in draft [references to be added]

Table 7.1 Critical Water Quality Control Checksheets

Reference	Title	Area and Owner
Procedures		
Currently in draft		

7.6 Contingency Response

Deterioration of Water Quality

In the event that the turbidity of the discharge water does not meet the consent conditions then the Thickener overflow is automatically diverted to the settling ponds. The ponds are then able to further chemically treat the water. In addition, there is a filter wall at the end of the first pond that traps any remaining solids.

The secondary response is automated shut-down of the Slurry Pipeline in the event that the final discharge exceeds an average of 50NTU for a 30 minute period (refer IP-1245.170). This allows for the Operator to assess what is the cause of elevated turbidity and determine when is the preferred time to recommence slurry pumping. This must be done in discussion with the WNH Mine Operations Superintendent.

Monitoring Instrumentation

In the event that any of the monitoring instrumentation fails, NZ Steel has 24/7 shift-maintenance teams that can respond to resolve these events. Should automated monitoring not be able to be reinstated within 24 hours and a back up turbidity monitor is not available, the Superintendent in consultation with the NZPI Environment Manager will be determine what back up monitoring is appropriate.

Chemical and hydrocarbon spills

Fire and Spill Response Plans have been prepared for hazardous substances used and stored on site. These outline instruction for plant operators on how to respond and requires notification of the Utilities team so that they are prepared to implement any necessary contingencies.

7.7 Associated Procedures and Drawings

Table 7.2 lists key procedures and drawings that provide additional detail around the water systems and associated activities described in the WQMP.

Table 7.2 Associated Procedures

Reference	Title	Area and Owner
Procedures		

IP−1245.020	Dewatering Plant Running Checks	Iron Plant
IP−1245.031	Dewatering Plant Startup Sequence	Iron Plant
IP−1245.051	Dewatering Plant Shutdown Sequence	Iron Plant
IP−1245.060	Dewatering Plant Alarms	Iron Plant
IP−1245.080	Clarifier Bed Level Control	Iron Plant
IP−1245.110	Dewatering Plant Chemical Dosing	Iron Plant
IP−1245.140	Flocculant Troubleshooting	Iron Plant
IP−1245.150	Dewatering Plant Troubleshooting	Iron Plant
IP−1245.170	Environmental Alarms and Actions	Iron Plant

8 Process Water to Southside Ponds and Outfall

The Rolling Mills Utility water systems consist of four cooling water systems, an oily waste treatment plant and an acid waste treatment plant. The majority of the treated process water from this Southern Catchment is recycled, either directly into the Mills or through the Southside Ponds and Ruakohua water supply dam.

The treated process water from the Acid Regeneration Plant is directly discharged to the Southside Outfall, with potential for diversion to the Southside Ponds.

An overview of each of these systems is detailed in the following section. This includes the chemical treatment program, the function of the settling ponds and key operational control practices, including real-time monitoring, shift inspections and contingency measures. Procedures and drawings listed in the table at the end of this Section are relevant to compliance with Resource Consents and implementation of this WQMP.

For context in reading this section, **Section 5** should be referred to in order to understand the range of contaminants treated and potential Environmentally Hazardous Substances. Roles and responsibilities are outlined in **Section 3** and the procedures listed in and associated with this WQMP. An overview of maintenance is provided in **Section 10** and the water quality monitoring program is outlined in **Section 11**.

8.1 Water Treatment Plants

Acid Waste Water Treatment Plant

The Acid Waste Water Treatment Plant treats the weak acid wastewater that is produced from the Cold Mill Strip cleaning and Acid Regeneration Plant. It consists of several neutralising basins, clarifier, sand filters and cooling tower. Once this water has been treated it will predominantly be pumped directly to the Southside Outfall. As a contingency measure it is possible for the water to be pumped to the Southside Ponds for additional treatment (dilution) where it will then be recycled to the Ruakohua Dam.

Rolling Mills Water Treatment

Process Water from the balance of the Cold Mill is treated in the Oily Wastewater Treatment Plant. Along with blowdown water from the cooling water systems the treated Process Water discharges to the Southside Ponds which is then recycled to the Ruakohua Dam.

Paint Line Water Treatment

The Paint Line uses process water for surface cleaning, prior to painting the steel strip. There are two separate water treatment facilities associated with the Pre-treatment Section and the Cleaning Section of the Paint Line. They are very similar, treating small volumes of water as a batch process. Both treatment systems include an oil removal tank, a dosing tank and a clarifier. The treated process water is then discharged to the Operational Area drainage system, flowing to the Southside Ponds.

8.2 Cooling Water Systems

Hot Mill

There are two Utility cooling water systems associated with the Hot Mill. One of the plants operates a full flow filtration plant and clarifier recovery system as Process Water from the Mill carries a high percentage of scale. Due to the high levels of evaporation that occurs within the Mill there is normally no blowdown from this system. If on occasions this occurs, the water is recycled to the Ruakohua Dam via the Southside ponds.

The second cooling water system is referred to as the Slab Reheat Furnace cooling water system. It is a medium sized cooling tower supplying cooling water to the Reheat Furnace. As with the other cooling systems in this area, the blowdown discharged from this system returns to the Ruakohua Dam via the Southside ponds.

Cold Mill

A small cooling tower provides cooling water to the Cold Mill. The quantity of discharge blowdown water is low and also returns to the Ruakohua Dam via the Southside ponds.

8.3 Settling Ponds

The Southside Ponds are designed to recycle the water recovered from the Southern ITA Area – ITA Stormwater and Process Water - to the Ruakohua Dam. This is therefore almost a closed-circuit, except during very high-intensity rainfall events. The two Southside Ponds have provision for overflow to the Southside Outfall as an emergency spillway, which may occur during extremely high rainfall events.

The gravity fed pipeline that discharges from these ponds to the Ruakohua Dam operates at a lower level in the pond than the overflow to the second (surge) pond. This creates surge capacity within the main pond which receives the incoming flow. The larger operational pond has a series of baffles to assist in settling suspended solids.

An overview of the pond specification, discharge location and monitoring, is provided below.

	ITA Areas and land use	Primary stormwater treatment device(s)	Discharge and monitoring
Southside ITA Catchment	The **Southside ITA catchment:** • Process buildings, • Administration buildings; • Sealed and unsealed roads; • Sealed car parks; and • Slab cooling yards. Approximate area of 41 ha.	Southside Ponds, comprise two ponds: • Southside duty pond with a capacity of 8,000 m^3; and • The Southside surge pond has a capacity of 5,000 m^3.	Water is generally recycled to the Ruakohua Dam reservoir. During periods of high rainfall, excess flow is discharged to the CMA. Water quality is monitored at the outlet (daily grab and composite samples).

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

8.4 Chemical Treatment Program

8.4.1 Chemical Management

Suitability of chemicals selected for water treatment must be assessed prior to their introduction.

NZ Steel's chemical suppliers should be referred to for guidance on selection of chemicals. Generally, they will assist with chemical bench-testing using a sample(s) of the water quality in the system.

Management of Change (MoC) processes should be used for this process, as it provides a record of the proposed change, who is involved in the assessment and any actions required to progress the change. The MoC process also provides a record of change approval. Ensure a copy is retained in the area and preferably sent to the NZPI Environment Team for their centralised records.

8.4.2 Water Treatment Plants

The chemical treatment processes in the clarifiers are designed to treat the water, so that once clarified, the water can be reused within the manufacturing plants. For the most part, the chemical process consists of pH correction and flocculation.

8.4.3 Settling Ponds

There is no chemical treatment available in the Southside Ponds.

8.5 Operational Monitoring and Inspection

The Southside Outfall has the following parameters continually displayed and trended in the Utilities Control Room:

- pH
- Turbidity
- Temperature
- Flowrate (volume)

Each shift the Southside Outfall is inspected to visually check the turbidity and colour of the discharge water and to ensure all instrumentation is working correctly.

8.6 Critical Water Quality Controls

The following lists are critical water quality controls, where an audit guide and frequency for conducting audits has been specified in plant procedures.

Section 14 identifies the procedures containing the checksheets for each audit and how audits are to be recorded. These listed standard controls are routinely carried out by the operators as part of their normal duties.

Wastewater Treatment Plants:

- Currently in draft

Southside settling ponds:

- Currently in draft

Table 7.1 Critical Water Quality Control Checksheets

Reference	Title	Area and Owner
Procedures		
Currently in draft		

8.7 Contingency Response

Deterioration of Water Quality

When the discharge is close to the Consent Limit, the Acid Wastewater Treatment Plan (AWWTP) is diverted to the Southside Ponds as a contingency measure – this water is diluted with ITA Stormwater and Process Water before recycling to the Ruakohua Dam. Given the AWWTP discharge has high chlorides it cannot be recycled all the time. So this contingency measure can only be an interim step until the AWWTP is either shut down, or steps taken to re-establish water quality.

There are two Southside Ponds operating in sequence. From the first pond there is a recycle water line returning water to NZ Steel water supply dam and the second pond operates for surge. In this way overflow to the Southside Outfall is largely avoided.

Monitoring Instrumentation

In the event that any of the monitoring instrumentation fails, NZ Steel has 24/7 shift-maintenance teams that can respond to resolve these events. The composite sampler would be repaired by the shift-maintenance team and if parts require replacing these are available on site for quick turnaround.

The Acid Wastewater Treatment plant has two turbidity meters measuring the water quality, as it exits the plant.

Chemical and hydrocarbon spills

Fire and Spill Response Plans have been prepared for hazardous substances used and stored on site. These outline instruction for plant operators on how to respond and requires notification of the Utilities team so that they are prepared to implement any necessary contingencies.

In the event that chemicals or hydrocarbons reach the Southside Ponds the Operators work to avoid discharge at the Southside Outfall. The Utility Operator will request a vacuum truck to recover hydrocarbons or implement other suitable measures to stabilise water quality.

8.8 Associated Procedures and Drawings

Table 8.2 lists key procedures and drawings that provide additional detail around the water systems and associated activities described in the WQMP.

Table 8.2 Associated Procedures

Reference	Title	Area and Owner
Procedures		
EN−6116.220	South Side Outfall Process Description and Operating Procedure	Utilities
EN−6126.700	Rolling Mills UMS Alarms Response	Utilities
EN−6135.050	CSM Acid Waste Plant Process Description and Operating Procedure	Utilities
EN−6104.080	Safe Working Around Hazardous Chemical Storage and Contingency Plan in the Event of Chemical Spill	Utilities
EN-6104.060	Reception and storage of chemicals	Utilities
EN−6116.201	Southside Ponds Cleaning Procedure	Utilities
Drawings		
161/520/007/000/001	Rolling Mills Utility water systems	Utilities

9 ITA Stormwater Controls

This section outlines the treatment devices associated exclusively with the ITA stormwater discharges to the North Stream, Kahawai Stream and Ruakohua Stream.

Note that ITA Stormwater and treated Process Water discharges are combined in the Northside and Southside Outfalls, as described in **Section 6** and are therefore not included in this section. **Figure 5.1** shows the main Manufacturing Plants and the figures in **Attachment 2** show the locations of the discharges and their respective catchments.

Procedures and drawings listed in the table at the end of this Section are relevant to compliance with Resource Consents and implementation of this WQMP.

For context in reading this section, **Section 5** should be referred to in order to understand the range of contaminants treated and potential Environmentally Hazardous Substances.

Roles and responsibilities are outlined in **Section 3** and the procedures listed in and associated with this WQMP. An overview of maintenance is provided in **Section 10** and the water quality monitoring program is outlined in **Section 11**.

9.1 Northern Catchment

There are four stormwater discharge outfalls in the northern catchment, these are associated with the Coal Yards, one Aggregate Yard (Y56K) and the Metal Cutting Yard.

9.1.1 North Stream Catchment

The northern portion of the ITA Area is used for raw material stockpiling on an ongoing basis. Material stockpiles containing Coal, Aggregate co-products and PC contributes to stormwater runoff to the North Stream. (As noted earlier, some parts of the aggregate and coal yards discharge to the Northside Ponds and Outfall.)

Runoff from the stockpile yards is treated in specific settlement ponds, sized for their catchment and respective potential contaminants. Inflow from the CY19 and Eastern Coal settlement ponds is monitored continuously for flow and turbidity. Chemical treatment is added to the inflow in the fore bay to aid settlement of solids and discharge is via a decant arm. Both ponds consist of a forebay and secondary settling pond.

Runoff from the aggregates yard pond (Y56K) is very low flow volume and discharged via a decant arm.

North Drain ITA Catchment	**East Pond sub-catchment:** • Coal Yard 5/6; • Coal Yard 1/2; and • Stores building roof. Approximate area of 5.4 ha.	East Pond: • Capacity of 1,310 m^3; and • Includes additional treatment measures. • Additional devices generally provide conveyance.	The East Pond discharges to the North Drain. Water quality is monitored at the outlet (grab samples) following a rain event.
	Y56K Pond sub-catchment: • Aggregate stockpiling yard. Approximate catchment area of 1.2 ha.	Y56K Pond: • Capacity of 230 m^3	Y56K pond outlets to the North Drain. Water quality is monitored at the outlet (grab sample) following a rain event.
	Coal Yard 19 sub-catchment: • Coal Yard 19. Approximate area of 3.3 ha.	CY19 Pond: • Approximate capacity of 745 m3; and	At low turbidity it discharges to North Drain. Automatically

		• Includes additional treatment measures.	diverts to the Northside Ponds for higher turbidity. Water quality is monitored at the outlet (grab sample) following a rain event.
	North contractors' yard sub-catchment: • Administrative building roofs; and • Car parks. Approximate area of 2.5 ha.	The sub-catchment does not incorporate a formal treatment device. ITA stormwater flows to North Drain via road ditch/swale.	Flows to the North Drain via a informal drain/swale. Water quality is monitored in the receiving North Drain (Site 1C) following a rain event.
	Rail siding sub-catchment: • Train movements; and • Rail car storage. Approximate area of 4.1 ha.	There is no formal stormwater device. There are underflow drains, majority of stormwater infiltrates to ground.	Flows to the North Drain. Water quality is monitored in the receiving North Drain (Site 1C) following a rain event.
	North Drain Future ITA sub-catchment: • pasture; and • future ITA use. Approximate area of 25 ha.	No formal stormwater device due to no current activities.	Flows to the North Drain via overland flow.

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

9.1.2 Kahawai Stream Catchment

The former ITA Stormwater from the Metal Cutting Yard discharged into the Kahawai Stream. This area has now been remediated and does not currently discharge any ITA Stormwater, although this area is identified as a Future ITA Area and would be subject to the conditions of consent.

An overview of the pond specification, discharge location and monitoring, is provided below.

	ITA Areas and land use	**Primary stormwater treatment device(s)**	**Discharge and monitoring**
Kahawai Stream ITA	**Kahawai ITA sub-catchment:** • Future ITA activities.	No formal stormwater device due to no current activities.	Any discharges would discharge to the Kahawai Stream.

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

9.2 Southern Catchment

There are two ITA Stormwater discharge points in the southern catchment, as shown **Figure W-ITA7** included in **Attachment 2**. Both discharges are part of the lower Ruakohua Stream catchment and subsequently end up in the Ruakohua Dam, which is NZ Steel's Process Water supply dam.

9.2.1 Southern Contractor's Yard

The Contractor Yard compound is largely sealed and consists of relocatable buildings used by contractors for their staff facilities and limited storage. Carparks and roads are sealed. Areas under and immediately around the buildings are mostly unsealed.

Stormwater runoff from the Contractors' Compound is treated through aggregate filtration beds, where the water cascades through the three beds. The discharge from these filter beds is via a concrete energy dissipator into the Ruakohua Stream downstream of Mission Bush Road and upstream of Yard 31.

9.2.2 Yard 31

Yard 31 is mainly unsealed and activities in this yard are predominantly packing and unpacking of sea-freight containers, ferrous scrap handling and the storage of export billet.

Stormwater runoff flows via open drains and culverts to two settling ponds, with suitable retention capacity for settlement of solids. Pond 1 is the primary catchment pond, which then flows to Pond 2. Pond 2 eventually discharges via vegetated (grass) swale drain into a tributary of the Ruakohua Stream, immediately upstream of the NZ Steel water supply dam (the Ruakohua dam).

An overview of the pond specification, other treatment devices, discharge location and monitoring, is provided below.

	ITA Areas and land use	**Primary stormwater treatment device(s)**	**Discharge and monitoring**
Ruakohua Stream ITA Catchment	**Southern Contractors' Compound sub-catchment:** • Office roofs; • Carparking; and • Short-term equipment storage. Approximate area of 1.9 ha.	Contractors' Compound filter beds comprise: • Three filter beds.	The filter beds discharge to the Ruakohua Stream. Water quality is monitored at the outlet (grab sample) following a rain event.
	Yard 31 sub-catchment: • A rail siding; • Storage of equipment and finished steel products (including packing in sea-freight containers) and ; • Imported container laydown; • Metal scrap cutting (NZS uprisings); and • Grass area. Approximate area of 11.5 ha.	Yard 31 settlement ponds: • Pond 1 is operational and has an approximate capacity of 2543 m^3; and • Pond 2 approximate capacity is 490 m^3	Yard 31 discharges to the Ruakohua Tributary. Water quality is monitored within Pond 1 (grab sample) following a rain event.
	Ruakohua Future ITA Area sub-catchment: • dam raw water treatment plant; and • future ITA use. Approximate area of 2ha.		

Source: Table 4.1 T+T 2022 – ITA Report (as part of consent application)

9.3 Chemical Treatment Program

9.3.1 Chemical Management

Suitability of chemicals selected for water treatment must be assessed prior to their introduction.

NZ Steel's chemical suppliers should be referred to for guidance on selection of chemicals. Generally, they will assist with chemical bench-testing using a sample(s) of the water quality in the system.

Management of Change (MoC) processes should be used for this process, as it provides a record of the proposed change, who is involved in the assessment and any actions required to progress the change. The MoC process also provides a record of change approval. Ensure a copy is retained in the area and preferably sent to the NZPI Environment Team for their centralised records.

9.3.2 Settling Ponds

Chemical treatment is only required for the Coal Yard ponds, discharging to the North Stream. This consists of a flow-activated dosing system, which is monitored via turbidity instrumentation.

9.4 Contingency Response

Deterioration of Water Quality

Monitoring is undertaken periodically during higher rainfall events, when a single grab sample is collected. Should water quality exceed Trigger Investigation Levels an investigation will determine appropriate response.

Chemical and hydrocarbon spills

Fire and Spill Response Plans have been prepared for hazardous substances used and stored on site. These outline instruction on how to respond and requires notification of the Utilities team so that they are prepared to implement any necessary contingencies.

In the event that chemicals or hydrocarbons reach the Yard 31 Ponds and Contractor Yard filtration beds, the Operators work to avoid discharge until the spilled material is treated or removed.

9.5 Associated Procedures and Drawings

Table 9.1 lists key procedures and drawings that provide additional detail around the water systems and associated activities described in the WQMP.

Table 9.1 Associated Procedures

Reference	Title	Area and Owner
Procedures		
Procedure ref pending	Stormwater Monitoring and Management Programme – RMH, Aggregate	Iron Plant
Procedure ref pending	Stormwater Monitoring and Management Programme – MCY Yards	SteelServ
Procedure ref pending	Stormwater Monitoring and Management Programme – Yard 31 and Contractors Yard	Materials and Distribution Manager
Drawings		

10 Maintenance of Water Treatment Facilities and Structures

An overview of the maintenance program for Water Treatment Facilities (and associated equipment) and outfall structures is outlined in this section. The maintenance programs are critical to ensuring that the facilities are fully operational and functioning correctly and provide adequate water treatment to meet consent limits.

Table 10.2 and 10.3 list procedures associated with maintenance activities.

10.1 Maintenance Recording System (SAP)

The maintenance of equipment within the Site, including WWTP's, equipment and structures associated with water treatment is managed and controlled via a dedicated computerised maintenance system.

This system (called Enterprise Resource Planning, ERP) uses a licensed agreement with SAP Maintenance Recording System. It is sufficiently detailed so that every major and minor equipment item (including down to device level, such as a pH meter) can be uniquely identified. What this means in practice, is that every equipment item has a unique identification code or number (called a Functional Location Code).

10.2 WWTP's

New Zealand Steel uses the SAP system to plan and manage all scheduled maintenance work. Most equipment and devices are maintained on a set interval schedule. For example, a small field device, such as a pH meter, can be scheduled to be calibrated weekly. SAP Maintenance Recording System is then able to track and report on this weekly activity. This ensures that the maintenance schedule is being adhered to.

Less frequent tasks, such as the major maintenance/production tasks for a clarifier, would generally be scheduled for every 12-24 months. This type of activity would require many detailed maintenance tasks and work orders. Each task is loaded into the SAP system under a maintenance shut plan. At the required frequency they are scheduled and appropriately resourced for the materials and labour requirements at the due date.

In the event of an unplanned maintenance task, this is also recorded in the SAP maintenance system and these unplanned events are coded so that New Zealand Steel is able to investigate and determine the possible root cause of failure. This allows for increasing reliability for key equipment items and an improved operation.

10.3 Outfall Structures

There are two outfall structures associated with the Northside and Southside discharges. (Resource Consents are held to authorise the structures associated with the Northside and Southside Outfall, where they are situated in the coastal marine area.) As the structures are in or near the coastal marine area it is important to ensure their ongoing structural integrity. Inspection and a maintenance program is therefore appropriate.

Smaller, less complex outfall structures are associated with each of the smaller volume discharges such as from the North Drain ITA Area. These smaller structures need regular inspection (with guidance) to determine if any repair is required.

The structural assessment review completed in 2021[2] for Northside and Southside Outfall structures, considered structural integrity over the next 35 years. The following comments and recommendations were made:

- Repairs need to be undertaken in a timely fashion, such as
- removing loose / cracked concrete;
- protecting / replacing corroded reinforcing;

[2] T+T Report, June 2021, Structural Inspection of Northside and Southside Outfalls

- reinstating any of the above using an approved repair mortar;
- The timber / steel access structures and the V notch weir are likely to need maintenance;
- Regular inspection / repair of the downstream channel to ensure no scouring occurs that could undermine the structure.

Note that some works to maintain or repair structures may require a separate Resource Consent, depending on the nature and scale of the activity. The NZPI Environment Team should review the proposed work to assist in this evaluation.

Access structures (stairs and platforms) are likely to need maintenance or full replacement in the next 35 years. However, the T+T engineer advised this does not affect structural integrity.

10.4 Yard Sediment Control Devices

Where yards are not discharging to the Northside or Southside Ponds the following sediment devices will be installed:-

- Sediment fencing and/or windrows;
- Catchpits, check dams and cut-off drains
- Aggregate filters
- Settling ponds, with or without chemical treatment

The nature and extent of these control devices depends on the material stored or handled in the yard. The specific device will be identified in area procedures. The following outlines general maintenance requirements for key devices.

10.4.1 Super Silt fencing

Super Silt fencing (silt fencing reinforced by mesh wire for added integrity) is to be used to promote longevity. These management devices are utilised to minimise the fine sediment flow into drains and settlement ponds.

As a minimum Super Silt fencing will require replacement approximately every 1- 2 years (design life). Where damaged or not functioning correctly, they are to be replaced immediately.

Inspection and maintenance requirements will be identified in area procedures. Fences should meet the following minimum specifications:

- Minimum fence height of 400mm above ground level
- Posts no greater than 2m spacing
- Installation must be minimum of 200mm deep (ie trenched to first red line on fabric)
- Super Silt fencing must be specified when re-ordering

Inspection

Inspection of the silt fence is to be undertaken during periods of heavy rainfall, as it is easier to identify any holes, rips or tears. If only a small volume of rain has occurred they should be inspected on a minimum of a monthly frequency.

Maintenance

- Maintenance is required if any of the following is noted:
- Sediment/silt build up is approaching 10% of the above ground height of the fence; and
- Fence replacement/or maintenance is required; and
- Tops are not folded over wire and are not secured; and
- Tears or gaps have occurred to allow flow through (check along base and at joins).

10.5 Sediment settling ponds and drains

Inspection and maintenance requirements vary for each pond, for this reason, requirements have been separated for each pond with associated catchment drains and devices.

Specific inspection and maintenance requirements will be identified in area procedures.

As a minimum, sediment ponds and decant systems must have at all times:-

- >80% settling capacity in forebay and pond; and
- Decant system fully operational; and
- Discharge pipe clear; and
- Outfall unobstructed and scour protection in good condition; and
- Chemical dosing fully functioning (where installed)

Maintenance

Frequency of maintenance, as a minimum will be:

- Before a bulk raw material shipment;
- After a yard is cleared of raw material;

In addition, an inspection of the sediment ponds and decant systems must be undertaken immediately after the following events, so maintenance requirements can be determined:

- Following heavy rainfall;
- Spill incident;
- Recording of elevated water quality results.

Periodically the pond will need to be emptied of sediment to maintain >80% settling capacity. This will be determined also during regular inspections.

Where there is evidence of erosion or scour at inlet locations, additional rock may be required. Where there are any signs of pond side-wall instability it must be recorded and further advice sought on remediation options from Engineering Services.

Inspection

During or following high rainfall this pond should be inspected for scour and erosion at the inlet and on the embankments. Check condition of plantings in the swale drain and arrange for replacement as required or weed maintenance.

10.6 Final Discharge Settling Ponds and Filters

As noted previously, the maintenance module in SAP identifies frequency and requirement for maintenance.

A summary of the inspection frequency to determine any maintenance requirements, is set out in **Table 10.1**. Responsibility for undertaking these inspections and ensuring maintenance is undertaken as soon as practicable rests with the owner of the facility.

Table 10.1 - Inspection frequency and key inspection items

Catchment / Device	Frequency	Key Inspection Items or Monitoring
Catchment: Northside Outfall	Monthly	• Scour / erosion on bank and drains • Silt accumulation or excessive vegetation in drains, culverts or on spillways
Ponds (4) - forebay		
Ponds (4) – settling zone		

Catchment / Device	Frequency	Key Inspection Items or Monitoring
Pond banks		• Silt accumulation in sediment ponds • Structural integrity of outlet (pipes, aprons) • Condition of vegetation cover planted for bank stabilisation and sediment filtering • Weeds colonising areas, such as pond margins or filter beds • Evidence of flooding from inlet drains, ponds or outlets • Extent of exposed, eroded areas requiring vegetating (hydroseeding) or application of aggregate / riprap • Damaged to fencing, access structures or pathways
Chemical dosing system		
Baffles		
Oil booms		
Melter aggregate filters (2)	Weekly	• NTU analysis
Melter aggregate weirs (SRNZ Ponds)		
Catchment / Device	**Frequency**	**Key Inspection Items or Monitoring**
Outfall Structure and erosion protection	Annual	• Wooden stairs and rails • Concrete apron and stilling basin • Rip rap
Catchment: North Drain	Weekly (and/or following heavy rainfall)	• Sediment build up • Condition of barriers (rips, dislodgement) • Wash outs
V-drains and check dams		
Catch pits		
Silt containment barriers		
Silt fencing		
Ponds (3) - forebay		
Ponds (3) – settling zone		
Pond banks	Monthly	• Instrumentation function • Function • Pipework and fitting integrity
Outfall erosion protection		
Decant devices		
Chemical dosing system		
Catchment: Kahawai Stream	Monthly (or following heavy rainfall)	• Sediment build up • Condition of pond banks • Condition of vegetation (weeds, washed away) • Decant structures intact
V-drains		
Settling Pond		
Vegetated filters		
Catchment: Southside Outfall	Monthly	• Scour / erosion on bank and drains • Silt accumulation or excessive vegetation in drains, culverts or on spillways • Silt accumulation in sediment ponds • Structural integrity of outlet (pipes, aprons)
Ponds (2) – settling zone		
Pond banks		
Outfall erosion protection		

Catchment / Device	Frequency	Key Inspection Items or Monitoring
Outlet for recycle line Inlet channel (open)		• Condition of vegetation cover planted for bank stabilisation and sediment filtering • Weeds colonising areas, such as pond margins or filter beds • Evidence of flooding from inlet drains, ponds or outlets • Extent of exposed, eroded areas requiring vegetating (hydroseeding) or application of aggregate / riprap • Damaged to fencing, access structures or pathways
Outfall Structure	Annual	• Wooden stairs and rails • Concrete apron and stilling basin • Rip rap
Catchment: Ruakohua Stream V-drains Yard 31 – catch pit Yard 31 – settling ponds Decant device Outfall erosion protection	Monthly (or following heavy rainfall)	• Sediment build up • Condition of pond banks • Condition of vegetation (weeds, washed away)) • Decant structures intact
Melter aggregate filter	Monthly	• NTU analysis

10.7 Annual settling pond and dam inspection

In addition to the inspections set out in **Table 10.1**, the Utilities' Superintendent will either arrange for a suitably qualified person within NZ Steel or engage an external resource to undertake a full assessment of a number of settling ponds annually. This inspection will include a review of seepage drains and piezometer data collected in the previous 12 months. A report is provided to the Utilities Superintendent and Environment Manager identifying any actions and recommended timeframes.

The Auckland Unitary Plan (AUP) sets out the requirements for managing ponds, classified as dams in the AUP. Associated drawings for each pond/dam that meets this classification is to be prepared. Where any modification is proposed, then an assessment is required to determine continuing compliance and safe operating of the pond/dam.

10.8 Post-Storm Inspection and Maintenance

Responsibility for initiating a post-storm inspection is the person designated to the Housekeeping Catchment, as listed in **Table 3.1**.

- Significant rainfall – either over a prolonged period or of high intensity over a short duration – may result in issues such as:-
- Flooding (localised on roads and yards);
- Scouring (drains, yards, roads, pond margins, outfalls);
- Overflowing ponds, sumps, drains;
- High sediment and other contaminant loads (to ponds, drains, sumps or natural waterways);

Table 10.2 provides more detail on what to inspect and conditions to look for. The key objective of a post-storm inspection is to avoid adverse environmental effects on the receiving (natural) waterways and ensure continued compliance water quality requirements (consent discharge quality and this WQMP).

Following a significant storm event the NZPI Environment Team will check with the relevant Superintendent to ensure an inspection has been completed, or is underway and to discuss outcomes of the inspection to provide any guidance required.

Checksheets may be available in local procedures, which are specific to the treatment devices in the area. The inspection is to be recorded as a MARs audit and actions assigned. The completed Checksheet can be attached to the Audit.

The person completing the inspection is to ensure that the relevant persons and the local Superintendent is aware of the urgency of repair or maintenance work, to ensure compliance.

10.9 Associated Procedures and Drawings

Procedures listed in **Tables 10.2 and 10.3** provide further detail for maintenance inspections and actions to be taken when an inspection indicates maintenance or repair is required.

Table 10.2 – Maintenance Associated Procedures

Reference	Title	Area and Owner
Procedures		
Northside and Southside		
EN 6108.040	Sample collecting, testing and chemical dosing	Utilities
EN 6108.070	Monthly checks on makeup valves	Utilities
EN 6108.731	Monthly monitoring of ground water levels	Utilities
EN 6114.040	North Outfall environmental monitoring instruments emergency preparedness	Utilities
EN 6131.015	Cleaning wastewater clarifiers	Utilities
EN 6131.085	Clarifier shut down	Utilities
EN 6108.732	Monthly Monitoring of Groundwater Levels in Southside Ponds	Utilities
EN 6108.742	Monthly & Annual Walkover - Inspection and Monitoring of Groundwater Levels and Drains	Utilities
Dewatering Plant		
IP−1245.164	Dewatering Plant Shutdown Work	Iron Plant
IP−6162.005	Dewatering Plant Clarifier Turbity Meter Weekly PM Check	Iron Plant
IP−6162.006	Dewatering Plant Clarifier Clarometer Weekly PM Check	Iron Plant
IP−6162.007	Dewatering Plant Filter Belt Weekly PM Check	Iron Plant
IP−6162.008	Dewatering Plant North Side Stream Turbidity Meter Weekly PM Check	Iron Plant

IP−6162.010	Dewatering Plant North Side Stream Turbidity Meter Calibration Check	Iron Plant
IP−6162.011	Dewatering Plant Clarifier Turbidity Meter Calibration Check	Iron Plant
Raw Materials Handling		
IP-1240.500	RMH Coal Yard Runoff Management	Iron Plant
IP-1245.164	DWP Shutdown work	Iron Plant
Aggregates		
In draft	*Quarry Pond System*	SteelServ
Drawings		
	These are contained within the engineering documents listed above	

Table 10.3 – Settling Pond and Outfall Structures Associated Procedures and Drawings

Reference	Title	Area and Owner
Procedures		
	Northside and Southside Outfalls	
EN-6114.201	Northside Pond Cleaning	Utilities
EN-6116.020	Southside Pond Cleaning	Utilities
	Dewatering Plant	
IP-1245.082	Clarifier Outflow Pond Management and Maintenance	Iron Plant
	Raw Materials Handling	
IP-1240.500	RMH Coal Yard Run-Off Management	
Drawings		
	To add Northside and Southside Outfall Structure drawings	

11 Water Monitoring Program

This section outlines the monitoring requirements for Resource Consents, to report on both Consent Limits and Trigger Investigation Levels. This section addresses the requirements under Condition xxx of Consent xxx [to be updated on granting of consent].

The monitoring program is dependent on the purpose of the monitoring. In general, the purpose of the on-going monitoring include:

- Monitoring potential effects on the environment including:
    - changes in long term trends where they demonstrate effectiveness of ongoing improvements or where further investigation, or actions are required.
    - demonstrate continued compliance for key contaminants which the assessment has been based on. This primarily is focused on zinc and suspended solids.
    - monitor for changes in the marine receiving environment.
    - confirm that current controls associated with discharges to the North Drain are adequate to ensure the concentration of zinc and suspended solids meet the relevant guidelines and consent limits.
- Monitoring as a management tool including:
    - to identify any potential abnormal events which require response (such as a failure of controls).
    - where improvements may be required, to understand the effectiveness and adequacy of controls.

Attachment 3 sets out the Consent Limits and Trigger Investigation Levels and frequency of sampling.

To ensure discharge consent limits are met, real-time monitoring in the Waste Water Treatment Facilities associated with Process Water ITA Stormwater is important. Process Water monitoring also includes regular inspection of the facilities by operators.

Real-time water quality monitoring and key inspections are outlined below. The Associated Procedures listed in **Table 11.2** provide the detailed instruction for sampling and analytical methods, repeat sampling and internal reporting of results.

The location of each discharge is identified in **Attachment 2**, in the relevant catchment figure.

11.1 Compliance Discharge Monitoring

Discharges from the Northside and Southside Outfalls are Process Water and ITA Stormwater combined. Any sampling in these locations is for the combined sample and samples are collected daily.

For discharges of ITA Stormwater only, the samples are taken during rainfall events at various frequencies.

Some compliance monitoring for treated Process Water is undertaken via instrumentation – such as the turbidity, pH and volume – and this is automatically collated in NZ Steel computer systems.

Where composite or grab samples are specified for compliance monitoring the Chemical Laboratory Analyst is responsible for the samples from each discharge – operational or environment personnel may assist. The samples must be taken at the specified frequency and according to specific APHA (American Public Health Association) or other designated standard sampling procedures.

11.1.1 Consent Limits

Resource consent/Schedule 1, includes Consent Limits for a number of parameters and locations. Consent Limits are set at a level to demonstrate continued compliance with the limits that formed the basis of the

overall assessment[3]. The [proposed] Consent Limits are set out in the following **Tables 11.1, 11.2 and 11.3** (and Attachment 3).

Table 11.1: Northside and Southside Outfalls consent limits

Parameter	Northside Outfall proposed Consent Limit	Southside Outfall proposed Consent Limit
pH	6-9.5	6-9.5
TSS	15 mg/L (monthly flow weighted average)	-
Zinc concentration	0.11 mg/L (three monthly flow weighted average)	0.08 mg/L (three monthly flow weighted average)
Zinc load	1 kg/day (three monthly flow weighted average)	-
Cadmium	0.055 mg/L (three monthly flow weighted average)	0.055 mg/L (three monthly flow weighted average)
Chromium	0.044 mg/L (three monthly flow weighted average)	0.044 mg/L (three monthly flow weighted average)
Copper	0.013 mg/L (three monthly flow weighted average)	0.013 mg/L (three monthly flow weighted average)
Lead	0.044 mg/L (three monthly flow weighted average)	0.044 mg/L (three monthly flow weighted average)
Nickel	0.7 mg/L (three monthly flow weighted average)	0.7 mg/L (three monthly flow weighted average)

Table 11.2: Dewatering Plant consent limits

Parameter	Dewatering Plant
Volume	Average 7,400 m^3/day,
Turbidity	20 NTU (monthly average)

Table 11.3: North Drain consent limits

Parameter	
TSS	50 mg/L (monthly average)
Zinc	0.031 mg/L (80% ANZECC DGV, monthly average)

For those parameters where the limit is based on an average (such as monthly or three-monthly average) the calculation will be based on the following basis:

- Where continuous turbidity monitoring is undertaken, it is calculated based on the 30-minute average (i.e. a single data point is represented by the 30 minute average);
- For TSS and zinc, the calculation shall be undertaken using the daily composite results;

11.1.2 Setting Trigger Investigation Levels

The Trigger Investigation Levels are set based on the higher of the following for the majority of contaminants, with the exception to this is pH (where the existing triggers of less than 6 and more than 9.5 will remain):-

[3] T+T Effects assessment undertaken for the 2021 consent application, following review of 5 years of historical data.

- The average, plus two standard deviations, based on the previous 2 years of monitoring data; or
- The ANZWQG 95% SPL where this is higher than the monitoring results.

The proposed Trigger Investigation Levels and monitoring frequency are included in **Attachment 3**.

11.1.3 Marine Ecological Monitoring Programme

In the mixing zone of the Waiuku Estuary, associated with the Northside and Southside discharges, the Resource Consent requires sampling and analysis of sediment quality, benthic community health, and shellfish contamination and health.

The current marine ecological monitoring programme is undertaken by Bioresearches on behalf of NZ Steel and includes:

- Metal contaminants and grain size in marine sediments at 10 locations every two years (Zinc, copper, lead, cadmium and chromium).
- Benthic community health at any sediment contaminant monitoring sites that exceed the AC ERC-Red guideline value, and at the newly established control site regardless of contaminant concentrations.
- Zinc, copper, population density, length, and condition of pacific oysters at six locations annually.
- Seasonal coastal bird surveys to support the existing baseline surveys with a particular focus on proposed compensation actions such as constructed or enhanced roosts as part of the CBMP; and
- Coastal vegetation surveys where any vegetation management is proposed as part of the CBMP.

The frequency and parameters included in the proposed marine ecological monitoring programme are outlined in **Table 11.1**.

Table 11.1: Marine ecological monitoring

Parameters	Benthic ecology and sediment sites[1]	Oyster sites
Sediment grain size	2 yearly	-
Cadmium (total recoverable sediment concentration)	2 yearly	-
Chromium (total recoverable sediment concentration)	2 yearly	-
Copper (total recoverable sediment concentration)	2 yearly	-
Lead (total recoverable sediment concentration)	2 yearly	-
Zinc (total recoverable sediment concentration)	2 yearly	-
Benthic ecology at the control site and at Northside A and at any other sites where the AC ERC-Red guideline values are exceeded for any metals	2 yearly for the control site and Northside A and 2 yearly where required at other sites	-
Zinc concentration in oysters	-	Yearly
Copper concentration in oysters	-	Yearly
Oyster density, length and condition	-	Yearly

[1] Note that the Ruakohua Dam Spillway already has a consent to discharge to the CMA and so sediment sampling is not technically required at the two Ruakohua sites. However, the Ruakohua sites will continue to be sampled in the short term (for sediment grain size and contaminants only) to provide further data to validate the DHI modelling and assist with the implementation of the Coastal Bird Management Plan.

11.2 Review of Monitoring Programme and Trigger Investigation Levels

The Resource Consents provide for the frequency of monitoring, the parameters and Trigger Investigation Levels to be adjusted, with the agreement of Council. This may occur where Trigger Investigation Levels have remained low for an extended period.

Any proposed change to this monitoring programme must be discussed with Council and approved prior to implementation, as set out in the Consent Conditions (an outlined in **Section 2** of the WQMP). When changes are approved the WQMP and associated procedures are to be updated.

11.2.1 Review of Trigger Investigation Levels

The method for establishing and reviewing Trigger Investigation Levels is outlined in **Section 11.1.2** and is based on at least two-years of recent monitoring results. The Trigger Investigation Levels will be reviewed annually, as follows:-

- Where the Trigger Investigation Level is based on the average plus two standard deviations and the new Trigger Investigation Level is lower, this will apply for the following 12 months. This is to ensure that any improvements are "locked in" going forward; and
- Should the average plus two standard deviations be higher than the current Trigger Investigation Level, the existing level will remain.

11.2.2 Review of Monitoring Frequency

The monitoring frequency may be reviewed and reduced based on the following criteria:

- Where daily sampling is undertaken, if there has been no exceedance of the relevant trigger level for a period of at least 2 years, the monitoring frequency may be reduced to monthly;
- Where monthly sampling is undertaken and there has been no exceedances of the relevant trigger level for a period of at least 2 years, the monitoring frequency may be reduced to quarterly;
- Where quarterly sampling is undertaken and there has been no exceedance of the relevant trigger level for a period of at least 5 years (including any daily or monthly sampling), on-going monitoring will be reduced to annually.

11.3 Associated Procedures and Drawings

Procedures listed in **Tables 11.2** provide further detail of the sampling and monitoring program.

Table 11.2 Associated Procedures

Reference	Title	Area and Owner
Procedures		
TA−4100	Laboratory Procedure Manual	Technical Services
TA−4100.006	Laboratory Reports	Technical Services
TA−4100.100	Water Sampling Sites	Technical Services
TA−4100.060	Criteria for Repeating Analysis on Water Samples	Technical Services
TA−4100.010	Routine Sampling Analysis	Technical Services

EV-7030.024	Waiuku Estuary Mixing Zone Monitoring	Environment
Drawings		
	Not applicable	

12 Hazardous Substances Management

This section relates to hazardous substances as they are defined under the HSNO Act. Any hazardous substance stored, transported, handled or used on the Site has the potential to contaminate water. This may result in an exceedance of the Water Quality Limits specified in Resource Consents.

The majority of hazardous substances held within the Operational Area are fuels, oils, acids, caustics and solvent-based products, including paints. (A large volume of bottled gas is used on Site. However, gases are not referred to in the WQMP since they are not relevant to water quality.)

A full inventory of hazardous substances is maintained by Engineering Services, who also coordinate external services required under the HSNO regulations.

Environmentally hazardous substances are defined in the Auckland Unitary Plan and the Definitions of this WQMP. Some materials used, stored and handled on the Site are potentially environmentally hazardous substances. **Sections 6, 7, 8 and 9** outline the ITA controls for any runoff from the ITA Area.

NZ Steel has a generic spill response plan for substances that are not covered by HSNO regulations and which are potentially environmentally hazardous (other than bulk raw materials).

12.1 Physical and Management Controls

A range of physical and management controls are in place for the hazardous substances stored and used within the Operational Area, to ensure compliance with the HSNO regulations, Workplace Health and Safety regulations and water quality discharge consent limits. **Table 12.1** lists key procedures relating to these controls.

Storage facilities design and construction must be appropriate to the hazardous substance it contains. Tanks and storage facilities containing hazardous substances are audited annually by a third-party (the Certifier), to provide for the issue of Tank Certificates and Location Test Certificates.

12.1.1 Physical controls

Typical physical controls include:-

- Bunding of tanks and storage areas;
- Fuel tanks double-skinned and bunded;
- Covered storage for storage of substances in drums;
- Sealed area around storage facilities;
- Oil boom on water treatment ponds;
- Spill kits available near hazardous substances.

12.1.2 Management controls

- Key management controls include:-
- Assessment of hazardous substances prior to introduction and action plans to ensure correct storage, handling and disposal;
- Fire and Spill response plans for substances typically used and stored on site;
- Emergency Response Plans, for events such as large fires and spills where multiple resources and cross-team coordination is required;
- Inspection of storage facilities and tanks to ensure integrity of controls;
- Procedures for working safely around hazardous substances and responding to a spill;
- Procedure for filling of bulk tanks.

13 Emergency Spill Response Plan

The following resources will assist personnel in responding to small and large spills, to avoid contamination of water and soils.

13.1 Notification to Utilities

Utilities must be notified of any spill to drain to ensure that any additional response is implemented to avoid contaminated discharge to the receiving waterway.

13.2 Notification to NZPI Environment Manager

Immediately notify the NZPI Environment Manager and/or the Utilities Superintendent should any hazardous substance spill be insufficiently contained within the Site and therefore reach a natural waterway (stream or Waiuku Estuary). The Environment Manager is required to inform Auckland Council of an incident of this nature.

Should neither of these people be available the Site Emergency Services Team have the designated authority to fulfil reporting functions to Council. [NZS procedure to be updated following issue of consents.]

13.3 Spill kits

Spill kits, with appropriate containment and clean up materials must be available close to each storage facility and bulk storage of hazardous substances. Procedures listed in **Table 12.1** provide further guidance on spill kits and spill response.

Service providers (NZS teams and contractors) are required to follow NZ Steel procedures for spill preparedness. A specific procedure sets out controls associated with bulk delivery to storage tanks, which is a contracted service for fuels, acids and caustics.

Hazardous waste (including waste oil) must be managed according to the hazard classification of the substance.

13.4 Fire and Spill Response Plans

This is the responsibility of the operational team leader and Superintendent to ensure 1-page NZ Steel "Fire and Spill Response Plans" are available close to each storage location and operators involved in use, storage and disposal are trained to respond to a spill. These plans outline who within NZ Steel is to be notified in the event of a spill entering a Site drain or waterway.

NZ Steel has a template for these Fire and Spill Plans and important information contained in these Plans are:-

- Spill response material suitable for the specific hazardous substance;
- Personnel protective equipment and key safety practices during spill response;
- Method for containment, in particular to avoid flow to water systems;
- Isolation distance, where applicable;
- Clean up method;
- Disposal procedures;
- Contact details for Utilities Team and Environment Team

Full support is available from the 24/7 Site Emergency Services Team, who have the capacity to call an off-site HAZMAT team in the event of a serious event involving a hazardous substance.

13.5 Supporting resources

The Site Emergency Services (SESO) team based on site is rostered to provide a 24/7 response, as part of their various other tasks. This team is trained in responding to large spills and will also provide additional support to operational teams when required.

The SESO Team carry appropriate response equipment for a variety of scenarios. In addition, should it be required they will call in external resources, such as the local fire service team or HAZMAT team.

13.6 Drills and Audits

Audits are undertaken periodically to ensure the contents of spill kits are intact.

Where required by HSNO Regulations, practical emergency response drills involving cross functional teams, are undertaken. Emergency drills are scheduled and planned by the Site Emergency Services Team and coordinated with relevant Superintendents. Following a drill any associated actions are recorded in MARS (as an audit) and responsibility for completing actions are assigned.

13.7 Associated Procedures and Drawings

Procedures listed in **Table 13.1** provide further detail for storage, handling, disposal and spill preparedness of hazardous substances. The listed drawing is a key so identifies the drawing number associated with each area.

Table 13.1 Associated Procedures

Reference	Title	Area and Owner
Procedures		
EV-5900 Manual	Hazardous Substances Management	Environment
EV-7400.010	Environmental Incident response and reporting	Environment
EN−6104.080	Safe Working Around Hazardous Chemical Storage and Contingency Plan in the Event of Chemical Spill	Utilities
Drawings		
797/922/000/001/000	Hazardous Area Classification-Hazardous Substance Stores, Controlled Zones and Hazardous Atmospheres: Key to Area Plans *This drawing identifies the drawing number associated with each area*	

14 Auditing

Audits on NZ Steel's management system and controls associated with water management systems are conducted by internal and external resources.

All internal and external audits provide observations which are useful in guiding improvements, to avoid or minimise environmental harm and resource consent non-compliances.

14.1 Critical Water Quality Control Audits

14.1.1 Audit purpose

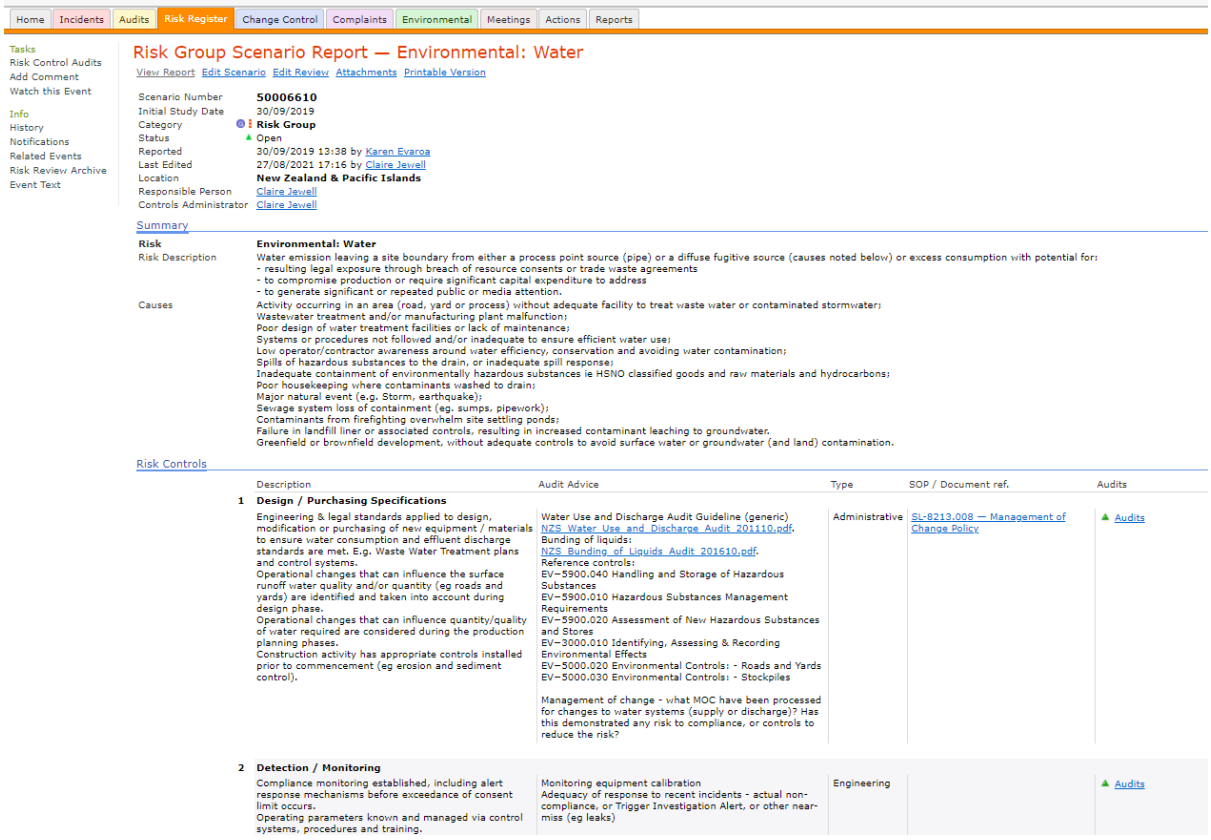
The purpose of the internal audit of critical water quality controls is to demonstrate:

- Existence of a local procedure, outlining key controls and monitoring to support compliance;
- Evidence that operators are trained and using the procedures;
- Incidents are being reported and documented in MARS – refer figure 13.1;
- Environmental controls are included in local procedures, including identification of responsible personnel.

Audit topics are based on the critical water quality controls identified in **Sections 6.6, 7.5 and 8.6**, which are based on the seven key controls listed in the MARS scenario for water and land. They are area and risk specific.

Figure 14-1 is a screenshot from the MARS database, showing one section of the water scenario. The critical water quality controls audit checksheets corresponding to the key control will be referenced in the column titled "SOP/Document Ref".

Figure 14-1 Extract from MARS Water Scenario



14.1.2 Auditing resources and frequency

Subject-matter-experts may include process or other engineers, Utility engineers and operators, environment professionals and those undertaking tasks associated with hazardous substance management. Auditing by operational teams is required to assess effectiveness of controls and to ensure ongoing compliance with consent conditions. These are in addition to regular inspections undertaken by operational or maintenance personnel.

Audit checksheets to guide the auditor in reviewing critical water quality controls are listed in Table 11.1. Each listed audit will be conducted at least annually. A higher frequency may be applied where it is deemed necessary, based on the frequency of Investigation Trigger Levels or incidents.

14.1.3 Audit record

NZ Steel's hazard register (MARS) includes a risk associated with water. The critical water quality control audits are entered into the MARS database, which provides cross-reference to both the water and land risk scenarios. This cross-reference then facilitates a review of what audits have been conducted against each control identified in the Water and Land Scenarios.

14.2 Management System Audits

Management System audits are conducted by trained internal auditors and annually external auditors are engaged to conduct a full audit across the business. The internal and external audits include the following and are required either as part of regulatory requirements, or to provide for external certification to an ISO standard:-

- ISO14001 Environmental Management
- ISO9001 Quality Management
- ISO17025 Laboratory Services

Response to observations and recommendation from these audits may be required within a specified timeframe, in order to satisfy compliance requirements. The IMS Steering Group and the NZPI Environment Team monitor completion of audit non-conformances and any opportunities for improvement or recommendations identified by auditors.

14.3 Compliance Audits

External auditors and Council Compliance Officers conduct either an audit or site inspections for the following reasons, at least annually:-

- Location Test Certificate and Tank Certification
- Council resource consent compliance visit
- WorkSafe compliance visit (hazardous substances)

14.4 Associated Procedures and Drawings

Procedures listed in **Table 14.2** provide further detail for inspections and actions to be taken when an inspection indicates maintenance or repair is required.

Table 14.2 Associated Procedures

Reference	Title	Area and Owner
Procedures		

EN−6131.081	Critical Environmental Audit - Northside Outfall Catchment	
Under development	Critical Environmental Audit - Southside Outfall Catchment	
Under development	Critical Environmental Audit -Dewatering Plant	
Drawings		
	Not applicable	

15 Incident Response and Reporting

Where an event within the Operational Area could result in any of the following, an incident must be reported in the MARS system: -

- Discharge consent limit exceedance;
- Water quality results above one or more Trigger Investigation Levels;
- Increasing water consumption which could lead to an exceedance of a consent limit;
- Increasing contaminant level, with potential to affect water quality;
- Spill or loss of containment, including hydrocarbons, hazardous substances, suspended solids
- Failure to maintain water treatment devices, which could lead to a breach of consent.

The general requirements for incident investigations and reporting are set out in procedure EV-7400.010. An overview of the response to events where Consent Limits are exceeded, or Trigger Investigation Levels are elevated is outlined below.

15.1 Spill Incident Response

Response to hazardous substance spills is outlined in **Section 13**, including notification to Utilities and the Environment Manager and reporting to Auckland Council.

Substances specific spill response plans are available in each location hazardous substances are stored and used.

15.2 Response to Non-Compliance

A non-compliance is where a Consent Limit is exceeded. As noted in **Sections 6.7, 7.6, 8.7, 9.4 and 11.1**, there is an established process for continuous monitoring to assess compliance with Consent Limits and report on Trigger Investigation Levels. Where both Consent Limits and Trigger Investigation Levels are set for a discharge, the Trigger Investigation Levels contingency response protocols are intended to ensure Consent Limits are not exceeded.

As set out in EV-7400.010 an investigation must be undertaken where a Consent Limit is exceeded, an Incident Report must be prepared and submitted to the Council.

The investigation is to be led by the relevant operational Superintendent and additional resources sought as required. Typically an investigation involves:-

- Collation of data within the current month, including rainfall and other environmental factors so that a Root Cause Analysis can be completed. (there maybe more than one possible cause);
- Review of reported operational incidents, inspections, checks and audits conducted leading up to the non-compliance;
- Comparison of results, where relevant, with previous months, or the same period in the previous year;
- Review of any manufacturing plant maintenance activities, shut-downs or breakdowns within the period to evaluate possible contribution;
- For water treatment facilities review of previous maintenance activities and whether these met the specified/recommended frequency;
- Review any changes to material storage or process consumables, which could have influenced results.

During the investigation possible remedial work is to be considered to avoid reoccurrence of a non-compliance due to a similar/same root cause. The initial Incident Report will be submitted to Council (by the Environment Team) within the timeframe specified in the Resource Consents. An updated and final Incident Report is to include mitigation measures and/or remedial activities, with a timeframe for completion.

The Environment Manager is to be notified immediately when a non-compliance occurs and informed of progress on the investigation and proposed remedial activity.

Following conclusion of the full investigation a final Incident Report is to be submitted to Auckland Council with 15 working days of the initial notification summarising:-

- Resource consent reference and location of discharge;
- The date, time, duration, nature of the incident;
- Results of any other sampling to support an investigation and environmental conditions in the previous 24 hours.
- Proposed remedial actions which are likely to avoid further exceedances of Consent Limits (and Trigger Investigation Levels); and
- A trend analysis of sampling results over the previous days or months, whichever is most relevant.

15.3 Response to Trigger Investigation Levels

The Trigger Investigation Levels provide a mechanism to monitor for potential effects on the environment and are also a useful management tool providing an early indication to potential exceedance of Consent Limits.

Exceedance of Trigger Investigation Levels will initiate specific actions to be taken are outlined in the flow charts in **Attachment 6**.

In summary, where a Trigger Investigation Level is exceeded:-

- An initial assessment is to be undertaken of the possible reason or cause, including review of any continuous monitoring at the discharge location (for example turbidity); and
- Where the likely cause is identified and the issue is resolved, the event is to be documented as an Environmental Incident and summarised in the Annual Report (does not require immediate notification to Auckland Council); or
- If no source or cause is immediately identified, then additional sampling (grab) may be appropriate within the catchment and ongoing review of any continuous monitoring, to confirm if the event is still on-going, or was a one off exceedance; and
- Where additional monitoring shows the issue is on-going (that is consecutive elevated Trigger Investigation Levels) then the response is to elevated and immediately reported to Auckland Council within 3 working days.

15.4 Associated Procedures and Drawings

Procedures listed in **Tables 15.1** identifies procedures with specific detail on responding to elevated water quality results.

Table 15.1 Associated Procedures

Reference	Title	Area and Owner
Procedures		
TA-4100	Water Laboratory Manual	Metallurgical Services and Laboratory / Laboratory Supervisor
TA-4100.010	Routine Sample Analyses	Laboratory Supervisor

TA-4100.060	Criteria for Repeating Analyses on Water Samples	Laboratory Supervisor
Drawings		
	Not applicable	

16 Compliance Reporting

Compliance requirements for reporting to Auckland Council are set out in the Resource Consents [conditions xxx]. Council may also request additional information, or request specific actions to address matters identified during review of Compliance Reports, or their Compliance visits. Depending on the timing of the request this detail is either included in the next Compliance Report, or separately addressed in earlier correspondence.

Compliance reporting consists of an Annual Report and a 5-Yearly Report, as outlined below. The reporting task is outlined in more detail in the procedures listed in **Table 16.1**.

16.1 Annual Report

The Annual Report is to be prepared and submitted to Auckland Council by September 30 each year, for the period July 1 to June 30, as set out in Condition xxx [to be updated following issue of consents]. The report is include the following:-

- A summary description of all revisions to the WQMP relating specifically to the implementation of this consent for the preceding 12 months;
- A summary of maintenance of the water management system for the preceding 12 months;
- A summary of the water monitoring data collected in accordance with the water monitoring programme, in the preceding 12 months and comparison with at least previous 2 years of water monitoring data;
- A summary of any spills with potential to result in exceedances of Consent Limits and Trigger Investigation Levels which occurred within the preceding 12 months and the response which was undertaken;
- Identify and comment on any emerging trends with respect to the information presented in accordance with subclauses (iii) and (iv) above;
- Identify and comment on any environmental factors or operational events which may have affected the results.
- A summary of activities supporting the Coastal Birds Management Plan (CBMP) and the Wetlands Management Plan (WMP) and any associated maintenance and monitoring; and
- A summary of actions and outcomes taken in response to any exceedances of Consent Limits or Trigger Investigation Levels.

16.2 Five-Yearly Report

The Five-yearly Report is to be prepared and submitted to Auckland Council by September 30 every fifth year, as set out in Condition xxx [to be updated following issue of consents].

From the issue of the ITA consent the dates for submission of the Five-yearly Report will be [to be updated following issue of consents]:-

- December 20XX
- December 20XX
- December 20XX
- December 20XX
- December 20XX
- The purpose of the Five-yearly Report is to evaluate all aspects of the environmental performance of the ITA Area, which relates to treated process water and ITA stormwater discharges. This report is to be prepared by a suitably qualified and experienced person, which may be an employee or consultant. as set out in Condition xxx [to be updated following issue of consents].

The five-yearly report consists of two parts, with Part 2 only required in the event that any effects are identified in Part 1(a)(vi).

Part 1 – General outline of report	Part 2 – required in the event that any effects are identified in Part 1(a)(vi)
a. Taking into account the information provided in the five preceding Annual Reports (Condition 22), provide commentary regarding compliance with conditions of this consent, and, in the event of any non-compliance, commentary regarding actual and potential effects associated with those non-compliances.	d. A review of all significant aspects of the water management system relevant to the effects identified in Part 1(a)(vi). The review shall include: i. The associated water management system, and associated operations and maintenance procedures. ii. Description of alternative methods for minimising the effects of the discharge compared to that currently used in the ITA Area. iii. Identification of any of the alternative methods in (ii) that would significantly reduce adverse effects. iv. The feasibility, including financial implications, of adopting the methods identified in (iii). v. An overall evaluation of whether current practice is the best practicable option.
The commentary shall: i. Compare data with the previous Five Yearly Report; ii. Identify and comment on long-term emerging trends in monitoring data; iii. Critically evaluate the performance of the operations and maintenance procedures and physical mechanisms in place to minimise any adverse effects associated with the exercise of this consent; iv. Identify any improvements to the water management system, undertaken or planned, including those implemented in response to non-compliances; v. Make recommendations on any additional improvements needed, with respect to procedures or mechanisms relating to the exercise of this consent; and, vi. Identify any effects beyond those identified in the application for this consent.	e. Where current practice is no longer the best practicable option as identified in Part 2(~~c~~d)(v), the steps to be taken to adopt the best practicable option, and a timetable in which those steps can practicably be taken.
b. Taking into account the information in (a), review and confirm the ongoing monitoring requirements including parameters and frequencies, and update the WQMP if necessary.~~.~~	
c. Any other issue considered important by the Consent Holder.	

16.3 Environment Committee

NZ Steel established an Environment Committee in the 1970's and invited representatives of the community to attend. The Committee meets every 4-months and it is attended by the Company's Senior Managers, the

Company's Legal Secretary, the Company's Environment Manager, representatives from Auckland Council Compliance Team and invited community representatives.

The Environment Team has established procedures and templates for preparing the Environment Committee presentations. The information reported to Council – as set out above – is presented to the Committee and opportunity is provided for discussion and feedback. Representatives are asked to provide a summary of the Committee meeting to the people they represent.

Consent condition xxx [to be updated following issue of consent] sets out the requirements for presenting information to the meeting, including:-

a. A summary of the water monitoring data collected in accordance with the water monitoring programme in the preceding 12 months;
b. A summary of any spills with potential to compromise compliance with the conditions of this consent which occurred within the preceding 12 months and the response which was undertaken;
c. Outline of any identified emerging trends with respect to the information presented in accordance with subclauses (a) and (b) above;
d. Outline of any environmental factors or operational events which may have affected the results; and
e. Summary of actions and outcomes taken in response to any exceedances of Consent Limits or Trigger Investigation Levels.

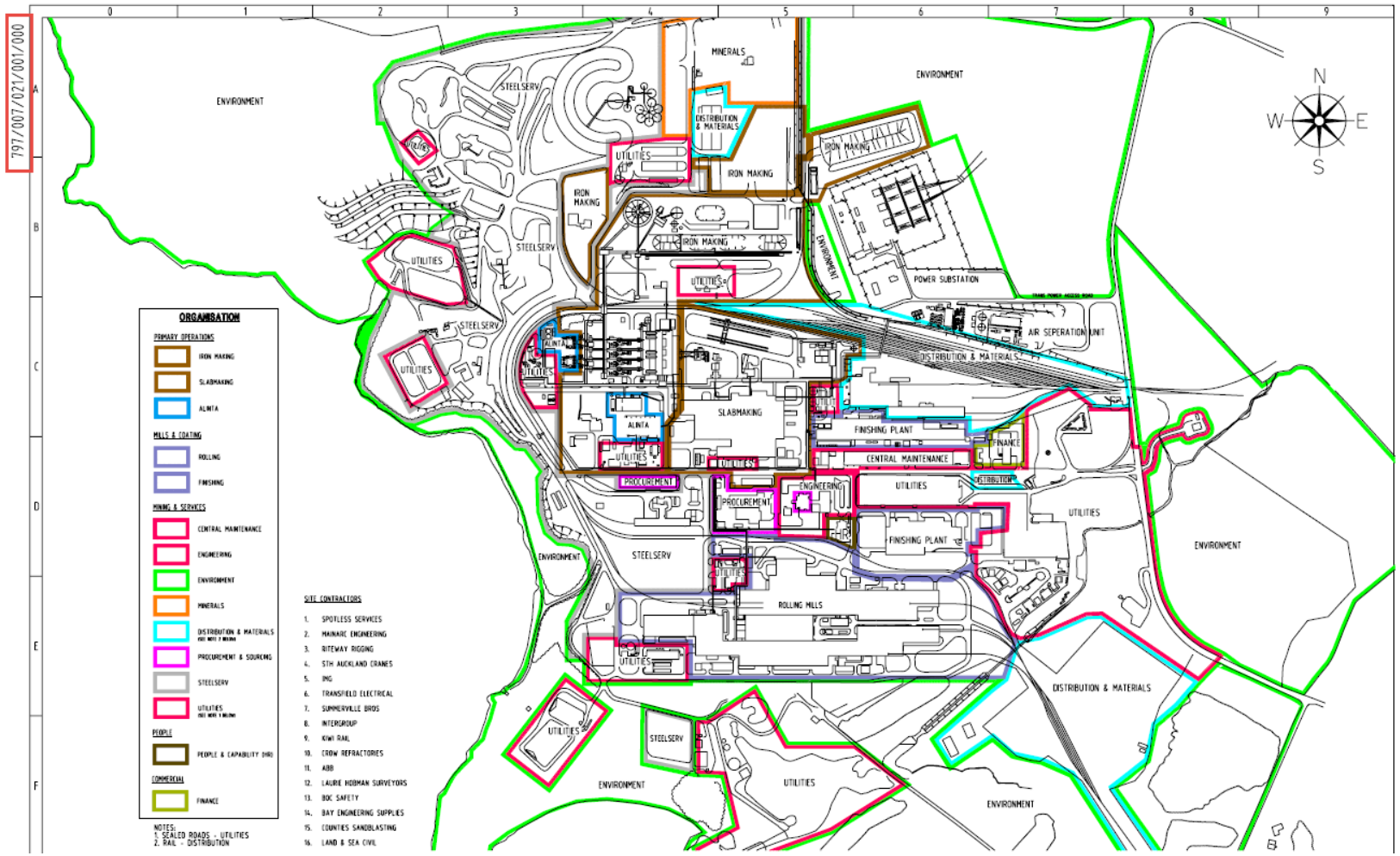
Table 16.1 Associated Procedures

Reference	Title	Area and Owner
Procedures		
EV-7040	Compliance Reporting Manual	Environment / Environment Manager
EV-4400.020	Environment Committee Meetings	Environment / Environment Manager

17 References

June 2021	Structural Inspection of Northside and Southside Outfalls, Tonkin and Taylor
June 2021	Water Discharges and Industrial and Trade Assessment, Tonkin and Taylor
October 2012	New Zealand Steel – Assessment of Effects on the Environment

Attachment 1 – Housekeeping Areas


797/007/021/001/000
ENVIRONMENT
STEELSERV
MINERALS
DISTRIBUTION & MATERIALS
UTILITIES
IRON MAKING
POWER SUBSTATION
AIR SEPERATION UNIT
SLABMAKING
ALINTA
FINISHING PLANT
CENTRAL MAINTENANCE
FINANCE
PROCUREMENT
ENGINEERING
ROLLING MILLS
N
W
E
S
ORGANISATION
PRIMARY OPERATIONS
IRON MAKING
SLABMAKING
ALINTA
MILLS & COATING
ROLLING
FINISHING
MINING & SERVICES
CENTRAL MAINTENANCE
ENGINEERING
ENVIRONMENT
MINERALS
DISTRIBUTION & MATERIALS
PROCUREMENT & SOURCING
STEELSERV
UTILITIES
PEOPLE
PEOPLE & CAPABILITY (HR)
COMMERCIAL
FINANCE
NOTES:
1. SEALED ROADS - UTILITIES
2. RAIL - DISTRIBUTION
SITE CONTRACTORS
1. SPOTLESS SERVICES
2. MAINARC ENGINEERING
3. RITEWAY RIGGING
4. STH AUCKLAND CRANES
5. IMG
6. TRANSFIELD ELECTRICAL
7. SUMMERVILLE BROS
8. INTERGROUP
9. KIWI RAIL
10. CROW REFRACTORIES
11. ABB
12. LAURIE HOBMAN SURVEYORS
13. BOC SAFETY
14. BAY ENGINEERING SUPPLIES
15. COUNTIES SANDBLASTING
16. LAND & SEA CIVIL

Attachment 2 – Catchments and Location of Discharges

Figure W-ITA1 –ITA Catchments

Figure W-ITA2 –ITA Catchments

Figure W-ITA3 –ITA Catchments

Figure W-ITA4 – Northside ITA Catchment

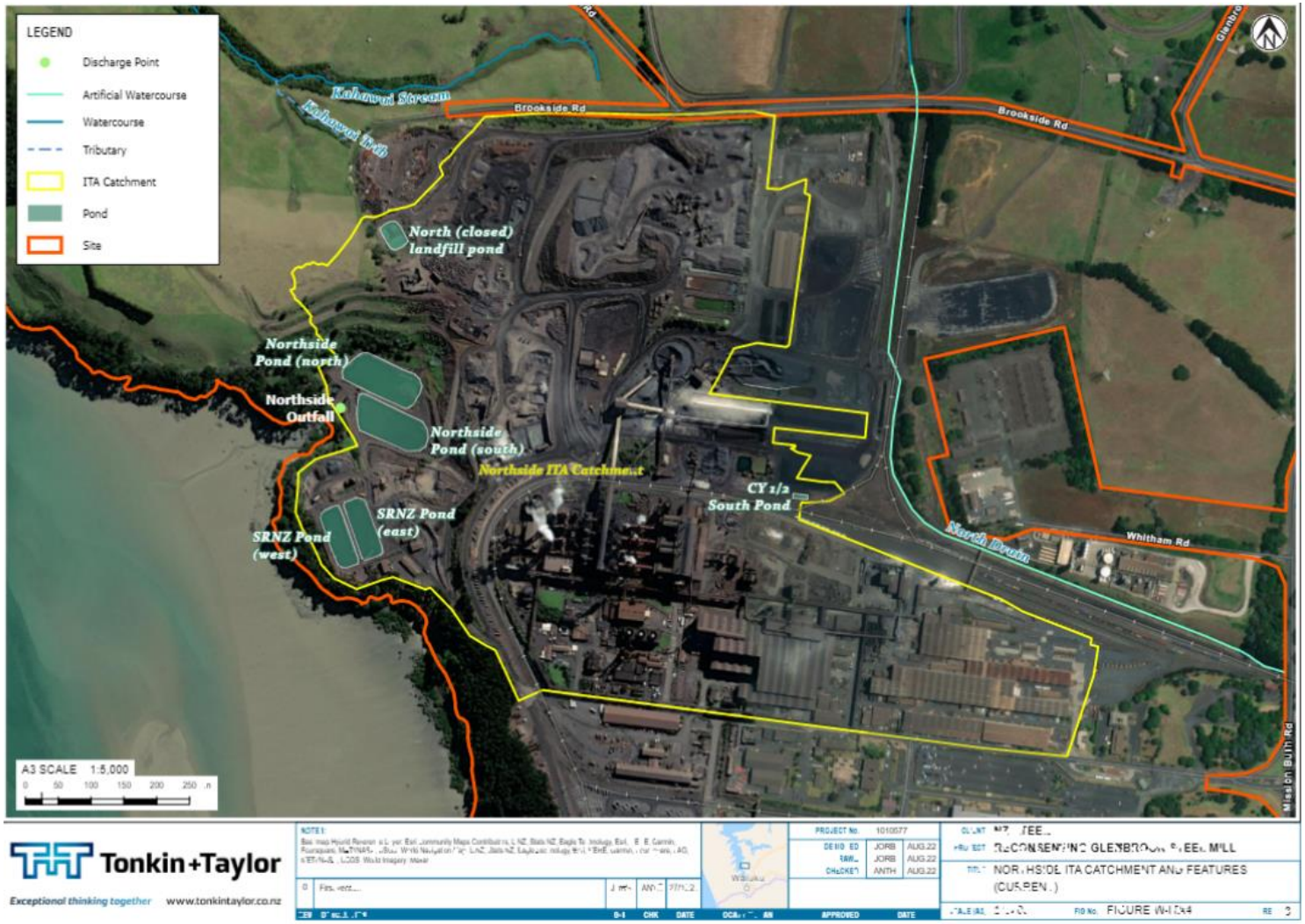


Figure W-ITA5 – Southside ITA Catchment

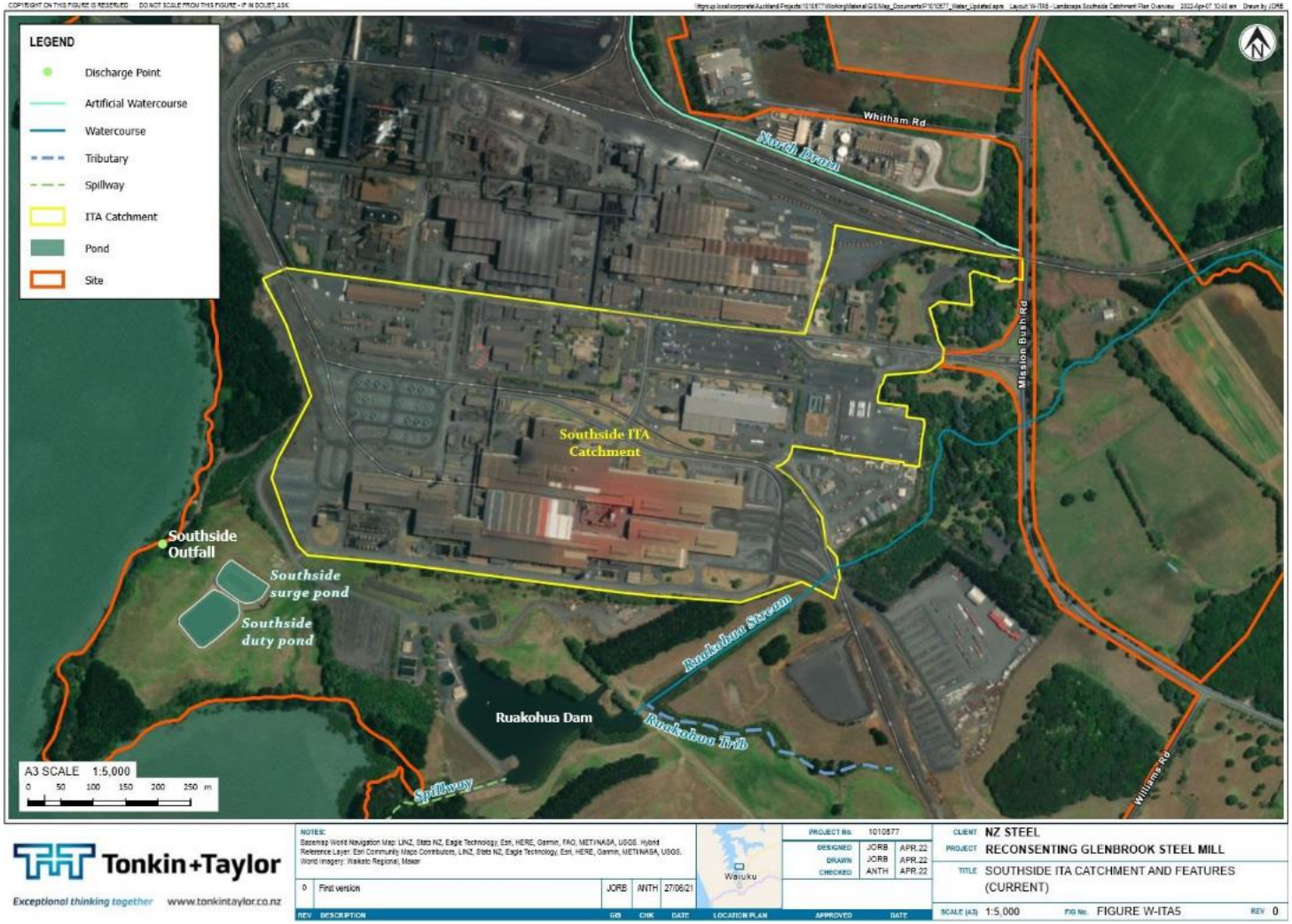
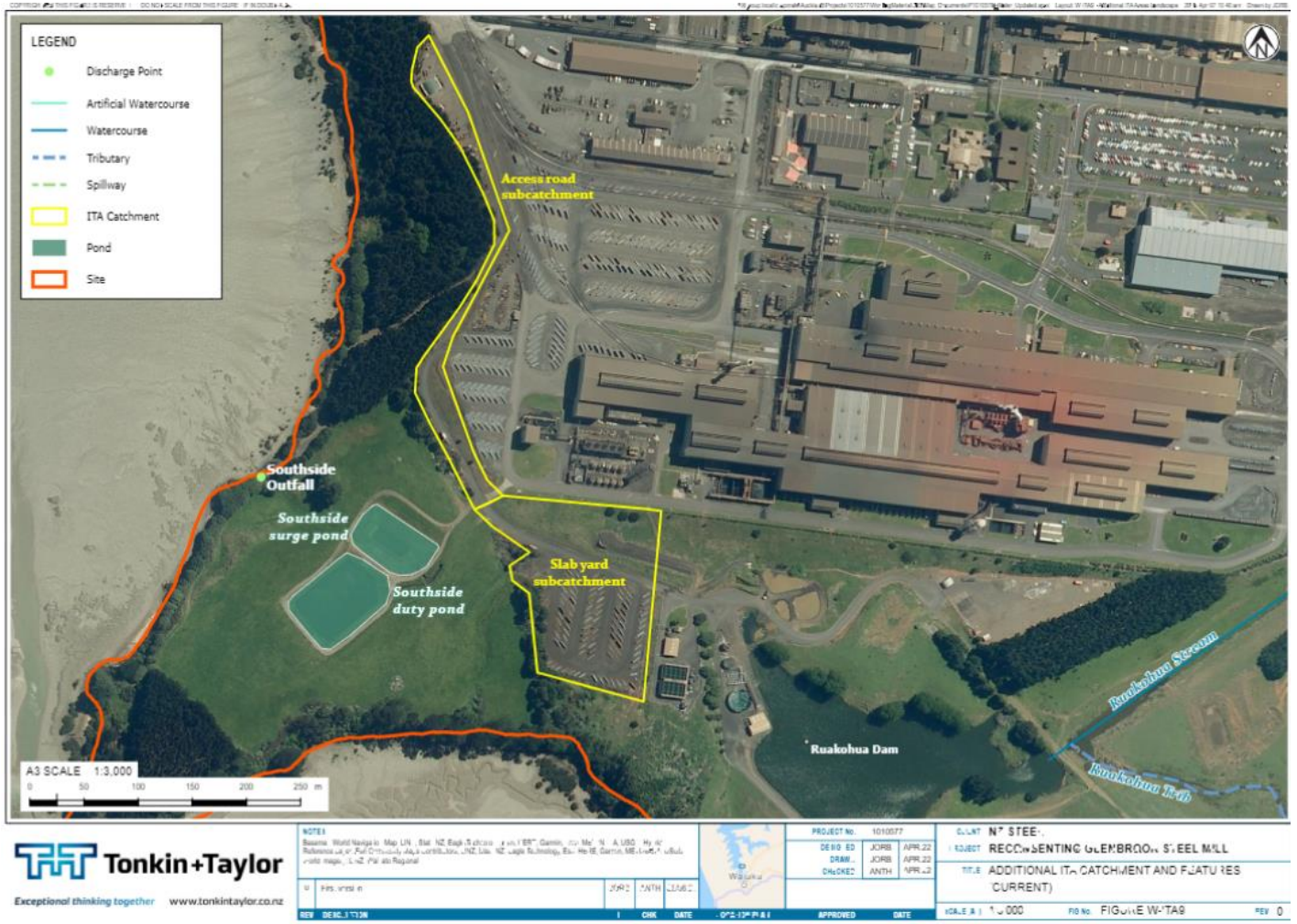


Figure W-ITA6 – North Drain and North Stream Catchment

Figure W-ITA7 – Ruakohua Stream ITA Catchment

Figure W-ITA8 – Kahawai Stream ITA Catchment

Figure W-ITA9 – Additional Catchment and Features (current)



Attachment 3 – Monitoring Program, Consent Limits and Trigger Investigation Levels

The following tables are the proposed Monitoring Program, including Proposed Consent Limits and Trigger Investigation Levels, submitted in response to Section 92 request and lodged with Council in October 2022.

NORTHSIDE AND SOUTHSIDE OUTFALLS

Table 1: Discharge monitoring at Northside and Southside Outfalls[1]

Parameter	Northside Outfall	Southside Outfall
Volume	Continuous	Continuous
Temperature	Continuous	Continuous
Turbidity	Continuous	Continuous
pH	Daily composite	Daily composite
PAHs	Monthly	Monthly
TSS	Daily composite	Daily composite
Conductivity	Daily composite	Daily composite
Hardness	Daily composite	Daily composite
Dissolved Organic Carbon	Monthly	Monthly
Oil and Grease	Monthly	Monthly
Total Petroleum Hydrocarbons (TPH)	Monthly	Monthly
Aluminium	Monthly	Monthly
Boron	Monthly	Monthly
Cadmium (total)	Quarterly	Quarterly
Chromium total	Quarterly	Quarterly
Copper (dissolved)	Daily composite	Daily composite
Copper (total)	Daily composite	Daily composite
Iron (total)	Daily composite	Daily composite
Lead (total)	Quarterly	Quarterly
Nickel (total)	Quarterly	Quarterly
Vanadium (total)	Daily composite	Daily composite
Zinc (dissolved)	Daily composite	Daily composite
Zinc (total)	Daily composite	Daily composite

Note 1:

- "Quarterly"/ "Monthly" are composite samples, except for oil and grease, dissolved organic carbon, TPH's and PAH's which would be grab samples.
- "Daily composite" refers to daily samples, based on predetermined aliquot which is taken on a time or flow basis.

Table 2: Consent Limits for Northside and Southside Outfalls

Parameter	Northside Outfall proposed Consent Limit	Southside Outfall proposed Consent Limit
pH	6-9.5	6-9.5
TSS	15 mg/L (monthly flow weighted average)	15 mg/L (monthly flow weighted average)
Zinc concentration (total)	0.11 mg/L (three-monthly flow weighted average)	0.08 mg/L (three monthly flow weighted average)
Zinc load	1 kg/day (three monthly flow weighted average)	-
Cadmium	0.055 mg/L (three monthly flow weighted average)	0.055 mg/L (three monthly flow weighted average)
Chromium	0.044 mg/L (three monthly flow weighted average)	0.044 mg/L (three monthly flow weighted average)
Copper	0.013 mg/L (three monthly flow weighted average)	0.013 mg/L (three monthly flow weighted average)
Lead	0.044 mg/L (three monthly flow weighted average)	0.044 mg/L (three monthly flow weighted average)
Nickel	0.7 mg/L (three monthly flow weighted average)	0.7 mg/L (three monthly flow weighted average)

Table 3: Draft Trigger Investigation Levels for Northside and Southside Outfalls

(Source**:** T+T ITA Report (2023) Attachment 5, Table 12)

Contaminant (mg/L)	Northside	Southside
Aluminium - Total	0.6492	0.5109
Boron - Total	18.7	7.4
Cadmium - Total	0.0061	0.0061
Chromium - Total	0.0072	0.0070
Copper - Dissolved	0.0042	-
Copper - Total	0.0063	0.0056
Iron - Total	0.7739	1.0158
Lead - Total	0.0128	0.0129
Nickel - Total	0.07[1]	0.07[1]
Zinc – Dissolved	0.0550	0.008[1]
Zinc – Total	0.2792	0.0262
Temperature (degrees)	34.2	27.8
TSS	14.3	9.6
Napthalene	0.7[2]	n/a
pH	6.0- 9.5	

Notes:

1. Cells marked with a [1] – have applied the ANZWQG 95 % SPL as this was greater than the mean result plus two standard deviations.
2. As monitoring for PAHs including naphthalene has not historically been monitored, an initial Trigger Investigation Level has been set based the ANZWGV 95% with an allowance of mixing of 10 times the guideline.

RUAKOHUA STREAM AND KAHAWAI STREAM CATCHMENTS

Table 4: Discharge and freshwater monitoring at Ruakohua Stream and Kahawai Stream catchments[1]

Parameter	**Ruakohua Stream catchment**	**Kahawai Stream catchment**
	• **Contractor's Compound** • **Yard 31** • **Future Ruakohua ITA Discharges**	• **Kahawai ITA** • **Kahawai Culvert**
Temperature	Quarterly	Quarterly
pH	Quarterly	Quarterly
TSS	Quarterly	Quarterly
Conductivity	Quarterly	Quarterly
Hardness	Quarterly	Quarterly
Dissolved Organic Carbon	Quarterly	Quarterly
Oil and Grease	Quarterly	Quarterly
Aluminium	Quarterly	Quarterly
Boron	-	Quarterly
Copper (total)	Quarterly	Quarterly
Iron (total)	Quarterly	Quarterly
Vanadium (total)	Quarterly	Quarterly
Zinc (total)	Quarterly	Quarterly

Note 1:

"Quarterly" are grab samples during rain events. Rain events are as specified in the WQMP.

NORTH DRAIN

Table 5: Discharge and freshwater monitoring at North Drain catchment

Parameter	North Drain ITA catchment1		North Drain catchment – downstream[2]	North Drain: Dewatering Plant[3]	Buffer Scrap Yard discharges (once operational)*
	• Coal Yard 19 Pond • CY1/2 East Pond	• Y56K Pond • Future North Drain ITA Discharges	• Site 1	• Dewatering Plant	• Buffer Scrap Yard
Volume	-	-	-	Continuous	-
Temperature	Monthly	Monthly	Weekly	Monthly	Monthly
Turbidity	Continuous	-	Continuous	Continuous	-
pH	Monthly	Monthly	Weekly	Monthly	Monthly
TSS	Monthly	Monthly	Daily composite	Monthly	Monthly
Conductivity	Monthly	Monthly	Daily composite	Monthly	Monthly
Hardness	Monthly	Monthly	Daily composite	Monthly	Monthly
Dissolved organic carbon	Monthly	Monthly	Daily composite	Monthly	Monthly
PAHs*	-	-	Weekly	-	Monthly
TPH*	-	-	-	-	Monthly
Oil and Grease	Monthly	Monthly	-	Monthly	Monthly
Aluminium	Monthly	Monthly	Daily composite	Monthly	Monthly
Boron	Monthly	Monthly	Daily composite	-	Monthly
Cadmium (total)	-	-	Daily composite	-	-
Chromium total	-	-	Daily composite	-	-
Copper (total)	Monthly	Monthly	Daily composite	Monthly	Monthly
Iron (total)	Monthly	Monthly	Daily composite	Monthly	Monthly
Lead (total)	-	-	Daily composite	Monthly	-
Nickel (total)	-	-	Daily composite	-	-
Vanadium (total)	Monthly	Monthly	-	Monthly	Monthly
Zinc (total)	Monthly	Monthly	Daily composite	Monthly	Monthly

Note 1:

- For the North Drain ITA catchment, "Monthly" are grab samples during rain events. Rain events are as specified in the WQMP.
- For Site 1, "Weekly" are composite samples. "Daily composite" refers to daily samples, based on predetermined aliquot which is taken on a time or flow basis.
- For Dewatering Plant, "Monthly" are grab samples (not rain event).
- *Only relevant if External Scrap is stored in this catchment.

Table 6: Consent Limits for Dewatering Plant

Parameter	Dewatering Plant
Volume	Average 7,400 m^3/day
Turbidity	20 NTU (monthly flow weighted average)

Table 7: Consent Limits for North Drain

Parameter	Site 1 (daily composite sampling)
TSS	50 mg/L (monthly average)
Zinc	0.031 mg/L (monthly average) (80% ANZECC DGV, monthly average)

Table 6: Draft Trigger Investigation Levels for North Drain ITA monitoring sites and Dewatering Plant
(Source: T+T ITA Report, November 2022)

	Kahawai Stream				Ruakohua Stream		North Drain discharges				North Stream
Contaminant (mg/L)	**Culvert Kahawai**	**Kahawai Upstream**	**Kahawai Downstream**	**Kahawai ITA**	**Contractors Compound**	**Yard 31**	**CY19 Pond**	**East Pond**	**Y56K Pond**	**Dewatering Plant**	**Site 1**
Aluminium - Total	6.7	3.9	2.6	9.8	0.4	7.6	4.1	4.6	15.3	1.2	5.4
Boron - Total	13.2	7.6	9.8	13.5	-	-	3.3	8.8	12.1	-	2.1
Cadmium - Total	-	-	-	-	-	-	0.0060	0.0057	0.0057	-	0.0002[1]
Chromium - Total	-	-	-	-	-	-	0.0219	0.0223	0.2450	-	0.0110
Copper - Total	0.0090	0.0075	0.0075	0.0114	0.006	0.013	0.0088	0.011	0.0527	0.0074	0.0057
Iron - Total	4.5	2.3	2.3	8.3	0.9	16.4	6.0	16.9	55.1	3.0	15.3
Lead - Total	-	-	-	-	-	-	0.0158	0.0150	0.0161	0.0161	0.0055
Nickel - Total	-	-	-	-	-	-	0.011[1]	0.011[1]	0.0154	-	0.011[1]
Zinc - Total	0.1280	0.0571	0.8559	0.19172	0.036	0.151	0.2215	0.410	0.3838	0.0509	0.0786
Temperature (degrees)	25.5	22.4	23.0	27.8	23.0	26.2	23.5	23.1	21.0	27.6	
TSS	188	36.2	28.2	143.7	7	168	464.5	380	979.3	36.6	90.4
Turbidity[2]	-	-	-	-	-	-	-	-	-	-	-
pH	<< 6.0- 9.5>>										

Notes:

1. Cells marked with a [1] - have applied the ANZWQG 95 % SPL as this was greater than the mean result plus two standard deviations.

2. Historically monitoring of sediment in water has focused on TSS. It is proposed to monitor both TSS and turbidity going forward to enable a TSS and turbidity relationship to be established monitoring of turbidity will be undertaken and trigger levels will be developed once sufficient data is obtained. In the interim, results will be compared to the TSS trigger levels.

COASTAL MONITORING

Table 7: Coastal monitoring

Parameters	Benthic ecology and sediment sites	Oyster sites
Sediment grain size	2 yearly	-
Cadmium (total recoverable sediment concentration)	2 yearly	-
Chromium (total recoverable sediment concentration)	2 yearly	-
Copper (total recoverable sediment concentration)	2 yearly	-
Lead (total recoverable sediment concentration)	2 yearly	-
Zinc (total recoverable sediment concentration)	2 yearly	-
Benthic ecology at the control site and at Northside A and at any sites where the AC ERC-Red guideline values are exceeded for any metals	2 yearly for the control site and at Northside A and 2 yearly where required at other sites	-
Zinc concentration in oysters	-	Yearly
Copper concentration in oysters	-	Yearly

Attachment 4 – Summary of Key Activities, Controls and Contingency

Refer to Sections 6, 7, 8 and 9 for further detail.

Activity	Key contaminants	Critical Water Quality Controls / Contingency Measures
Steel Mill wide		
Sealed roads and yards	Heavy metals, suspended solids	Sweeping to remove sediment Sumps and catch-pits for collection of heavy solids
Hazardous substances storage and use	Various including pH and hydrocarbons	Secondary containment at storage locations and capture within ponds on site
Northside Outfall ITA Catchment		
Product tipping beds, co-product and waste processing	Heavy metals, suspended solids	Catch-pits at source and sediment fencing Northside Ponds Contingency: Additional cleaning
Iron Plant	Heavy metals, suspended solids	WWTP Continuous monitoring and adjustment of chemical treatment Wedge pits for heavy sediment collection Northside Ponds Contingency: Additional cleaning or adjustment of chemicals; use of surge pond to reduce flow or contain water requiring further settling
Steel Plant	Heavy metals, suspended solids	WWTP Continuous monitoring and adjustment of chemical treatment Northside Ponds Contingency: Diversion to Southside Ponds for treatment and then recycling to Dam
EAF (process water aspect)	Metals, suspended solids	Recycling to the Steel or Ironplant WWTP Northside ponds Contingency: Diversion to Southside Ponds for treatment and then recycling to Dam
WWTP sludge dewatering	Heavy metals	Sludge dewatering plant filter weirs Northside Ponds Contingency: With multiple ponds available an alternative sludge dewatering pond can be put into operation (only required if slag filter required replacement)
Iron Plant raw materials including coal and PC stockpiles	Heavy metals, suspended solids	Subsidiary ponds and sediment fencing in coal yards Northside Ponds Contingency: Additional cleaning or maintenance of silt fencing
Aggregate stockpiling and processing	Suspended solids	Subsidiary ponds Northside Ponds Contingency: Additional cleaning
Metal Coating Line	Chromium, pH and zinc	Wastewater treatment plant

Activity	Key contaminants	Critical Water Quality Controls / Contingency Measures
		Continuous monitoring and adjustment of chemical treatment Northside Ponds
EAF Scrap Yards (Local Yard – North, Local Yard – South and Yard A)	Metals, suspended solids, PAHs, hydrocarbons	At source treatment for coarse sediment and hydrocarbons; Recycling to the Steel and Iron Plant Northside Ponds
North Drain ITA Catchment		
Dewatering Plant	Suspended solids, conductivity	Slurry water treatment plant and ponds Continuous monitoring and adjustment of chemical treatment Contingency: Diversion to settling pond for additional treatment and shutdown of slurry pipeline
CY19 Coal stockpiles	Heavy metals, suspended solids	CY19 Pond Continuous monitoring and adjustment of chemical treatment Contingency: diversion to Northside Ponds, additional cleaning or adjustment of chemicals
CY1/2 and CY 5/6 coal stockpiles	Heavy metals, suspended solids	East Pond Continuous monitoring and adjustment of chemical treatment Contingency: Additional cleaning or adjustment of chemicals
Future ITA area	Heavy metals, suspended solids	Conversion of settling ponds and any other requirements, if area is developed
Southside Outfall ITA Catchment		
Southside stormwater	Heavy metals, suspended solids	Area is largely sealed Regular sweeping of sealed roads Settling solids in Southside Ponds Surge pond and recycle line to Water Supply Dam, to minimise occurrence of overflow to Southside Outfall
ARP WWTP	pH and TSS	Continuous monitoring and adjustment of chemical treatment Contingency: Diversion to Southside Ponds and recycling to Dam
Oily waste treatment plant	Hydrocarbons	Continuous monitoring and adjustment of chemical treatment Oil recovery and recycling Treated water recycled to Hot Mill or recycle via Southside Ponds
Other catchments		
Kahawai Stream ITA catchment	Heavy metals, suspended solids	*October 2022 – Current metal cutting yard has been removed and area returned to pasture.* *Should any future use of this area be proposed, a full ITA water treatment design proposal would be prepared.*
Contractors yard catchment	Heavy metals, suspended solids	Melter Aggregate filter beds

Activity	Key contaminants	Critical Water Quality Controls / Contingency Measures
Yard 31 catchment	Heavy metals, suspended solids	Sediment ponds and filter strip
Southern slab yard and adjoining access road	Heavy metals, suspended solids	Discharge to planted area (filter strip)

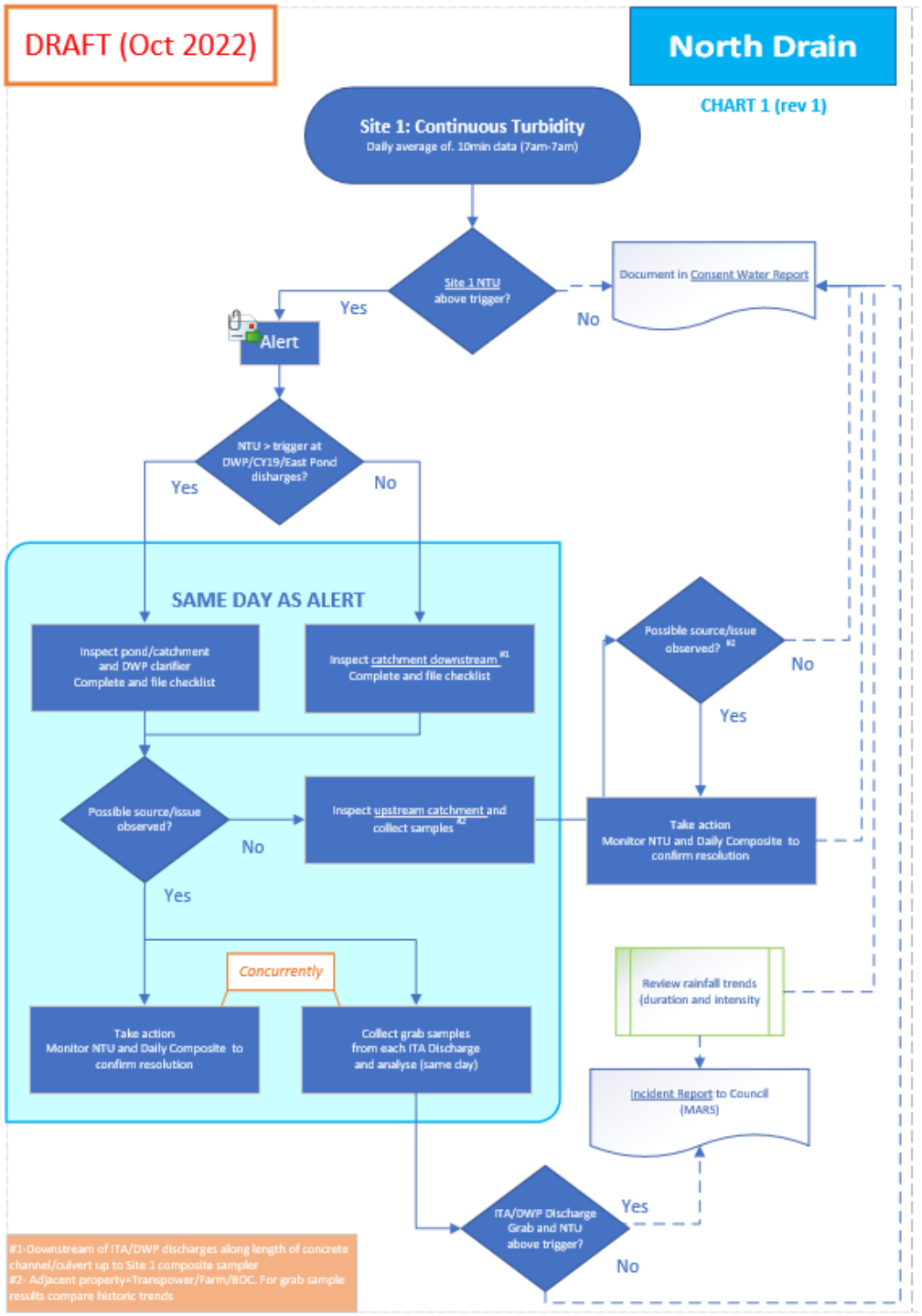
Attachment 5 – Example of Wastewater Treatment Plant Checks

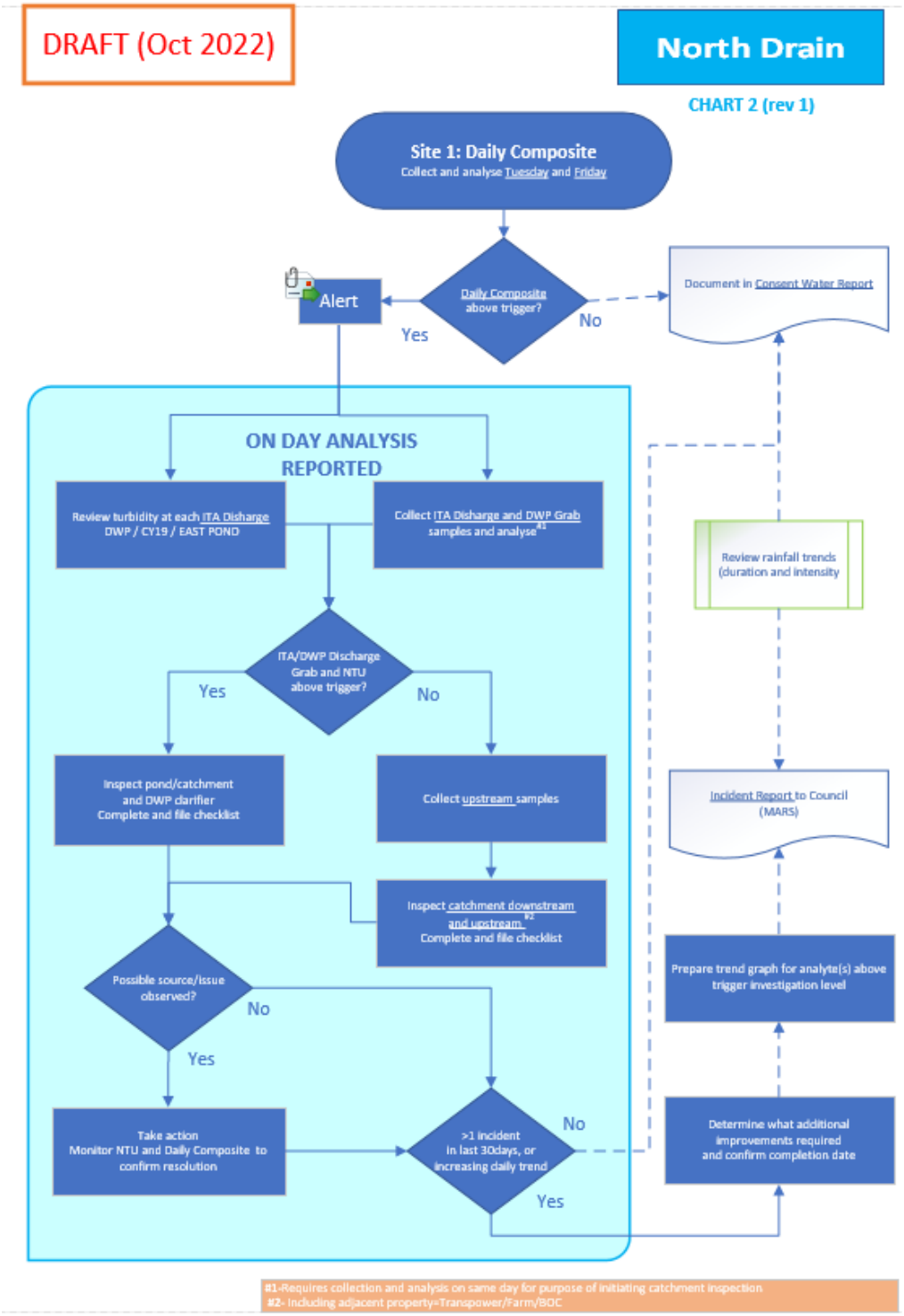
Example of a detailed list of Plant Checks undertaken by Utilities' operators at the intervals specified. These are recorded in Day Logs and the Operator reports any issues to the Utilities' engineer which need additional resources (eg fitter or technician).

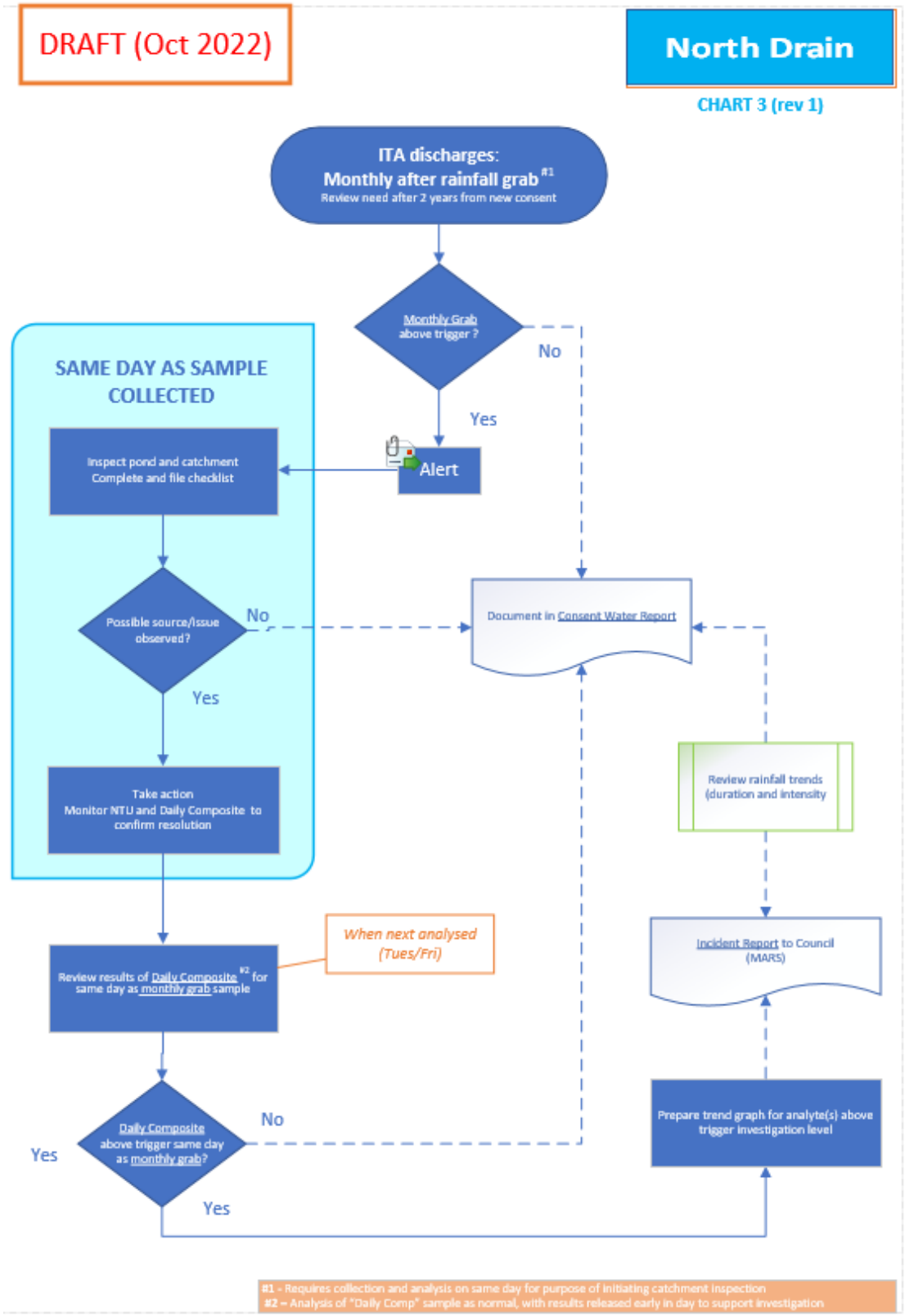
1.	Check the North ponds and outfall for contamination, turbidity, excess flow, oil spillage foaming	per shift
2.	Check pH and turbidity of outfall	per shift
3.	Check the flow from the North SteelServ ponds to the South Ponds/ Outfall.	per shift
4.	Check that buffer capacity in the northside ponds and start yellow pump if required.	daily
5.	Check Wetland slag bed for slumping and clean nozzles	daily
6.	Piezo meter readings at outfall	monthly
7.	Physical sample at north outfall to be collected and check for pH, compare with UMS reading.	per shift
8.	Adjust north pond gates to balance ponds during high rainfall events	
9.	Collect grab and composite samples at outfall and read and record flows, temp and dissolved oxygen.	Sat / Sun
10.	Check waterflow between east and west SteelServ ponds for blockage.	day shift
11.	Road watering pumps to south outfall: check running and outlet and minimum valve open	day shift
12.	North Pond 1 and 2 Total Dig out	Yearly
13.	North ponds Heads every 4 months	4 monthly
14.	SteelServ ponds dig out every 18 months	18 monthly
15.	Check acid tank level and adjust pH at outfall, also re-order acid if required.	per shift
16.	Check oil and fuel levels of the Yellow and red pumps+ maintenance of yellow pump every 250 hrs running.	when pump run
17.	Dig channel to north ponds: Coordinate with SteelServ/ Land Sea and Civil	6 monthly
18.	Water fall drains: Arrange and Coordinate with Intergroup	6 monthly

Attachment 6 – Site 1: North Drain - Response to Environmental Incidents

Draft response protocols to be finalised following issue of new consent and a trial period of agreed timeframe to be determined with Auckland Council.




DRAFT (Oct 2022)
North Drain
CHART 2 (rev 1)
Site 1: Daily Composite
Collect and analyse Tuesday and Friday
Daily Composite above trigger?
Yes
No
Alert
Document in Consent Water Report
ON DAY ANALYSIS REPORTED
Review turbidity at each ITA Disharge DWP / CY19 / EAST POND
Collect ITA Disharge and DWP Grab samples and analyse #1
ITA/DWP Discharge Grab and NTU above trigger?
Yes
No
Review rainfall trends (duration and intensity
Inspect pond/catchment and DWP clarifier Complete and file checklist
Collect upstream samples
Incident Report to Council (MARS)
Inspect catchment downstream and upstream #2 Complete and file checklist
Possible source/issue observed?
No
Yes
Prepare trend graph for analyte(s) above trigger investigation level
Take action Monitor NTU and Daily Composite to confirm resolution
>1 incident in last 30days, or increasing daily trend
No
Yes
Determine what additional improvements required and confirm completion date
#1-Requires collection and analysis on same day for purpose of initiating catchment inspection
#2- Including adjacent property=Transpower/Farm/BOC


DRAFT (Oct 2022)
North Drain
CHART 3 (rev 1)
ITA discharges:
Monthly after rainfall grab #1
Review need after 2 years from new consent
Monthly Grab above trigger ?
No
Yes
SAME DAY AS SAMPLE COLLECTED
Alert
Inspect pond and catchment
Complete and file checklist
Possible source/issue observed?
No
Yes
Document in Consent Water Report
Take action
Monitor NTU and Daily Composite to confirm resolution
Review rainfall trends (duration and intensity
When next analysed (Tues/Fri)
Review results of Daily Composite #2 for same day as monthly grab sample
Incident Report to Council (MARS)
Daily Composite above trigger same day as monthly grab?
No
Yes
Yes
Prepare trend graph for analyte(s) above trigger investigation level
#1 - Requires collection and analysis on same day for purpose of initiating catchment inspection
#2 – Analysis of "Daily Comp" sample as normal, with results released early in day to support investigation

Attachment 7 – Coastal Birds Management Plan

Indicative Draft Coastal Birds Management Plan

Attachment 8 – Wetlands Management Plan

Draft Wetlands Management Plan

Attachment 9 – Ferrous Scrap Management Plan

Draft Ferrous Scrap Management Plan, submitted with EAF Short term ITA consent application, Date August 2023.