Eastland Port

Twin Berth Project

Stormwater Management Engineering Report

200577
12 August 2022

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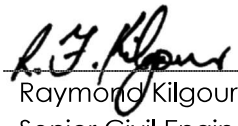

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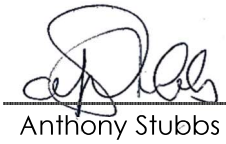

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1. EXECUTIVE SUMMARY

Eastland Port Limited (EPL) has commissioned Cheal to report on a proposed stormwater management solution for its Southern Log Yard (SLY), which forms part of stage 2 of the Twin Berths Project. Stormwater from the SLY has a recent history of elevated total suspended solids (TSS) with respect to the interim discharge limits contained in the resource consent. The report examines the proposed improvements and possible impacts of bringing the SLY treatment system up to the same standard as the other yards within the port complex i.e., to contain and treat a 90-percentile storm event.

The SLY is the largest of the log storage areas at the Port of Gisborne. It is made up of two discrete sub-catchments, the north and south areas of the yard respectively. Eastland Port Limited holds a discharge permit from Gisborne District Council (GDC) to discharge runoff from the site.

The northern sub-catchment (SLY Nth) is 5.25 ha but also catches runoff from areas of Kaiti Beach Road and Kaiti Hill. This catchment discharges to the harbour. The southern sub-catchment (SLY Sth) is 3.42 ha and discharges into the sea.

Both sub-catchments currently have filtration systems intended to ensure acceptable water quality discharges, as required by the existing discharge permits.

These existing treatment systems are not performing to the level required by the discharge permits therefore a secondary treatment system is proposed to supplement the existing systems. The non-compliance is total suspended solids (TSS) and discolouration.

The secondary treatment process will consist of:

- Underground detention chambers
- Chemical dosing to improve particle settling
- Lamella clarifiers, which are more efficient and have greater flow capacity than the existing primary filtration systems

This secondary treatment infrastructure would be inserted between the existing filtration systems and the existing outfalls.

The lamella clarifiers operate at a fixed rate, which will result in peak discharge rates significantly lower than the current rate at the outfalls. Therefore, no changes are proposed to the outfalls.

As with the other log yards, the secondary process aims to treat the runoff from storm events up to the 90th percentile depth, which is in line with current best practice. The 90th percentile storm for the Gisborne region is 21mm, based on the 2010 NZTA document "Stormwater Treatment for Highway Infrastructure".

Due to the large area and external catchments, the system performance is sensitive to the effects of shorter duration 21mm storms. Therefore, assessment of the design performance in flow handling terms has been based on methods that analyse volumes based on time distributed rainfall patterns.

This report concludes that the proposed improvements can achieve a required discharge quality that maintains receiving environment water quality standards for all but relatively extreme rainfall

events with the applicable discharge water quality standards, however full compliance is not achievable for short duration storms less than 4 hours, due to the concentration of the treatment storm volume within the shorter time window. While the proposed system may not accommodate the entire volume of these extreme events it will treat the bulk of the stormwater that has the highest contaminant concentration and which occurs during the first half of a rainfall event.

The assessment shows that the proposed system for the SLY Sth area can effectively achieve the required discharge quality objectives within the confines of the site. The effects of redevelopment will be an overall improvement in water quality. In short duration events, there would be some ponding, but this will remain contained in the SLY Sth yard area.

For the SLY Nth sub-catchment, the analysis again highlighted some localised ponding during short term events, but also the potential for some flow to bypass all treatment devices and flow straight to the harbour.

EPL wishes to avoid ponding within the yards. To mitigate against ponding occurring, whilst also ensuring that there is no untreated discharge from the site, additional treatment devices, in the form of hydrodynamic vortex separators (HVS), will be installed in the bypass flow paths of each of the SLY Nth and SLY Sth systems.

Due to the limitations of the modelling approach, the report recommends implementing the concept design, and carrying out intensive monitoring of rainfall, flows and water quality for an initial period. This would allow for a better informed, effects-based assessment of whether further improvements are warranted, and if so, to define an optimal solution.

The location of the proposed infrastructure is wholly within the port site. In terms of potential environmental effects during construction of the proposed systems, implementation of standard measures will ensure a very low probability of unlawful discharge.

2. INTRODUCTION

Eastland Port has initiated the Twin Berths Project (TBP) to improve the cargo handling capacity of the Port of Gisborne. The Proposal is designed to enable two ships up to 200m long to berth at the port simultaneously, unlocking greater capacity for bulk freight and potential options for container freight in future. Stage 1 of the TBP was consented in December 2020. This stage remediated the former slipway to reduce its footprint within the port to enable more manoeuvring space for ships, and rebuilt part of Wharf 6 and all of Wharf 7.

Stage 2 provides for the remaining works required to complete the TBP, and comprises the:

- Extension of the existing Wharf 8 structure into the area of the inner breakwater;
- Reclamation next to the SLY;
- Rebuilding the outer breakwater structure;
- Deepening access channels in the outer port to accommodate larger Handymax vessels; and
- Improving stormwater collection and treatment facilities in the SLY.

As described above, in this report we have assessed the stormwater effects in relation to the SLY from Stage 2.

Part of the TBP will be a reclamation of land creating an additional flat area of approximately 6,900m². The reclamation revetment will provide better protection against large coastal waves from the ocean intruding onto the log handling area. The extension is adjacent to the SLY. The reclamation will need to be serviced by stormwater treatment of run off.

The TBP provides an opportunity to bring the stormwater treatment for the SLY up to the same standard as the other log yards within the port precinct. Cheal has been engaged by EPL to provide a report outlining the proposed stormwater management concept for the SLY.

In broad terms, the proposed concept is to insert new treatment systems into the existing network downstream of the existing filtration structures, and upstream of the existing outfalls.

3. CURRENT STATUS

3.1 Port Operations

The predominant cargo handled through the port is unprocessed logs. This operation requires extensive areas for staging and temporary storage. The logs arrive direct from the forest with a significant by-load of timber detritus that is unsuitable for discharge to the environment. The makeup of this by-load is complex, creating challenges for the clarifying of storm runoff before it enters the marine environment.

While at times logs are transferred from these areas direct to the wharf for loading, at other times, logs are staged in other areas to speed up loading operations.

3.2 Log Handling and Storage Areas

For log export shipping, the port has three substantial areas for temporary storage of logs (refer to Figure 1: Overall Layout of Port and Log Yard showing new reclamation area adjacent to SLY below and Cheal drawing 200577 LU01 in Appendix 1). These are:

1. The Upper Log Yard (ULY)①
2. the Wharfside Log Yard (WLY)②
3. the Southern Log Yard (SLY)③

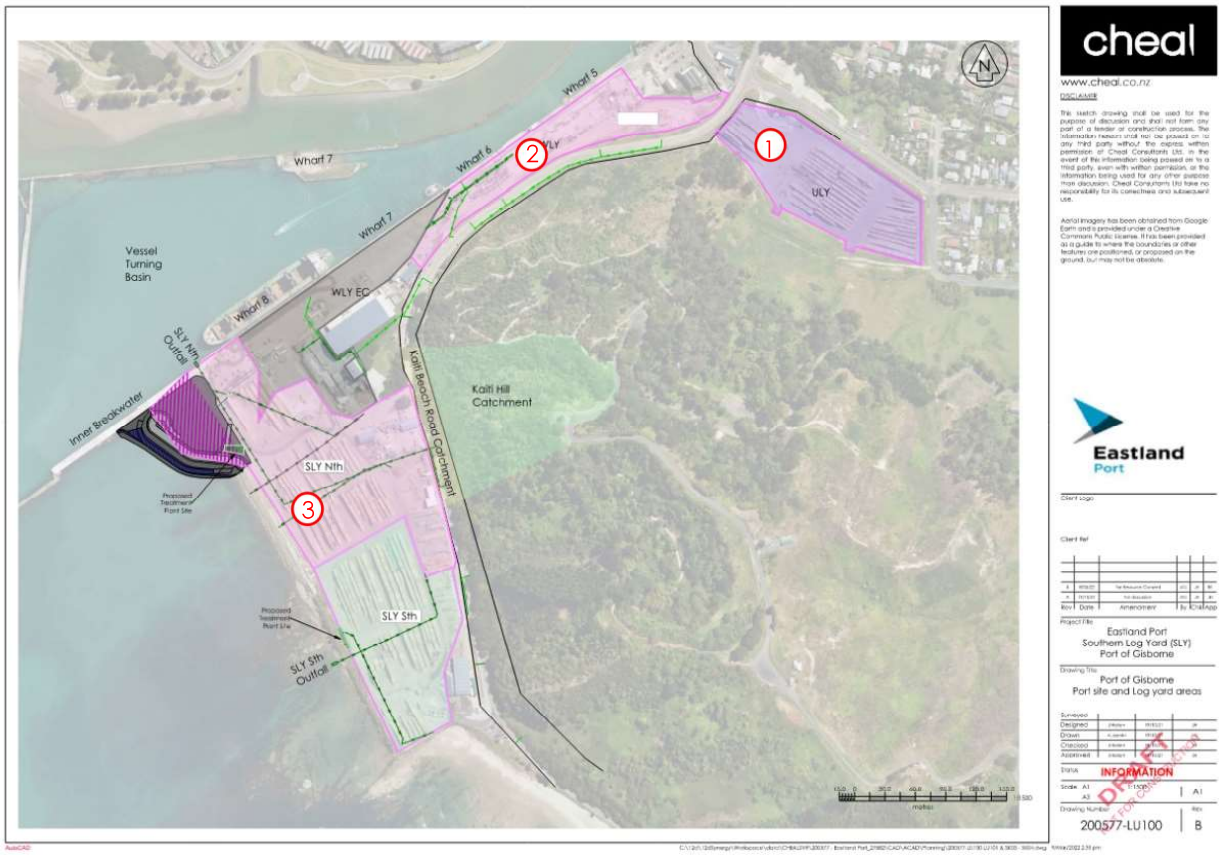


Figure 1: Overall Layout of Port and Log Yard showing new reclamation area adjacent to SLY

The SLY is made up of two discrete stormwater catchments, the existing northern area of approximately 5.25ha, and the southern area of approximately 3.42ha. These two areas have different stormwater outfalls, the southern area direct to Turanganui-a-Kiwa/Poverty Bay and the northern area to the harbour. For this report, the northern area will be referred to as SLY Nth and the southern area as SLY Sth.

The northern area will expand with the inclusion of the proposed reclamation and this expansion will be referred to as Ex. SLY Nth. The area of Ex. SLY Nth is 5.94ha.

The current stormwater system for the SLY was designed in 2010. This design included devices to screen contaminants, which have proved insufficient to meet the existing target water quality expressed as interim median and 75 percentile total suspended sediment concentrations in the current consent (further discussed in sections 3.3 and 3.4).

Through operations and experience the expectations of the GDC changed and both the ULY (2014) and the WLY (2017) have been developed with more comprehensive stormwater treatment and management systems. These have successfully been implemented to help deal with the contaminated stormwater runoff and discolouration. Both redevelopments included a sealed surface with lamella clarifiers as treatment devices for removing contaminants from the runoff. The WLY has three 25m³/hr capacity lamella clarifiers and includes a large volume of underground storage to detain runoff to match the treatment processing rate. The ULY, has less detention storage, and relies on two larger capacity (50m³/hr) lamella clarifiers.

The WLY stormwater system was extended to cover the areas of Wharf 7, a large portion of Wharf 8 and the redeveloped main port entrance off Kaiti Beach Road.

The ULY ultimately discharges treated water to the Kopuawhakapata Stream, while the WLY discharges treated runoff to the inner harbour near the current tug berth at Wharf 6. The WLY outlet utilises an historic outfall that also discharges a Council network draining a portion of Rakaiatane Road, so the treated flows are mixed with those from the public system. The arrangement allows for allows for sampling at points to determine the contributing sources of suspended particulates and associated discolouration in the discharge.

3.3 Current Consents for the Southern Log Yard

The SLY currently has a consent granted to discharge stormwater under Coastal Permit (Discharge) CD2010-104664-00, granted in December 2010. This consent allows for a system of various screening structures to filter out contaminants. This consent established several water quality discharge limits. These limits were amended by variation in 2016. The amended discharge permit is attached at Appendix 2.

3.3.1 Existing Stormwater Management Plan

In accordance with the SLY coastal discharge consent, EPL completed and submitted a stormwater management plan in March 2015. The plan is attached at Appendix 3.

This plan will be reviewed and updated to comply with the conditions of the new discharge permit sought by Eastland Port as part of the current Project.

3.3.2 System Performance

Over the period of its operation to date, total suspended sediment (TSS) concentration targets have been exceeded for 84% of the monitoring surveys.

The 4Sight Ecology and Water Quality report (July 2022, included as Appendix M to the 4Sight Assessment of Environmental Effects) notes that a range of parameters are measured in the stormwater discharges and receiving waters. Most data are available for the northern discharge into the harbour. Discharge quality includes pH, TSS, volatile suspended solids, chemical oxygen demand, total organic content, tannin, total petroleum hydrocarbons (TPH), dissolved copper, lead and zinc. Of these, TSS, TPH and the metals are assessed against specific consent discharge limits.

The most recent monitoring report (4Sight Consulting, November 2021 'Eastland Port Southern Log Yard Sampling Report-Quarter 4, 2021) indicates that the discharge quality fails to meet discharge

limits only in respect of the TSS. Quantitative receiving environment consent limits are specified after reasonable mixing for pH and metals. These quantitative limits are met but a narrative standard requiring no conspicuous visual change in receiving waters beyond the mixing zone boundary (as defined by the existing discharge permit), is sometimes not met, presumably due to the elevated TSS and associated discolouration.

3.4 Stormwater Treatment Upgrades in Upper and Wharfside Log Yards

The SLY was designed and consented in 2010 with construction finishing in 2013. This included the stormwater treatment system based around a screen and centrifugal vortex separator systems its performance was found to be insufficient. While some TSS removal was achieved it was not to the standards required by consent conditions. It also failed to achieve the visual conditions requiring no conspicuous change in colour from discharges.

The ULY was designed and consented in 2014. Recognising these deficiencies, the ULY stormwater treatment system featured a lamella clarifier treatment system that also provided provision for chemical treatment if required. This system proved it could meet the TSS expectations of the consent however the requirement for no conspicuous change in colour remained an issue.

The WLY was designed and consented in 2017. However rather that accepting performance targets the granted consent from GDC came with expectations that discharge performance issues needed to be resolved before construction could begin.

Specifically, condition 43a required:

> *The Consent Holder shall conduct pilot trials to establish performance criteria for the stormwater criteria for the stormwater treatment system required to achieve compliance with trigger values specified in Table 1 of this consent. Test results and design criteria arising from the pilot trials shall be provided to Council consent Manager as soon as practicable and no later than two (2) weeks before installation.*

Investigations ensued and laboratory trials were undertaken to find suitable solutions. A solution accepted by GDC was achieved by implementing a lamella clarifier treatment plant like that in the ULY but with chemical flocculation included from the outset of installation.

The WLY stormwater treatment system has met the performance expectations and is compliant with its water discharge consent conditions. Consequently, the ULY stormwater treatment system was upgraded to implement chemical flocculation here as well and the discharge consent was varied in 2020 to acknowledge this.

As the methods implemented for the WLY and ULY have proved effective, the proposed SLY stormwater management system aims to achieve similar outcomes by implementing the lamella clarifier and chemical flocculation treatment system, to effectively treat runoff from the existing yards, the external catchments to the North and the new reclamation area. Consent conditions associated with the new SLY consent are expected to require discharges to meet the same performance criteria as applied for the ULY and WLY discharge consents.

4. STORMWATER MANAGEMENT OBJECTIVES

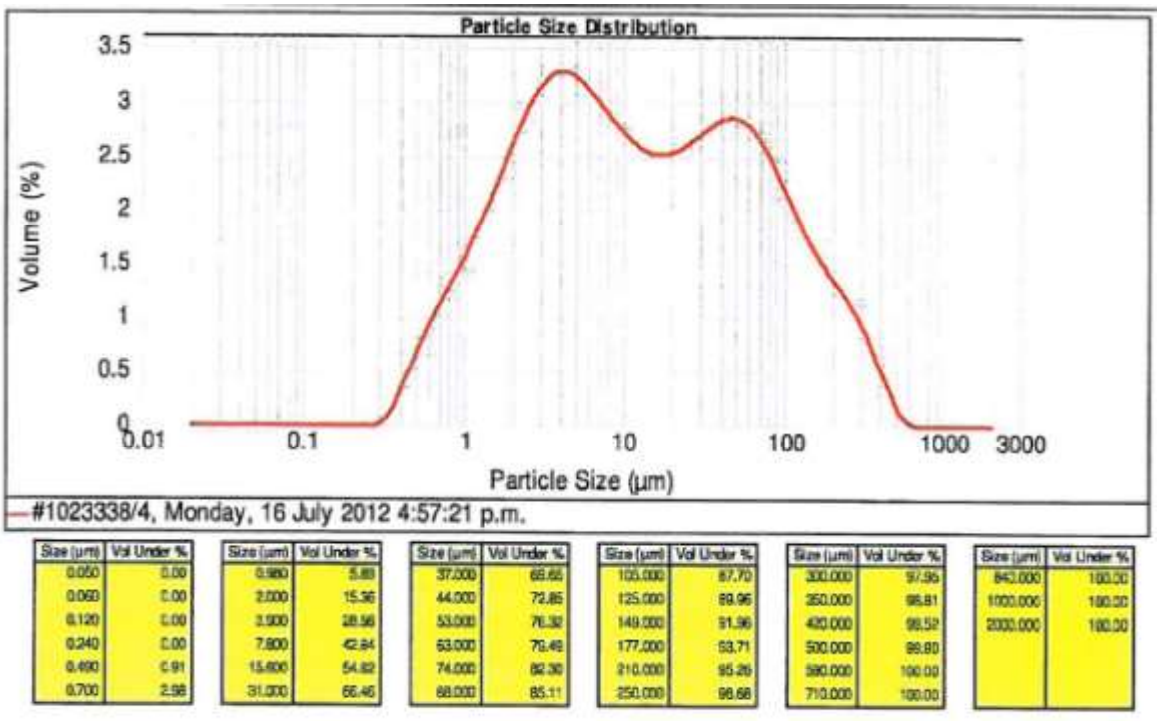
4.1 Log Handling and Storage Residual Contamination

As discussed above, the log handling operation generates a significant number of contaminants, which consist of various sizes and densities. Based on reporting for the ULY development in July 2011, Opus *Gisborne Log Yard Extension – Treatment of Stormwater Runoff Peter Askey, Opus, 7 June 2011* these could be summarised as:

- High levels (500 – 1500gms/m cubed) of suspended solids, comprising mud and fine organic matter from logs and vehicles
- Large quantities of bark and wood detritus
- Sand and fine gravel
- Oxygen Demand from sap discharges from fresh cut logs, resin acids and fine organic debris
- Potential hydrocarbons (TPH) from oil and hydraulic fluids
- Colouring from tannins, and fine particulates and other compounds
- Elevated nitrogen from organic matter in the logs.

While the bulk of this residue is easily managed by sealed surface sweeping and collection in dry weather, or by interception in the storm drain system, a significant quantity of small particles tends to embed into the yard surface and remain resistant to sweeping and mechanical recovery.

The particle size distribution for the ULY (Figure 2) shows many fine particles make up the Total Suspended Solids (TSS), with approximately 30% being Volatile Suspended Solids (VSS). The VSS reflects the organic based particles brought onto site with the logs.



Size (µm)	Vol Under %
0.050	0.00
0.060	0.00
0.120	0.00
0.240	0.00
0.490	0.91
0.700	2.98

Size (µm)	Vol Under %
0.980	5.89
2.000	15.36
3.900	28.56
7.800	42.84
15.600	54.82
31.000	66.46

Size (µm)	Vol Under %
37.000	65.65
44.000	72.85
53.000	78.32
63.000	79.48
74.000	82.30
88.000	85.11

Size (µm)	Vol Under %
105.000	87.70
125.000	89.96
149.000	91.96
177.000	93.71
210.000	95.26
250.000	96.68

Size (µm)	Vol Under %
300.000	97.96
350.000	98.81
420.000	99.52
500.000	99.80
590.000	100.00
710.000	100.00

Size (µm)	Vol Under %
840.000	100.00
1000.000	100.00
2000.000	100.00

Figure 2: ULY Runoff Particle Distribution (PSD)

However, during wet weather, the residue is mobilised by the surface water runoff, in which it becomes suspended. Due to the residue having a lower density than water, it is resistant to traditional water treatment methods based around differences in density (i.e., settling) and can remain in suspension for a significant period. Furthermore, a sealed surface, while beneficial for dry weather cleaning, shortens the time runoff takes to travel across the surface, which increases the initial concentration of contaminants in runoff during rainstorms.

This sensitivity of the runoff to sediment contamination during rainstorms elevates the risk of contaminant spill beyond the port yards and into the surrounding environment. Because much of the finer residues are "locked up" until it rains, being able to manage high intensity events is important over a range of possible storm events.

This experience in the ULY would be expected to be consistent with that in the SLY. Both yards store logs in the same fashion, the same operations recovering the detritus cover the entire port operational area, and the pavements in both yards are now consistent. This is evident in the similarity of particle size distributions illustrated in Figure 2 (ULY) and Figure 6 (SLY) both with mean of ~10 microns.

4.2 Environmental Limits/Performance Standards

For the SLY, Coastal Permit (Discharge) CD2010-104664-00 was granted in December 2010 and subsequently amended by way of variation in 2016. The amended consent identifies specific targets for water quality, for each of the two discrete catchments within the SLY. One is for discharge from the southern area yard to Kaiti Beach, and the other for the northern area, which discharges into the harbour between Wharf 8 and the inner breakwater. The different stormwater discharge limits reflect both the different receiving water standards and different mixing zone requirements and dilution potentials in the open coastal versus harbour receiving environments.

Condition 9(a) of the consent requires the southern area discharge meet the Class SA water quality standard in terms of the Regional Coastal Environment Plan (Tairawhiti Plan).

Condition 9(b) of the consent requires the southern area discharge meet the Class SC water quality standard in terms of the Regional Coastal Environment Plan.

The Part Operative Tairawhiti Resource Management Plan (POTRMP) encompasses the former Regional Coastal Environment Plan and applies the same water quality standards within the Coastal Environment Overlay. The specifics of the water quality classifications can be found at C.10.4 of the POTRMP. The applicable standards are quoted below.

STANDARDS FOR CLASS SA WATERS – The quality of Class SA waters shall conform to the following requirements:

- *The natural water temperature shall not be changed by more than 3 degrees Celsius.*
- *The natural pH of the waters shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or greater than 8.5.*
- *There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances nor shall the waters emit objectionable odours.*
- *The natural colour and clarity of the water shall not be changed to a conspicuous extent.*

- *Aquatic organisms shall not be rendered unsuitable for human consumption by the presence of contaminants, and the water shall not be rendered unsuitable for bathing by the presence of contaminants.*

STANDARD FOR CLASS SC WATERS – The quality of Class SC waters shall conform to the following requirements:

- *The natural water temperature shall not be changed by more than 3 degrees Celsius.*
- *The natural pH of the waters shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or greater than 8.5.*
- *There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances nor shall the waters emit objectionable odours.*
- *The natural colour and clarity of the water shall not be changed to a conspicuous extent.*

Figure 3 below is an extract from the Tairawhiti GIS website showing the water classification areas adjacent to the port.

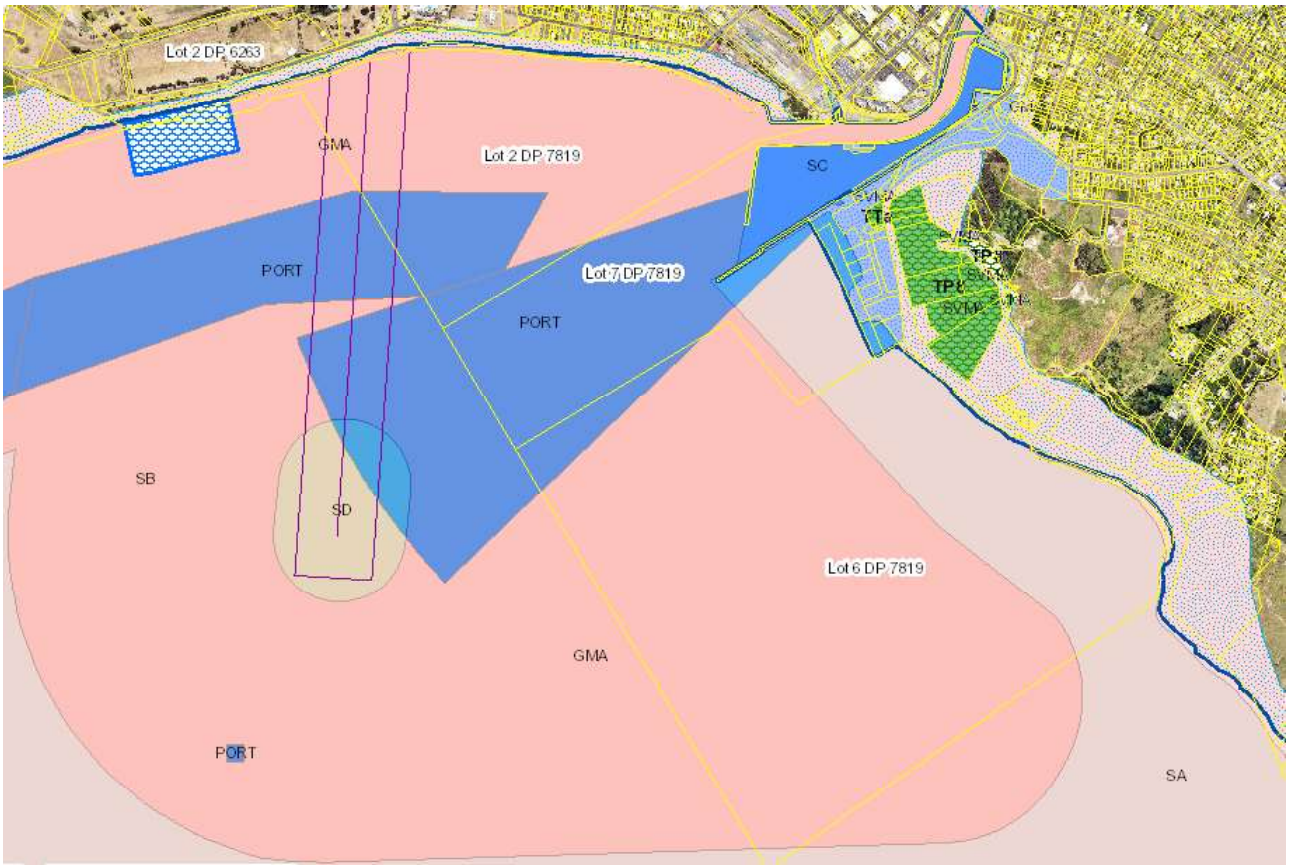


Figure 3: Water Quality Classification Areas from Tairawhiti Plan

4.3 Monitoring History

A summary graph of sampling since the 2016 discharge permit variation can be found at Figure 4 below. The summary report can be found at Appendix 4.

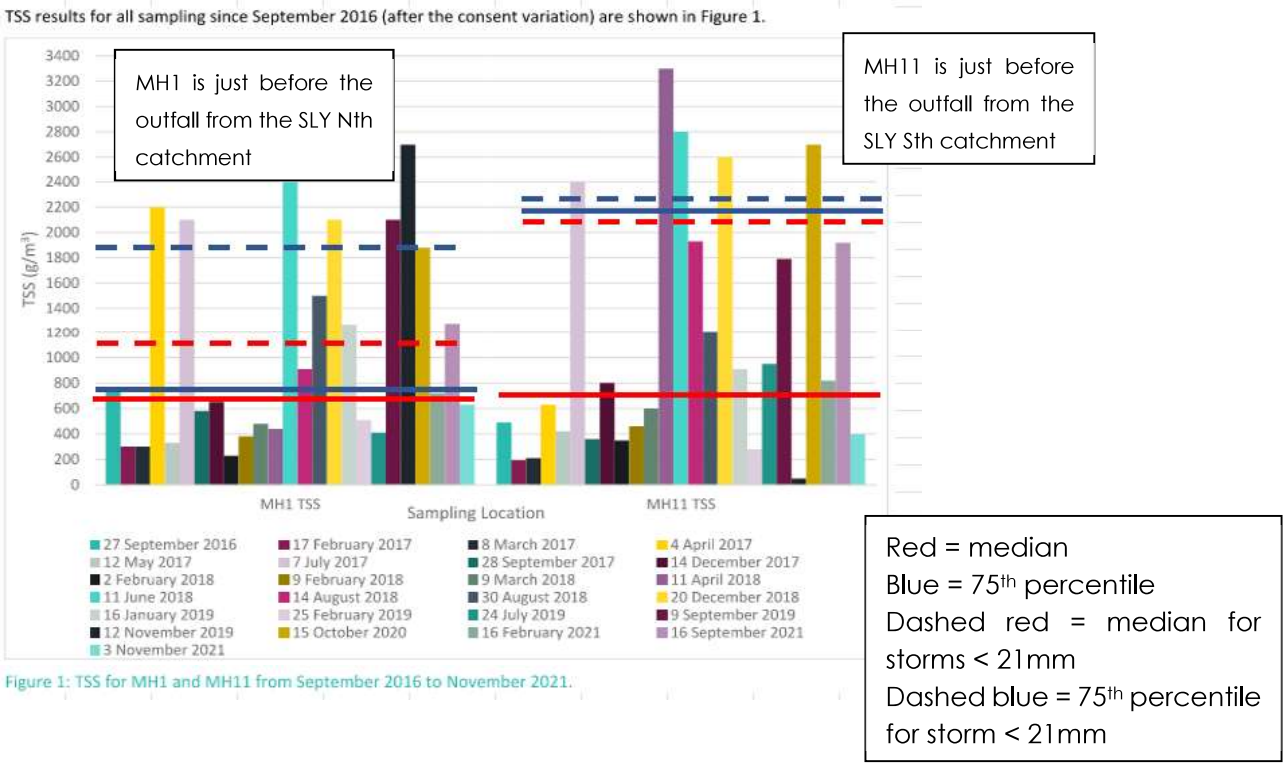


Figure 1: TSS for MH1 and MH11 from September 2016 to November 2021.

Figure 4: SLY TSS Monitoring Results 2016 – 2021

Since the amended consent was issued in 2016, monitoring has focused on whether the discharge meets or exceeds the key TSS limits being a median 300g/m³ and 75th percentile of 450g/m³. The sampling by 4Sight show that TSS has generally frequently exceeded both TSS limits, and that this is occurring for storms no larger than 21mm (monitoring usually happens during or after significant rainfall events).

The horizontal lines have been added by the writer to highlight the performance over the sampling period. The red lines represent the median while the blue is the 75th percentile. The dashed lines represent storms that were less than 21mm depth.

4.4 Proposed Treatment Systems

As part of the Project and the stormwater system for the SLY extension, EPL is proposing to deploy a stormwater management system that provides a secondary treatment process downstream of the existing system. This proposed additional treatment will provide for an improvement in stormwater management and treatment and has been selected as a better alternative than replacing/extending the existing filtration system.

Experience with both the ULY and WLY means EPL has a proven technological solution that can be applied with a high level of confidence and compliance. Both the ULY and the WLY rely on lamella

clarifiers to treat the water. Since the implementation of the ULY and the WLY, port staff have gained considerable experience and expertise with operating these systems. This includes:

- Determining optimal residence time of untreated water in detention storage
- Quantifying pre-treatment dosing with coagulants to improve contaminant removal
- Applying optimal processing rates through the clarifiers.

For the SLY, similar systems are proposed. Lamella clarifiers have been attributed with a filtration efficiency of 90% of particles approximately 25µm and larger. These attributed efficiencies build in a degree of conservatism as the latest product literature from local supplier Filtec states a filtration efficiency of 97-98%, (albeit not specifically related to a particular particle spectrum). Filtec have provided a preliminary assessment of clarifier performance which is discussed in Section 5.2 later in this report.

The ability of the secondary treatment plants to function effectively depends significantly on the management of surface water upstream of the plant, and this report considers the configuration of the on-site stormwater system to effectively manage the stormwater, especially when considering the hydrological factors affecting the SLY. These factors are addressed in Section 6 of this report.

In brief as will be explained later in this report, it is necessary to find the optimal balance between treatment unit capacity and on-site detention, to ensure the treatment process is not compromised by excessive inflows, while still achieving acceptable environmental outcomes at either site outfall.

4.5 Alternative Treatment Systems

The development of the ULY addressed possible alternatives (Upper Log Yard: Stormwater Treatment Opus - November 2012, Ecology and Water Quality Report, 4Sight, July 2022, refer Appendix M of the 4Sight Assessment of Environmental Effects). This report considered approaches that involved less machinery and operational management, however most of these required significantly more area to set aside and were not considered suitable due to space limitations.

For the SLY, space is again a key concern and so the same treatment approach as for both the ULY and the WLY is considered appropriate.

5. STORMWATER MANAGEMENT CONCEPT

As discussed above, the essential objective of the stormwater management is to provide treatment for the new reclaimed area and improve the quality of runoff discharges from the SLY to the same quality achieved elsewhere on port. This will be achieved by installation of lamella clarifiers downstream of the existing filtration structures as a secondary treatment, in effect forming a treatment train. Additional to the clarifiers, detention storage will be provided between the filtration units and the clarifiers, where further deceleration of flow velocities will aid settlement of solids.

Implementing this system in the SLY will complete coverage of the port with this proven treatment method.

5.1 Existing Treatment Structures

The 2010 redevelopment of the SLY incorporated several structures designed to reduce contaminants in the stormwater runoff.

The basic system is depicted in schematic form at Figure 5. This could be described as a primary treatment system.

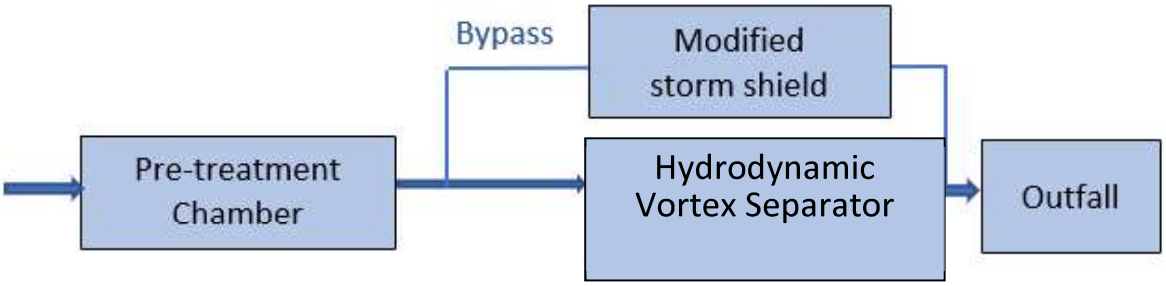


Figure 5: Existing Filtration System Schematic

To explain in detail:

- The pre-treatment chamber has a 20mm grate opening equating to 0.88m² effective inlet area, this acts as a gross pollutant trap.
- Low flow or "first flush" flow exits from a low level of the chamber to a Hydrodynamic Vortex Separator (HVS).
- The literature for the brand of HVS installed states that at a design flow of 96L/s, it can remove up 60-90% of all particles with a mean size of 150µm (0.15mm). This efficiency falls as flows increase.
- During high intensity storms, where inflow exceeds the maximum HVS capacity of 200L/s, runoff from the pre-treatment chamber bypasses the HVS and flows direct to the sea outfall. The bypass is filtered through a modified Hynds Storm Shield that has a dual 15mm screen, slightly inclined downward from vertical, for initial bypass flow. When the water level in the pre-treatment chamber rises above the top of the dual screens, a secondary 15mm screen facing upward at about 50° allows further outflow.

Figure 6 below shows a Particle Size Distribution sampling the SLY Nth outfall, during a 33.4mm rainfall event. The redline denotes the mean particle size for the HVS suppliers published filtration efficiency (60-90% of particles with a mean size of 150µm). This suggests the HVS is generally performing to expectations during major events, but a large number of finer particles are still passing through the primary filtration arrangement.

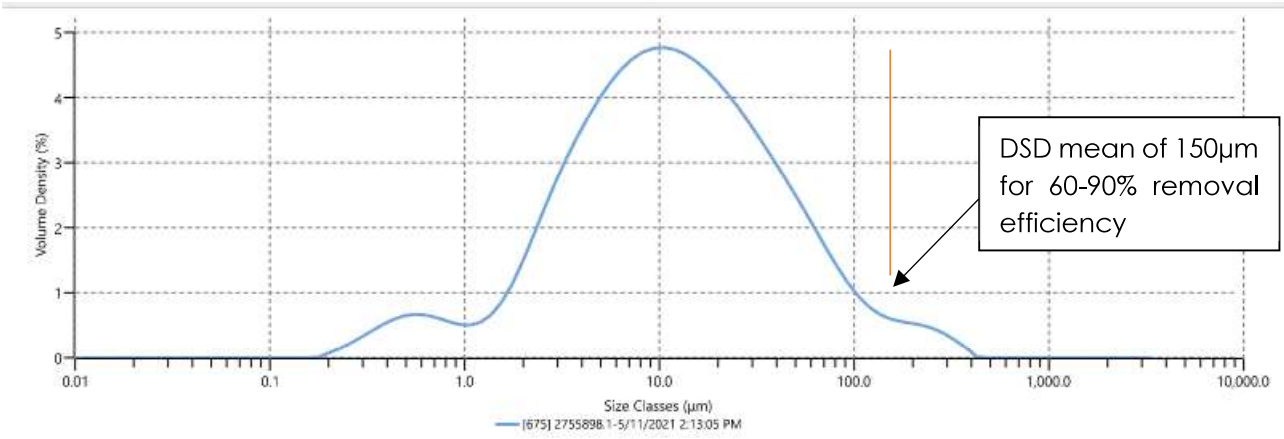


Figure 6: Particle Size Distribution of Sample at Penultimate Manhole of SLY Nth System

Based on this assessment there is clear room for improvement in the effectiveness of the management of stormwater in the SLY as part of the TBP which can be achieved by implementing the lamella clarifier system installed elsewhere on port.

5.2 Proposed Secondary Treatment

To improve the discharge water quality, the TBP proposed solution is to install two components downstream of the existing structures to provide secondary treatment of the runoff in line with the ULY and WLY illustrated in Figure 7. The proposed new components will resemble the ULY and WLY system structures.

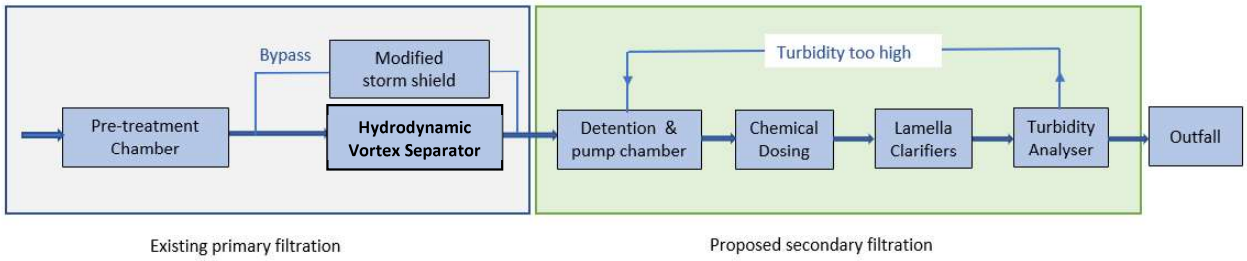


Figure 7: Proposed Treatment Train Schematic

The first component that is proposed is underground detention consisting of large diameter (1600mm) pipes. The pipes will intercept discharge from the existing network and convey (and/or detain it) before the next component, the Stormwater Treatment Plant (SWTP). SLY Nth and SLY Sth will each have separate SWTPs.

Each SWTP will have two clarifiers, with individual capacity up to 110m³/hr. The proposed stormwater treatment plants and ancillary structures sit above ground and are generally less than 4m in height. As the clarifiers are mounted above ground, a pump station will be required at the low end of the detention system. The pumping rate will be limited by the overall capacity of the clarifiers. As each yard system will need more than one clarifier, the pump station will have two variable speed pumps in a duty/standby manifold configuration, plus the ability to operate both pumps concurrently if required. This will allow pumping rates to be optimised during operations.

The current system has been designed for handling peak flows, with the HVS's sized accordingly. The outfall invert levels are set at mean sea level, meaning that for probably half of storm events the piped system hydraulics are not controlled by a tailwater, and can flow freely. For the proposed system, the outflow will be driven by the pumping rate, therefore sea levels will not affect the flow rates through the system. As a result:

- detention time will increase,
- flow rates through the piped system will decrease, and
- precipitation and settling of TSS will be improved.

The pump system will simply lift the water high enough to generate the required flow through the clarifiers. The pumping will temporarily increase the turbidity; however, the next step is to chemically dose the water before it is processed through the clarifiers.

The intention of dosing is to accumulate the fines in clumps that are both larger and denser, and thus can be removed during the settling process. This is a key step that is missing in the current treatment system and represents the most significant improvement to the existing SLY treatment system resulting from the Project.

Attached at Appendix 7 is a report on treatment optimisation for the ULY SWTP. The chemical dosing proposed for the SLY SWTPs will be the same as used at the ULY SWTP. Specifically, the same coagulant (Polyaluminium Chloride), and the same flocculant Crystalfloc B400 (Polymer) are proposed for pre-treatment at the clarifiers. In similar fashion to the trials carried out in ULY, the effectiveness of the dosing at the SLY SWTPs will be optimised over time through further trials at different flow rates and dosing concentrations. This process could be required as a consent condition similar to condition 43c in the WLY consent.

The ULY report also highlights foaming issues in the treated discharge. While the factors causing the foaming are significantly less likely to arise with the configuration proposed for the SLY, the possibility of foaming occurring cannot be ruled out with any certainty. Therefore, it is prudent to allow for anti-foaming treatment as a precaution. As for the pre-treatment dosing at the ULY, the same product is proposed XIAMETER AFE-1520 Antifoam Emulsion will be utilised. Application will be in similar fashion, at the common discharge pipe downstream of the clarifiers.

After passing through the clarifiers, the treated water reaches a turbidity analyser, which controls whether the water can be released to the outlet or returned to the detention storage for recycling through the clarifier treatment. The turbidity analyser does not measure TSS directly, it uses light measurement to determine the cloudiness of the water.

Preferred lamella supplier Filtec were asked to complete a preliminary efficiency assessment based on a TSS sample used in Figure 8. Their assessment was that removal of a high percentage of particles greater than 22µm is achievable. This would see that effect appearing in the green box in Figure 8 below. For particles finer than 22 µm, the level of chemical dosing will decide to what degree these particles can be settled.

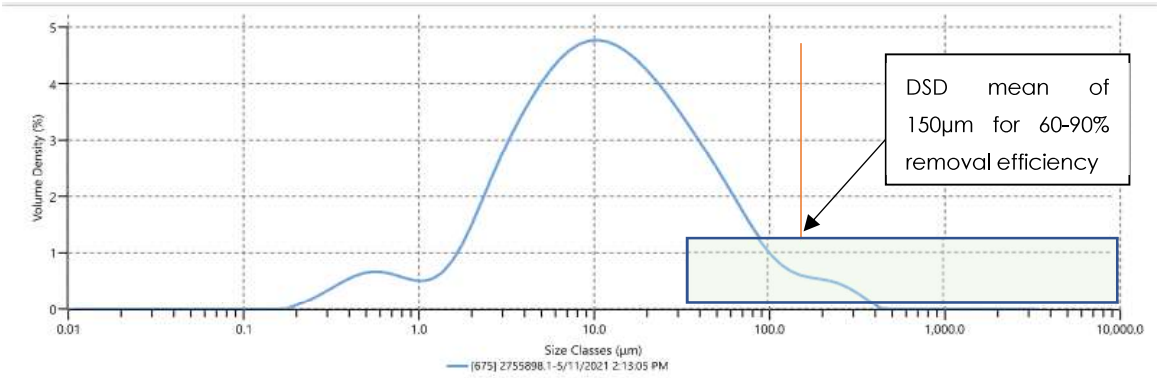


Figure 8: Clarifier Performance Envelope

5.3 Effects At Existing Outfalls

The lamella clarifiers have limited flow capacity with the maximum capacity for each of the double-unit SWTPs being 220m³/hr or 61L/second. This rate is significantly lower than the existing discharge rates, therefore there will be no adverse effects of a flooding or scouring nature.

6. STORM RUNOFF ASSESSMENT

6.1 Treatment Storm Depth

While stormwater systems can be designed to effectively manage a high percentage of extreme events, the diminishing reduction of risk weighed against the increased investment to provide effective management means it is uneconomical to provide protection for all storms. For most regions of New Zealand, the typical approach is to design treatment systems to handle 90% of storms.

For both the ULY and the WLY, the 90% storm for Gisborne was determined to be 21mm depth, based on the 2010 NZTA document "Stormwater Treatment for Highway Infrastructure". For reasons outlined later in this section, it is intended that, while the 90th percentile storm requirement is useful as a yardstick, some flexibility in complying with the standard is warranted in this instance. This approach is due to the constraints on disposal capacity in the treatment plants to manage storms where the 21mm falls over a short period of time (1 – 2hrs).

6.2 Storm Duration

A given depth of rain can occur over a range of durations. The shorter the duration, the more intense the rate at which rain falls, which leads to higher runoff flow. As the possible outlet flow for the treatment train is limited to the capacity of the lamella clarifiers, it is necessary to analyse various storm durations, to optimise the provision of treatment plant flow-through capacity.

6.3 Storm Occurrence Probability

As mentioned above, the shorter duration storms are more likely to stress the storm management system. From the National Institute of Water and Atmospheric Research (NIWA) High Intensity Rainfall

Design System V4 (HIRDSV4), the annual exceedance probability (AEP) of storms of a given depth decreases in line with the storm duration (the shorter the duration, the less probable it will occur in a particular year). HIRDSV4 rainfall predictions are now widely adopted around New Zealand for assessing the storm water impacts of proposed developments, where historic rainfall data is lacking.

In Figure 9 below, the highlighted cells indicate storms of similar depth to the 90th percentile. A 10-minute 21mm storm has an AEP of 2.5% (the Average Recurrence Interval or ARI is 40years). For a 1-hour storm the AEP is 63.3% and the ARI is 1.58years.

HIRDS V4 Depth-Duration-Frequency Results Rainfall depths (mm) RCP8.5 for the period 2081-2100													
ARI (yrs)	AEP (%)	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	63.3%	7.28	11	14	21	30.4	51.5	68.3	87.9	107	118	124	129
2	50.0%	8.23	12.4	15.8	23.6	34.3	57.7	76.7	97.8	119	131	139	144
5	20.0%	11.7	17.6	22.2	33	47.7	79.7	105	133	162	177	187	193
10	10.0%	14.5	21.7	27.4	40.5	58.3	96.8	127	160	194	212	223	231
20	5.0%	17.6	26.2	33	48.6	69.7	115	151	189	228	249	261	269
30	3.3%	19.6	29.1	36.6	53.7	76.8	127	165	207	249	271	284	293
40	2.5%	21	31.2	39.2	57.4	82	135	176	220	264	287	301	310
50	2.0%	22.2	32.9	41.3	60.5	86.3	142	184	230	276	300	315	323
60	1.7%	23.2	34.3	43	62.9	89.7	147	192	239	286	311	325	334
80	1.2%	24.8	36.6	45.9	67.1	95.4	156	203	252	302	328	342	353
100	1.0%	26	38.4	48.2	70.3	99.9	163	212	263	314	341	357	366
250	0.4%	31.5	46.3	57.9	84	119	193	249	307	365	395	413	423

Figure 9: Treatment Storm Duration Probability

6.4 Catchments

The SLY sits on the shoreline between the Pacific Ocean (Turanganui-a-Kiwa/Poverty Bay) and Kaiti Hill, from which the yard is exposed to a significant area of hillside catchment. The SLY Nth and SLY Sth are physically separated by a subtle bisecting ridge.

In terms of overall catchment area, the SLY is significantly larger than the other two yards. The table below compares the contributing catchment areas.

Table 1: Comparison of Log Yard Catchments

Catchment	Area (ha)	Comment
Current Logyard areas		
ULY	2.54	Existing
WLY	5.41	Extended to serve Wharfs 7 and 8
SLY Nth	5.25	Present area
SLY Sth	3.81	Present area
Total current	**17.01**	
Additional areas to be treated in SLY Nth as part of TWB		
Kaiti Hill and Kaiti Beach Road	4.1	External catchments to be treated
SLY Nth reclamation	0.69	Reclamation area
Total additional area (SLY Nth)	**4.79**	
SLY catchments for TWB		
Total SLY Nth	10.04	Extended area
Total SLY Sth	3.81	Present area
Total SLY	**13.85**	

As well as the larger area, the SLY Nth has a potentially longer time of concentration, as runoff from a portion of Kaiti Beach Road, and Kaiti Hill above the road (illustrated in Figure 10), passes though the SLY Nth. For the other log yards, upstream catchment inflows have not been a factor.

6.4.1 Kaiti Beach Road Catchment

The Kaiti Beach Road catchment includes the main port entrance. The Kaiti Beach Road catchpits receive flows from the road, which currently flows through the existing filtration system for the SLY Nth.

As part of the yard runoff sampling described in 4.3, the catchpits are also routinely sampled for, and while some contaminants occur, this is generally at significantly lower concentrations than from within the SLY.

6.4.2 Kaiti Hill Catchment

The Kaiti Beach Road catchpits also capture runoff from the southern aspect of Kaiti Hill (Titirangi Reserve) above, so the effect of this integration of flows on the proposed stormwater system needs to be considered as part of the overall strategy. This catchment is undeveloped and mostly in bush/vegetation, meaning it has a longer response time.

Once these catchment discharges are in the SLY Nth drainage system, the runoff from both catchments is conveyed through the existing SLY system to eventual discharge to the sea, or, in the event of an extreme storm and when the piped system is at capacity, flows overland into the SLY Nth, where it will stand until eventually draining through the outlets to the sea. For extreme events, the ponding currently exceeds the yard capacity and flows to the north, towards Wharf 8.

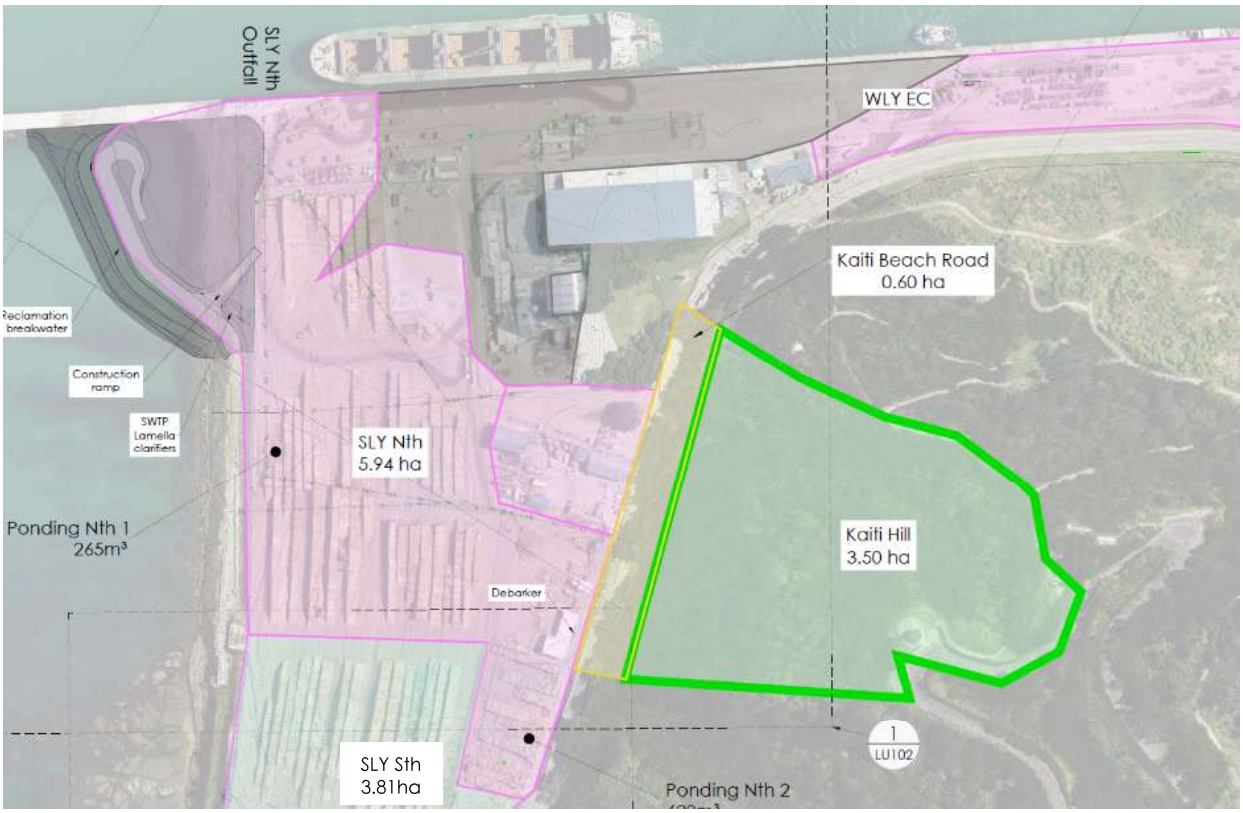


Figure 10: Southern Log Yard North future catchment areas

6.4.3 Upstream Catchments – Assessment of Impacts

While developing the new stormwater management concept, the potential impact of the upstream catchments was assessed. Figure 11 shows relative flows from all 3 catchments over the course of a storm. The Kaiti Beach Road and SLY Nth peak flows align, with the addition of the Kaiti Beach Road flow increasing the overall peak flow, whereas the Kaiti Hill catchment peaks later, causing a temporary flow increase, but does not affect the overall peak flow.

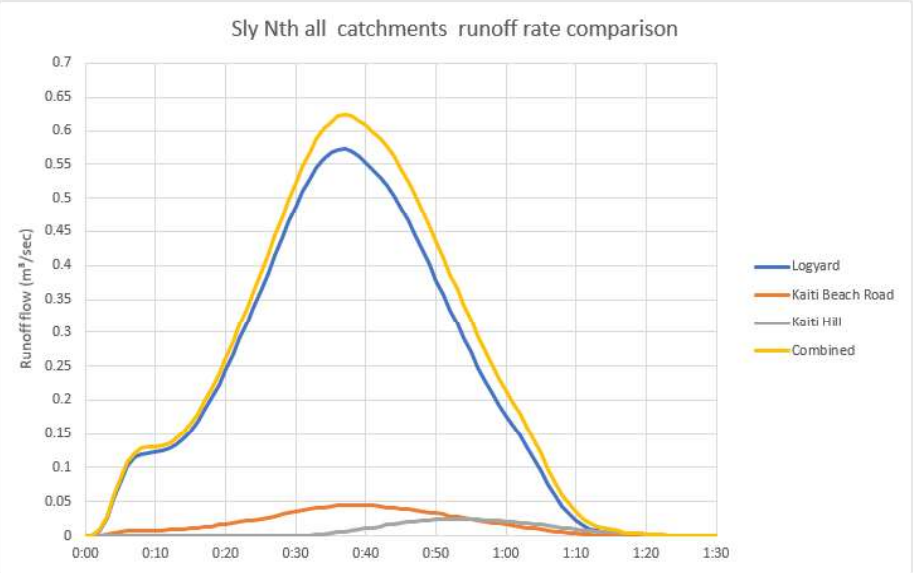


Figure 11: Runoff Flows in SLY Nth Catchment – 21mm Depth/1-hour Duration

A review of the sampling since 2016 indicates a significant volume of TSS contaminants in runoff from Kaiti Beach Road. Ideally these levels need to be reduced prior to discharge to the marine environment, and therefore the appropriate approach going forward is to retain the current arrangement. This means the Kaiti Hill runoff will also have to be managed.

6.4.4 SLY Sth

The SLY Sth area is not affected by external flows. With the breakwater revetment around two sides and the site sloping towards the revetment, the SLY Sth can contain a significant amount of water before spilling beyond the yard.

6.5 Rainfall Temporal Distribution

The design storm depth of 21mm is the total depth over the full duration. It does not, however, represent the variation of depth incrementally during the storm. This variation, sometimes called temporal distribution or pattern, also affects the rate of runoff.

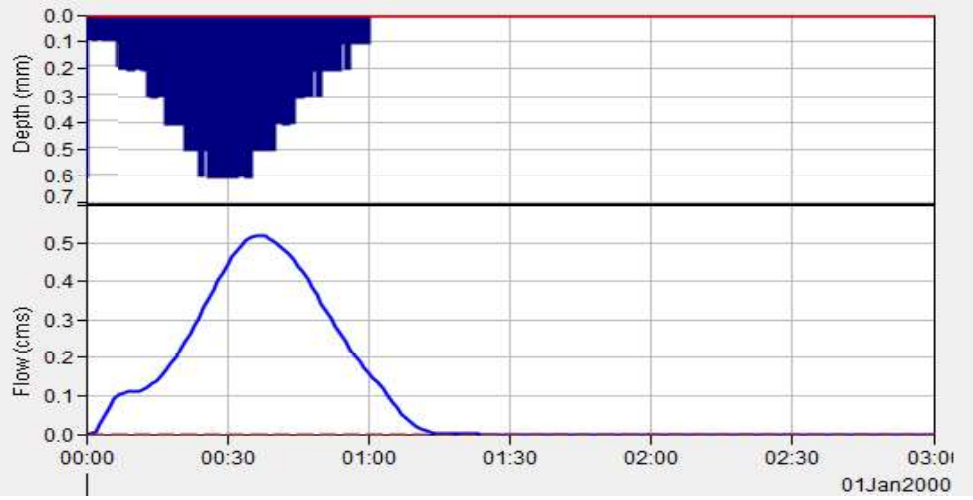


Figure 12: Example - Temporal Distribution of Rainfall Depth and Runoff Flow Rate

Figure 12 above shows an example storm rainfall distribution (hyetograph) and the consequent runoff (hydrograph), for a 1-hour 21mm storm. The sum of the depth increments equals 21mm. The area under the flow curve equals the runoff volume. There is a clearly discernible time lag between the peak rainfall and the peak runoff.

Temporal rainfall distributions can be based on historic records, but this approach is only appropriate where the proximity of gauges would provide information relevant to the site. In the absence of relevant rainfall gauge data for this exercise, the hyetographs for various duration, 21mm depth storms have been developed using methodology published by the National Institute of Water and Atmospheric Research (NIWA) as part of its High Intensity Rainfall Design System V4 (HIRDSV4).

7. HYDROGRAPH MODELLING

To fully account for the extensive catchment area, longer travel times and varied surfaces, the flow analysis for the treatment system design relies on comparison of inflow and outflow hydrographs.

The hydrographs have been calculated according to the US National Resource Conservation Service (NRCS – formerly SCS or Soil Conservation Service) Curve Number Method. The calculations were carried out using HEC-HMS, software produced by the US Army Corps of Engineers.

It should be remembered that stormwater modelling inputs and results involve a significant amount of estimation and non-linear interpolation, and therefore can differ significantly from actual events by some margin. Rainfall patterns, both in time and spatial terms, can vary significantly. For example, the HIRDSV4 rainfall distribution has just one set of factors to cover the east of the North Island ranging from East Cape to Cape Palliser. There could be considerable variance within the zone. For this reason, wherever a comparison of methods is possible, the most conservative result is adopted.

A check on the methodology was completed using 2 other approaches, being:

- SCS Curve Number using US EPA-SWMM based software (slightly different calculation)
- The Rational Method

The check compared peak flows rather than volumes (the Rational Method is not considered appropriate for calculation of volumes). The comparison revealed similar results but showed that the HEC-HMS based SCS Curve Number produced the highest peak flows, so to take a conservative (lower risk) approach, all design is based on that method.

Similarly, the shortest possible time to peak has been applied to the hydrograph modelling. If the time of peak flow occurs later in the storm, the hydrograph curve flattens, and the overall volume develops over a longer period. By applying the shortest possible time to peak, the system is analysed in its most stressed condition, again a conservative approach.

8. TREATMENT CAPACITY

The proposed secondary treatment units are limited to specific maximum flows. As the outflow from the treatment units are direct to the ocean outfalls, the flow handing capacity of the units is the key restraint on the disposing of runoff water from the SLY.

The units proposed for the SLY are Filtec units with an individual unit capacity of 110m³/hr. These are the largest clarifiers in the Filtec range so have been used as a default option. The ULY has a 55m³/hr unit, whereas the ELY has three 25m³/hr units.

The increased yard area and external catchments have been taken into account when assessing the performance of the proposed system.

9. STORAGE CAPACITY

The hydrograph method allows comparison of runoff inflow volumes to discharge outflow volumes (via the treatment plant), over the duration of a storm. Working with volumes allows any potential detention storage within the system to be accommodated.

Detention storage in the system is made up of:

- The existing pipe network and in-ground structures
- The new detention storage pipes upstream of the treatment plants
- Some incidental surface storage (flooded areas in overland flow).

Given constrains in space in the SLY and the need to utilise space efficiently. Ponding within the log yard is not proposed as part of the system and detention is instead managed directly as part of system structures. The concept design therefore does not factor in surface storage however the analysis indicates the expected volume of surface water for critical events (being a duration of both 1 and 2 hours).

10. SYSTEM ANALYSIS

10.1 Hydrograph Analysis

The initial hydrograph comparison analysed the proposed scenario being two clarifiers for each sub-catchment.

Storm durations tested were 1-hour, 2-hours, 4-hours, and 6-hours. At 4 hours or longer, it was clear that 2 clarifiers provided ample capacity for treating each sub-catchment. Charts comparing runoff volumes to clarifier process volumes for the above storms are attached at Appendix 3.

Figure 13 showing the 1-hour storm (reproduced from Appendix 3) clearly illustrates the effects of the short storm duration and demonstrates the limitations of clarifier capacity. The grey line shows the SLY Nth runoff cumulative volumes against time, while the yellow line is the cumulative volume passing through the underground detention storage and processed through two clarifiers. The gap between the two lines is the volume left on the surface which is tracked as the red dashed line. The orange line represents the SLY Sth inflow.

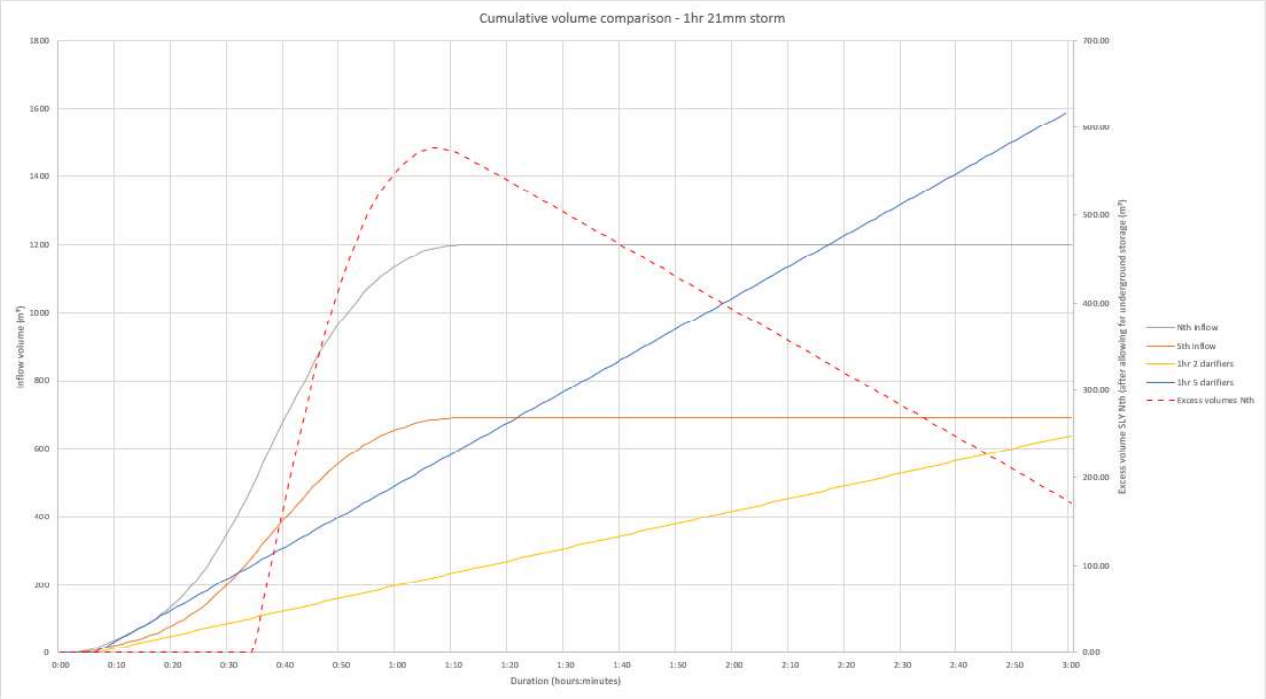


Figure 13: 1-hour Storm Mass Volume Analysis

For the 2-hour event, two clarifiers were insufficient for both areas. However, to assess the benefits of additional treatment capacity, the blue line in Figure 13 tracks the outflow volume for five clarifiers. This clearly shows that a significant increase in treatment capacity will still struggle to handle the short duration storm peaks.

10.2 Effects of Excess Runoff

10.2.1 Volumetric Impacts

Unless suitable mitigation measures are put in place, the effect of insufficient capacity in the secondary treatment system will be a build-up of excess surface water, with extensive ponding around inlets. Within the yard catchments there are some areas where water can pond before spilling out of the catchment, which could provide extra detention, and ensure the excess volume is ultimately treated. The possible extents of surface ponding and likely overland flows are shown on Cheal drawing 200577-LU101 attached at Appendix 1.

Both catchments have two areas where ponding could occur. These are shown below in Figure 14 along with the overall flow paths.

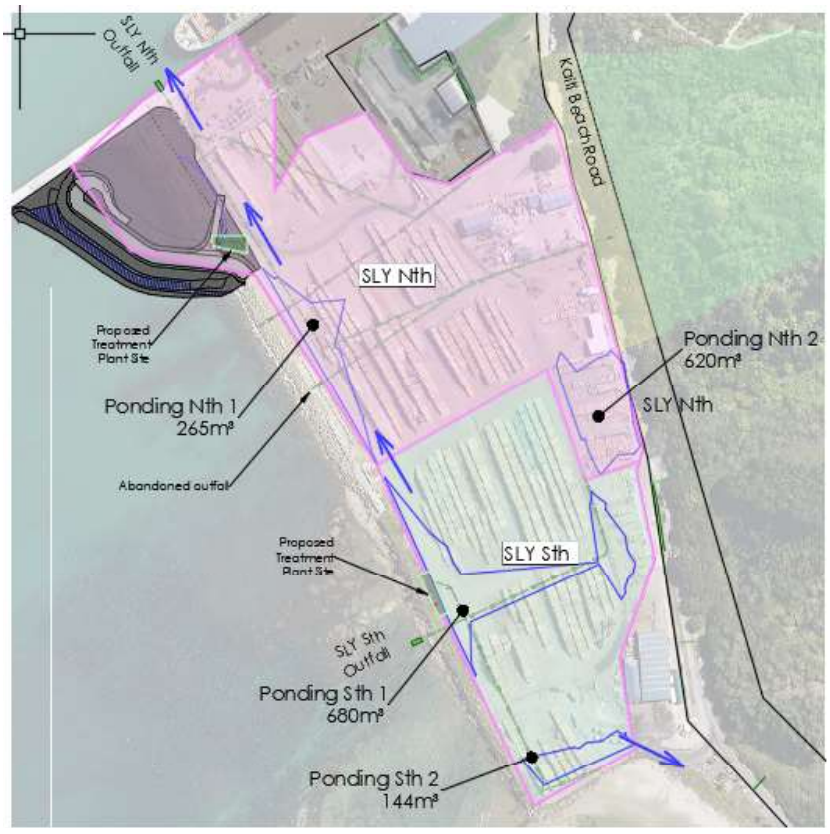


Figure 14: Major Flow Paths and potential ponding

When the Sly Nth surface water exceeds the available ponding capacity, the water will flow north-west towards Wharf 8 near the outfall. When the SLY Sth surface water exceeds the available ponding capacity, the water will either flow north-west towards the SLY Nth area and then to Wharf 8, or toward the east near the southern entrance to the SLY.

For the two sub-catchments, the ponding has different effects. In the SLY Nth sub-catchment, only about 30% of contributing area will be routed through ponding areas.

The SLY Sth sub-catchment is quite well contained around its perimeter, which will effectively impound the water at depths up to as much as 850mm in the lowest areas. This depth of water would impact operations especially from a safety aspect.

For the SLY Nth sub-catchment, which is less well contained around its perimeter, there are 2 areas where ponding could occur. While not as deep as the ponding predicted for the SLY Sth yard area, it is still considered a potential problem for operations.

As a result, surface ponding to increase detention volumes in the treatment train is not considered acceptable by EPL.

If ponding is to be avoided (for storms not exceeding 21mm depth), the excess volume needs to be routed away from the yard areas to the receiving waters. Surface flows are not practicable, as substantial regrading of the yards would be necessary, and there would still be surface water albeit at shallow depth. The other issue, however, is that the runoff would be untreated.

10.2.2 Proposed Mitigation

As EPL have indicated a preference for no ponding while still seeking to avoid untreated flows discharging from the site, it is proposed that a separate treatment system, using Hydrodynamic Vortex Separators (HVS) will be installed to treat the bypass flows. The HVS will be installed within the pipe system to allow for full sub-surface conveyance of excess runoff during the 21mm design storm, while also reducing the extent of ponding in the yards to insignificant levels. This will also avoid overland flows.

It is proposed the SLY Nth and SLY Sth yards will each have a separate bypass treatment system. The bypass flow point will be determined by a weir inside the last manhole before the detention system. When the flow overtops the weir, it is then routed through the HVS before ultimately discharging to the existing outfall pipe. This is depicted schematically in Figure 15 below.

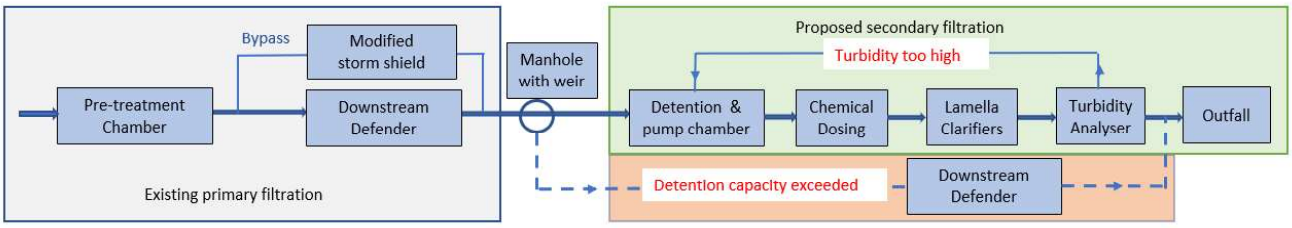


Figure 15: Proposed Treatment Train Schematic with bypass system

The HVS's utilised on site to date have proven effective in removing a given spectra of particle size. Moreover, they have flow capacities that align well with the expected bypass flows. The preferred HVS model technical literature states both a design flow capacity (i.e., at which maximum filtration efficiency occurs), and a maximum flow capacity, which is about twice the design flow capacity. As flow through increases above the design rate, filtration efficiency reduces.

Based on monitoring results, the HVS's are most effective at filtering particles >20µm, meaning a lesser standard of treatment than that expected from the detention /clarifier/PAC dosing secondary treatment train. If the flow is higher than the HVS design flow, further reduction in filtration efficiency could happen. For the peak bypass flow rate, our estimate is a 10-20% reduction from the design performance, based on the product technical literature. However, this should be offset significantly by a falloff in runoff contaminant levels as the storm progresses.

To explain in more detail, high mobilisation of solids on the surface is expected to occur when the rainfall intensity rises to >5mm/hr within 5minutes, which for the 21mm storm of 1hour duration occurs within 5minutes. This high intensity continues to increase to around the 30minute mark where it peaks at 36mm/hr. The modelling shows that the bypass for this storm should occur at about 35 minutes. This means there is a high probability that the bulk of surface contaminants will have been transported into the detention system before the bypass point.

EPL has experienced that TSS load is higher in initial stages of a rainfall event when the yard pavement is effectively flushed of the very fine particles, ~10-micron particle size (Figure 2, 6), that rest in the pavement unable to be recovered by machinery. After this initial concentration of fine material is effectively flushed, the TSS load in the discharges decreases to become much less.

Ultimately though, given the limitation of modelling, the actual effectiveness of the bypass treatment can only be adequately assessed by the water quality monitoring, backed up by monitoring of rainfall and flows to better understanding the stress the system is trying to operate under.

Initial analysis suggests one Hynds DD3000 Downstream Defender will have capacity for about half the 1hr storm bypass volume, which, if the bulk of contaminated stormwater has already entered the detention chamber, would not result in significant concentrations in the receiving waters. However, if maximum risk reduction is the objective, adding another DD 3000 would provide enough design flow capacity, to handle the total bypass flow.

In conclusion, installing a HVS in the bypass flow path, with the backup of monitoring and reporting/review conditions, should help to ensure that the anticipated water quality improvement is maintained during short duration storms, while reducing surface ponding within the yards to insignificant levels.

11. MAINTENANCE

For the scale of extra infrastructure proposed, the stormwater infrastructure will need regular inspection and cleaning. This can be detailed in the Stormwater Management Plan that will be required under the discharge permit.

12. INFRASTRUCTURE LOCATION AND TAIRAWHITI RESOURCE MANAGEMENT PLAN

All the proposed improvements are located with the SLY, as shown in Cheal drawings 200577-LU02 and LU03 attached at Appendix 1.

In terms of the Tairawhiti Plan, the site is in the Port B Zone and the Coastal Environment Overlay (CE). Other overlays pertaining to the SLY are:

- Stability Alert Overlay
- Land Overlay (Land 1)
- Heritage Overlay

None of these overlays affect the proposed stormwater infrastructure.

An assessment of the stormwater upgrade works against the regional provisions of the Tairawhiti Plan and the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health is contained in the 4Sight Assessment of Environmental Effects.

13. CONSTRUCTION

Implementation of the proposed stormwater improvements will not create a significant risk to the marine environment during construction.

The construction works will involve the laying of large diameter pipes, pump wells and valve chambers beneath the Log Yard surface. The lamella clarifiers and chemical dosing facilities will be constructed above ground.

For the SLY Nth, the earthworks will involve disturbance of approximately 650m² area to facilitate underground or above ground infrastructure. There will be no change to elevation of either the existing yard surface, or the proposed reclamation surface level, due to the construction of the stormwater infrastructure.

For the SLY Sth, accommodating the new infrastructure will require some modification of the revetment bank. This will involve excavation and retaining walls to create a recess. The earthworks are over 500m² area and will involve approximately 600m³ of cut within the inner embankment of the revetment.

There will be no works at or near the existing outfalls. The construction works are located behind the revetment and during the construction period will only occupy small areas that can be easily isolated from affecting the existing storm drains. Typical measures to avoid ingress of sediment laden water in the storm drainage system can be managed via the construction management plan and may include physical stormwater barriers and controls around excavation and material handling areas, with filter socks placed around adjacent inlet grates.

A reasonable estimate for the construction period in relation to the stormwater works is 3 – 6 months for each treatment system installation, although this will be managed as part of the wider TBP construction project.

14. CONCLUSIONS

14.1 SLY Nth

The proposed system for the SLY Nth sub-catchment is generally capable of processing the majority of possible 90 percentile storm durations, however, the analysis highlighted potential bypasses during short duration storms of 2-hours or less, with the possibility of partially treated water entering the harbour.

The bypass would at worst amount to about 25% of the overall volume, occurring toward the end of the storm duration, meaning at least the first 75%, containing the highest TSS concentrations, will flow through the main treatment train. Regardless, an overall improvement in discharge water quality is still expected. These excess runoff flows are unlikely to create any scour or erosion in the Wharf 8 area, and any adverse effect would be less than minor.

The probability of major storms triggering bypass flows occurring decreases as the durations decrease, from 63.3% AEP (1 in 1.5year ARI) for a 21mm 1-hour event to 2.5%AEP (1 in 40year ARI) for a 10-minute 21mm event. As these short duration events make up a minor proportion of possible 21mm depth storms (out to 48 hours), the proposed arrangement can be considered as generally capable of compliance with the 90th percentile treatment target.

To support ongoing assessment of the stormwater management system against the modelled outcomes, monitoring of rainfall, runoff, and discharge TSS concentrations of the proposed system is proposed. Such monitoring will support a better understanding of the system dynamics and enable system improvements to be identified and implemented over time.

The limited discharge rate from the treatment system will reduce the risk of scour or erosion at the existing outfall.

The proposed works are not affected by any of the overlays in the Tairāwhiti Resource Management Plan.

14.2 SLY Sth

The assessment shows that the proposed system for the SLY Sth area can effectively achieve the required discharge quality objectives within the confines of the site. The effects of the TBP redevelopment will be an overall improvement in water quality.

The limited discharge rate from the treatment system will reduce the risk of scour or erosion at the existing outfall.

The proposed works are not affected by any of the overlays in the Tairāwhiti Plan.

15. RECOMMENDATIONS

To ensure the ongoing assessment of the performance of the proposed stormwater management system, we recommend that the discharge permit for the system as proposed, is granted subject to conditions that require the applicant to:

- Implement monitoring of rainfall, flow rates, storage volumes and ponding/overflow events,
- Implement a Stormwater Quality Monitoring Programme similar to that in place for the Wharfside log yard, under discharge permit CD-2016-107183-00,
- Submit to the Council after a 2-year operating period, a report on any log yard ponding/overflow events and possible/other design changes to minimise/avoid such events in the future.

CHEAL CONSULTANTS LIMITED
12 August 2022

Appendix 1

Cheal Drawings

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Aerial Imagery has been obtained from Google Earth and is provided under a Creative Commons Public License. It has been provided as a guide to where the boundaries or other features are positioned, or proposed on the ground, but may not be absolute.

Eastland Port

Client Logo

Client Ref

Rev	Date	Amendment	By	Chk	App
B	8/03/22	For Resource Consent	ATJ	JH	RK
A	19/10/21	For discussion	ATJ	JH	JH

Project Title

Eastland Port
Southern Log Yard (SLY)
Port of Gisborne

Drawing Title

Port of Gisborne
Port site and Log yard areas

Surveyed			
Designed	J.Hallam	19/10/21	JH
Drawn	A.Jasmin	19/10/21	ATJ
Checked	J.Hallam	19/10/21	JH
Approved	J.Hallam	19/10/21	JH

Status INFORMATION

DRAFT NOT FOR CONSTRUCTION

Scale A1 1:1500 | A1
A3

Drawing Number 200577-LU100 | Rev B

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Legend:

- Decommisioned stormwater line
- Existing Stormwater line
- Proposed Stormwater line
- Stormwater manhole
- Catchment area
- Overland flow
- Ponding area

Eastland Port

Client Logo

Client Ref

Rev	Date	Amendment	By	Chk	App
A	19/10/21	For discussion	ATJ	JH	JH

Project Title
Eastland Port
Southern Log Yard (SLY)
Port of Gisborne

Drawing Title
Stormwater Plan
Catchments & Overland Flows

Surveyed			
Designed	J.Hallam	19/10/21	JH
Drawn	A.Jasmin	19/10/21	ATJ
Checked	J.Hallam	19/10/21	JH
Approved	J.Hallam	19/10/21	JH

Status INFORMATION

DRAFT NOT FOR CONSTRUCTION

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A3

Drawing Number 200577-LU101 | Rev A

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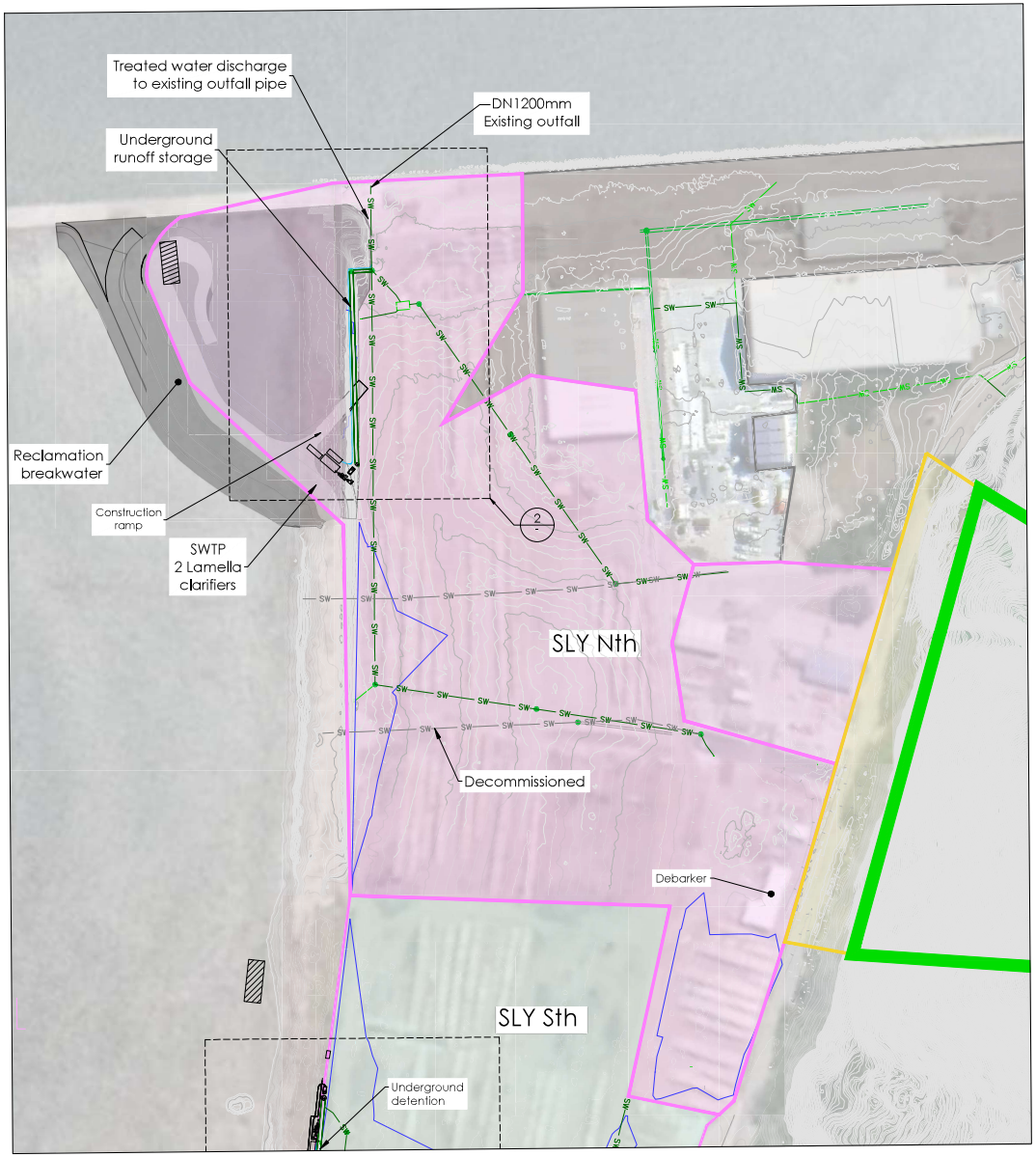

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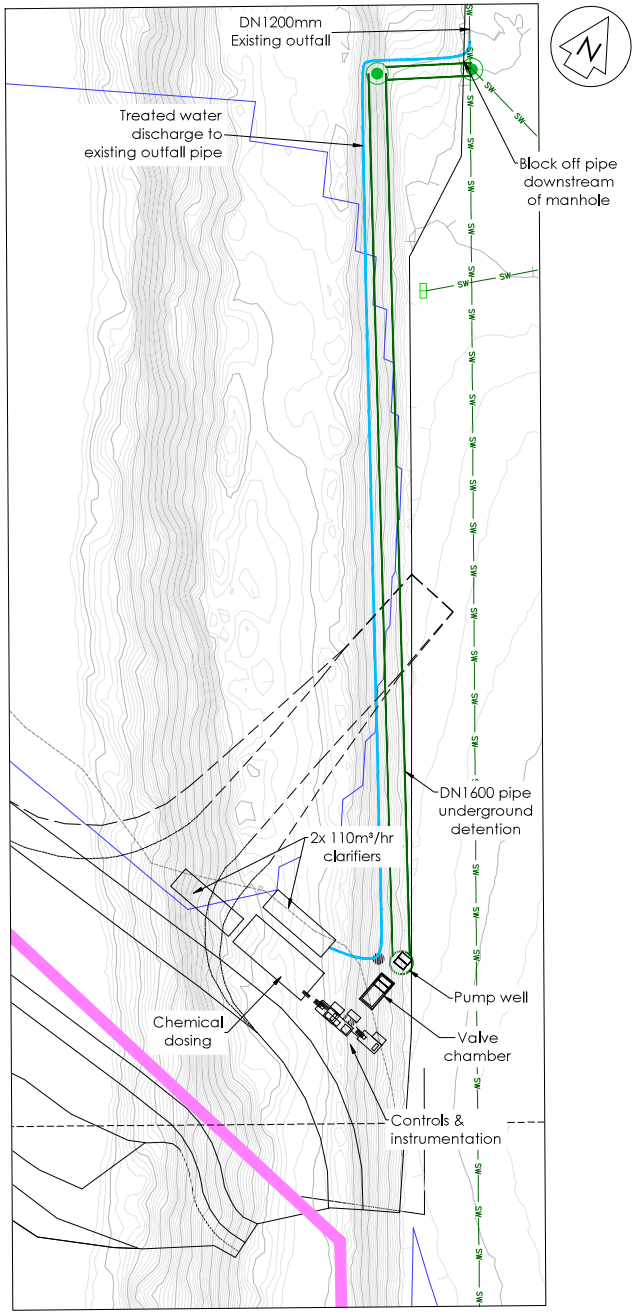

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metres

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Legend:

- Decommisioned stormwater line
- Existing Stormwater line
- Proposed Stormwater line
- Stormwater manhole
- Catchment area
- Ponding area

Eastland Port

Client Logo

Client Ref

Rev	Date	Amendment	By	Chkd	App
A	16/02/22	For discussion	ATJ	JH	JH

Project Title
Eastland Port
Southern Log Yard (SLY)
Port of Gisborne

Drawing Title
Stormwater Plan
SLY Nth
Proposed Management System

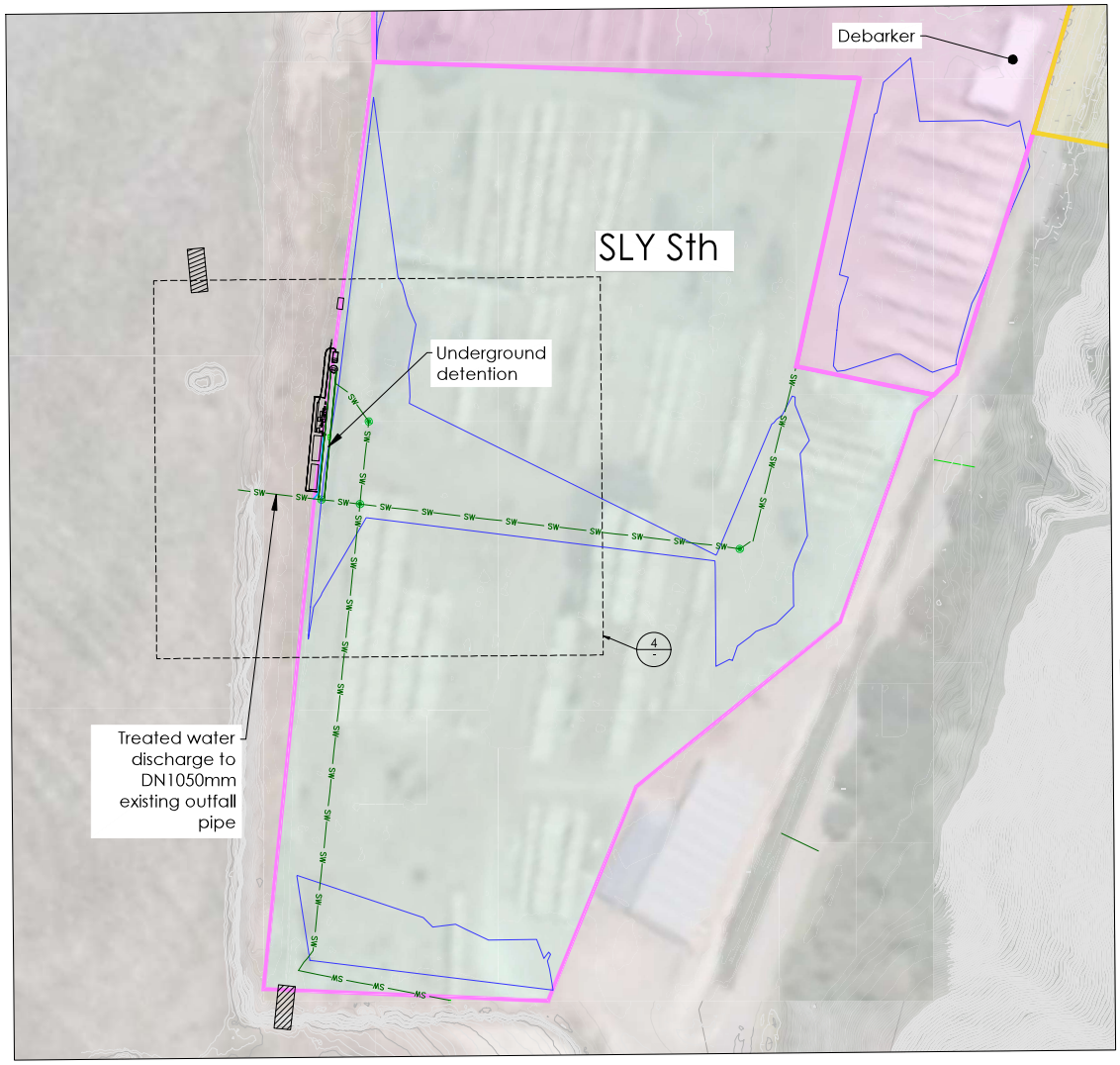
Surveyed			
Designed	J.Hallam	02/22	JH
Drawn	A.Jasmin	16/02/22	ATJ
Checked	J.Hallam	16/02/22	JH
Approved	J.Hallam	16/02/22	JH

Status INFORMATION

Scale A1 As Shown | A1
A3 As Shown x 2

Drawing Number 200577-LU102 | Rev A

DRAFT NOT FOR CONSTRUCTION



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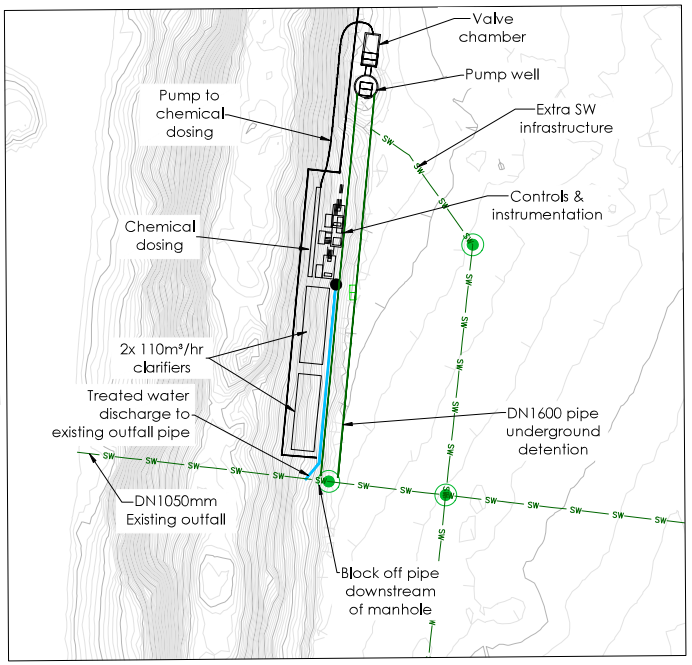

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Legend:

- Decommisioned stormwater line
- Existing Stormwater line
- Proposed Stormwater line
- Stormwater manhole
- Catchment area
- Ponding area

Eastland Port

Client Logo

Client Ref

Rev	Date	Amendment	By	Chkd	App
A	16/02/22	For discussion	ATJ	JH	JH

Project Title
Eastland Port
Southern Log Yard (SLY)
Port of Gisborne

Drawing Title
Stormwater Plan
SLY Sth
Proposed Management System

Surveyed			
Designed	J.Hallam	02/22	JH
Drawn	A.Jasmin	16/02/22	ATJ
Checked	J.Hallam	16/02/22	JH
Approved	J.Hallam	16/02/22	JH

Status INFORMATION

Scale A1 As Shown | A1
A3 As Shown x 2

Drawing Number 20057-LU103 | Rev A

DRAFT NOT FOR CONSTRUCTION

AutoCAD

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Appendix 2

Discharge Permit

Conditions of Resource Consent

Eastland Port Southern Logyard

Amended

The following conditions shall be attached to Coastal Permit (Discharge) **CD-2010-104664-01** and to Coastal Permit (Construction) **CC-2010-104665-00**

General Conditions applying to both permits (Conditions 1-4)

1. All activities shall (unless modified by the following conditions) be in accordance with the application submitted to Gisborne District Council dated 11h November 2010 and plans and maps accompanying the application unless altered by the following conditions.
2. The permit holder shall pay to the Gisborne District Council any administration, inspection or monitoring charges fixed in accordance with s.36(1) of the Resource Management Act 1991, or any additional charge pursuant to s.36(3) of the Resource Management Act 1991, payable in respect of this permit.
3. The Environmental Services Manager of the Gisborne District Council (the Manager) may after granting of these permits give notice of intention to review the conditions of the permits pursuant to s.128 of the Resource Management Act 1991. This may occur on the 30th of June or within a month thereafter each year and for all or any of the following purposes:
   i. to require the permit holder to adopt the best practical option to remove or reduce any adverse effects on the environment; or
   ii. to deal with any other adverse effect on the environment on which the exercising of the permit may have an influence; or
   iii. review the appropriateness of conditions in the light of changes to relevant national standards, regulations and guidelines, and the Councils relevant regional and district plans; or
   iv. to modify any specific monitoring regime which may be required from time to time. This may increase or reduce sampling frequency and/or alter sampling parameters and limits; or
   v. to amend the purposes under which future reviews may take place.
4. These permits are granted by the consent authority subject to its servants and agents being permitted access to the relevant parts of the site at all times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

Conditions specific only to Coastal permit (Discharge) CD-2010-104664-00 (Conditions 5-17)

Site Stormwater Management Plan (SMP).

5. The site shall be managed in accordance with a Site Stormwater Management Plan (SMP) which includes details of the emergency response procedures, Environmental Management Programmes, staff training, record keeping, monitoring and reporting requirements and a continuous improvement plan. The SMP shall be certified by the Manager, and amended as necessary until certified by him/her as meeting the conditions of this consent.

6. The SMP shall be prepared by a person with relevant professional qualifications and experience in the assessment of effects from log yard contaminants. The author shall state their qualifications and provide a written assurance that the site storm water management plan adopts best practice methods and is appropriate for the current scale of the log yard operation.

7. The certified SMP shall be kept on site and adhered to by the permit holder at all times.

8. The SMP shall be reviewed at the time of the first anniversary of the date of this consent being approved, and every five years thereafter, provided that the Manager may request, or the consent holder may offer, a review of the plan at any time to deal with any particular issues that may arise in connection with the operation of the activity and which may require an amendment to the SMP. Any revised SMP shall be recertified in accordance with the process as set out in condition 5 above.

9. a) With the exception of the construction phase covered by Coastal Permit (Construction) CC-2010-104665-00. For the Southern discharge, shown in the attached Figure 1, the discharge shall, after reasonable mixing, meet the following standards for Class SA classified water in the Proposed Regional Coastal Environment Plan:

   I. The natural water temperature shall not be changed by more than 30 celsius.
   II. The natural pH of the water shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or more than 8.5.
   III. There shall be no destruction of natural aquatic life by reasons of a concentration of toxic substances nor shall the waters emit objectionable odours.
   IV. The natural colour and clarity of the waters shall not be changed to a conspicuous extent.
   V. Aquatic organisms shall not be rendered unsuitable for human consumption by the presence of contaminants, and the water shall not be rendered unsuitable for bathing by the presence of contaminants.

   b) With the exception of the construction phase covered by Coastal Permit (Construction) CC-2010-104665-00. For the Northern discharge, shown in the attached Figure 1, the discharge shall, after reasonable mixing, meet the following standards for Class SC classified water in the Proposed Regional Coastal Environment Plan:

I. The natural water temperature shall not be changed by more than 30 celsius.
II. The natural pH of the water shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or more than 8.5.
III. There shall be no destruction of natural aquatic life by reasons of a concentration of toxic substances nor shall the waters emit objectionable odours.
IV. The natural colour and clarity of the waters shall not be changed to a conspicuous extent.

Figure 1 Location of stormwater sampling manholes and discharge points

10. A Stormwater Monitoring programme shall be included in the SMP. The monitoring programme shall define the frequency, identify sampling sites, methods of collection and testing. The results of such sampling and testing shall compare the water quality test results with the following trigger levels, except for when the design rainfall event is exceeded:

Discharge Parameter	**Trigger Level**	**Sample Location**	**Notes to interpret trigger level and sample results**
pH	6.7 to 8.5 –log (H+)	Receiving environment	Gisborne Regional Coastal Environment Plan SA and SC Water Classifications
pH	See clause (b) below	Stormwater discharge	See clause (b) below
Total Suspended Solids (TSS)	Median of 300 g/m3	Stormwater discharge	Median and 75 percentile values are used to reflect the variable TSS

	75 percentile of 450 g/m3	Stormwater discharge	concentrations and intermittent discharges. The trigger level values are interim and may be changed, by written agreement between the consent holder and the Manager, based on the criteria described in condition (g) below.
Total Petroleum Hydrocarbons (TPH)	15g/m3	Stormwater discharge	Marine Pollution Regulations 1998: Regulation 9(1)(c) which allows oils (or any mixture containing oil) to be discharged from ships at a concentration of up to 15 g/m3. Also the Ministry for the Environment: Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand 1998, which uses the same as a 'guideline'.
Zinc Dissolved	0.023g/m3 (northern) & 0.015g/m3 (southern)or background concentration whichever is the higher value	Receiving environment	ANZECC 2000; Table 3.4.1 for the marine environment at the 90% species protection level for the northern outfall area and at the 95% species protection level for the southern outfall area
Zinc - Dissolved	Receiving environment trigger level multiplied by the dilution factor	Stormwater Discharge	Trigger levels for samples at the manholes shall be based on an interim dilution factor of 30 times as explained in the SMP. The dilution factor may be changed, by written agreement between the consent holder and the Manager, based on clear and consistent evidence from a monitoring period of

			at least 20 sample results within a 2 year period.
Copper Dissolved	0.003g/m3 (northern) & 0.0013g/m3 (southern) or background concentration whichever is the higher value	Receiving environment	ANZECC 2000; Table 3.4.1 for the marine environment at the 90% species protection level for the northern outfall area and at the 95% species protection level for the southern outfall area
Copper – dissolved	Receiving environment trigger level multiplied by the dilution factor	Stormwater Discharge	Trigger levels for samples at the manholes shall be based on an interim dilution factor of 30 times as explained in the SMP. The dilution factor may be changed, by written agreement between the consent holder and the Manager, based on clear and consistent evidence from a monitoring period of at least 20 sample results within a 2 year period.
Lead Dissolved	0.0066g/m3 (northern) & 0.0044g/m3 (southern) or background concentration whichever is the higher value	Receiving environment	ANZECC 2000; Table 3.4.1 for the marine environment at the 90% species protection level for the northern outfall area and at the 95% species protection level for the southern outfall area
Chemical Oxygen Demand (COD)	No value	Stormwater discharge	Analysis of trends in COD to indicate the quality of catchment management.
Total Organic Carbon (TOC)	No value	Stormwater discharge	Analysis of trends in TOC to indicate the quality of catchment management.
Volatile Suspended	No value	Stormwater discharge	Analysis of trends in VSS to indicate the quality of

Solids (VSS)			catchment management.
Tannins g/m3	See clause (g) below	Stormwater discharge	Analysis of trends in Tannins to indicate the quality of catchment management. Where sufficient evidence exists, a trigger level will be established based on monitoring data, as described in clause (g) below.
Tannins g/m3	See clause (g) below	Receiving water	Analysis of trends in Tannins to indicate the quality of catchment management. Where sufficient evidence exists, a trigger level will be established based on monitoring data, as described in clause (g) below.

(b) The SMP shall outline how the stormwater system sampling results of pH are to be assessed against the receiving environment trigger values. This requirement recognises that mixing factors are difficult to apply to pH and with the large buffering potential of marine waters, a pH within the 6.7-8.5 range is expected after reasonable mixing.

(c) The consent holder will in relation to the metals trigger levels, which are receiving environment based, sample these parameters from within the stormwater system and apply the dilution factor for the zone of reasonable mixing (as defined in clause (f) below). The SMP shall detail the basis for the sample replication, mixing zones, dilution factors and other matters to be taken into account when analysing and reporting on the metals monitoring results.

(d) The SMP shall in respect of the monitoring of total suspended sediment values outline the time period over which the percentile trigger levels are to be calculated, and the number of samples for the purposes of compliance reporting, after the initial monitoring period of 20 samples over a period of not more than 2 years. However this shall not be less than 10 consecutive samples over any 2 year period.

(e) The SMP shall outline how the stormwater system sampling results for COD, TOC and VSS are to be assessed and reported on to the Council in relation to the trend analysis indicators. It shall also outline and explain the basis of these three indicators and related sampling and testing procedures.

(f) The interim zone of reasonable mixing for the receiving environments for these discharges shall be 50 metres from the Northern outlet and 30 metres from the Southern outlet. These zones may be changed, by written agreement between the consent holder and the Manager, based on clear and

consistent evidence from a monitoring period of at least 20 sample results within a 2 year period.

(g) As soon as practicable following the variation that includes this condition becoming operative, the consent holder shall take photos of the discharge entering the receiving water, including the outer edge of the zone of reasonable mixing, taken at the most appropriate height and orientation to demonstrate the effect of the discharge on the colour and clarity of the receiving water. Measurements of turbidity and secchi depth shall also be made in the receiving environment, when practical. The photographs, turbidity and secchi depth measurements will occur at locations and times that allow comparison with total suspended solids and tannin analyses from samples over a monitoring period of at least 20 sample results within a 2 year period. The consent holder and the Manager shall review this information and where a clear and consistent relationship is found, that information shall be used to establish trigger levels for Total Suspended Solids and/ or Tannins that avoid a change to the colour and clarity of the receiving waters to a conspicuous extent beyond the reasonable mixing zone. Any trigger levels established by this process must be documented in a written agreement between the consent holder and the Manager.

(h) The SMP shall describe the recording of other relevant information to assist in understanding the monitoring results which may include:

- The date and time when samples were collected and photos of the discharge taken, including the approximate time since the rainfall started;
- An estimate of the magnitude of the rainfall event at the time of sampling (mm/hour);
- The number of days since the preceding rainfall event and any noteworthy activities that occurred in the catchment during that period that may have affected the stormwater quality, including an indication of the quantity and type of anti-sap stain treatment chemicals used, any changes to the coverage of treated logs across the yard and the pattern of yard sweeping activity.

11.

(a) The consent holder shall provide all the monitoring data required by Condition 10, including the test results from the Stormwater Monitoring Programme and provide a monitoring report about all of that data, in accordance with a suitable template in the SMP, to the Manager within 15 working days of the consent holder receiving the results from the testing laboratory. The monitoring report shall compare the sampling results against the applicable trigger levels in condition 10 and identify any exceedances.

(b) If any exceedance is identified then the Council shall be advised in writing within 2 working days of the consent holder receiving the results from the testing laboratory. In addition the monitoring report required under Clause (a) above shall outline the possible causes of the exceedance, the environmental effects of it, describe any follow up re-testing and analysis of the stormwater discharge that is to be undertaken and the implementation of appropriate corrective actions.

(c) The SMP shall identify a range of investigations to be undertaken into the possible causes of any trigger level exceedance, the procedures for any re-testing, and analysis of the stormwater discharge, and the range of corrective actions to be assessed in the monitoring report.

Advice note:
The SMP shall recognise that any re-testing has to be done after a significant rainfall event and the time for laboratory analysis and reporting to the Council will vary accordingly.

12. The SMP shall provide for daily sweeping of the sealed area that is not covered with logs and immediate sweeping of areas that become available for sweeping no later than 48 hours after a shipment of logs.

13. The SMP shall provide a means of monitoring the available storage capacity of the pre-treatment chambers and the Down Stream Defenders, on a monthly basis, to determine when the storage capacity is 80% full. When the chambers holding the separated out bark, debris, soil and any other collected material are 80%, or more full, the contractor or maintenance crews shall be informed immediately by the consent holder and the chambers emptied within one week.

Training

14. The consent holder shall ensure that all staff and contractors involved with the activities authorised by these permits receive sufficient training to operate, repair and maintain the stormwater collection and treatment processes in accordance with the SMP and these conditions.

Armouring of discharge points

15. The discharge points, as marked on drawing numbers 3933425-C-003 and 3933245-C-004 in the application shall be armoured such that the discharge shall not cause any erosion at or downstream of the discharge point.

Waste disposal

16. All waste generated by the activity is to be contained and disposed of to an approved site that is accredited for the disposal of the waste material.

Sampling and analysis

17. (a) All stormwater sampling required to meet the conditions of these consents shall be carried out in accordance with the methods set out in the Council approved SMP

(b) All stormwater analysis required to meet the conditions of these consents shall be carried out by a IANZ registered laboratory or equivalent in accordance with the American Public Health Association, American Water Works Association and Water Pollution Control Federation: Standard Methods for Examination of Water & Wastewater 22nd (2012) or newer edition.

Conditions specific only to Coastal Permit (Construction) CC-2010-104665-00 (Conditions 18-20)

Construction Management Plan

18. Prior to the commencement of the activity, the consent holder shall have an appropriately qualified professional prepare a Construction Management

Plan (CMP) which shall demonstrate compliance with the conditions of this consent and relevant permitted activities. The CMP shall include, but not necessarily be limited to the following matters:

i. the name and contact details of the site construction manager who would act as a point of contact for residents and others who have concerns or queries regarding the construction activity.

ii. procedures for dealing with complaints.

iii. movement routes and volume of construction traffic on adjacent roads and the expected hours that this would occur.

iv. measures that will be used to ensure that vehicles leaving the site do not deposit soil or other debris off-site, and if they do the remedial measures that are to be taken to avoid any such deposit.

v. location of contractor parking.

vi. details of the silt and dust mitigation measures for the construction area and other areas, within the site area, that may not be planned for development at any time.

vii. details of temporary stormwater treatment and discharge methods and monitoring on those areas not included in the staged progress of the log yard sealing and associated storm water treatment and discharge.

19. The CMP shall be submitted to the Manager and amended as necessary until certified by him/her as meeting the conditions of this consent and relevant permitted activities. No construction work associated with the implementation of this consent shall be undertaken on site prior to the certification of the CMP.

20. The certified CMP shall be adhered to at all times.

Advice notes:

I. Should any archaeological deposits be identified during development the contractor/occupier should avoid effects to the deposits and contact the Historic Places Trust, Department of Conservation or Ngati Oneone immediately. Under Section 99 of the Historic Places Act 1993 it is an offence to destroy, damage or modify an archaeological site (recorded or unrecorded) without authority from the Trust and a fine of up to $100, 000 may be imposed upon any offender

2. For further information about the Gisborne District Council charging policy refer to the current Manual of Fees and Charges-Environment and Planning.

3. The conditions imposed as part of these consents if fully complied with does not in any way infer that lesser standards for stormwater discharge from any other Eastland Port, yards, wharves or facilities that may discharge into the Coastal Marine Area or into natural water shall be acceptable in meeting the responsibility of Eastland Port to discharge stormwater.

Reasons for the Decision:

1. The proposal is a means of safely discharging log yard storm-water.

2. Water quality standards for the Coastal receiving environment will be met
3. Management Plans shall be in place to ensure ongoing assurance that best practice is adopted and that the potential effects on the environment are avoided, mitigated or minimised.

Relevant Resource Management Act Sections:

RMA Section 12 restrictions on use of the Coastal Environment

RMA Section 14 restrictions relating to water

RMA Section 15 Discharge of contaminants into environment

Planning Documents Considered:

New Zealand Coastal Policy Statement

Regional Policy Statement for the Gisborne District (RPS)

Proposed Regional Coastal Environment Plan (PRCEP)

Transitional Regional Coastal Plan

Part-operative Combined Regional Land & District Plan (PoCRLDP)

Gisborne Urban Coastal Strategy

Principle Issue:

1. Contamination of coastal water.

Summary of Evidence Considered and Main Findings of Fact:

1. The application including an assessment of environmental effects
2. The nature of the discharge.
3. Technical information provided on the methods used for storm water treatment.
4. The material is unlikely to result in adverse effects on the environment and will provide improved management compared to current practices.

Appendix 3

2016 Stormwater Management Plan

Stormwater Management Plan

For

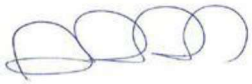
Southern Logyard

ANDREW. STEWART

March 2015

ANDREW STEWART LTD

REPORT QUALITY CONTROL

Client	Eastland Port Ltd	
Project	Southern Logyard	
Document	Stormwater Management Plan	
Version	Revised Draft	
Date	31 March 2015	
ASL Reference	AA0786	
Authors	**Title**	**Signature**
Mark Poynter	Principal Ecologist	
Trent Sunich	Senior Environmental Consultant	
Max Dunn	Planning Services Manager	
Reviewer	**Title**	**Signature**
Aaron Andrew	Director	
Approved for Release	**Title**	**Signature**
Max Dunn	Planning Services Manager	

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APPENDICES

1 INTRODUCTION

1.1 BACKGROUND

Eastland Port Ltd (EPL) operate the Port of Gisborne. The primary activity at the port is the storage and loading of logs onto vessels for export overseas. The port area also contains office and other facilities.

The southern logyard is a sealed area of approximately 6.5ha at the southern end of the port. The stormwater system serving the logyard area was authorised by two coastal permits granted by the Gisborne District Council (Council) in December 2010. One of the coastal permits requires a Stormwater Management Plan (SMP) be prepared by a suitably qualified person, certified by the Council and then implemented on an ongoing basis. This plan covers these consent condition requirements.

The consent conditions require that the plan be reviewed one year after approval by the Council and then on a regular five yearly basis. The conditions also enable the Council to require that the plan be reviewed at any time to deal with any particular issues that arise.

1.2 RELEVANT RESOURCE CONSENTS

The two coastal permits in place for the southern logyard area are:

- Coastal Permit (Construction) – CC-2010-104665-00: Consent to construct stormwater outlets within the Coastal Marine Area (CMA) adjacent to the southern logyard (expiry December 2015).
- Coastal Permit (Discharge) – CD-2010-104664-00: Consent to discharge treated stormwater from the outlets to water within the CMA (expiry December 2045).

The construction coastal permit authorises two stormwater outlets, which have been constructed. They discharge treated stormwater to the CMA at about mean sea level. At the southern end of the logyard this discharge is into the Coastal Marine Area (CMA) adjacent to the seawall into waters classified as SA. At the northern end, the logyard discharge is into waters within the port zone into CMA waters classified as SC.

The discharge permit contains several conditions relating to preparation, approval and implementation of the SMP. It is the most relevant to this plan. The southern logyard area also contains debarking and anti-sap stain treatment facilities that are subject of a land use consent issued by the Council in August 2008. The details of this consent are:

- Land Use Consent PD-2008-103243-00 provides for the construction and operation of a log debarker and anti-sap staining facility (no expiry date).

The anti-sap stain facility is completely self-contained within a bunded covered area. It does not contribute contaminated stormwater to the southern logyard stormwater reticulation system. However it does contribute roof water to the system, hence the relevance of this consent to the SMP. The log debarker lies within the stormwater catchment covered by the SMP.

Appendix A contains copies of the three resource consents.

1.3 PLAN SCOPE

Conditions 5-17 of the coastal (discharge) cover the scope of the SMP and related matters. Condition 5 requires the SMP to cover the following matters:

- Environmental management programmes;
- Emergency response procedures;
- Staff training;
- Record keeping;
- Monitoring and reporting requirements; and
- A continuous improvement plan.

Condition 9 requires that the SMP not include any trigger levels for parameters that are of a standard less than those required for the respective Class SC and Class SA water classifications in the Regional Coastal Environment Plan that apply to the coastal waters adjacent to the northern and southern outlets respectively.

Condition 10 requires the SMP also contain a Stormwater (Quality) Monitoring Programme. It is required to cover the following matters:

- Frequency of monitoring;
- Sampling sites; and
- Methods of collection and testing.

Condition 11 requires the test results from the Stormwater Monitoring Programme be compared to the 'applicable trigger levels in Condition 10, identify any exceedances and take appropriate action as set out in the SMP. It also requires in such circumstances that a test report be provide to the Council within 21 working days of receiving the test result from the laboratory.

Condition 12 requires that "*the SMP provide for daily sweeping of the sealed area that is not covered with logs and immediate sweeping of areas that become available for sweeping less than 48 hours after shipment of logs*".

Condition 13 requires that "*the SMP provide a means of monitoring the available storage capacity of the pre-treatment chambers and Down Stream Defenders, on a monthly basis to determine when the storage capacity if 90% full*". It also places a related obligation on EPL to immediately contact the debris collection contractor or maintenance crew when the facility is 80% full and arrange it's emptying within 1 week.

Condition 14 requires all EPL staff and contractors using the logyard to be sufficiently trained to operate, repair and maintain the stormwater systems on the site in accordance with the SMP.

Condition 17 requires all water quality sampling to be carried out in accordance with the SMP and all testing to be carried out by an IANZ registered laboratory in accordance with specified North American standards.

This plan covers all of the above matters. It contains the following 'background' information:

- A description of the logyard site, the receiving environment and the potential for contaminants to be generated; and
- A description of the stormwater collection and treatment systems on the logyard site and associated inspection and maintenance processes in place.

1.4 PLAN PREPARATION

Condition 6 of the coastal (discharge) requires the SMP be prepared by a person with relevant professional qualifications and experience in the assessment of effects from logyard contaminants. Mark Poynter, a marine ecologist with Andrew Stewart Ltd (ASL) has experience with logyards in Northland and has assisted with the preparation of this plan.

Max Dunn, Planning Services Manager, and Trent Sunich, Senior Environmental Consultant, from ASL have also assisted with preparation of the plan.

2 SITE & SURROUNDING ENVIRONMENT

2.1 SITE DESCRIPTION

The southern logyard area of approximately 6.5ha is shown in **Figure 1.**

FIGURE 1: LOGYARD LOCATION

The approximate locations of the northern and southern stormwater discharge outlets are also shown in **Figure 1**

2.2 STORMWATER COLLECTION & TREATMENT FACILITIES

Along the north-eastern side of the southern logyard, there are weigh station, log de-barking, refueling station, and warehouse facilities. Due to the existing drainage systems and catchment flows, several of these facilities are included in the area being covered by the SMP, as shown in **Figure 2.**

The stormwater collected from surrounding infrastructure held by both the port company and the Council is outlined in **Figures 2 & 3**. The stormwater catchment area is caught by the surrounding perimeter slot drain and dish drain (**Appendix B**). The port entry, workshop area, log debarker area, and Kaiti Beach Rd and a portion of Kaiti Hill are captured by the stormwater system covered by the SMP.

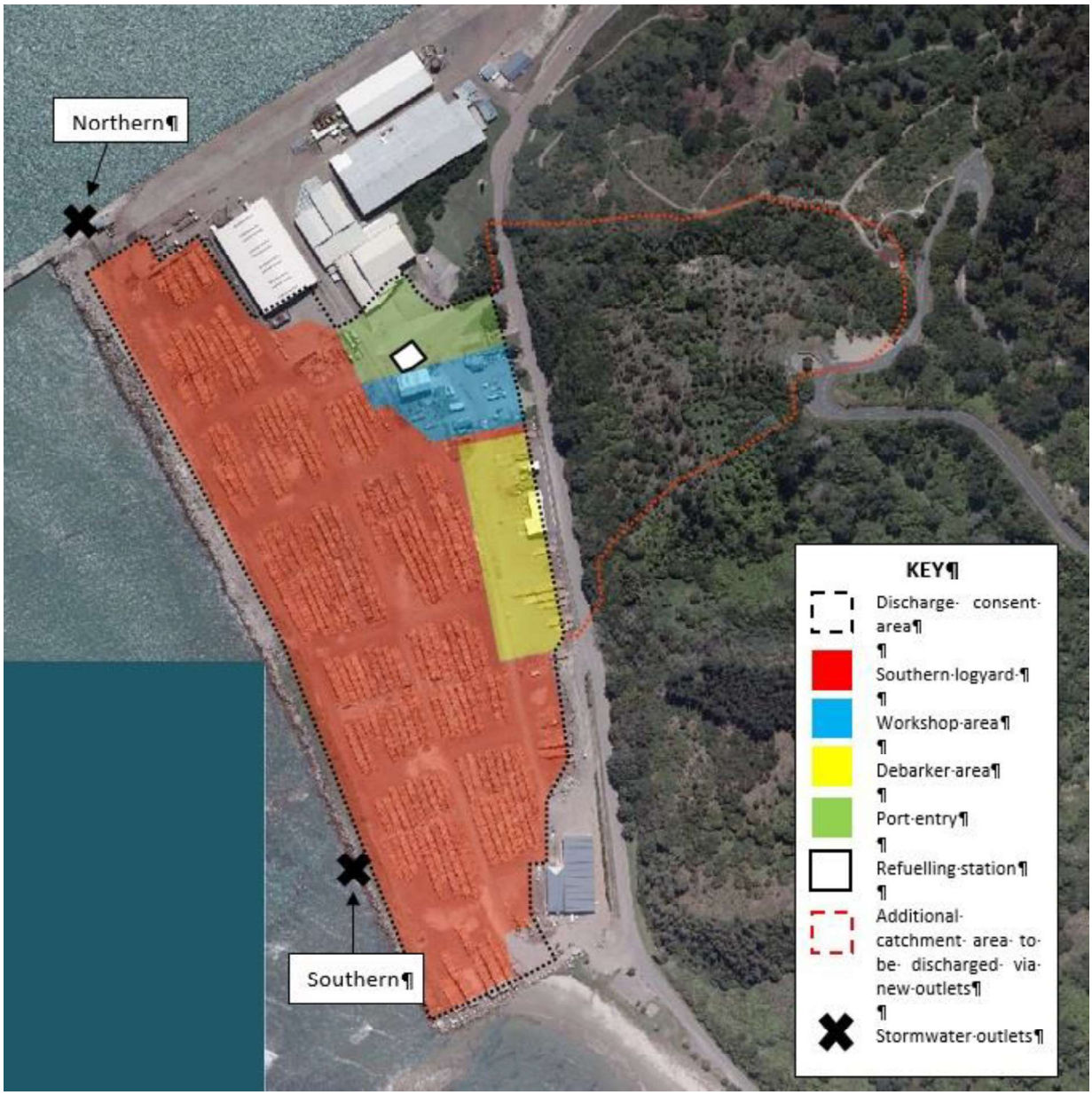

FIGURE 2: SOUTHERN LOGYARD & ADDITIONAL CATCHMENT AREAS

2.2.1 Port Entry

The port entry area immediately off Kaiti Beach Road has a series of sumps and kerb and channel to capture stormwater. The relationship and direction of flow of stormwater, treatment devices and manholes is shown

in **Figure 3**. Further details are provided in the engineering plans in **Appendix B**. The treated stormwater discharge from this area is conveyed to the northern outlet.

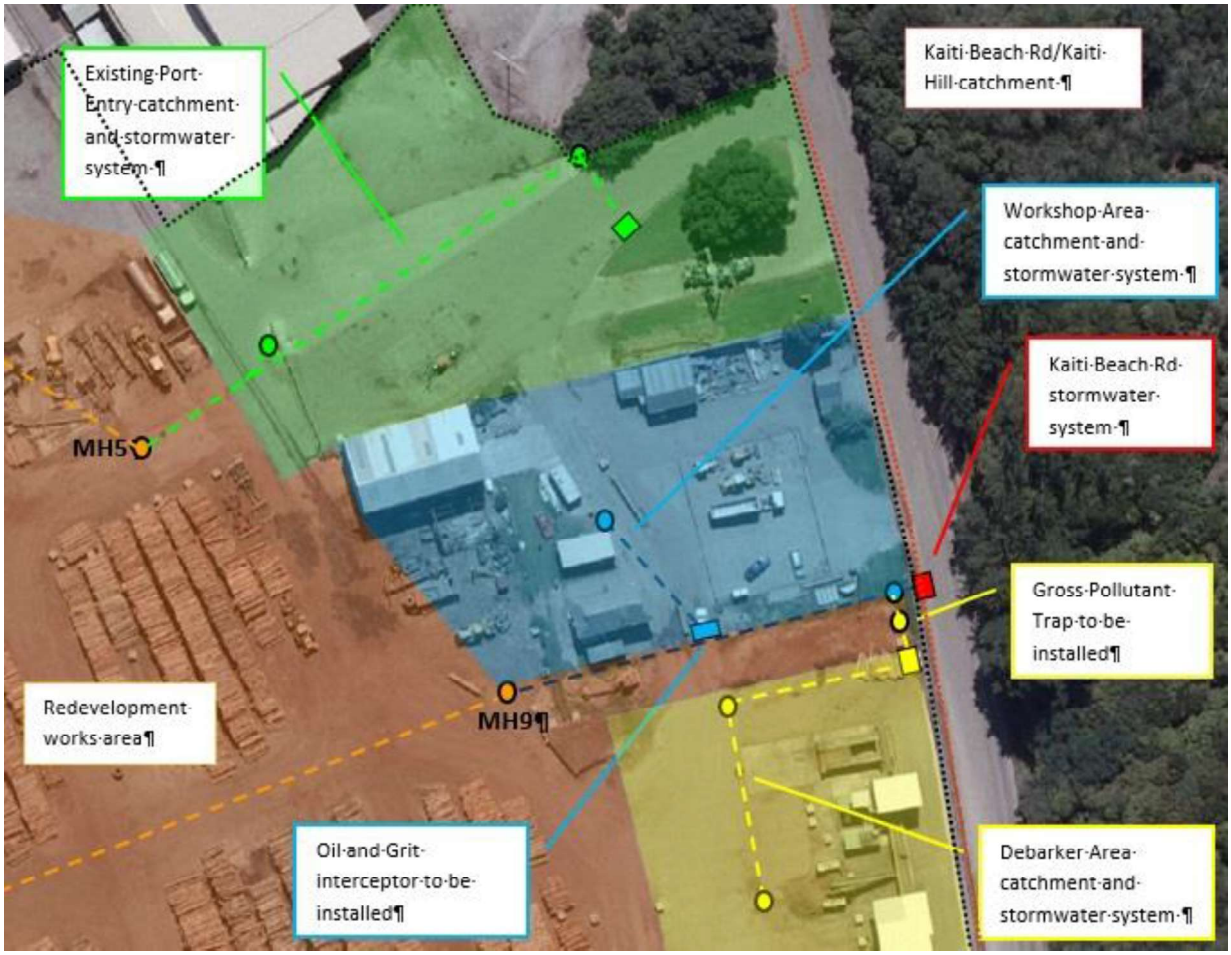

FIGURE 3: EASTLAND PORT & COUNCIL STORMWATER SYSTEMS ADJACENT TO SOUTHERN LOGYARD

2.2.2 Workshop Area

The workshop area drains to an oil and grit interceptor. The relationship and direction of flow of stormwater, treatment devices and manholes is generally shown in **Figure 3** and in more detail in **Appendix B**. The stormwater discharge from this area is to the northern outlet.

2.2.3 Log Debarker Area

The log debarker mechanically removes bark and wood fibre from logs. The log debarker area has a series of catch pit sumps and kerb and channel which collects the storm water from this area. This flows to a single sediment trap after which there is a gross pollutant trap. The relationship of treatment devices and manholes is shown generally in **Figure 3** and in more detail, along with the direction of stormwater flow, in **Appendix B**. The treated discharge from this area is to the northern outlet as shown in Figure 2.

2.2.4 Kaiti Beach Rd & Kaiti Hill

All the stormwater captured off Kaiti Beach Road and Kaiti Hill, (**Figure 2**.), is diverted through MH9 and exits the yard via the northern outlet (**Figure 3** and **Appendix B**). This stormwater does not pass through any treatment device.

2.3 SITE ACTIVITIES & POTENTIAL SOURCES OF CONTAMINANTS

This SMP covers the following site activity areas:

- Southern logyard;
- Refueling station;
- Log debarker and anti-sap stain facility;
- Mobile plant operating within the port; and
- Mobile plant wash down area.

2.3.1 Southern Logyard

The southern log storage yard is the primary focus for this SMP. Bark and general log debris, as well as sediments, will be entrained in and potentially discharged with the stormwater. Minor amounts of other contaminants such as hydrocarbons and some metals associated with vehicle use may also enter the stormwater system. Because of routine sweeping and surface management, log debris and bark does not remain on the ground surface for significant periods. Therefore there is limited potential for organic loading or the forming of contaminated leachates from accumulated debris.

2.3.2 Diesel Refueling Station

The refueling facility comprises 202,000L of diesel stored in a double-skinned above ground storage tank with associated pumps used for refueling of vehicles onsite. Diesel is defined as a hazardous substance and is flammable, toxic and ecotoxic. Possible contaminants from this area include hydrocarbons which are entrained in stormwater runoff as a result of minor spillage during refueling. This area is subject to specific management in that the fuelling area drains to an oiloil separator which removes hydrocarbons entrained in stormwater runoff and also provides spill containment with a product capacity up to 11,500L.

2.3.3 Log Debarker & Anti Sap Stain Facility

Following debarking, the DASS anti-sap stain facility treats the cleaned log surface with the chemical fungicide Blue Control OF.

The anti-sap stain portion of this operation is entirely self-contained within the bunded area on site as per the requirements of the resource consent PD-2008-103243-00. Treated logs are given time to drip dry within this contained system. There is no potential for contaminants from the anti-sap stain operation to enter the stormwater system other than potentially from treated logs once they are moved to open storage in the yard. Any such losses are predicted to be minimal and consequentially copper, which is the active ingredient in the anti-sap applications, is unlikely to be a significant factor in terms of the quality of logyard stormwater discharge. Specific management is described below for DASS product stored on the yard.

The debarking operation collects and directs the mechanically removed bark through a central conveyor which creates a heap for removal. The site is asphalted and most of the bark is removed within a short period after it is collected.

Contaminants which can enter the stormwater are as for the wider logyard and include bark debris, sediment and particulates and minor amounts of hydrocarbons from vehicles and the hydraulically powered debarker. The sump behind the debarker (which captures 100% of the designated area) is to be cleaned out monthly and debris recovered taken to the appropriate consented landfill for contaminated material.

The DASS treated logs are primarily stored in Blocks DB shown on **Figure 4.** However they can also be stored in Block H for short periods when Block DB is at capacity.

FIGURE 4: EASTLAND PORT SOUTHERN LOG YARD - LOG STORAGE AREAS

The TBD rows are to be stored in the portion of H block designated and in front of the debarker. This area is expected to contain enough row starts to accommodate all EPL customers (PFP 3x lengths, HFF 3x lengths, Timber Grow 3x lengths, +1 float @ 150-200 JAS each).

If there is the need to temporarily store DASS product outside of the designated areas, then EPL operations will be given at least 6 hours' notice and 3 hours opportunity to clear the site of brown bark debris ready for storage of DASS product. Conversely EPL operations are to be given 6 hours' notice to recover DASS debris where has been stored post load out and 3 hours opportunity to do so. Any temporary DASS log storage areas are to be swept clean prior to storage of any treated logs. As soon as a stored log row is uplifted for ship loading the area is swept clean before any other product is place in that row. The debris captured is disposed of in the DASS waste skip and taken to the appropriate consented contaminated material landfill.

2.3.4 Mobile Plant Operations

Log loader and other mobile plant owned by both the company and contracted service operators, work within the area. P ossible contaminants associated with this plant include minor amounts of hydrocarbons from fuels and metals from tyres and brake linings.

2.3.5 Mobile Plant Washdown Area

Mobile plant is washed down adjacent to the vehicle maintenance building and water from this area discharges into the main stormwater line which runs through the site. Particulates and trace hydrocarbons may be lost from this area and enter the stormwater system.

2.4 RECEIVING ENVIRONMENT

Map 7.1 of the Council's Regional Coastal Plan defines the open coastal waters in the bay (around the southern discharge point) as having an SA Classification. The waters within the port area (around the northern discharge point) are shown on the map as having an SC classification. Section 3.4.5L of the Regional Coastal Plan sets out the SA and SC water quality classification standards.

Condition 9(a) of the coastal (discharge) permit requires the stormwater discharge from the southern outfall (except during construction) into the open coastal waters comply with the water quality standards for the adjacent SA classified waters. Condition 9(b) requires the stormwater discharge from the northern outfall into the port area comply with water quality standards for the adjacent SC classified waters. The two water classes have the same standards on water temperature, pH, water colour and clarity, and aquatic life protection. The only difference between the standards is the requirement for SA waters that '*aquatic organisms are not rendered unsuitable for human consumption by the presence of contaminants and the waters shall not be rendered unsuitable for bathing by the presence of contaminants*'.

3 STORMWATER INTERCEPTION & TREATMENT MEASURES

The logyard stormwater system includes the surface water drainage system, the piped network and stormwater treatment devices. The 'as built' engineering plans in **Appendix B** show the stormwater system in more detail.

Coupled with the stormwater system is a comprehensive maintenance regime. The components of this are generally described in the next parts of this plan. Further details are provided in the company Stormwater System Inspection & Maintenance Schedule in **Appendix C**.

3.1 STORMWATER SYSTEM

The stormwater drainage system divides the site into approximately two equal areas, one draining to an outlet to the port area at the northern end of the yard and one draining to an outlet in the sea wall at the southern end of the yard. Both areas are divided into three sub-catchments. There are a total of six sub-catchments. Each sub-catchment has dedicated stormwater collection and treatment.

Stormwater runoff from two existing sub-catchments discharge into the 'head' of the main catchment discharging towards the north. These existing sub-catchments comprise the log debarker area, the adjacent area which includes a workshop, and vehicle parking and refueling station. The nature of the nine sub-catchments are summarised in **Table 1.**

The stormwater drainage system comprises an arrangement of slot drains discharging directly into pipes. Once collected, the piped stormwater is discharged via two staged treatment devices where grit and bark is separated. Downstream of the treatment devices buried pipelines convey the stormwater to the nearest outlet either towards the northern or southern ends of the seawall. The pipelines have been sized to convey a 10% AEP (10 year storm event).

The treated stormwater is discharged to the sea via two outlet pipes constructed at the northern and southern end of the seawall. Both outlet pipes discharge at a point just below mean sea level (MSL). The positions of the 1200mm and 1050mm diameter northern and southern outlets respectively and their relationship to the stormwater collection and treatment system are shown on the engineering plans in **Appendix B.**

TABLE 1: SOUTHERN LOGYARD STORMWATER SUB- CATCHMENTS

Catchment	Area (ha)	Use	Outlet	Peak Flow litres per second	Estimated Discharge Volume (10% AEP 10 minute)
1	0.55	Vehicle refueling, mechanics shed, vehicle wash down area & vehicle parking	Northern	94	56
2	0.73	Existing de-barker area	Northern	126	74
3	1.13	Log storage	Northern	194	116
4	1.14	Log storage	Northern	195	117
5	1.75	Log storage	Southern	299	180
6	1.08	Log storage	Southern	185	111
7	1.35	Log storage	Southern	231	138
8	0.73	Log storage	Southern	125	75
9	0.45	Vehicle access & maneuvering, weigh station	Southern / Open drain	77	46
Total	**8.91 ha**			**1526 l/s**	**913m^3**

3.2 LOGYARD

A first stage in contaminant management is coarse screening to separate bark and wood debris and facilitate

settlement of coarse particles. The 'first flush' stormwater, that is stormwater run-off for storm intensities up to 20mm/hr for the longest sub-catchment, is directed from the pre-treatment coarse screen chamber to the 'Hynds Downstream Defender Unit' (DSD). This unit is designed to separate heavy and light matter by centrifugal action. The DSD manufacturer's brochure in **Appendix D** describes the treatment device in more detail.

Any discharge in excess of 20mm/hr will bypass the DSD and connect to the stormwater pipeline downstream. In selecting the DSD unit for treatment of stormwater, key parameters included the need to minimise the hydraulic head of any device and the ability to treat the identified key contaminants. Key contaminants targeted are bark, sediment (and adsorbed metals), oils and greases. The EPL instructions for inspection and maintenance of the DSD devices are in **Appendix E**.

3.3 REFUELLING STATION

The refueling station is a double-skinned above ground storage tank equipped with an oiloil separator that provides gravity separation of hydrocarbons entrained in stormwater runoff prior to discharge to the stormwater system. The area is bunded and all stormwater from the refueling area is directed through the oil separator unit. ThisThis is considered that this is sufficient protection of the stormwater from this facility and is in accordance with current industry best practice.

A Z Energy Stormwater Management Plan outlining minimum spill kit requirements, inspection and maintenance of the refueling station is included in **Appendix F**.

3.4 LOG DEBARKER FACILITY

A DSD treats stormwater from this area prior to it entering the stormwater pipe.

3.5 MOBILE PLANT

Mobile plant, both owned by the company and port service providers, are required to have regular maintenance programmes to minimise contaminant losses. To prompt timely repairs and maintenance, daily fleet checks are performed and recorded on all plant operated solely within the Port. This check list is in **Appendix G**.

3.6 MOBILE PLANT WASH DOWN AREA

An oil and grit trap treats flows from this surface area, prior to connection with the stormwater line. Instructions for inspection and maintenance of this device are included in **Appendix H**.

4 STORMWATER MANAGEMENT PROGRAMME

This SMP outlines a series of measures to intercept potential contaminants and control and remove these at source before they enter the stormwater system, as well effective treatment of the stormwater using high efficiency modern proprietary devices (in this case the Hynds DSD's).

4.1 LOGYARD BARK DEBRIS RECOVERY PROGRAMME

As required under Condition 12 of the coastal (discharge) permit, daily sweeping and debris recovery is undertaken of the accessible sealed area (not covered with logs). All areas are swept within 48 hours of log removal. This captures log debris and contaminants before they enter the stormwater treatment and conveyance system. All wood waste recovered from the logyard surface is removed from the port by contractors. Some of this material is of value for the landscaping and potentially other industry (as a fuel) and is used by other sectors.

4.2 STORMWATER SYSTEM INSPECTION & MAINTENANCE PROGRAMME

Regular maintenance of the site and the stormwater system is important to ensure the facilities are operating efficiently. The EPL inspection and maintenance schedule of the system is in **Appendix C**. Inspection and maintenance records are to be kept.

Visual inspection of the pre-treatment chambers and the DSD's will take place on a monthly basis to determine when the storage capacity is approaching 80% full after which chambers will be emptied by approved contractors within one week. The DSD inspection and maintenance form is in **Appendix E**.

Maintenance of the seawall stormwater outlets will take place if any erosion at or downstream of the discharge point is observed following annual inspections. The EPL inspection and maintenance form for the outlets is in **Appendix I**.

4.3 WASTE DISPOSAL

All waste generated by the stormwater treatment devices will be contained on-site and disposed of to an approved site that is consented for the disposal of the waste material.

5 STORMWATER QUALITY MONITORING

5.1 BASIS OF THE MONITORING PROGRAMME

Stormwater monitoring will be undertaken quarterly to characterise stormwater quality and verify compliance with consent conditions. The monitoring programme is to be reviewed by EPL after three years of data collection.

The monitoring programme recognises the likely small scale and significance of possible water quality effects. This arises from the following factors:

- the log yard is sealed;
- the stormwater system is new and incorporates multiple levels of interception and containment of potential contaminants and modern efficient treatment devices;
- any discharge is intermittent and short term;
- the contaminants themselves pose little or no toxicological risk at the concentrations likely to be experienced either in the raw discharge or after even low orders of dilution in the marine waters; and
- the receiving environment of potentially the higher sensitivity and which has the higher water quality standard, being open coastal, is robust to low mass load and low concentrations of the likely contaminants.

Condition 10 of the coastal (discharge) permit requires the the stormwater quality monitoring be carried out with reference to seven particular parameter 'trigger levels', some of which are discharge based and some of which are marine receiving environment based. The consent conditions allow samples to be be collected either from within the stormwater system or from the marine receiving environment at a 'mixing zone' boundary, which is also specified in the consent conditions.

Receiving environment sampling would require multiple samples to be collected at the edge of each identified mixing zone beyond the two seawall outfalls. This would require a boat operating close to the shore with at least two people on board during unpredictable conditions, given that sampling is to occur after rainfall events and may not coincide with calm weather conditions. On this basis sampling of the discharge itself is generally more reliable and efficient, and also safer.

Discussions with EPL staff have made it clear that it is generally more practical and efficient to sample the discharges from within the logyard, rather than from a boat within the adjacent receiving environments at the two outfall locations, which are also some distance apart. Also the consent requirement to sample the first flush part of a discharge event if possible, makes it difficult to mobilise a small boat and appropriate manpower at short notice. Furthermore health and safety risks are significant in relation to boat access for any marine receiving environment sampling, particularly the southern discharge area which can be exposed to significant ocean swell and wind waves adjacent to the seawall.

The coastal (discharge) permit conditions for the logyard do not appear to require any specific monitoring of the stormwater discharge from areas used for storing anti-sapstain treated treated logs. This SMP proposes additional monitoring of the subcatchments used for the storage of these logs. This stormwater will be monitored to verify that contaminants particular to the anti-sapstain treatment (primarily copper) is being adequately controlled and contained and is not unduly affecting the quality of the discharge from the northern stormwater outlet to the port area (as sampled at MH1).

5.2 SAMPLING LOCATIONS

The stormwater sampling locations can be at any point below the last treatment device, but upstream of any marine water back flooding effect as may occur from time to time near the outlets. The two preferred sampling locations are the stormwater system manholes shown indicatively in **Figure 5**.

FIGURE 5: STORMWATER OUTLET & SAMPLING LOCATIONS

- Manhole 1 (MH1) on Beca Concept Design Drainage Plan Sheet 1 in Appendix B. This manhole is located at the northern end of the logyard near the rock breakwater and a short distance from the adjacent outfall which discharges into the port.
- M11 (Manhole 11) as marked on Beca Concept Design Drainage Plan Sheet 2 in **Appendix B**. This manhole is located towards the southern end of the logyard and close to the adjacent outfall into the open coastal waters.

Stormwater sampling locations for the subcatchments potentially affected by logs stored following antisapstain treatment are also identified as Manholes 9 and the DASS Facility Downstream Defender shown on **Figure 6**. The sampling being undertaken by EPL at these locations is in order to verify that copper losses from within the antisapstain log storage remain at low or trace levels. It is noted that there are no consent conditions specifically requiring this sampling, but it is considered useful to have this sampling data when analysing the sampling data from the Northern stormwater outlet. EPL will also sample the Kaiti Beach Road stormwater sump shown in **Figure 3** for any roadside other non EPL source contaminants that may enter the EPL stormwater system.

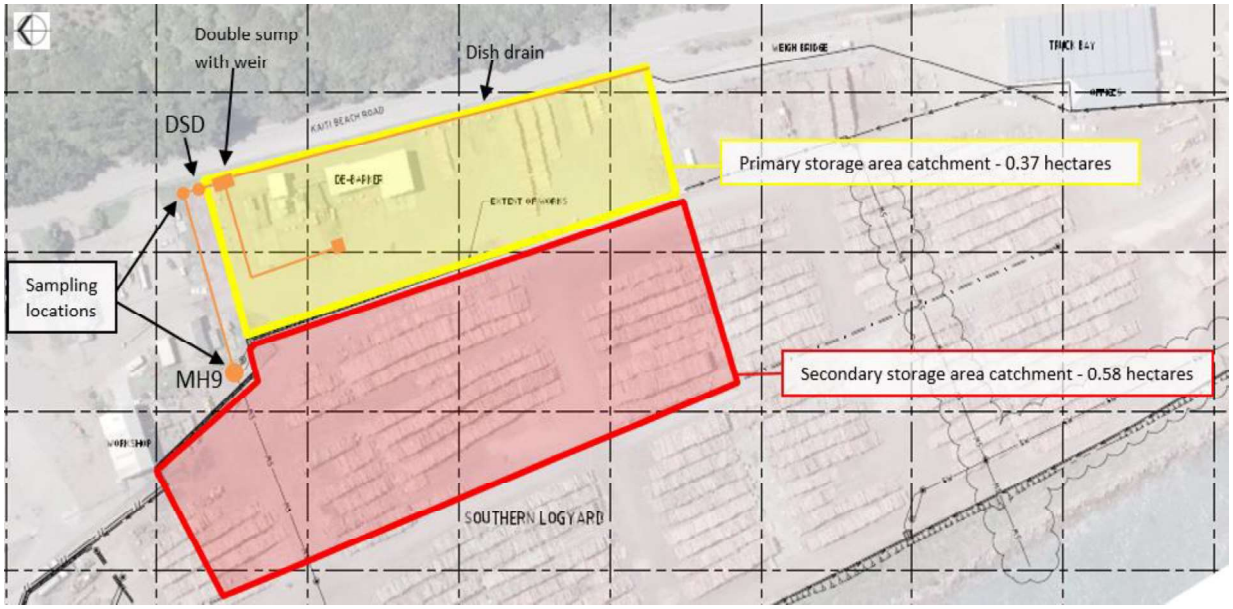

FIGURE 6: DASS FACILITY STORAGE AREAS AND STORMWATER SAMPLING LOCATIONS

5.3 FREQUENCY OF MONITORING

Monitoring of each discharge will be carried out at least once quarterly where rainfall and discharge conditions allow. Sampling of the antisaptain catchments will be carried out concurrently with, and as part of, this monitoring. The monitoring data set will be reviewed after three years. The monitoring period will begin on approval of the monitoring programme by the Council.

5.4 SAMPLING METHODOLOGY

At each discharge location, two grab stormwater samples of equal volume will be collected downstream of the last treatment device (generally from the last manhole) prior to the discharge entering or being influenced by (e.g. back flooding) the marine waters. The second of the two stormwater samples will be collected approximately five minutes after the first sample is taken. The two samples are to be composited for purposes of analysis. The same procedure will be undertaken for sample collection from the sub-catchments containing anti sapstain logs .

The samples are to be collected during the first flush (within the first 30 minutes) if possible, which generally occurs shortly after commencement of a heavy rainfall event. If possible, there should be at least three days of dry weather (or at least limited rainfall) prior to undertaking a sampling event to allow contaminants to build up on impervious surfaces. Rainfall data will be taken from reported values from Awapuni Rd gauge (http://www.gdc.govt.nz/site-report/#rainfall). This gauge is located approximately 1.1km from the site.

The water samples must be collected and handled according to accepted sampling procedures. Sample bottles

used should be acquired from the testing laboratory (where the samples are to be analysed).

The water samples are to be collected and handled according to accepted sampling procedures these being:

- ASL Standard Operating Procedure (SOP) for Stormwater Sampling
- ASL SOP for Sample Handling, Storage, Shipping, Recordkeeping, and Chain of Custody
- ASL SOP for Equipment Decontamination

The ASL SOP manual held by EPL contains a copy of the abovementioned procedures. They are also reproduced in **Apendix J**.

All sampling will be conducted under the Sampling Contractor's Health and Safety Plan (HASP) that is specific to the sampling activities and the site and approved by EPL. Sample bottles used should be acquired from the testing laboratory (where the samples are to be analysed). Care should be taken to avoid cross contamination during handling and storage of the samples and to avoid personal contact with sample or the interior surfaces of sample container/lid.
The size and intensity of rainfall events vary significantly and therefore identification of an appropriate event in which to sample is often a matter of judgment. There may be a period of sampling before the temporal relationship between the rainfall and discharge rate at the outlet becomes apparent. A record will be kept of the approximate time of start of rainfall and the time of sample collection. Other information, such as depth of flow and photographs, should be recorded for each sampling event.

5.5 FIELD SHEETS

A field sheet will be filled in during each sampling event in order to have a direct record of information which will assist in interpretation of the results. **Appendix K** contains an EPL field sheet template.

The EPL field sheet is expected to record the following information:

- Sample site location/site identification
- Date, time sample is taken
- Sample identification number
- Rainfall depth (of the rainfall event)
- Sample collectors name
- Depth of flow at the sample location
- Any other relevant information or observations, including photographs where possible (i.e. changes in water colour, any visible sediment plumes in the receiving environment, the presence of debris or conspicuous objects etc.), approximate wind direction and strength at each discharge site.

5.6 CHAIN OF CUSTODY FORMS & LABORATORY REQUESTS

A Chain of Custody (COC) form provided by the analytical laboratory should also be filled in providing all relevant information required for sample identification and laboratory analyses. One copy of the COC should go to the laboratory and one copy should be retained by the sampler and logged as part of the EPL record. This is described in detail in the ASL SOP: Sample Handling, Storage, and Shipping, Recordkeeping and Chain of Custody.

5.7 STORMWATER SAMPLE ANALYSIS & MONITORED PARAMETERS

The samples are to be sent to an IANZ accredited laboratory for analysis.

The sample collector must request bottles from the testing laboratory for the collection of the stormwater samples

prior to sampling.

All sampling must be collected and handled according to the testing laboratories established procedures which shall be in accordance with Standard Methods for the Examination of Water and Wastewater prepared and published jointly by the American Public Health Association, American Water Works Association and Water Pollution Control Federation 22nd (2012) or newer edition.

The analyses undertaken on the samples collected as part of this SMP are to include pH, total suspended solids (TSS), biological oxygen demand (BOD_5), total petroleum hydrocarbons (TPH), total zinc (Zn), total copper (Cu) and total lead (Pb) as required under the consent conditions.

5.8 TRIGGER LEVELS FOR ASSESSING EFFECTS

Condition 10 of the consent requires the stormwater quality monitoring be carried out with reference to 'trigger levels' for seven different parameters, some of which are discharge based and some of which are marine receiving environment based. The BOD, TSS and TPH 'trigger levels' apply to the discharge. The 'trigger levels' for Zn, Cu and Pb apply to the marine receiving environment after mixing.

Condition 10 notes the 'trigger levels' were set on the following basis:

- The pH 'trigger' is derived from the SA/SC water quality classification standards and is applicable to receiving waters.
- The TSS and TPH 'trigger' are based upon Environment Bay of Plenty (EBoP) regional plans for stormwater discharges and other related publications and of a purely discharge (within pipe) nature.
- The BOD_5 'trigger' is based on a Washington State logyard stormwater quality technical publication and also of a discharge nature.
- The Zn, Cu and Pb 'triggers' are based on ANZECC 2000 guidelines marine 90% protection level which, as noted above, are receiving environment guideline values.

Condition 9 requires the stormwater discharges not compromise the SA/SC water classification standards applying ot the different marine receving environments. This includes the discharge after mixing not resulting in '*Conspicuous oil or grease films, scums or foams, or floatable or suspended materials*' or '*Any conspicuous change in the colour or visual clarity'.* Under Condition 10 a 10m radius 'mixing zone' has been set around the the two stormwater pipe outlets to the CMA. In order to determine compliance with the above requirements at the time of each stormwater sampling round photographs will be taken of the 'mixing zone' around each outlet.

5.9 DILUTION & MIXING ZONE MATTERS

Condition 10 requires the SMP detail the mixing zone and dilution factors applying to any stormwater discharge monitoring of metals and pH. As outlined earlier manhole sampling of these parameters, along with the others, is expected to be undertaken because of ease of sampling point access and health and safety reasons. This means that for the specified RCEP and ANZECC receiving environment 'triggers', an estimate is required for the probable mixing and dilution, in order to 'back-calculate' a discharge (within manhole) concentration for monitoring purposes.

This mixing zone and dilution factor 'back-calculation' analysis has been done, although primarily in relation to monitoring of the metal concentrations (copper, lead and zinc). For small intermittent discharges pH is not considered a significant water quality issue. The buffering capacity of seawater rapidly 'corrects' any slight pH imbalance which might occur in the runoff which is any event mostly rainwater and close to pH neutral.

Receiving Environment Considerations

The two receiving environments are physically quite different and discrete. The southern discharge is to the open coast adjacent to a concrete rubble seawall. The area adjacent to the seawall is mostly flat intertidal rock.

The actual point of confluence between the discharge and marine waters moves up and down the shore with the tides. Water depth in the vicinity of the discharge confluence is shallow. Turbulence and exposure to wind and waves is high. The northern discharge is to the port area. Adjacent and nearby habitats are modified (port structures). Water depth at the stormwater outlet point is greater than for the southern discharge and the area of confluence between the discharge and the marine water is more or less constant, being at the pipe outlet. Exposure to waves is less than for the southern discharge, but the site is exposed to wind, tidal and river flow effects.

Each receiving environment is very different in terms of the processes which can potentially act on or otherwise influence the discharge. These are complex processes and include receiving environment salinity; current velocity through the mixing zone; turbulence; wind direction and velocity. That is, the area within and beyond the mixing zones will have quite different characteristics and dilution potentials for each discharge location.

Site Inspection Findings

The different characteristics of the two locations were evident on a site inspection on 28th January 2015 just after high tide and following a period of significant overnight rain and intermittent heavy showers during the morning. On that day a fresh breeze was blowing from the northeast at the northern discharge and from the southeast at the southern discharge. At both locations there was a noticeable, but relatively slight discolouration of water at each discharge. It was evident that at both sites the discharge was largely being entrained by the wind and kept within a few metres of the seawall and port structures respectively in the downwind direction.

The discharges at both locations were not mixing within a notional uniform radius from the outlet. Mixing and the water affected by the discharge was highly asymmetrical relative to the stormwater pipe. This provides a good illustration of why simplistic representations of the behavior of each discharge for modelling purposes are likely to be of limited use. It also illustrates that monitoring of receiving waters (if and when that occurs) by sampling at a notional radius from the pipe, is similarly simplistic

Each of the discharges in the near shore zone where initial mixing will occur, will also behave differently and according to discharge velocity, discharge flow rate; discharge buoyancy and temperature; tidal state; and discharge pipe inundation. Some of these factors will vary over a single discharge event. These interacting and highly variable properties are likely to make an 'engineering' based prediction for dilution of each discharge in each receiving environment difficult. Any predictive 'engineering' approach would have to be premised on a number of assumptions and the output would be a generalisation in any event. Such a high level approach might be warranted if the discharges were considered to pose a high risk to sensitive biota, but they do not in either location.

Mixing Zones

The site and other investigations carried out indicate that reasonable mixing is expected to occur within 10m of the outlets. The southern stormwater outlet is not immersed during high tides, so the 10m radius in these situations the mixing zone is expected to extend from the point of confluence of the stormwater discharge and the marine receiving environment. For the northern stormwater outlet discharge, 'reasonable mixing' is to be generally assessed as having occurred within a 10m radius from the outlet pipe at all times. The approximate extent of the mixing zones are shown in **Figure 7.**

FIGURE 7: NORTHERN & SOUTHERN STORMWATER OUTLETS: INDICATIVE MIXING ZONES

RCEP Water Classification & ANZECC Guidelines

The sensitivity of each receiving environment beyond the indicative mixing zone is related to the concentrations of contaminants in each discharge. The aim of the monitoring is to show that biota are protected from concentrations of contaminants that would be potentially harmful over short periods of exposure (because the discharges are highly intermittent). To that extent it is the protection from acute concentrations that are of most interest during the monitoring. Also it has to be recognised that an inherently conservative approach is being taken in using ANZECC receiving environment guideline values for marine waters as the reference point. These guidelines are intended to protect marine ecosystems from chronic effects under sustained concentrations and exposure.

The southern discharge area is the more sensitive receiving environment to the extent that it is classified SA. However the outfall is some distance from the nearest potentially 'sensitive resource' being habitat at or below the low tide mark. Initial dilution near to the outlet and subsequent dilution and mixing at and beyond the low water mark is cumulatively likely to be high that far from the outlet. Biota is most unlikely to be at risk.

The northern discharge is into a less sensitive environment being within a port area and classified as SC. In addition to the almost completely modified physical structure of the port marine area, the ambient water quality in this environment is likely to be influenced by the quality of the Turanganui River, discharge from the Kopuawhakapata Stream; shipping movements and other activities in the upper port area. Staff from the Cawthron Institute, in relation to a peer review undertaken on behalf of the Council in relation to the upper logyard discharges into the upper port area, suggested not higher than a 90% ANZECC marine protection level is appropriate for the port waters [1].

Dilution Factor

The mixing zone potential is likely to be relatively high a short distance beyond the outfalls and a dilution factor has been conservatively estimated at 20x. This has been applied to produce the derived metals concentrations within the stormwater pipe, these being the the shaded values in **Table 2** below.

TABLE 2: STORMWATER DISCHARGE TRIGGER VALUES FOR ASSESSING EFFECTS

Parameter	Units	Trigger Levels For Assessing Effects		
		Marine Receiving Environment[1]	Dilution[2]	**Discharge[3]**
BOD_5	g/m^3			**30**
pH	$-\log(H^+)$	6.7-8.5		**>6.0**
TSS	g/m^3			**150 (median)**
	g/m^3			**250 (95%ile)**
TPH	g/m^3			**15**
Total Zn	g/m^3	0.023	20x	**0.46**
Total Cu	g/m^3	0.003	20x	**0.06**
Total Pb	g/m^3	0.0066	20x	**0.132**
Note 1	ANZECC 2000 Marine 90% protection level			
Note 2	Assumes a dilution factor of 20 times within a notional small mixing zone of 10m from the outfall			
Note 3	Shaded values are derived based on concentrations 20 x ANZECC marine receiving environment			

Experience with Similar Discharge Permits in Other Regions

The proposed EPL 'trigger' values for 'within pipe' measurement of heavy metals (using the 20x dilution factor) are of a similar order to other reported NZ stormwater values. As outlined in **Table 3** that follows, the converted 'trigger' values for Cu, Pb and Zn fall within the range of means reported from other catchments within NZ. This same table also shows that the TSS 'trigger' (which is already set as being of a 'within pipe' nature within the consent conditions) is also within the values reported for other NZ locations.

[1] Section 1.3 'Applicable Guideline Criteria' of A Letter from Cawthron Institute To Gisborne District Council Dated 12 April 2013

The proposed 20 times dilution factor is conservative and within the range of dilution likely at either discharge location. It is not considered useful to attempt to further quantify or model the dilution of either stormwater discharge in the marine environment. This matter is to be reviewed with Council staff after the first few rounds of stormwater discharge sampling and if need be refined.

TABLE 3: DISCHARGE TRIGGER VALUES COMPARED TO NZ URBAN STORMWATER CONCENTRATIONS[23]

Water Quality Parameter	**EPL Derived Discharge Trigger Value**	**Whangarei[1]**		**Tamaki[2]**	**Onehunga[2]**	**NZ[1]**
	See Table 2 of SMP	Mean	Median	50%ile and 90%ile	50%ile and 90%ile	Range in Means
TSS (g/m^3)	150 (within pipe as per condition)	192	86	29.5, 149	34.5, 149	25 to 690
Cu (g/m^3)	0.060 (converted to within pipe)	0.069	0.023	0.014, 0.084	0.010, 0.033	0.015 to 0.061
Pb (g/m^3)	0.132 (converted to within pipe)	0.065	0.040	0.014, 0.081	0.020, 0.066	0.055 to 0.210
Zn (g/m^3)	0.460 (converted to within pipe)	0.400	0.350	0.162, 0.980	0.079, 0.247	0.190 to 0.460

5.10 INTERPRETATION OF RESULTS & REPORTING

Quarterly Monitoring Reports

Condition 10 requires the SMP set out the frequency of the monitoring. Quarterly monitoring realted to 'first flush' rainfall ecents is proposed. The monitoring results will be interpreted by EPL's nominated environmental consultant, and being a person competent to interpret water quality data. **Appendix L** contains a copy of the EPL quarterly monitoring report template. As per the condition the report will be provided to the Council manager within 15 working days of receiving the results from the laboratory.

Condition 10 (b) requires that If any exceedance is identified then the Council shall be advised in writing of the results within 2 working days of EPL (thought its envionmental consultant) receiving the results from the testing laboratory. This will be done by EPL's nominated environmental consultant, in conjunction with EPL staff. In addition this clause requires the quarterly monitoring report outline the possible causes of the exceedance, the environmental effects significance of it, whether any follow up re-testing and analysis of the stormwater discharge is to be undertaken, and whether any corrective actions have been undertaken and/or are planned. This will also be done by EPL's nominated environmental consultant, in conjunction with EPL staff.

Condition 10(c) requires the Council approved SMP identify the range of investigations to be undertaken into the possible causes of any trigger level exceedance, the procedures for any re-testing, and analysis of the stormwater discharge, and the range of corrective actions to be assessed.

[2] R E Williamson and C E Thomsen 1994 *Whangarei Urban Stormwater Report* Prepared for Northland Regional Council. NIWA Consultancy Report No NRC/003/

[3] Griffiths, G.; Timperley, M., 2005. Auckland City stormwater - *A summary of NIWA and other relevant studies*. Prepared by NIWA for Metrowater Ltd. NIWA Client Report AKL2005-007, October 2005

The SMP is required to recognise that re-testing has to be done after a significant rainfall event and the time for laboratory analysis and reporting to the Council will vary accordingly.

Trigger Value Exceedance 'Follow Up' Investigation, Re-Testing and Corrective Action Protocols

Investigations to be Carried Out: Where one or more trigger values as stated in The 'Discharge' Column of Table 2 are exceeded, investigations to clarify if possible the source of exceedance may include a review of activity in the log yard on the day of sampling; an inspection of the manhole sampling locations in terms of accumulated material and requirements for maintenance thereof; and review of the field sampling record including the intensity and duration of the rainfall and event. A decision will be made by EPL's nominated environmental consultant and EPL based on an assessment of the significance of the exceedance, as to re-testing and follow up actions and these will be conveyed to the Council within 15 working days of receipt of the analytical results.

Re-Testing: Where retesting is required or recommended, all parameters will be sampled in accordance with the sampling protocols as soon as is practicable. This is expected to be the next time a rainfall event results in a significant amount of water enmters the stormwater system. The results of the re-testing will be reported to the Council as for the approved routine sampling, i.e within 2 working days of the results being received from the laboratory.

Corrective Actions to be Considered: Corrective actions will depend on the contaminant, the source and the significance of the exceedance. Options may include cleaning sumps and slot drains; increased sweeping and debris removal; checking debarker and antisapstain operations to ensure bunding, security and acceptable standard of control over copper drips/leaching.

6 SITE MANAGEMENT & REPORTING

6.1 LOGYARD OPERATIONS MANAGER RESPONSIBILITIES

Stormwater and other environmental responsibilities for the logyard are are allocated in the first instance to the Logyard Operations Manager (formerly the Logyard Manager). The Logyard Operations Manager is responsible for directing activities and contractual relationships occurring within the logyard as outlined in **Figure 8**.

The Logyard Operations Manager is the company first point of contact with responsibility for implementation of the SMP and ensuring compliance with the applicable resource consents. It is the Logyard Operations Manager's responsibility to monitor and direct this SMP, unless otherwise determined by EPL and advised to the Council. This includes inspection and maintenance programmes for the logyard and stormwater system and monitoring the stormwater quality

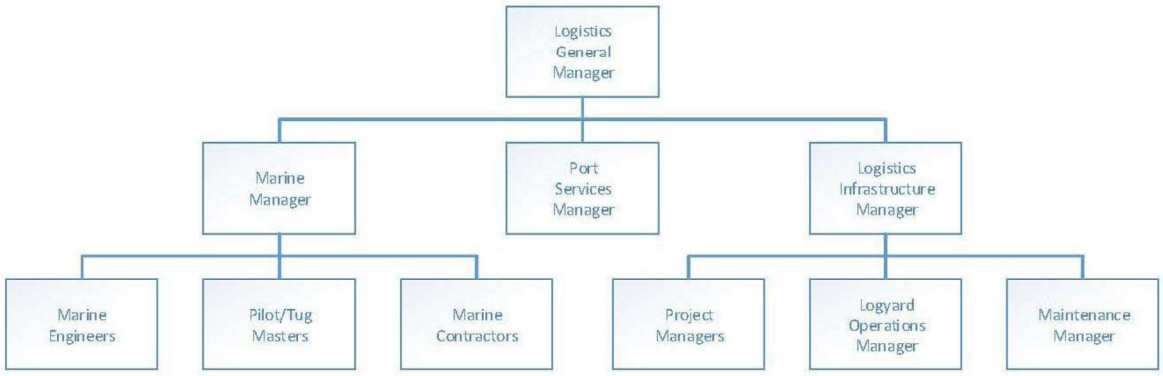

FIGURE 8: EASTLAND PORT LTD MANAGEMENT STRUCTURE

Environmental responsibilities are to be conveyed through education and training of Port procedures, and enforced through contractual obligations on all company employees, contracted service providers, and port users. All parties, i.e. company employees, contracted service providers, and port users, will be made aware of the Port wide emergency response procedures through employment inductions, education, and training if required.

6.2 EMERGENCY RESPONSE PROCEDURES

The Logyard Operations Manager will also be responsible for instituting emergency response procedures. The most likely emergency is expected to involve spillage of a hazardous material or other potential contaminant.

The Logyard Operations Manager will take the following immediate actions to contain the spill:

1. Stop spill at source.
2. Isolate the spill from the drainage system via temporarily bunding of surfaces and blocking drains.
3. Utilise the emergency spill kit.
4. Clean up the spill using methods appropriate to the spilled materials.
5. If the spill enters a drain notify the Council 24 hour pollution hotline 0276527919.
6. Using the site drainage plan, identify the path of the spill and investigate whether the spill can be isolated (e.g. in downstream manhole) before discharging to the coast.
7. Check the spill is totally cleaned up.
8. Remove temporary blocks in the drainage system.
9. Complete an SF1000 Incident Investigation - Action Record immediately. **Appendix M** contains a copy of the EPL environment incident form.
10. If the spill has not entered the drainage system, notify the Council within 24 hours of the spill.
11. Complete an SF 800 Continuous Improvement Form, within 24 hours of the incident. **Appendix N** contains a copy of the EPL continuous improvement form.
12. Send copies of a written report, accompanied with the SF 800 and SF 1000, to the Council and EPL Health and Safety Facilitator within 7 days of the spill.

6.3 STAFF TRAINING

The objectives of training the operators of the stormwater system are:

- Emergency response procedures;
- Implementation of the stormwater management and standard operating procedures;
- Inspection and maintenance regimes;
- A training record for all staff;
- Review and update staff training requirements as needed.
- Environmental awareness training includes:
- Inductions: Documented procedures listing environmental issues that employees need to be aware of.
- Inductions are specific to the overall site, yard areas, and tasks that employees will primarily undertake.
- Updates: Provide general awareness tools such as visual displays of the environmental policy, emergency spill or other procedures, company newsletters, drills, and verbal instructions.

The Logyard Operations Manager is primarily responsible for managing the site stormwater system. He will in

coununction with other EPL managers undertake the identification and updating of staff training requirements. The training process is illustrated in **Figure 9**.

The Logyard Operations Manager is also primarily responsible for all inductions for EPL staff and contractors. Ongoing environmental training is the responsibility of the Logyard Operations Manager and is for all staff on an as needed basis.

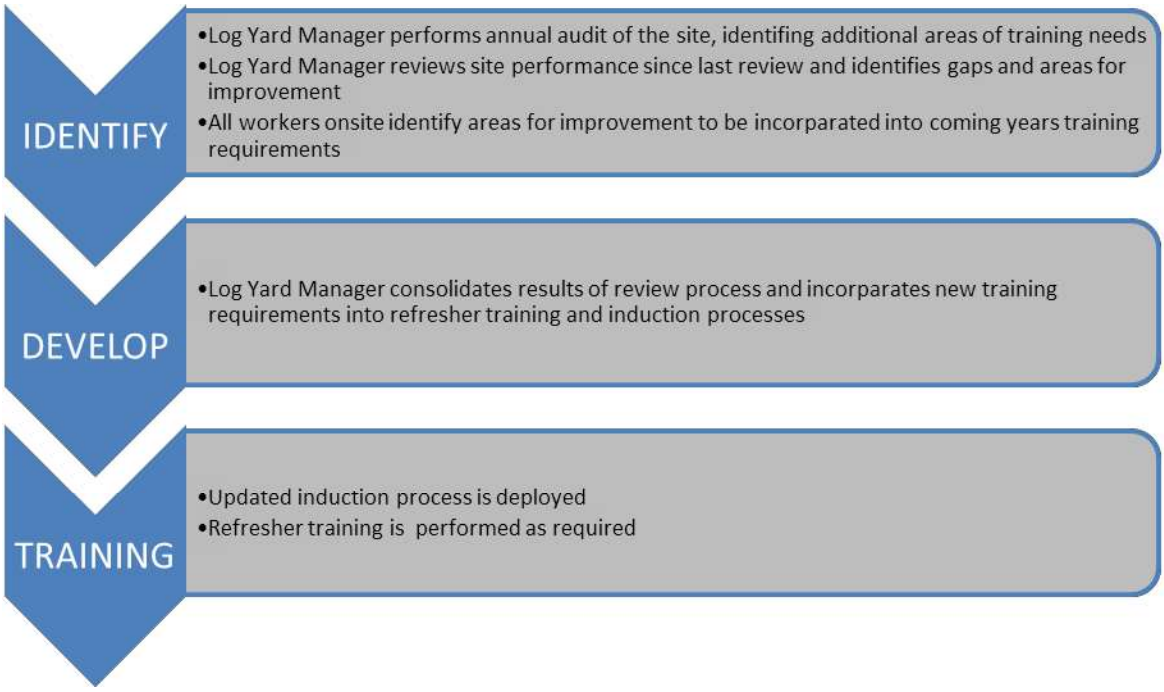

FIGURE 9: EASTLAND PORT LTD STAFF TRAINING PROCESS

6.4 REPORTING

The EPL reporting to the Council has been outlined earlier in this SMP. In summary it will involve the following:

- The monitoring, maintenance and inspection records maintained by the company shall be made available to the Council for inspection or on request.

- The annual monitoring report summarising water quality data, site management and responses shall be submitted to the Council by the 1 April each year.

- In the instance of the stormwater monitoing results not meeting the 'trigger values' identified in Table 2 of the SMP, EPL will assess the significance of the exceedance in consultation with an appropriately qualified environmental consultant, and advise the Council of the results within 2 working days. EPL will, in cojnuction with the environmental consultant, assess the likely reason(s) for the exceedance, possible sources of contaminant(s), the need for any further sampling (that is in addition to the quarterly sampling), and the need for and form of any following up on site management. In these circumstances a report detailing the causative investigations and follow up corrective actions will be submitted to the Council within 15 working days of receiving the results from the testing laboratory.

- A record shall be kept of any complaints relating to the southern log yard catchment area and a summary of such complaints and Eastland Port responses (if any) shall be included in the annual

report to the Council. **Appendix O** contains a copy of the EPL complaint form.

6.5 RECORD KEEEPING

The following records will be kept by EPL:

- Stormwater System Inspection and Maintenance Schedule Appendix C
- Downstream Defender Inspection and Maintenance Form Appendix E
- Z Energy Stormwater Management PlanManagement Plan Appendix F
- Mobile Plant Inspection Form Appendix G
- Oil and Grit Interceptor Inspection and Maintenance Form Appendix H
- Stormwater Outlet Inspection and Maintenance Form Appendix I
- Stormwater Sampling Field Sheet Appendix K
- Stormwater Monitoring Quarterly Report Appendix L
- Environmental Incident Record Appendix M
- Environmental Incident Continuous Improvement Form Appendix N
- Environmental Complaint Form & Register Appendix O

6.6 CONTINUOUS IMPROVEMENT PLAN

Condition 5 of the Coastal (discharge) permit does not prescribe what the continuous improvement plan is to contain. EPL consider it is directed at on-going improvement in stormwater management within the yard. This is expected to be achieved through the site management, monitoring and record keeping/training provisions in this plan, that will be regularly reviewed in accordance with the consent conditions.

A record of plan changes and reviews by the Council is to be kept and as an appendix to the plan. Reasons for making changes to the SMP will be documented. A copy of the original SMP document and subsequent versions will be kept for EPL records, and marked as obsolete. Each new/updated version of the SMP documentation will be issued with a version number and date to eliminate obsolete SMP documentation being used.

Revised SMP's will be submitted to the Council's Manager: Environment and Planning and amended as necessary until certified by him or her as meeting the conditions of consent.

REFERENCES

Australian and New Zealand Environment and Conservation Council (ANZECC), 2000. Guidelines for Fresh and Marine Water Quality. National Water Quality Management Strategy, Australian and New Zealand Environment and Conservation Council. http://www.mfe.govt.nz/publications/water/anzecc-water-quality- guide-02/anzecc-water-quality-guide-02-pdfs.html

Appendix A

Resource Consents

CC-2010-104665-00

CD-2010-104664-00

PD-2008-103243-00

GISBORNE DISTRICT COUNCIL
RESOURCE CONSENT

GISBORNE DISTRICT COUNCIL

PLANNING - DISCRETIONARY

Pursuant to, section 104 & 104B of the Resource Management Act 1991 the GISBORNE DISTRICT COUNCIL hereby grants the following:

CONSENT NUMBER: PD-2008-103243-00 **FILE NUMBER:**

CONSENT HOLDER: EASTLAND PORT LIMITED

OF:

LEGAL DESCRIPTION: LOT 1 DP7296

SITE LOCATION: KAITI BEACH ROAD
GISBORNE

CONSENT TO: Proposed debarker and anti-sap staining facility

APPROVAL DATE: 14 August 2008 **EXPIRY DATE:**

This consent is subject to the conditions specified in the attached resource consent decision.

Signed at Gisborne this Thursday 14 August, 2008 for and on behalf of the Gisborne District Council

Kurt Ridling

PLANNER

GISBORNE DISTRICT COUNCIL

File Reference: PD-2008-103243-00

NON-NOTIFIED RESOURCE CONSENT APPLICATION (LANDUSE)

REPORTING OFFICER:	Kurt Ridling
APPLICANT:	Eastland Port Limited
ACTIVITY:	Construction and operation of a debarker and antisap staining facility
LOCATION:	Eastland Port, Kaiti Beach Road, Gisborne
STATUS:	Non-complying Activity pursuant to Section 88 of the Resource Management Act 1991

1.0 INTRODUCTION

The applicant proposes to assemble and operate a debarker and antisap stain treatment plant at Eastland Port. The activity will include logs being fed onto a conveyor system that takes them through the debarker and into a spray chamber. The logs are sprayed with a fungicide treatment referred to as 'Blue Control OF', identified as a hazardous substance in accordance with the Hazardous Substances and New Organisms Act 1996. After spray treatment logs move along the conveyor to a covered drip area. Logs are then transferred if necessary, to an interim storage area until the chemical is 'fixed' and then onto the main log storage area. It is proposed that a sealed, bunded area will be provided to ensure no chemical runs-off during treatment and to allow for surplus chemical material to be recovered and re-used in the plant.

The proposed facility is to be located at the former Caltex Petroleum Tank Farm, between the existing log yard and Kaiti Beach Road. This is within the Port Management B zone identified in the District Plan. The activity also occurs within the buffer zone of archaeological sites Y18/466 and Y18/467. The development requires earthworks and ground levelling and sits on or near what would have been the Kaiti Beach shoreline before port reclamation works.

The facility is proposed as being likely to operate 12 hours per day, 5 days per week. It is stated in the application that the ultimate capacity of the plant is 250,000m^3. However, there may be 2-3 years before this is achieved and during this lead in period, production of 100,000-150,000 tonnes per year is expected. The applicant wishes to retain the flexibility to operate the plant 24/7.

2.0 CONSULTATION

The usual agencies and departments were advised and various comments about the proposal were raised. A section 92 request was sent to the applicant on 26 May 2008 which addressed questions raised by various Council sections. A reply to this request was provided on 25 June 2008 that addressed the matters raised. A meeting was also organised and held by the applicant on 26 June 2008 that outlined the proposal and operation of the plant.

Staff members from Council's Water Conservation, Environmental Health and Planning sections attended the meeting. Conditions and advice notes were subsequently drafted as a result of the information provided and the presentation given.

In terms of iwi consultation, the application stated that the proposal had been discussed with a representative of Ngati Oneone and a cultural protocol was identified as an appropriate mechanism to deal with any cultural effects that may arise as a result of land disturbance. A draft protocol was provided with the application. To date no response or acknowledgement of consultation or the protocol has been provided by Ngati Oneone. However, because the effects on the environment were deemed to be no more than minor it was not considered necessary to notify the application. This is discussed further under section four of this report.

3.0 STATUTORY REQUIREMENTS

The matters to be considered when assessing an application for resource consent are set out in Section 104 of the Resource Management Act 1991. Amongst other things, these matters require consideration of any actual and potential effects on the environment arising from the proposal, together with an assessment as to whether the application is consistent with relevant objectives, policies and rules of any relevant plan and any other matters the consent authority considers relevant and reasonably necessary to determine the application.

Under section 104B, the consent authority may grant or refuse a resource consent application for a non-complying activity and if it grants the application may impose conditions under section 108.

Further under section 104D, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either:

a) The adverse effects of the activity on the environment (other than any effect to which section 104(3)(b) applies) will be minor; or

b) The application is for an activity that will not be contrary to the objectives and policies of the relevant plan.

Part Operative Combined Regional Land and District Plan

The site to which this application relates is zoned Port Management B. This zone allows for any activity not specifically provided for in any other rule in the Plan as a permitted activity in accordance with rule 20.12.1.1. However, the activity is occurring within the buffer zone of archaeological sites Y18/466 and Y18/467 and the Chapter 3 rules relating to archaeological sites become applicable. Because a qualified archaeologist has not assessed the proposal the activity becomes non-complying in accordance with rule 3.14.3.1.

Further to this, Chapter 11 (Noise and Vibration) is also relevant. Rule 11.12.7.1 sets out the general noise rules for Port Management Zones with non-essential port activities required to comply with the noise limits specified in sections 11.12.1 - 11.12.6. The application does not meet this criterion and in particular is unable to comply with rule 11.12.5.1 which sets out the average and maximum noise levels permitted at the boundary of sites zoned Heritage Reserve.

Relevant Objectives and Policies

20.3 Objectives (Management of Port)

1. Enable continued operation and development of the Port Management Zones recognising the importance of the port as a major regional transport facility.

2. Recognise or provide for the operational needs of the Port while ensuring adverse effects of Port activities are avoided, remedied or mitigated.

3. Enable the utilisation of land within the Port Zone that is unsuitable to accommodate Port related activities provided that adverse effects of the introduced activity on the operation of the Port itself, on the sustainability of the city centre and on other land uses are avoided, remedied or mitigated.

20.4 Policies (Management of Port)

1. Provide for Port and non Port related activities within the Port zone provided that:

   - Non Port related activities do not have an adverse effect on the operation of the Port; and
   - That the effects of Port and non Port related activities on the environment can be avoided, remedied or mitigated; and
   - Non Port related activities do not have any adverse effect on the sustainability of the city centre particularly the area zoned Inner Commercial.

4. To ensure that whilst enabling the continued operation of the Port:

   - The visual linkage between the landing place of Captain Cook, the waters of Poverty Bay and the outstanding landscape of Te Upoko o te Kuri a Paoa (Young Nick's Head) is preserved;
   - The visual amenity of the Cook "cone of vision" is maintained and enhanced;
   - The cultural symbolism of the Cook landing site is recognised and protected.

4.0 ISSUES

The application can be seen to be consistent with the above Port Management Zone polices. There is obviously some emphasis on the operation and development of the Port with an obligation to avoid, remedy or mitigate adverse effects. Although the proposal would not be an essential port activity, it is port related and would comply as a permitted activity if the relevant criteria were met. In terms of the Cook "cone of vision" the proposal complies with the relevant rules and is located at an appropriate distance to retain the visual connections listed above. There is also a baseline assessment relevant in this regard with the proposed site currently occupied with tall log stacks. The visual linkages would essentially be unchanged.

The proposed plant will be visible from Kaiti Beach Road and is shown as being relatively close to this boundary. The elevations provided with the additional information indicate the height of the tallest structure to be just over 6m at the highest point and the length of the plant to be approximately 50m. The facility is shown to run parallel with Kaiti Beach Road. Photos were also provided from the previous location at Marsden Point Port.

The visual appearance of the facility is industrial in nature and would be obvious if travelling along Kaiti Beach Road. Although there are no specific yard distance requirements for this proposal, it is located in close proximity to Titirangi Reserve, Kaiti Beach, and the Cook Memorial and associated "cone of vision". These areas retain both a high level of amenity and historical significance. Given these factors it is considered appropriate to request some form of screening along the road boundary. This is envisioned as being similar to the vegetative screening at the far end of the log yards and will be followed through as a condition of consent.

Noise has the potential to adversely affect any neighbouring, adjacent or distant environment. The type or level of noise is a significant component of the character of an area and it is important that the potential noise generated from a consented activity is compatible with the zone in which it occurs. The District Plan recognises that the Port is physically constrained by a limited land resource and provides some flexibility in terms of noise limitations with some emphasis on the 'best practicable option' approach. However, this is specific to essential port activities, which as outlined in Chapter 24 (Glossary) does not include chippers and debarkers. Therefore it is necessary to apply the relevant zoning noise limitations to this activity.

A 'Sound Level Monitoring and Noise Assessment Report' by Malcolm Hunt Associates was provided with the application. This assessed the potential noise levels from the proposal based on a similar plant in Napier. It was concluded that noise emissions from the activity as proposed will be able to comply with the relevant District Plan standards. However, this assessment was based on the Amenity and Recreation Reserve zoning rules and not the Heritage Reserve rules which is the adjacent zone to the activity. This resulted in an amended report and discussions with Environmental Health Officers regarding the noise limits set for the Heritage Reserve Zone. It was identified by the Chief Environmental Health Officer that the noise limits set in the Plan were incorrect and the noise rules applicable to the Amenity and Recreation Reserve zones would be more appropriate. This being the case the activity, although not complying with the noise rules for the Heritage Reserve Zone, is considered to be acceptable by Council's Environmental Health section and the effects deemed to be no more than minor.

In terms of the hours of operation, it is not considered necessary to restrict the activity to specific times and hours. However, it is considered prudent to include as part of the review condition a clause for reassessing the hours of operation if noise becomes a problem or if the noise limits outlined in the plan and conditions cannot be adhered to.

The proposed facility is shown to be within the buffer zones of archaeological sites Y18/466 and Y18/467. Both sites are described as midden(s) with historical evidence and have a buffer distance diameter of 100m. The footprint of the plant extends into these buffer zones by approximately 10-20m. It is not anticipated that there will be any adverse effects on these archaeological sites as a result of the proposal. As mentioned there will be some earthworks and ground levelling involved but given the previous modification of the site it is unlikely any archaeological material will be encountered. The site has a long history of land disturbance, from reclamation to the former petroleum tank farm and the subsequent remediation of the site. According to the applicant the ground level was raised by approximately one metre during site remediation. Given this and the proposed extent of earthworks it is unlikely that any archaeological material will be encountered during site preparation.

The standard archaeological footnote is considered appropriate to deal with any material that may be encountered. In terms of land disturbance within the buffer zone of known archaeological sites, the effects are considered to be no more than minor.

The applicant also proposes to undertake chemical treatment of logs as part of the activity. This will include a spray treatment of a product known as Blue Control OF. A copy of the application was sent to Council's Hazardous Substances Officer and Water Conservation section. After discussions with the relevant staff members various details were requested with regard to the treatment process. This was subsequently provided and a presentation given outlining the proposed operation. The system is essentially a closed loop with chemical runoff being contained in bunded areas and recycled back through the plant. Residual material will be disposed of in an appropriate manner. Following this it was determined that a discharge consent was not required and conditions of consent would be adequate to avoid, remedy, or mitigate any adverse effects on the environment.

Overall, given the information provided and the mitigation measures proposed it is considered the environmental effects of the operation will be no more than minor.

5.0 DECISION

Pursuant to Sections 104 and 104B of the Resource Management Act 1991, and delegation from the Gisborne District Council, I hereby consent to a Discretionary Activity to construct and operate a debarker and antisap stain facility at Eastland Port on land legally described as Lot 1 DP 7196, subject to the following conditions:

1. The development shall be carried out in general accordance with the details submitted with the application (Reference: PD-2008-103243-00).

2. The average maximum noise level (L_{10}) arising from the operation of the debarking and anti-sap staining facility measured at the boundary of the Heritage Reserve (Titirangi Reserve) shall not exceed L_{10} of 75dBA.

3. The average maximum noise level (L_{10}) and maximum noise levels (L_{max}) generated from this site and as measured at or within the boundary of any site zoned residential shall not exceed the following limits:

	AVERAGE MAXIMUM NOISE LEVEL (L_{10}) dBA			**(L_{max}) dBA**
	Day 0700-1800	Evening 1800-2200	Night 2200-0700	Night 2200-0700
Monday-Saturday	55	45	40	65
Sunday & Public Holidays	45	45	40	65

4. The applicant shall take all reasonable steps to ensure that the noise created from the activity is kept to practicable minimum.

5. All operations on the site which have the potential to cause dust emissions shall be suitably managed at all times so as to avoid the creation of a dust nuisance.

6. There shall be no creation of dust from the process which is offensive or objectionable, as determined by a suitably qualified and experienced enforcement officer from the Gisborne District Council, at or beyond the boundary of the site.

7. A row of suitable screening plants shall be planted along the boundary of Kaiti Beach Road to the satisfaction of the Consent Authority. This shall be the for the purpose of screening the activity from the road and shall be maintained on an ongoing basis.

8. Prior to commencement of the activity a Management Plan shall be prepared by the consent holder to the satisfaction of the Consent Authority and shall address the following:

   - The relevant matters set out in Appendix 3: Schedule B of the Gisborne District Council Regional Plan for Discharges to Land and Water, Waster Management and Hazardous Substances.
   - Monitoring programmes and measures to ensure compliance with consent conditions.
   - Emergency Response procedures

9. The Management Plan shall be adhered to at all times.

10. The management Plan shall be reviewed at yearly intervals. Any revised plan shall be submitted to and certified by the Consent Authority.

11. All residual chemical material not available for reuse in the plant shall be disposed of to an approved facility. Details of the contractual arrangements to dispose of the residual chemical material shall be provided to the Consent Authority prior to the commencement of the activity.

12. All chemical and contaminated material shall be stored within the primary bund area. This bund area shall have sufficient capacity to contain the maximum total volume of all chemicals stored within.

13. The primary bund area shall be constructed with an impervious and sealed surface. This surface shall be effectively maintained to prevent the escape of contaminants or contaminated material.

14. The primary bund area shall be constructed to prevent the ingress of stormwater from the surrounding area and shall be covered.

15. That this consent is granted by the Gisborne District Council, subject to its servants or agents being permitted access to the relevant parts of the site at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

16. The consent holder shall pay to the Consent Authority any administration, inspection, supervision, enforcement or monitoring charges fixed in accordance with Section 36(1) of the Resource Management Act 1991, payable in respect of this consent.

17. The Gisborne District Council may serve notice on the Consent Holder of its intention to review the conditions of this resource consent six months after the commencement of this consent and within one month after the first anniversary of the commencement of this consent and within one month after each subsequent anniversary, for the following purposes:

- To review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment from the Consent Holder's activity and, if considered appropriate by the Gisborne District Council, to deal with such effects by way of further or amended conditions.
- To review the appropriateness of conditions if changes to relevant national standards, regulations and guidelines, and the Council's relevant regional and district level plans.
- To impose additional, or modify existing, conditions of consent relating, but not necessarily limited to the matters specified hereunder if the Manager considers it necessary to deal with any adverse effect on the environment which may arise from the exercise of this and which it is appropriate to deal with at a later date:
  - Amenity values
  - Noise and odour
  - Dust
  - Hours of operation
  - Hazardous substances
  - Stormwater control
  - Review period.

Advice Notes

a) Storage of hazardous substances on the site shall comply with Hazardous Substances and New Organisms Act 1996 and may require a test certificate and test certifiers to handle the chemicals.

b) If any archaeological deposits are identified during site development, the owner/contractor should act in good faith and avoid effect to the deposits and contact the Historic Places Trust. Under Section 99 of the Historic Places Trust Act 1993, it is an offence to destroy, damage or modify an archaeological site (recorded or unrecorded) without an authority from the Trust and a fine of up to $100,000 may be imposed on the offender.

Hans van Kregten
Environment & Planning Manager

Dated: 14/ 8 /2008

CD-104664-00, CC 104665-00

5th January 2011

GISBORNE
DISTRICT COUNCIL

Eastland Port Limited
P O Box 1048
GISBORNE 4040
(Attention Marty Bayley)

Dear Marty,

Coastal Permits

Coastal Permits **CD-2010-104664-00** and **CC-2010-104665-00** for construction and operation of the stormwater discharge from the Southern Logyard at Eastland Port are enclosed. Please read these consents and conditions carefully. The conditions are to be complied with at all times.

COSTS

An invoice for the total processing costs to determine the consents will be forwarded to Eastland Port Limited in the near future.

MONITORING

Council staff will monitor compliance with the conditions of these consents. Please note that a charge for monitoring may be levied in accordance with the Council's charging policy.

The consents have been issued with the intention of allowing a certain amount of adaptive management to occur. During construction and in the first winter of operating each phase of construction, site visits associated with reviews of the Construction Management Plan and the Site Stormwater Management Plan may be requested on a more frequent basis so that best practice can be determined in a way that acknowledges practical methods that may develop over time. It is anticipated that improved methods may be introduced through including them in the certified Management Plans.

RMA S15 COMPLIANCE

The officers report that provided recommendations to the delegated officer (authorised to issue these consents), contained recommended enforcement action to ensure that s15 of the RMA (the Act) is complied with over the areas of Port logyard not covered by these consents. Section 15 of the Act states "that no person may discharge any contaminant to water" Unless expressly allowed by a rule in a plan or a resource consent. The consultant planner working on this project for Eastland Port Limited has suggested an exchange of letters that commit the Port Company to a time bound programme of improving all stormwater discharges from the Port. The programme of improvement will be required to assure compliance with s15 of the Act and actions will need to include both temporary and more permanent methods for controlling and treating all discharges from the Port.

Any time bound proposals are required to be in place by April 30th 2011; this will require urgent attention. Council Water Conservation staff will be pleased to liaise with Eastland Port Limited to clearly define what may be necessary in the way of temporary measures until more permanent treatment and discharge options have been consented for those Port areas not covered by these consents.

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The Port Company's commitment, in writing, with tight deadlines may alleviate the requirement for Council to follow through with formal enforcement actions at this stage, although enforcement remains and option should agreed deadlines not be met.

ADVISORY NOTES

You should also note the provisions of the Act which are summarised below:

Expiry Date – (s125)

A resource consent shall be deemed to lapse five years after the date of commencement of the consent, unless otherwise expressly provided for in the consent.

Note that the expiry date for the Coastal Permit (construction) is 5 years from the issue date of the permit. The expiry date for the Coastal Permit (Discharge) is 35 years from the issue date.

Review of Conditions – (s127)

In circumstances the holder of a consent may apply to the Consent Authority for the change or cancellation of any of the consent. The Consent Authority may initiate a review of the conditions of the consent (s128).

Rights of Objection – (s357)

Any person who has made an application for a resource consent may have the right to object to the decision issued under delegated authority in respect of that application. The objection must be lodged with the Consent Authority within 15 working days of the notification of the decision.

Right of Appeal – (s120)

The applicant may appeal to the Environment Court against the decision of the Consent Authority. The appeal must be lodged with the Environment Court and the Consent Authority within fifteen working days of the notification of the decision. Where relevant, a copy of the notice of appeal shall be served on any submitter within five working days of the notice of appeal being lodged with the Environment Court.

If you are contemplating an appeal it is suggested that you seek legal or professional advice and you should discuss the implications of an appeal under the Resource Management Act 1991 with your adviser. A composite of form (7) from the Resource Management (Forms) Regulations 1991 for making an appeal can be obtained from this office.

Appeals must be lodged in Wellington with the Department of Justice Tribunals Division in accordance with the provisions of the Resource Management Act and Regulations 1991.

If you have any questions please contact me by phoning (06)8672049 extension 7846 or email dennis@gdc.govt.nz .

Yours faithfully

Dennis Crone
Team Leader Water Conservation

GISBORNE DISTRICT COUNCIL
RESOURCE CONSENT

GISBORNE DISTRICT COUNCIL

COASTAL PERMIT - CONSTRUCTION

Pursuant to, section 104 & 104B of the Resource Management Act 1991 the GISBORNE DISTRICT COUNCIL hereby grants the following:

CONSENT NUMBER: CC-2010-104665-00 **FILE NUMBER:** 3380/GEN

CONSENT HOLDER: EASTLAND PORT LIMITED

OF: P O Box 1048
GISBORNE 4040

LEGAL DESCRIPTION: LOT 7 DP7819 and Coastal Marine Area

SITE LOCATION: Coastal marine Area off Kaiti Beach Road
at or about Map and Grid Ref: NZMG 2946869 6268645
and 2947128, 6268143

CONSENT TO: Construct stormwater outlets within the Coastal Marine Area adjacent to the Southern Logyard Port Eastland

APPROVAL DATE: 22 December 2010 **EXPIRY DATE**: 22 December 2015

This consent is subject to the conditions specified in the attached resource consent decision.

Signed at Gisborne this Wednesday 22 December 2010 for and on behalf of the Gisborne District Council

T G Freeman
ENVIRONMENTAL SERVICES MANAGER (Issued pursuant to delegated authority)

Any enquiries concerning this consent may be directed to:- Dennis Crone

TEAM LEADER WATER CONSERVATION

GISBORNE DISTRICT COUNCIL
RESOURCE CONSENT

COASTAL PERMIT - DISCHARGE TO WATER

Pursuant to, section 104 & 104B of the Resource Management Act 1991 the GISBORNE DISTRICT COUNCIL hereby grants the following:

CONSENT NUMBER: CD-2010-104664-00 **FILE NUMBER:** 3380/ GEN

CONSENT HOLDER: EASTLAND PORT LIMITED

OF: P O Box 1048
GISBORNE 4040

LEGAL DESCRIPTION: LOT 7 DP7819 and Coastal Marine Area

SITE LOCATION: Coastal Marine Area off Kaiti Beach Road
at or about Map and Grid Ref: NZMG 2946869 6268645 and 2947128, 6268143

CONSENT TO: Discharge treated stormwater from Eastland Port Southern Logyard to water within the Coastal Marine Area

APPROVAL DATE: 22 December 2010 **EXPIRY DATE:** 22 December 2045

This consent is subject to the conditions specified in the attached resource consent decision.

Signed at Gisborne this Wednesday 22 December 2010 for and on behalf of the Gisborne District Council

T G Freeman

ENVIRONMENTAL SERVICES MANAGER (Issued pursuant to delegated authority)

Any enquiries concerning this consent may be directed to:- Dennis Crone

TEAM LEADER WATER CONSERVATION

Conditions of Resource Consent

Eastland Port Southern Logyard

The following conditions shall be attached to Coastal Permit (Discharge)**CD-2010-104664-00** and to Coastal Permit (Construction) **CC-2010-104665-00**

General Conditions applying to both permits (Conditions 1-4)

1. All activities shall (unless modified by the following conditions) be in accordance with the application submitted to Gisborne District Council dated 11h November 2010 and plans and maps accompanying the application unless altered by the following conditions.
2. The permit holder shall pay to the Gisborne District Council any administration, inspection or monitoring charges fixed in accordance with s.36(1) of the Resource Management Act 1991, or any additional charge pursuant to s.36(3) of the Resource Management Act 1991, payable in respect of this permit.
3. The Environmental Services Manager of the Gisborne District Council (the Manager) may after granting of these permits give notice of intention to review the conditions of the permits pursuant to s.128 of the Resource Management Act 1991. This may occur on the 30th of June or within a month thereafter each year and for all or any of the following purposes:
   i. to require the permit holder to adopt the best practical option to remove or reduce any adverse effects on the environment; or
   ii. to deal with any other adverse effect on the environment on which the exercising of the permit may have an influence; or
   iii. review the appropriateness of conditions in the light of changes to relevant national standards, regulations and guidelines, and the Councils relevant regional and district plans; or
   iv. to modify any specific monitoring regime which may be required from time to time. This may increase or reduce sampling frequency and/or alter sampling parameters and limits; or
   v. to amend the purposes under which future reviews may take place.
4. These permits are granted by the consent authority subject to its servants and agents being permitted access to the relevant parts of the site at all times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

Conditions specific only to Coastal permit (Discharge) CD-2010-104664-00 (Conditions 5-17)

Site Stormwater Management Plan (SMP).

5. The site shall be managed in accordance with a Site Stormwater Management Plan (SMP) which includes details of the emergency response

procedures, Environmental Management Programmes, staff training, record keeping, monitoring and reporting requirements and a continuous improvement plan. The SMP shall be certified by the Manager, and amended as necessary until certified by him/her as meeting the conditions of this consent.

6. The SMP shall be prepared by a person with relevant professional qualifications and experience in the assessment of effects from log yard contaminants. The author shall state their qualifications and provide a written assurance that the site storm water management plan adopts best practice methods and is appropriate for the current scale of the log yard operation.

7. The certified SMP shall be kept on site and adhered to by the permit holder at all times.

8. The SMP shall be reviewed at the time of the first anniversary of the date of this consent being approved, and every five years thereafter, provided that the Manager may request, or the consent holder may offer, a review of the plan at any time to deal with any particular issues that may arise in connection with the operation of the activity and which may require an amendment to the SMP. Any revised SMP shall be recertified in accordance with the process as set out in condition 5 above.

9. a) With the exception of the construction phase covered by Coastal Permit (Construction) CC-2010-104665-00. For the Southern discharge point off Kaiti beach, entering water classified SA, the SMP shall not include any trigger levels for parameters that are of a standard less than that required under the following standards applying for Class SA water in the proposed Regional Coastal Environment Plan:

    I. The natural water temperature shall not be changed by more than 3^0 Celsius.

    II. The natural pH of the water shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or more than 8.5.

    III. There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances nor shall the waters emit objectionable odours:

    IV. The natural colour and clarity of the water s shall not be changed to a conspicuous extent.

    V. Aquatic organisms shall not be rendered unsuitable for human consumption by the presence of contaminants, and the water shall not be rendered unsuitable

    b) With the exception of the construction phase covered by Coastal Permit (Construction) CC-2010-104665-00. For the Northern discharge point, entering the harbour basin and into water classified SC, the SMP shall not include any trigger levels for parameters that are of a standard less than that required under the following standards applying for Class Sc water in the proposed Regional Coastal Environment Plan:

I. The natural water temperature shall not be changed by more than 3^0 Celsius.

II. The natural pH of the water shall not be changed by more than 0.1 unit and at no time shall be less than 6.7 or more than 8.5.

III. There shall be no destruction of natural aquatic life by reason of a concentration of toxic substances nor shall the waters emit objectionable odours:

IV. The natural colour and clarity of the water shall not be changed to a conspicuous extent.

10. A Stormwater Monitoring programme shall be included in the SMP. The monitoring programme shall define the frequency, identify sampling sites, methods of collection and testing. The results of such sampling and testing shall compare the water quality test results with the following trigger levels, except for when the design rainfall event is exceeded:

Parameter	Trigger level	Units
pH	**6.7 - 8.5**	-log (H^+)
Suspended Solids	**150**	gm/m^3
Total Petroleum Hydrocarbons (TPH)	**15**	gm/m^3
Zinc – Total	**0.015**	gm/m^3
Copper – Total	**0.0018**	gm/m^3
Lead – Total	**0.0056**	gm/m^3
Biological Oxygen demand (BOD_5)	**30**	gm/m^3

11. The consent holder shall compare the test results from the Stormwater Monitoring Programme against the applicable trigger levels in condition 10, identify any exceedances and take appropriate action as certified by the Manager in the SMP. In addition, a test report shall be forwarded to the Manager within one month of receiving the results from the testing laboratory and fulfil any requirements of the certified SMP and the conditions of these consents.

12. The SMP shall provide for daily sweeping of the sealed area that is not covered with logs and immediate sweeping of areas that become available for sweeping no later than 48 hours after a shipment of logs.

13. The SMP shall provide a means of monitoring the available storage capacity of the pre-treatment chambers and the Down Stream Defenders, on a monthly basis, to determine when the storage capacity is 80% full. When the chambers holding the separated out bark, debris, soil and any other collected material are 80%, or more full, the contractor or maintenance crews shall be informed immediately by the consent holder and the chambers emptied within one week.

Training

14. The consent holder shall ensure that all staff and contractors involved with the activities authorised by these permits receive sufficient training to operate, repair and maintain the stormwater collection and treatment processes in accordance with the SMP and these conditions.

Armouring of discharge points

15. The discharge points, as marked on drawing numbers 3933425-C-003 and 3933245-C-004 in the application shall be armoured such that the discharge shall not cause any erosion at or downstream of the discharge point.

Waste disposal

16. All waste generated by the activity is to be contained and disposed of to an approved site that is accredited for the disposal of the waste material.

Sampling and analysis

17. All sampling and analysis required to meet the conditions of these consents and the associated Stormwater Management Plan and Construction Management Plan shall be carried out by a IANZ registered laboratory or equivalent and procedures shall be in accordance with Standard Methods for the examination of Water and Wastewater prepared and published jointly by:

    American Public Health Association

    American Water Works Association

    Water Pollution Control Federation

    Twenty First or newer edition

Conditions specific only to Coastal Permit (Construction) CC-2010-104665-00 (Conditions 18-20)

Construction Management Plan

18. Prior to the commencement of the activity, the consent holder shall have an appropriately qualified professional prepare a Construction Management Plan (CMP) which shall demonstrate compliance with the conditions of this consent and relevant permitted activities. The CMP shall include, but not necessarily be limited to the following matters:

i. the name and contact details of the site construction manager who would act as a point of contact for residents and others who have concerns or queries regarding the construction activity.

ii. procedures for dealing with complaints.

iii. movement routes and volume of construction traffic on adjacent roads and the expected hours that this would occur.

iv. measures that will be used to ensure that vehicles leaving the site do not deposit soil or other debris off-site, and if they do the remedial measures that are to be taken to avoid any such deposit.

v. location of contractor parking.

vi. details of the silt and dust mitigation measures for the construction area and other areas, within the site area, that may not be planned for development at any time.

vii. details of temporary stormwater treatment and discharge methods and monitoring on those areas not included in the staged progress of the log yard sealing and associated storm water treatment and discharge.

19. The CMP shall be submitted to the Manager and amended as necessary until certified by him/her as meeting the conditions of this consent and relevant permitted activities. No construction work associated with the implementation of this consent shall be undertaken on site prior to the certification of the CMP.

20. The certified CMP shall be adhered to at all times.

Advice notes:

I. Should any archaeological deposits be identified during development the contractor/occupier should avoid effects to the deposits and contact the Historic Places Trust, Department of Conservation or Ngati Oneone immediately. Under Section 99 of the Historic Places Act 1993 it is an offence to destroy, damage or modify an archaeological site (recorded or unrecorded) without authority from the Trust and a fine of up to $100, 000 may be imposed upon any offender

2. For further information about the Gisborne District Council charging policy refer to the current Manual of Fees and Charges-Environment and Planning.

3. The conditions imposed as part of these consents if fully complied with does not in any way infer that lesser standards for stormwater discharge from any other Eastland Port, yards, wharves or facilities that may discharge into the Coastal Marine Area or into natural water shall be acceptable in meeting the responsibility of Eastland Port to discharge stormwater.

Reasons for the Decision:

1. The proposal is a means of safely discharging log yard storm-water.

2. Water quality standards for the Coastal receiving environment will be met

3. Management Plans shall be in place to ensure ongoing assurance that best practice is adopted and that the potential effects on the environment are avoided, mitigated or minimised.

Relevant Resource Management Act Sections:

RMA Section 12 restrictions on use of the Coastal Environment

RMA Section 14 restrictions relating to water

RMA Section 15 Discharge of contaminants into environment

Planning Documents Considered:

New Zealand Coastal Policy Statement

Regional Policy Statement for the Gisborne District (RPS)

Proposed Regional Coastal Environment Plan (PRCEP)

Transitional Regional Coastal Plan

Part-operative Combined Regional Land & District Plan (PoCRLDP)

Gisborne Urban Coastal Strategy

Principle Issue:

1. Contamination of coastal water.

Summary of Evidence Considered and Main Findings of Fact:

1. The application including an assessment of environmental effects
2. The nature of the discharge.
3. Technical information provided on the methods used for storm water treatment.
4. The material is unlikely to result in adverse effects on the environment and will provide improved management compared to current practices.