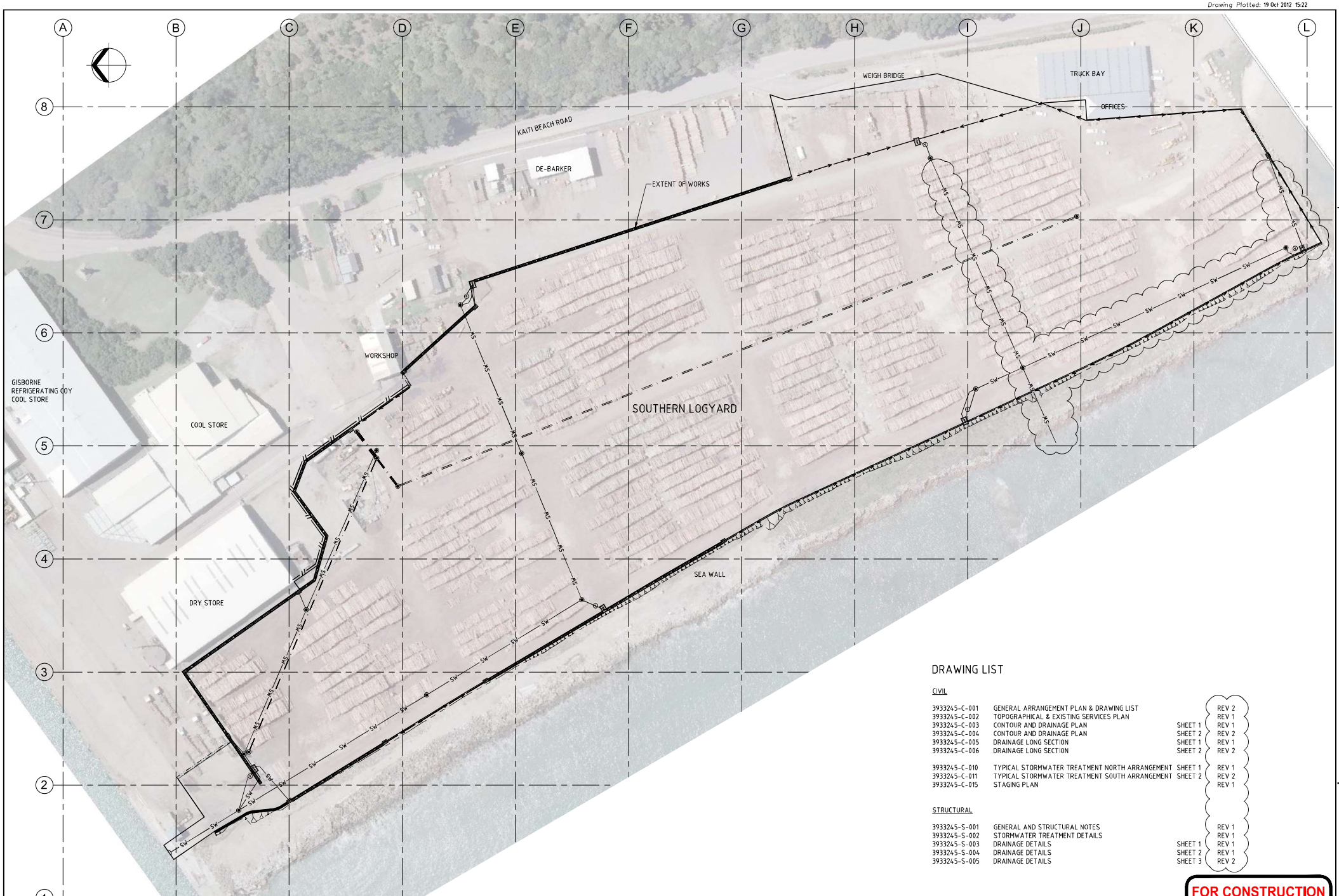
Appendix B

BECA Engineering Plans of Stormwater System Design and Layout



DRAWING LIST

CIVIL

3933245-C-001	GENERAL ARRANGEMENT PLAN & DRAWING LIST	REV 2
3933245-C-002	TOPOGRAPHICAL & EXISTING SERVICES PLAN	REV 1
3933245-C-003	CONTOUR AND DRAINAGE PLAN SHEET 1	REV 1
3933245-C-004	CONTOUR AND DRAINAGE PLAN SHEET 2	REV 2
3933245-C-005	DRAINAGE LONG SECTION SHEET 1	REV 1
3933245-C-006	DRAINAGE LONG SECTION SHEET 2	REV 2
3933245-C-010	TYPICAL STORMWATER TREATMENT NORTH ARRANGEMENT SHEET 1	REV 1
3933245-C-011	TYPICAL STORMWATER TREATMENT SOUTH ARRANGEMENT SHEET 2	REV 2
3933245-C-015	STAGING PLAN	REV 1

STRUCTURAL

3933245-S-001	GENERAL AND STRUCTURAL NOTES	REV 1
3933245-S-002	STORMWATER TREATMENT DETAILS	REV 1
3933245-S-003	DRAINAGE DETAILS SHEET 1	REV 1
3933245-S-004	DRAINAGE DETAILS SHEET 2	REV 1
3933245-S-005	DRAINAGE DETAILS SHEET 3	REV 2

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
2	SOUTHERN END NETWORK RECONFIGURED, DRAWING LIST UPDATED	BIL	GB	JEH	18.10.12
1	FOR CONSTRUCTION	MJH	GB	JDR	24.01.11
0A	UPDATED TO SHOW DRAWING REVISIONS	MJH	RBC	GB	11.01.11
0	FOR TENDER	KGA	RBC	JDR	28.10.10

Drawing Originator: Beca

Original Scale (A1) 1:750	Design	MJH	03.09.10
	Drawn	MJH	03.09.10
Reduced Scale (A3) 1:1500	Dwg Verifier	GDM	28.10.10
	Dwg Check	RBC	28.10.10

Approved For Construction* J. REVINGTON Date 24.01.11

* Refer to Revision 1 for Original Signature

Client: Eastland Port

Project: SOUTHERN LOGYARD REDEVELOPMENT

Title: GENERAL ARRANGEMENT PLAN AND DRAWING LIST

Discipline: CIVIL

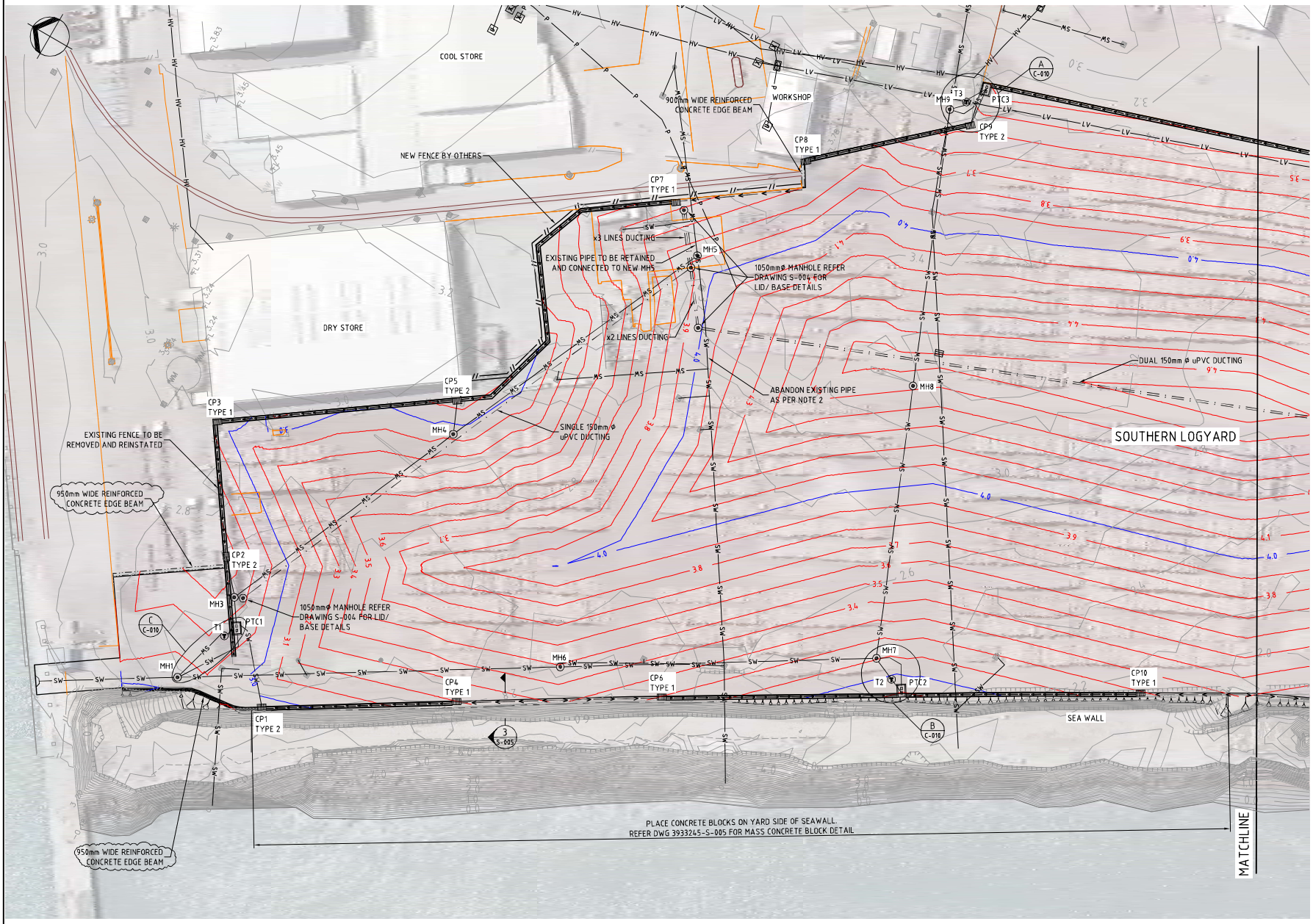
Drawing No. 3933245-C-001 Rev. 2

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

Document No. 3933245-C-001.dwg



LEGEND

EXISTING

- CATCHPIT
- HYDRANT
- POST
- VALVE
- POWER POLE
- MANHOLE
- CONTOURS
- PROPERTY BOUNDARY
- ROAD CENTRELINE
- EDGE OF SEAL
- CONCRETE EDGE/KERB/LINE
- TOP OF BANK
- TOE OF BANK
- TABLE/SWALE DRAIN
- METAL EDGE
- FENCE
- EXTENT OF FIELD/VEGETATION
- TRACK
- STORMWATER

NEW

- CATCHPIT
- INLET/OUTLET
- TREATMENT MANHOLE
- MANHOLE
- PRETREATMENT CHAMBER (PTC)
- ELECTRICAL DUCTING
- SLOT DRAIN
- DISHED DRAIN
- STORMWATER PIPE
- EARTHWORKS
- ABANDONED PIPE
- EXTEND OF WORKS
- EDGE BEAM
- PROPOSED 0.1m CONTOURS

DATA OBTAINED FROM OTHERS AND INCLUDED IN THESE DRAWINGS ARE AS FOLLOWS:

EASTLAND PORT LIMITED	PROPERTY BOUNDARIES, SERVICE PLANS, TOPOGRAPHIC SURVEY
LEVEL DATUM	GISBORNE VERTICAL DATUM 1926
COORDINATE SYSTEM	POVERTY BAY CIRCUIT 2000

NOTES:

1. FOR PIPE LONG SECTIONS REFER DRAWING 3933245-C-005.
2. UNLESS STATED OTHERWISE, ALL EXISTING STORMWATER PIPES ARE TO BE CAPPED WITH CONCRETE INFILL AND ABANDONED.
3. REFER DRAWING 3932345-S-002 AND -S-003 FOR TYPE 1 AND 2 CATCHPIT DETAILS.
4. DUCTING TO BE INSTALLED WITH DRAW WIRE AND WITH MINIMUM COVER OF 1.2m TO FINISHED SURFACE.
5. DUCTING TO BE BEDDED IN MINIMUM 100mm SURROUND OF SAND OR GRAVEL AP5

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	MJH	GBX	JDR	24.01.11
0	FOR TENDER	KGA	RBC	JDR	28.10.10

Drawing Originator: Beca

Original Scale (A1) 1:500
Reduced Scale (A3) 1:1000

Design	MJH	03.09.10	Approved For Construction* J. REVINGTON
Drawn	MJH	03.09.10	
Dsg Verifier	GDM	28.10.10	
Dwg Check	RBC	28.10.10	Date 24.01.11

* Refer to Revision 1 for Original Signature

Client: Eastland Port

Project: SOUTHERN LOGYARD REDEVELOPMENT

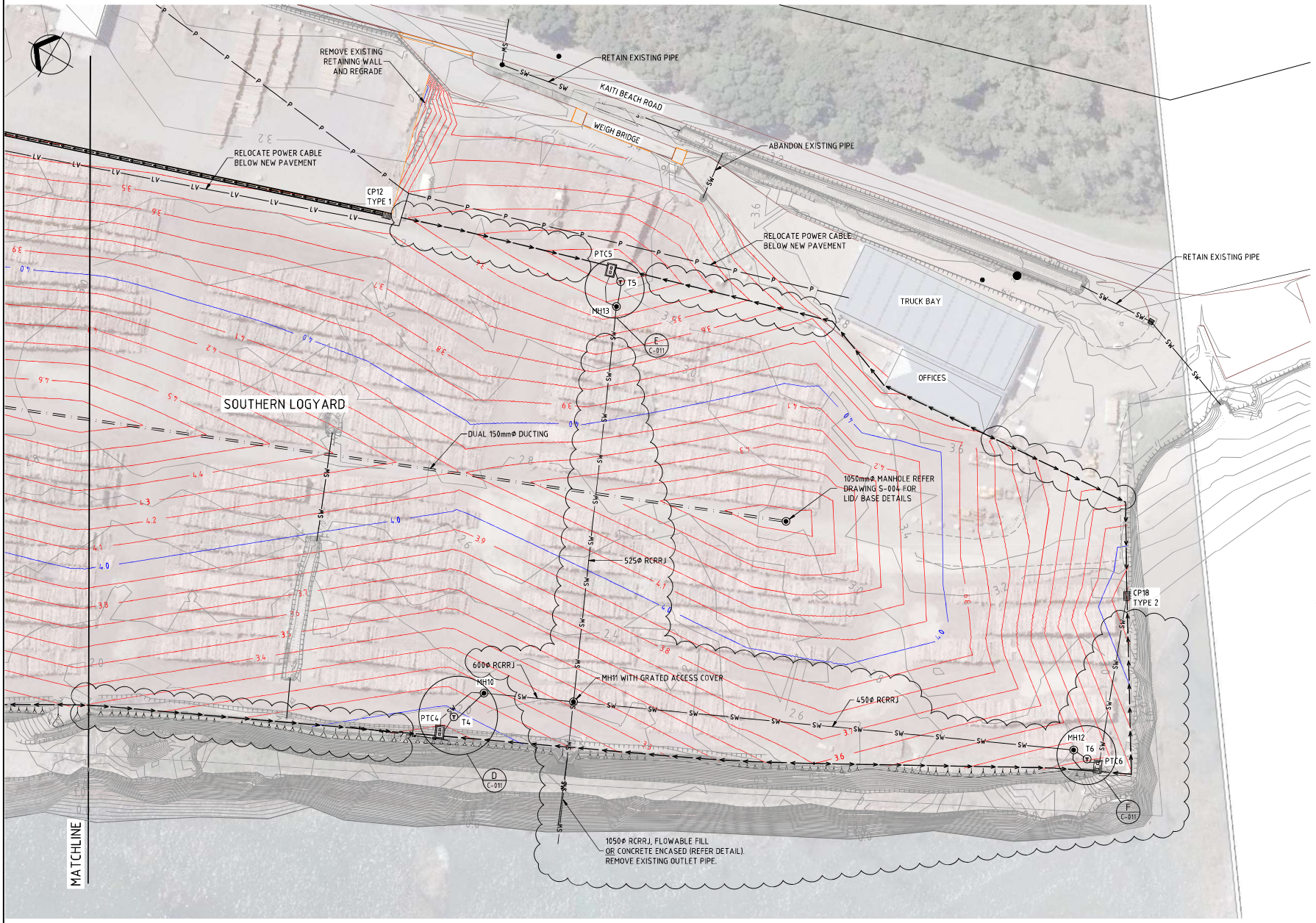
Title: CONTOUR AND DRAINAGE PLAN SHEET 1

Discipline: CIVIL

Drawing No. 3933245-C-003 Rev. 1

DO NOT SCALE

IF IN DOUBT ASK.



LEGEND

EXISTING

- CATCHPIT
- HYDRANT
- POST
- VALVE
- POWER POLE
- MANHOLE
- CONTOURS
- PROPERTY BOUNDARY
- ROAD CENTRELINE
- EDGE OF SEAL
- CONCRETE EDGE/KERB/LINE
- TOP OF BANK
- TOE OF BANK
- TABLE/SWALE DRAIN
- METAL EDGE
- FENCE
- EXTENT OF FIELD/VEGETATION
- TRACK
- STORMWATER

NEW

- CATCHPIT
- INLET/OUTLET
- TREATMENT MANHOLE
- MANHOLE
- PRETREATMENT CHAMBER (PTC)
- ELECTRICAL DUCTING
- SLOT DRAIN
- DISHED DRAIN
- STORMWATER PIPE
- EARTHWORKS
- ABANDONED PIPE
- EXTEND OF WORKS
- EDGE BEAM
- PROPOSED 0.1m CONTOURS

DATA OBTAINED FROM OTHERS AND INCLUDED IN THESE DRAWINGS ARE AS FOLLOWS:

EASTLAND PORT LIMITED	PROPERTY BOUNDARIES, SERVICE PLANS, TOPOGRAPHIC SURVEY
LEVEL DATUM	GISBORNE VERTICAL DATUM 1926
COORDINATE SYSTEM	POVERTY BAY CIRCUIT 2000

NOTES:

1. FOR PIPE LONG SECTIONS REFER DRAWING 3933245-C-005.
2. UNLESS STATED OTHERWISE, ALL EXISTING STORMWATER PIPES ARE TO BE CAPPED WITH CONCRETE INFILL AND ABANDONED.
3. REFER DRAWING 3932345-S-002 AND -S-003 FOR TYPE 1 AND 2 CATCHPIT DETAILS.
4. DUCTING TO BE INSTALLED WITH DRAW WIRE AND WITH MINIMUM COVER OF 1.2m TO FINISHED SURFACE.
5. DUCTING TO BE BEDDED IN MINIMUM 100mm SURROUND OF SAND OR GRAVEL AP5

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
2	PIPE NETWORK RECONFIGURED, SLOT DRAINS REPLACED BY CHANNELS	BIL	GB	JEH	18.10.12
1	FOR CONSTRUCTION	MJH	GB	JDR	24.01.11
0A	FOR TENDER - DESIGN AMENDED	MJH	JEH	JDR	22.11.10
0	FOR TENDER	KGA	RBC	JDR	28.10.10

Drawing Originator: Beca

Original Scale (A1) 1:500	Design	MJH	03.09.10
	Drawn	MJH	03.09.10
Reduced Scale (A3) 1:1000	Dwg Verifier	GDM	28.10.10
	Dwg Check	RBC	28.10.10

Approved For Construction* J. REVINGTON Date 24.01.11

* Refer to Revision 1 for Original Signature

Client: Eastland Port

Project: SOUTHERN LOGYARD REDEVELOPMENT

Title: CONTOUR AND DRAINAGE PLAN SHEET 2

Discipline: CIVIL

Drawing No.: 3933245-C-004 Rev.: 2

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

Document No. 3933245-C-004.dwg

Appendix C

EPL Stormwater System Inspection and Maintenance Schedule

Inspection and Maintenance Schedule

Activity	Frequency	Responsible
Log Yard Bark Debris Recovery	Daily	Log yard Operations
General site Housekeeping	Daily	Log yard Operations
Stormsheild Maintenance	Weekly or after rainfall	Logyard operations foreman
Downstream Defender – Visual Inspection	Monthly	Logyard operations foreman
Downstream Defender –clean-out of stored floatables and sediment	Biannually or where triggered by visual inspection	Logyard operations foreman
Grit Trap– Visual Inspection	Weekly	Logyard operations foreman
Grit Trap– Clean-out of accumulated sediment	Biannually or where triggered by visual inspection	Logyard operations foreman
API – Visual Inspection	Weekly or where triggered by event	Logyard operations foreman
API – Clean-out of accumulated sediment and accumulated hydrocarbonns	Bi-annually or where triggered by visual inspection	Logyard operations foreman
Stormwater Monitoring and reporting	3 monthly	Log Yard Manager
Cesspit Maintenance	Monthly	Logyard operations foreman
Stormshield Maintenance	Quarterly	Logyard operations foreman

Appendix D

Hynds Downstream Defender Brochure

HYNDS ENVIRONMENTAL

ENVIRONMENTAL PROTECTION SYSTEMS

HYNDS DOWNSTREAM DEFENDER®

Advanced vortex technology for high performance stormwater separation

protecting our environment

DOWNSTREAM DEFENDER

The Hynds Downstream Defender is an advanced Hydro-dynamic Vortex Separator that is specifically designed to provide high removal efficiencies of settleable solids and floatables over a wide range of flow rates.

Its flow-modifying internal components have been developed from extensive full scale testing, CFD modelling and over thirty years of hydro-dynamic separation experience in wastewater and stormwater applications.

These internal components distinguish the Hynds Downstream Defender from simple swirl-type devices and conventional oil/grit separators by minimising turbulence and head-losses, enhancing separation, and preventing re-suspension of previously stored pollutants.

The high removal efficiencies and inherent low head-losses of the Hynds Downstream Defender allow for a small footprint, making it a compact and economical solution for non-point source pollution.

Advantages

- Removes sediment, floatables, oils and grease
- Small footprint
- No pollutant re-entrainment
- No loss of treatment capacity between clean-outs
- Low head-loss
- Efficient over a wide range of flows
- Easy to install
- Low maintenance
- Easy to specify

Applications

The Hynds Downstream Defender's small footprint makes it an ideal choice wherever stormwater treatment is required. Installation locations include:

- Small footprint
- Streets and roadways
- Parking areas
- New developments
- Construction sites
- Vehicle maintenance yards
- Industrial and commercial facilities
- Airports, truck stops, shopping malls, restaurants, supermarkets, etc.

The Hynds Downstream Defender can also be used as a pre-treatment device for detention systems, mitigating wetlands, swales, filters or other polishing systems.

No Pollutant Re-entrainment

Most stormwater treatment devices collect sediment within the treatment vessel. This reduces treatment capacity, compromises removal efficiency and increases the risk of re-entrainment between clean-outs

The Hynds Downstream Defender is unique as the internal components create isolated zones for pollutant capture and storage. Separate oil and sediment storage areas are thereby established outside the main treatment flow path. Isolating the storage zones maintains treatment capacity and removal efficiency and prevents pollutant re-entrainment between clean-outs.

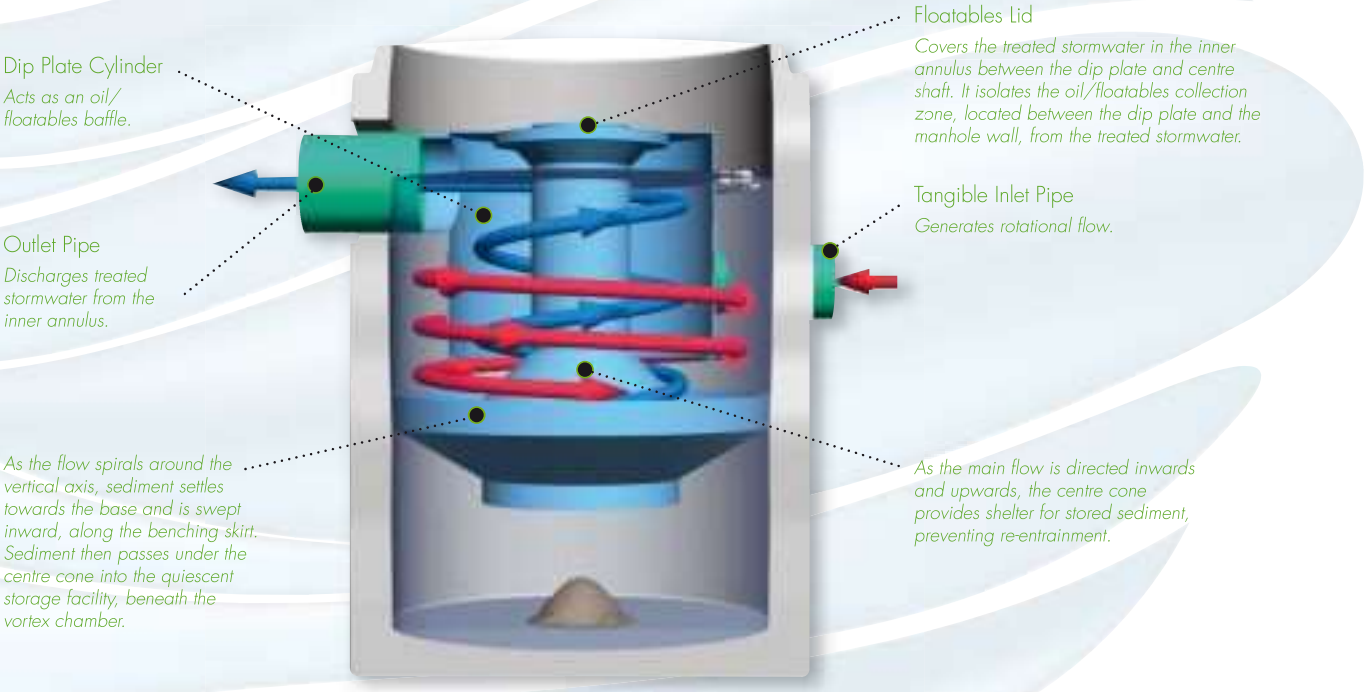
How it Works

The Hynds Downstream Defender consists of a concrete cylindrical vessel with a sloping base and internal components. Raw liquid is introduced tangentially into the side of the cylinder and spirals down the perimeter allowing heavier particles to settle out by gravity and the drag forces on the wall and base of the vessel.

The base of the Hynds Downstream Defender is formed at a 30 degree angle. As the flow rotates about the vertical axis, solids are directed towards the base of the vessel where they are stored in a collection facility. The internal components direct the main flow away from the perimeter and back up the middle of the vessel as a narrower spiralling column rotating at a slower velocity than the downward flow.

By the time the flow reaches the top of the vessel, it is virtually free of solids and is discharged through the outlet pipe.

How it Works



Low Head-loss

The Hynds Downstream Defender has large clear openings and no internal restrictions. Without internal orifice plates or weirs, hydraulic losses are minimised. The results are:

- Low headlosses (see table below)
- Reduced risk of blockage
- No upstream flooding

Performance

The device operates over a wide range of flows. At design flow the Hynds Downstream Defender is designed to remove 90% of all particles larger than 150 microns (0.15mm) with a specific gravity of 2.65. At lower flows this performance will increase.

The system also captures a large proportion of floatables, oils and grease and features a bypass system for flows greater than the capacity flow.

Sizing and Design

The sizing of a Hynds Downstream Defender is generally based on treating a 1 in 3 month storm or the "first flush".
The capacity through the system is shown below. At flows greater than capacity, the stormwater will bypass the Hynds Downstream Defender via an upstream manhole.

Installation

Installing a Hynds Downstream Defender is as simple as installing a standard manhole. It typically requires significantly less excavation than other flow through systems.

The Hynds Downstream Defender is delivered to site in a kit-set form, ready to be installed into the excavated hole and connected to the stormwater system.

Maintenance

Units are typically installed in locations that are easily accessible for a maintenance vehicle. A simple vactor procedure is used to periodically remove the pollutants.

Two ports at ground level provide access for inspection and clean-out of stored floatables and sediment. In most situations, bi-annual clean-outs are recommended.

Hynds Environmental offers maintenance contracts on all Downstream Defenders.

Detailed maintenance instructions and maintenance logs are also available.

Unit Size (mm)	Design Flow (l/s)	Capacity Flow (l/s)	Inlet Pipe Diameter (mm)	Outlet Pipe Diameter (mm)	Head-loss at Design Flow (mm)	Head-loss at Capacity (mm)	Minimum Sediment Storage (m^3)
1200	20	85	225	300	75	575	0.55
1800	85	200	300	450	175	825	1.60
2550	200	425	450	600	225	575	4.05
3000	370	700	600	750	250	550	6.65

Hynds Environmental Systems Limited

North Island

PO Box 17388, Greenlane,
Auckland 1546, New Zealand
Telephone +64 9 571 0090
Facsimile +64 9 571 0091
Email sales@hyndsenv.co.nz

South Island

PO Box 16552, Hornby,
Christchurch 8441, New Zealand
Telephone +64 3 344 1370
Facsimile +64 3 344 1375
Email mikes@hyndsenv.co.nz

www.hynds.co.nz

Hynds Pipe Systems Ltd manufactures the Downstream Defender under license from Hydro International. New Zealand Patent Number 197894.

Reference EV May 2007

Appendix E

EPL Downstream Defender Inspection and Maintenance Form

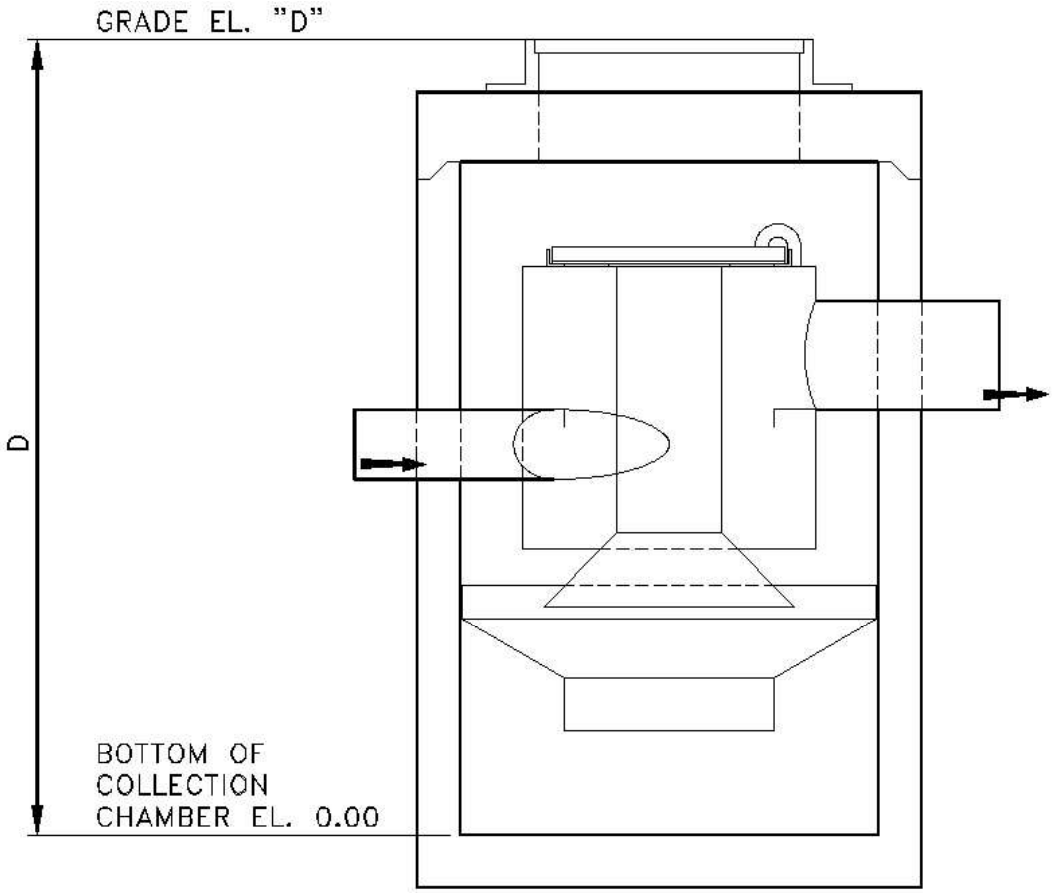
Downstream Defender Maintenance Log

Downstream defender location	
Inspector/contractor	
Contact name	
Company name	
Address	
Telephone	

Installation Date: _____/_____/_____

Downstream Defender Diameter: _____

Downstream Defender Depth: ("D"): _____



Downstream Defender Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth ("D" less measurement)	Volume of Sediment Removed	Site Activity/ Comments

Appendix F

Z Energy Stormwater Management Plan

C3 Gisborne Fuel Facility Emergency Management Plan

Stop, think, act

The first priority in the event of an emergency is for the safety of all people present
Raise the alarm

Location: Eastland Port, Gisborne

Emergency phone numbers

Dial 11 for Fire/Police/Ambulance

- Dial from a safe place
- Use a cordless or mobile phone if practical
- Tell the operator which emergency service you want
- Wait until that service answers
- Give the following address:

(Sitename): **Eastland Port** *(Street name):* **Kaiti Beach Road** *(City):* **Gisborne**

- Do not hang up until told to do so by emergency service
- Ensure someone is available to direct the emergency services to the scene

Immediately after calling 111, activate the Emergency Procedures

In an emergency

Contact tree

	Name	Department	Phone (Day)	Phone (Night)	Phone (Mobile)
Site and company contacts					
Manager					
Supervisor					
Safety officer					
First aider					
First aider					
Approved handler					
Eastland Port					
Z Energy			0800 474 355	0800 474 355	

Spill procedure checklist

You must know and understand what to do if a spill occurs
Your first consideration is the immediate safety of all people present
Next call emergency services
Then contain the spill but only if it safe to do so
If help is available, allocate responsibilities to others to create a competent emergency team to deal will spill

Spill checklist

1. Raise the alarm
2. Stop fuel flow if possible
3. Evacuate people if necessary
4. Contain spill if possible with spill kit
5. If spill is to large call for specialist services
6. Recover product or dispose of waste safely

Precautions

> Do not endanger yourself
> Wear personal protective equipment (PPE)_
> Do not leave the area unattended if there is a risk of a further spill
> Advise C3 manager of spill

Evacuation/assembly points _____

Fire procedure checklist

You must know and understand what to do if a fire occurs
Your first consideration is the immediate safety of all people present
Next call emergency services
Then contain the fire but only if it safe to do so
If help is available, allocate responsibilities to others to create a competent emergency team to deal will the fire

Fire checklist	Precautions
1. Raise the alarm	> Do not endanger yourself
2. Evacuate people if necessary	> Make sure you have an escape route
3. Activate any emergency shutdown systems	> Do not leave the area unattended if there is a risk of a further outbreak
4. Contain fire if possible with extinguisher	
5. Call emergency services (dial 111)	> Advise C3 manager of fire

Evacuation/assembly points _____

Stormwater Management Plan

The stormwater system has been designed to prevent release of hydrocarbons to the environment, but needs to be properly operated and maintained.

Operations

- All drains must be kept clear of sediment and debris.
- In the event of a spill refer to the Emergency Procedures.
- All sites have a Spill Response Kit. This must be stocked accordingly and be readily identifiable and accessible when the facility is operating.
- Contaminants are to be recovered to the extent practicable. Access the Spill Kit and place absorbent material on the spill. Do not use detergents or degreasers or other liquids. Spills contained within the temporary sock bund can be subsequently recovered.
- Used materials are to be stored in the designated bin and are to be disposed of at an approved disposal site
- Contact the Council's 24 hour Pollution Hotline ***0800-653-800*** for any spill over 20 litres.

Maintenance

- Drains are regularly inspected (minimum weekly) and any debris is removed
- The interceptor and drains are scheduled for cleaning annually. More frequent cleaning can be requested if observations indicate it to be necessary.
- If you observe silt build-up of 150mm depth or product thickness greater than 3 mm or product in the interceptor or excessive silt build up in the drains then this should be removed.

Spill Kit – Minimum Contents

Product	**Size**	**Minimum Quantity**
Wheelie bin	240l	1
Drain cover mat		1
Safety Road Cones	450mm high	2
M35 MATASORB Containment absorbent socks	6.1m	2
M30 MATASORB Containment absorbent socks	1.2m	5
M65 MATASORB Containment absorbent pillows		5
M75 MATASORB Containment absorbent pads		50
Heavy duty disposal bag		3
Caution tape roll		1
PVC gloves pair)		1
Wall poster		1
Instruction sheet		1
Class 3 flammable stickers		3
Contents list		1
Security tags		3
Optional Premium floor sweep	10kg	1

Appendix G

EPL Mobile Plant Inspection Form

Fleet Check List

Week Start Date	/ /	Machine Type	
Machine Location		Machine Model	

Daily Hour Readings	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Total Hours
Start								
Finish								
Total								

What Needs Attention	✓ Tick if OK			✕ Cross needs Attention				Next Service:
Tyres								
Engine Oil								
Water								
Instrument Gauges								
Lights								
Drains Air Tanks								
Transmission Oil								
Hydraulic Oil								
Hydraulic Hoses								
Steering								
Braking								
Machine Greased								
Fire Extinguisher								
Minor Damage If so, detail in comments area								

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Drivers Name							
Drivers Signature							
Drivers Name							
Drivers Signature							

Comments:

Appendix H

EPL Oil and Grit Interceptor Inspection and Maintenance Form

OIL AND GRIT TRAP MAINTENANCE LOG

Date	Depth of Grit in Chamber (mm)	Thickness of Oil layer in separator (mm)	Pump out, maintenance works and other remarks	Signature

Appendix I

EPL Stormwater Outlet Inspection and Maintenance Form

Outfall Inspection Report Form

Consent Number: _____ **File Number:** _____

Date: _____ Time: _____

Processing Officer: _____ Investigating Officer: _____

Site Location: _____

Consent Holder: _____

Site Contact: _____ Phone: _____

"As built" plans available: Yes/No

Inspection Item	N/A	Checked Yes	Checked No	Satisfactory	Unsatisfactory
1. Physical Characteristics					
Location as per design plans					
Pipe size as per plans (Size:…….mm diameter)					
Orientation to stream channel (no more than 45^{o} to stream channel).					
2. Structural Components					

Inspection Item	N/A	Checked Yes	Checked No	Satisfactory	Unsatisfactory
Condition of pipe (good, cracking in top of pipe, reo exposed)					
Condition of headwall (good, cracking, reo exposed)					
Components sealed					
Settlement (general, tilting, separation)					
3. Erosion Control *(Sketch in plan and long section on back of page)*					
Riprap Size:…….*mm Diameter* Area Extent:……..m *x*……..m Length behind pipe (if no headwall):……..m					
Waiora Filter Depth of basin:……..m					
Baffles Height:…….m Width:……..m					

Inspection Item	N/A	Checked Yes	Checked No	Satisfactory	Unsatisfactory
Other (give details)					
4. Ground Stability					
Stable around headwall					
Seepage in slope above outfall					
nstability in slope above outfall					
5. Downstream Characteristics					
Condition of bank opposite end of pipe					
Slumping of banks (note extent in sketch)					

Inspection Item	N/A	Checked Yes	Checked No	Satisfactory	Unsatisfactory
Vegetation in channel (Type:……)					
Type of stream bottom: Rock ☐ Stony Mud ☐ Soft bottom					
Relative Slope > 10 % ☐ 10 - 2 % ☐ < 2 % ☐					
6. Sediment					
Depth in pipe …… … (NB: Indicator of upstream problem)					

Action to be taken:

If any of the answers to the above items are checked unsatisfactory, a time frame needs to be established for their correction and repair and a follow up inspection date noted.

☐ No action necessary - continue routine inspections.

☐ Correct noted facility deficiencies by: _____
(List details of work that needs to be done below)

☐ Photographs of unsatisfactory items taken

Details of repairs required/Inspectors comments:

_____
_____
_____
_____
_____

Signature of Inspector: _____ **Date:** _____

Reinspection Follow Up

Facility repairs were indicated and completed. Site reinspection is necessary to verify corrections of repairs

- Site Reinspection accomplished on: _____

☐ Site reinspection was **satisfactory**
Next routine inspection is scheduled for: _____

☐ Site reinspection was **unsatisfactory**

Comments: _____

Signature of Inspector: _____ **Date:** _____

Appendix J

Andrew Stewart Limited
Standard Operating Procedure

STANDART OPERATING PROCEDURE

Stormwater Sampling

1.0 Purpose and Scope

1.1 This Standard Operating Procedure (SOP) provides guidance for collecting stormwater grab (also called dip) samples. The scope of this SOP covers the collection of stormwater grab samples. The stormwater samples may be collected from a variety of sources, including outfalls and manholes

1.2 As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with Program requirements for technical planning and review.

2.0 Safety Requirements

The health and safety considerations for the work associated with this SOP, including both potential physical and chemical hazards, will be addressed in the Sampling Contractor's site-specific health and Safety Plan (HASP) approved by EPL.

In no event are personnel to enter manholes or enter areas with unstable ground. Streams and rivers should not be entered without specific safety precautions in place.

2.1 Physical Hazards Associated with Stormwater Sampling

- Use proper tools to lift manhole covers as back strain may result
- Use poles or similar to collect grab samples from depth within manholes
- Stay away from manhole edges and do not enter manholes
- Do not collect samples from outfalls where flooding is occurring or where footing is not secure.

3.0 Qualifications and Training:

3.1 Training and Qualifications

- The individual executing these procedures must have read, and be familiar with, the requirements of this SOP.

3.2 Responsibilities:

- The Infrastructure Manager is responsible for ensuring that monitoring well sampling activities comply with this procedure. The Infrastructure Manager is responsible for ensuring that all field-sampling personnel involved in monitoring well sampling shall have the appropriate education, experience, and training to perform their assigned tasks.
- The Infrastructure Manager is responsible for ensuring overall compliance with this procedure.
- The Operations Manager is responsible for ensuring that all field sampling personnel follow these procedures.

- Field sampling personnel are responsible for the implementation of this procedure.
- The field sampler and/or task manager is responsible for directly supervising the groundwater sampling procedures to ensure that they are conducted according to this procedure and for recording all pertinent data collected during sampling.

4.0 Required Equipment

For each monitoring location, you will need:

- One pair powder-free, disposable nitrile or latex gloves
- One clean bottle for collecting the sample
- One chilly bin for shipping the sample
- Ice
- Self-sealing bags
- Laboratory-supplied bottles
- One field notebook, waterproof pens
- One camera for a visual record of sampling conditions

You may also need a grab pole, zip ties, or similar equipment to reach sampling points.

5.0 Procedure

5.1 Method Summary

Though it is not always feasible to collect discernable stormwater flows (discharges may be too shallow to collect a sample with a sample bottle, for example), a grab sample can be taken from any of several possible locations where water is flowing, including a pipe, swale or ditch. The site specific sampling plans and consents detail the areas/outfalls to be sampled.

1.) Collect sample in accordance with consent and management plan requirements (i.e., first flush, composite, etc.). Before you go outside, write the name of the person collecting the sample and the date the sample was collected on the collection bottle label.

2.) Put on the clean gloves. This prevents the possibility of your fingers or hands accidentally contaminating the sample. And when you remove the bottle's cap, be sure to place it on an uncontaminated surface (not on the ground) to prevent cross-contamination.

3.) Hold the bottle so the opening is facing upstream.

4.) Take care not to disturb the bottom of the stormwater flow, or walk in the discharge - both situations could contaminate your sample. Collect the sample from as close to the middle of the stormwater flow as possible; this provides the most representative sample of that discharge.

5.) Fill the lab's collection bottle as instructed by the lab. When preservatives are present in the bottle, fill a decontaminated container (see Standard Operating Procedure for Equipment Decontamination) from the

flowing water and use this to fill the laboratory-provided bottle. Be sure to handle the preservative carefully; most are acids or bases and can cause skin or eye irritation if not handled correctly.

6.) Once filled, cap the sample bottle, write the time the sample was collected and place it inside a re-sealable plastic bag. Place the bag into a chilly bin and prepare the chilly bin for pickup or shipment to the lab. Take notes about how the sampling event went, and record a photo to document the facility's conditions. Detailed instructions are provided in the SOP: Sample Handling, Storage, and Shipping and SOP: Sample Handling, Storage, Shipment, and Recordkeeping.

6.0 Quality Control and Assurance

6.1 Field personnel will follow specific quality assurance (QA) guidelines as outlined in the project-specific scope of works. The goal of the QA program should be to ensure precision, accuracy, representativeness, completeness, and comparability in the project sampling program.

6.2 Quality control (QC) requirements for sample collection are dependent on project-specific sampling objectives. The project-specific scope of works will provide requirements for sample preservation and holding times, container types, sample packaging and shipment, as well as requirements for the collection of various QC samples such as trip blanks, field blanks, equipment rinse blanks, and field duplicate samples. Typically, duplicates are collected at a minimum rate of 10%.

7.0 Procedures, standards and references

SOP, *Recordkeeping, Sample Labelling, and Chain-of-Custody*.

SOP, *Equipment Decontamination*.

8.0 Attachments

Attachment 1 – Stormwater Sample Collection Record

Attachment 1

Example Stormwater Sample Collection Record

Eastland Port Ltd

Site Name: _____

Stormwater Sampling Field Sheet

Sampling Date:

Samplers Name:

Reason for sampling: quarterly monitoring additional monitoring

other (describe):

Rainfall event start time: am / pm

Event rainfall depth: mm

Site	Site location				
	Site code				
Sample 1	Sample ID				
	Sample time				
	Pipe flow depth				
Sample 2	Sample ID				
	Sample time				
	Pipe flow depth				

Observations	Water colour				
	Debris				
	Foams / scums				
	Sediment plumes below outfall?				
Photos	Photo number(s) Time				

Samples sent to lab: courier company:

Date: Time: CoC form completed: ☐

STANDARD OPERATING PROCEDURE

Sample Handling, Shipment, Recordkeeping, and Chain-of-Custody

1.0 Purpose and Scope

1.1 The purpose of this standard operating procedure is to establish standard protocols for all field personnel for use in maintaining field and sampling activity records, writing sample logs, labelling samples, ensuring that proper sample custody procedures are utilized, and completing chain-of-custody/analytical request forms.

1.2 As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with Program requirements for technical planning and review.

2.0 Safety

Refer to site-specific Health and Safety Plan (HASP).

3.0 Terms and Definitions

3.1 **Field Forms and Notes**

Example field forms and notes are provided in Attachment 1 and are to be completed for all sampling events.

3.2 **Chain-of-Custody**

Chain-of-custody (COC) is documentation of the process of custody control. Custody control includes possession of a sample from the time of its collection in the field to its receipt by the analytical laboratory, and through analysis and storage prior to disposal. An example COC form is provided in Attachment 2.

4.0 Training and Qualifications

4.1 The Infrastructure Manager is responsible for determining which team members shall record information in the field notes and for checking sample logbooks and COC forms to ensure compliance with these procedures. The Infrastructure Manager shall review COC forms on a monthly basis at a minimum.

4.2 The Operations Manager is responsible for ensuring that all field personnel follow these procedures. The Infrastructure Manager is responsible for verifying that the COC/analytical request forms have been completed properly and match the sampling and analysis plan. The Infrastructure Manager is responsible for notifying the laboratory in writing if analytical request changes are required as a corrective action.

4.3 All field personnel are responsible for following these procedures while conducting sampling activities. Field personnel are responsible for recording pertinent data into the logbook to satisfy project requirements and for attesting to the accuracy of the entries by dated signature.

5.0 Sample Handling and Shipping

5.1 Sample Handling

Immediately following collection, label all samples as described in Section 6, below. The lids of the containers shall not be sealed with duct tape, but shall be placed directly into self-sealing bags. Prior to shipping, wrap glass sample containers on the sides, tops, and bottoms with bubble wrap or other appropriate padding and/or surround them in cushioning material to prevent breakage during transport. Pack all glass containers for water samples in an upright position,

Place the sample containers in an insulated chilly bin with frozen gel packs (e.g., "blue ice") or ice in sealed self-sealing bags. Samples should occupy the lower portion of the chilly bin, while the ice should occupy the upper portion. Place an absorbent material (e.g., proper absorbent cloth material such as a Chucks wipe or paper towels) on the bottom of the chilly bin to contain liquids in case of spillage. Leave as much air as possible in the self-sealing bags to provide cushioning. Pack as required to avoid breakage of sample containers.

Prior to shipment, replace the ice or cold packs in the chilly bins so that samples will be maintained as close to 4 degrees Celsius (°C) as possible from the time of collection through transport to the analytical laboratory. Ship samples within 24 hours or on a schedule allowing the laboratory to meet holding times for analyses. The procedures for maintaining sample temperatures at 4°C pertain to all field samples. Samples are typically shipped to Hill Laboratories in Hamilton. Shipping address information is provided in Attachment 3.

If samples cannot be shipped the same day as they are collected, the chilly bin should not be sealed. The ice should be replenished/replaced before shipping. In no event may samples be stored in a refrigerator that is used for food; however, samples may be temporarily stored in a refrigerator that is clearly labelled "NOT FOR FOOD", or similar.

5.2 Shipment

When a chilly bin is ready for shipment to the laboratory, place the chain-of-custody form inside a self-sealing bag and tape it to the inside of the insulated chilly bin. Then, seal the chilly bin with waterproof tape and label it with "Fragile," "This-End-Up" (or directional arrows pointing up), or other appropriate notices. Tape any drain plugs shut as well. Tape the address label to the top of the chilly bin.

6.0 Recordkeeping

This section provides standards for documenting field activities, labelling the samples, documenting sample custody, and completing COC/analytical request forms. The standards presented in this section shall be followed to ensure that samples collected are maintained for their intended purpose and that the conditions encountered during field activities are documented. The laboratory-provided COC form or computer-generated COC (provided in Appendix A) shall be used.

6.1 Recordkeeping

The field forms and notes serve as the primary record of field activities. Make entries chronologically and in sufficient detail to allow the writer or a knowledgeable reviewer to reconstruct each day's events. Field forms such as ground-water sampling forms will also be used.

6.2 Sample Labelling

Affix a sample label with adhesive backing to each individual sample container. Record the following information with a waterproof marker on each label:

- COC sample number;
- Date and time of collection;
- Sampler's initials; and
- Analysis to be performed on sample (if possible; there may not be adequate room on the label).

6.3 Custody Definition

For samples intended for analysis, sample custody procedures shall be followed through collection, transfer, analysis, and disposal to ensure that the integrity of the samples is maintained. A description of sample custody procedures is provided below.

6.4 Sample Collection Custody Procedures

A sample is considered to be in custody if one of the following conditions is met:

- It is in one's actual physical possession or view;
- It is in one's physical possession and has not been tampered with (i.e., it is under lock or official seal);
- It is retained in a secured area with restricted access; or
- It is placed in a container and secured with an official seal such that the sample cannot be reached without breaking the seal.

Field personnel shall also log individual samples onto COC forms (laboratory-supplied or computer generated) when a sample is collected. These forms may also serve as the request for analyses.

The field sampler(s) will also sign the COC form signifying that they were the personnel who collected the samples. The COC form shall accompany the samples from the field to the laboratory. When a chilly bin is ready for shipment to the analytical laboratory, the person delivering the samples for transport will sign and indicate the date and time on the accompanying COC form.

The COC form shall be placed inside a self-sealing bag and taped to the inside lid of the chilly bin. Each chilly bin must be associated with a unique COC form. Whenever a transfer of custody takes place, both parties shall sign and date the accompanying COC forms. One exception is when the samples are shipped; the delivery service personnel will not sign or receive a copy because they do not open the chilly bins. The laboratory shall attach copies of the completed COC forms to the reports containing the results of the analytical tests. Example COC forms are provided in Attachment 2 and the notes on the following page apply to completing COC forms.

Following are notes related to completing the COC form.

Comments: This area shall be used by the field team to communicate observations, potential hazards, or limitations that may have occurred in the field or additional information regarding analysis (e.g., a specific metals list, samples expected to contain high analyte concentrations). If a sample appears heavily contaminated, **field staff** must enter this information to alert the laboratory.

Type of Containers: Write the type of container used (e.g., 1-liter glass amber, for a given parameter in that column).

Preservatives: Field personnel should indicate on the COC the correct preservative used for the analysis requested. Indicate the pH of the sample (if tested) in case there are buffering conditions found in the sample matrix.

Sample Identification (ID) Number: This is typically a five-character alphanumeric identifier used by the contractor to identify samples. The use of this identifier is important since the laboratories are restricted to the number of characters they are able to use. Sample numbering shall be in accordance with the project-specific sampling and analysis plan.

Description (Sample ID): This name will be determined by the location and description of the sample, as described in the project-specific sampling and analysis plan. This sample identification should not be submitted to the laboratory, but should be left blank. If a computer COC version is used, the sample identification can be input, but printed with this block black. A cross-referenced list of the COC Sample Number and sample identification must be maintained separately.

Date Collected: Record the collection date in order to track the holding time of the sample. Note: For trip blanks, record the date it was placed in company with samples.

Time Collected: When collecting samples, record the time the sample is first collected. Use of the 24-hour military clock will avoid a.m. or p.m. designations (e.g., 1815 instead of 6:15 p.m.). Record local time; the laboratory is responsible for calculating holding times to local time.

Lab Quote Number: Number from the original lab quote.

Matrix/QC: Identify the matrix (e.g., water, soil, air, tissue, fresh water sediment, marine sediment, or product). If a sample is expected to contain high analyte concentrations (e.g., a tank bottom sludge or distinct product layer), notify the laboratory in the comment section. Mark an "X" for the sample(s) that have extra volume for laboratory QC matrix spike/matrix spike duplicate (MS/MSD) purposes. The sample provided for MS/MSD purposes is usually a field duplicate.

Analytical Parameters: Enter the parameter by analysis desired (e.g., BTEX, PAHs, etc.). Whenever practicable, list the parameters as they appear in the laboratory subcontract to maintain consistency and avoid confusion.

If the COC does not have a specific box for number of sample containers, use the boxes below the analytical parameter, to indicate the number of containers collected for each parameter.

Sampler's Signature: The person who collected samples must sign here.

Relinquished By: The person who turned over the custody of the samples to a second party other than an express mail carrier, such as FedEx or DHL, must sign and date here.

Received By: Typically, a representative of the receiving laboratory signs and dates here. Or, a field crew member who delivered the samples in person from the field to the laboratory might sign here

Received By (Laboratory): This space is for the final destination (e.g., at a subcontracted laboratory). A representative of the final destination (e.g., subcontracted laboratory) must sign and date here.

Lab No. and Questions: This box is to be filled in by the laboratory only.

Total # of Containers: Sum the number of containers in that row.

Totals: Sum the number of containers in each column. Because COC forms contain different formats depending on who produced the form, not all of the information listed above may be recorded; however, as much of this information as possible shall be included.

7.0 Quality Control and Assurance

7.1 Recordkeeping, sample labelling, and chain-of-custody activities must incorporate quality control measures to ensure accuracy and completeness.

7.2 Deviations from this procedure shall be documented in field records. Significant changes shall be approved by the Infrastructure Manager.

8.0 Records, Data Analysis, Calculations

8.1 The COC/analytical request form shall be emailed from the laboratory to the Infrastructure Manager for verification of accuracy. Field records are scanned and placed in the project file on the server. Any changes to the analytical requests that are required shall be made in writing to the laboratory. The reason for the change shall be included in the project files so that recurring problems can be easily identified.

8.2 Deviations from this procedure or the project-specific sampling and analysis plan shall be documented in the records. Significant changes shall be approved by the Infrastructure Manager.

9.0 Attachments

Attachment 1 Field Forms
Attachment 2 Example Chain of Custody Form
Attachment 3 Example Shipping Label

Attachment 1
Field Forms

Attachment 2
Example Chain of Custody Form

Generic Chain-of-Custody/Analytical Request Form

Attachment 3

Shipping Information

TO: Hill Laboratories

ATTN: Sample Reception

1 Clyde Street

Hamilton East

HAMILTON 3216

Tel + 64 7 858 2000

STANDARD OPERATING PROCEDURE

Equipment Decontamination

1.0 Purpose and Scope

1.1 This Standard Operating Procedure (SOP) describes methods of equipment decontamination, to be used for activities where samples for chemical analysis are collected or where equipment will need to be cleaned before leaving the site or before use in subsequent activities.

1.2 As guidance for specific activities, this procedure does not obviate the need for professional judgment. Deviations from this procedure while planning or executing planned activities must be approved in accordance with Program requirements for technical planning and review.

2.0 Safety Requirements

Typically, for equipment, a series of buckets are set up on a plastic-lined bermed area. Separate spray bottles containing cleaning solvents as described in this procedure and distilled water or deionised are used for final rinsing of equipment. Depending on the nature of the hazards and the site location, decontamination of heavy equipment, such as augers, pump drop pipe, and vehicles, may be accomplished using a variety of techniques.

All Field Personnel responsible for equipment decontamination must adhere to the site-specific health and safety plan (HASP) and must wear the personal protective equipment (PPE) specified in the Sampling Contractor's site-specific HASP. Generally, this includes, at a minimum, steel-toed boots, safety glasses, hard hats, and hearing protection (if heavy equipment is in operation). Nitrile and/or rubber gloves should also be used during decontamination to prevent skin contact with decontamination fluids and contaminants.

In addition to the aforementioned precautions, the following sections describe safe work practices that will be employed.

2.1 Chemical Hazards Associated with Equipment Decontamination

- Avoid skin contact with and/or incidental ingestion of decontamination solutions and water.
- Utilize PPE as specified in the site-specific HASP to maximize splash protection.
- Refer to material safety data sheets, safety personnel, and/or consult sampling personnel regarding appropriate safety measures (i.e., handling, PPE including skin and respiratory).
- Take the necessary precautions when handling detergents and reagents.

2.2 Physical Hazards Associated with Equipment Decontamination

- To avoid possible back strain, it is recommended to raise the decontamination area approximately 0.5m to 1m above ground level. Surfaces may become slippery when wet; use caution and clean up spills immediately.
- To avoid heat stress, over exertion, and exhaustion, it is recommended to rotate equipment decontamination among all site personnel.

- Take necessary precautions when handling field sampling equipment.

3.0 Qualifications and Training:

3.1 Training and Qualifications

- The individual executing these procedures must have read, and be familiar with, the requirements of this SOP.

3.2 Responsibilities:

- The Infrastructure Manager is responsible for ensuring that monitoring well sampling activities comply with this procedure. The Infrastructure Manager is responsible for ensuring that all field-sampling personnel involved in monitoring well sampling shall have the appropriate education, experience, and training to perform their assigned tasks.
- The Infrastructure Manager is responsible for ensuring overall compliance with this procedure.
- The Operations Manager is responsible for ensuring that all field sampling personnel follow these procedures.
- Field sampling personnel are responsible for the implementation of this procedure.
- The field sampler and/or task manager is responsible for directly supervising the groundwater sampling procedures to ensure that they are conducted according to this procedure and for recording all pertinent data collected during sampling.

4.0 Required Equipment

The following equipment and supplies are required:

- Decon 90 or similar phosphate-free detergent
- Clean tap water
- Distilled or deionised water
- Buckets
- Spray bottles
- Plastic sheeting or large rubbish bags
- Brushes (a toilet brush works well)
- Paper towels
- Aluminium foil or plastic (for wrapping clean equipment)
- Drums, buckets, or other suitable containers for waste containerisation
- Personal protective equipment – nitrile and/or rubber gloves, safety glasses and/or face shield required; disposable coveralls may also be required, depending on contaminant(s)

Pressure washer and material to construct bunded and lined area for containment of decontamination water (for heavy equipment decontamination only)

5.0 Procedure

5.1 Method Summary

Decontamination of equipment used in soil/sediment sampling, groundwater monitoring, well drilling and well development, as well as equipment used to sample groundwater, surface water, sediment, waste, asbestos, and the unsaturated zone, is necessary to prevent cross-contamination and to maintain the highest integrity possible in collected samples. Planning a decontamination program requires consideration of the following factors:

- Location where the decontamination procedures will be conducted
- Types of equipment requiring decontamination
- Frequency of equipment decontamination
- Cleaning technique and types of cleaning solutions appropriate to the contaminants of concern
- Method for containing the residual contaminants and wash water from the decontamination process
- Use of a quality control measure to determine the effectiveness of the decontamination procedure

The following subsections describe standards for decontamination, including the frequency of decontamination, cleaning solutions and techniques, containment of residual contaminants and cleaning solutions, and effectiveness.

5.2 Decontamination Area

Select an appropriate location for the decontamination area at a site based on the ability to control access to the area, the ability to control residual material removed from equipment, the need to store clean equipment, and the ability to restrict access to the area being investigated. Locate the decontamination area an adequate distance away and upwind from potential contaminant sources to avoid contamination of clean equipment

5.3 Types of Equipment

Decontamination of sampling equipment includes submersible pumps, bailers, interface probes, water level meters, and peristaltic pumps. Other sampling equipment that requires decontamination includes, but is not limited to, hand trowels, hand augers, slide hammer samplers, shovels, stainless-steel spoons and bowls, soil sample liners and caps, wipe sampling templates, composite liquid waste samplers, and dippers.

Equipment with a porous surface, such as rope, cloth hoses, and wooden blocks, cannot be thoroughly decontaminated and shall be properly disposed of after one use.

5.4 Frequency of Equipment Decontamination

Decontaminate down-hole drilling equipment and equipment used in monitoring well development and purging prior to initial use and between each borehole or well. Initiate groundwater sampling by sampling groundwater from the monitoring well where the least contamination is suspected. Decontaminate groundwater, surface water, and soil sampling devices prior to initial use and between collection of each sample to prevent the possible introduction of contaminants into successive samples.

5.5 Cleaning Solutions and Techniques

.

A rinse decontamination procedure is acceptable for equipment such as bailers, water level meters, new and re-used soil sample liners, and hand tools.

The decontamination procedure shall consist of the following:

1.) Wash with a non-phosphate detergent (Decon 90 or other suitable detergent) and potable water solution;

2.) rinse with potable water;

3.) rinse with deionized or distilled water; and

4.) spray with deionized or distilled water.

If possible, disassemble equipment prior to cleaning. Add a second wash at the beginning of the process if equipment is very soiled. Rinses with nitric acid or laboratory-grade isopropyl alcohol may also be required, depending on site-specific conditions and contaminants.

Decontaminating submersible pumps requires additional effort because internal surfaces become contaminated during usage. Decontaminate these pumps by washing and rinsing the outside surfaces using the procedure described for small equipment or by steam cleaning. Decontaminate the internal surfaces by recirculating fluids through the pump while it is operating. This recirculation may be done using a relatively long (typically 1m) large-diameter pipe (100mm or greater) equipped with a bottom cap. Fill the pipe with the decontamination fluids, place the pump within the capped pipe, and operate the pump while recirculating the fluids back into the pipe. The decontamination sequence shall include: (1) detergent and potable water; (2) potable water rinse; (3) potable water rinse; and (4) deionized water rinse. Change the decontamination fluids after each decontamination cycle.

Some decontamination solvents have health effects that must be considered. Decontamination water shall consist of distilled or deionized water. Steam-distilled water shall not be used in the decontamination process as this type of water usually contains elevated concentrations of metals. Decontamination solvents to be used during field activities will be specified in the scope of works.

Rinse equipment used for measuring field parameters, such as pH (indicates the hydrogen ion concentration – acidity or basicity), temperature, specific conductivity, and turbidity with deionized or distilled water after each measurement.

5.6 Containment of Residual Contaminants and Cleaning Solutions

A decontamination program for equipment exposed to potentially hazardous materials requires a provision for catchment and disposal of the contaminated material, cleaning solution, and wash water.

When contaminated material and cleaning fluids must be contained from heavy equipment, such as drill rigs and support vehicles, the area must be properly floored, preferably with a concrete pad that slopes toward a sump pit. If a concrete pad is impractical, planking can be used to construct solid flooring that is then covered by a nonporous surface and sloped toward a collection sump. If the decontamination area lacks a collection sump, use plastic sheeting and blocks or other objects to create a bermed area for collection of equipment decontamination water. Situate items, such as auger flights, which can be placed on metal stands or other

similar equipment, on this equipment during decontamination to prevent contact with fluids generated by previous equipment decontamination. Store clean equipment in a separate location to prevent recontamination. Collect decontamination fluids contained within the bermed area and store them in secured containers as described below.

Use wash buckets or tubs to catch fluids from the decontamination of lighter-weight drilling equipment and hand-held sampling devices. Collect the decontamination fluids and store them on site in secured containers until their disposition is determined by laboratory analytical results. Label containers in and arrange for appropriate disposal.

6.0 Quality Control and Assurance

A decontamination program must incorporate quality control measures to determine the effectiveness of cleaning methods. Quality control measures typically include collection of equipment blank samples or wipe testing. Equipment blanks consist of analyte-free water that has been poured over or through the sample collection equipment after its final decontamination rinse. Wipe testing is performed by wiping a cloth over the surface of the equipment after cleaning. These quality control measures provide "after-the fact" information that may be useful in determining whether or not cleaning methods were effective in removing the contaminants of concern.

7.0 Procedures, standards and references

Any project where sampling and analysis is performed shall be executed in accordance with an approved scope of works. This procedure may be incorporated by reference or may be incorporated with modifications described in the scope or HASP.

Deviations from this procedure or the sampling and analysis plan shall be documented in field records. Significant changes shall be approved by the Infrastructure Manager.

Appendix K

EPL Stormwater Sampling Field Sheet Form

Eastland Port Ltd

Southern Logyard

Stormwater Sampling Field Sheet

Sampling Date:

Samplers Name:

Reason for sampling: quarterly monitoring additional monitoring

other (describe):

Rainfall event start time: am / pm

Event rainfall depth: mm

Site	Site location				
	Site code				
Sample 1	Sample ID				
	Sample time				
	Pipe flow depth				
Sample 2	Sample ID				
	Sample time				
	Pipe flow depth				
Observations	Water colour				
	Debris				
	Foams / scums				
	Sediment plumes below outfall?				
Photos	Photo number(s) Time				

Samples sent to lab: courier company:

Date: Time: CoC form completed: ☐

Appendix L

EPL Stormwater Monitoring Quarterly Report

Eastland Port Ltd

Southern Logyard

Stormwater Monitoring Quarterly Report

1. Sampling Details

-Locations

-Dates & Times

2. Relevant Site information

-Rainfall (event, and four days previous)

-Pipe flow depth (m) at each survey point

-Discharge colour

-Any obvious/visual features

4. Conversion of Laboratory Results to Receiving Environment Concentrations after Mixing

Site	Sample	Total Zn g/m^3		Total Cu g/m^3		Total Pb g/m^3	
		Lab	Diluted[1]	Lab	Diluted[1]	Lab	Diluted[1]
MH1	S1						
	S2						
MH12	S1						
	S2						
Sump	S1						
	S2						
Note 1	Assumes a dilution factor of 30 times within a notional small mixing zone of 30m from the outfall						

3. Analysis of Laboratory Results

Parameter	**Units**	**Trigger Levels For Assessing Effects**		**Summary of water quality results with trigger level exceedences highlighted**					
		Discharge[1]	**Receiving Environment[2]**	**MH1 (North)**		**MH11 (South)**		**Kaiti Beach Road Sump**	
				S1	**S2**	**S1**	**S2**	**S1**	**S2**
BOD	N/A	N/A	N/A						
pH	$-\log(H^+)$	6.7-8.5	-						
TSS	g/m^3	150	-						

TPH	g/m^3	15	-						
Total Zn	g/m^3	0.69	0.023 [3]						
Total Cu	g/m^3	0.09	0.003 [3]						
Total Pb	g/m^3	1.98	0.0066 [3]						
Note 1	Shaded values are derived based on concentrations 30 x ANZECC receiving environment								
Note 2	ANZECC 2000 Marine 90% protection level								
Note 3	Assumes a dilution factor of 30 times within a notional small mixing zone of 30m from the outfall								

5. Relationship of Laboratory Results to Coastal Permit Limits for Compliance

-Assessing effects against 'triggers'

6. Findings on Consent Condition Compliance

7. Any Further Actions Required in Light of Findings

-Requirement for any follow up/additional monitoring

Appendix
M

EPL Environmental Incident Record Form

Incident Investigation – Action Record

Eastland Group:		Date of Incident		Event No.	
Name of Injured Person:		Location of Incident:			
Employee ☐	Contractor ☐	Visitor ☐	Consultant ☐	Member of the public ☐	
Type of Incident:	Near Miss ☐ First Aid ☐ Medical Treatment ☐ Serious Harm ☐ Property ☐ Other ☐				
Manager responsible for investigation:					

Activity	Date completed	Initials	Comments
IMMEDIATE RESPONSE			
Area made safe and first aid provided			
Procedures implemented to prevent further harm			
Incident scene preserved for any investigation			
Manager with "prime responsibility" notified			
CE and Direct Report to CE notified			
Media response procedure implemented			
Injury/Incident Report completed			
Relevant Regulatory body(s) notified: DoL☐ ESS☐ MNZ☐ CAA☐ Police☐ Council☐			
Insurer notified			
Counselling services offered to staff			
Information collected for investigation			
INVESTIGATION ACTION			
Investigation report completed			
Report reviewed by senior management			
Report reviewed by health and safety committee			
Report submitted to relevant regulatory body (s) DoL☐ ESS☐ MNZ☐ CAA☐ Police☐ Council☐			
Staff informed of findings			
CORRECTIVE ACTION			
All corrective actions identified			
Staff informed of corrective actions			
Responsibilities for corrective actions assigned including assigning time frames			
Hazard register updated			
Hazard management requirements updated			
Training requirements updated			
Injury prevention initiates implemented			
Copies of all injury and investigation forms submitted to BI Manager			
Central information register updated			

Appendix N

EPL Environmental Incident Continuous Improvement Form

Continuous Improvement Form

Tick the appropriate box(s)

- ☐ Hazard
- ☐ Incident/Event/**Near Miss**
- ☐ Audit
- ☐ Non Compliance
- ☐ Process/System Failure
- ☐ New Idea/Improvement
- ☐ Customer/Public Complaint or Feedback
- ☐ Theft/Security Breach or Issue
- ☐ Property/Vehicle Damage
- ☐ Environmental
- ☐ Contractor/Sub Contractor/Tenant Performance, Complaint or Feedback
- ☐ Other

Date:		**Form completed by:**	
Time:		**Person Assigned Close-Out:**	
Location:		**Discussed with, witnesses:**	

What's the Issue? *Describe what happened with as much detail as possible.*

What has been done? *Describe the immediate actions taken.*

What is the cause and how can we prevent it from happening again?

Please complete the rest of the form with your Manager

Has a significant hazard been identified? YES/NO

Does the Hazard Register for _____ need to be updated? YES/NO
(specify business area)

Updated on: _____

WHAT WILL BE DONE TO PREVENT RECURRENCE?

Action	By Whom?	By When?	Completed? (Date/Initials)

I agree that the actions above will improve the likelihood of a reoccurrence of the issue identified and agree on the timeframes and personnel responsibilities.

Manager: _____ **Signature:** _____ **Date:** _____

Appendix O

EPL Environmental Complaint Form

Environmental Complaint Form

Eastland Group:

Site Name/Location:

Site Address:

Time/Date:

Person(s)/Group/ Organisation/ Company	Environmental Concern	Complaint Origin/ Location	Action taken	Person(s) Responsible for Action
Comments/Notes:				

Appendix 4

Water Quality Monitoring Report 2021

4SIGHT CONSULTING

LAND. PEOPLE. WATER.

Eastland Port

EASTLAND PORT SOUTHERN LOGYARD SAMPLING REPORT – QUARTER 1 2021

For Eastland Port Limited

November 2021

REPORT INFORMATION AND QUALITY CONTROL

Prepared for:	Eastland Port

Author:	Marie Knue Ecology Consultant	
Reviewer and Approved for Release::	Mark Poynter Technical Director (Marine)	

Document Name	R_EPL_SLY Quarterly Sampling Report_Nov2021_v1.0

Version History:	V1.0	November 2021

TOITŪ CARBON REDUCE ISO 14064-1 ORGANISATION

SITE SAFE MEMBER

Telarc. Registered Telarc Q-Base Code

CONTENTS Page

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

Eastland Port Limited (Eastland) holds resource consent CD-2010-104664-01 which authorises the discharge of treated stormwater from its Southern Logyard to the Coastal Marine Area.

In accordance with Condition 10 of consent CD-2010-104664-01 monitoring of the Southern Logyard stormwater discharge quality and marine receiving environment water quality is required.

Consent conditions associated with the water quality monitoring have been revised via a Section 127 (Resource Management Act 1991) consent application, with a decision being made by an independent commissioner to vary conditions 9, 10, 11 and 17 of the consent. The decision is dated 08 July 2016 and resulted in a change to monitoring requirements (Appendix A). This report has been prepared in accordance with the revised conditions.

The draft Stormwater Management Plan, as required by the revised conditions of consent, specifies the stormwater discharge quality sampling sites as Manhole 1 (MH1; Northern Discharge), Manhole 11 (MH11; Southern Discharge), Manhole 9 (MH9) and the manhole after the downstream defender in the debarker area (DSD). An additional/voluntary stormwater sample is collected at the Kaiti Beach Road catchpit. For the marine receiving environment sampling sites, three surface grab samples are taken at the mixing zone boundary after reasonable mixing. This boundary is identified as a 50 m radius from the MH1 discharge and a 30 m radius from the MH11 discharge. Where possible two of these surface samples are within the stormwater discharge plume and supported by two samples at approximately 5 m depth. Surface samples are also collected from five background sites within the marine receiving environment: three within the port to provide reference conditions for the MH1 discharge; and two off Kaiti Reef to provide reference conditions for the MH11 discharge. Refer to Appendix B for a plan of the sample sites.

Shipping movements and the presence of ships at berth can constrain access to sampling locations within the port around the MH1 mixing zone. Taking these operational and potential health and safety constraints into consideration, best endeavours are made to ensure that sampling is undertaken in accordance with the Draft Stormwater Management Plan (which reflects the changed consent conditions and is yet to be approved by Gisborne District Council), and the Monitoring Protocols and Standard Operating Procedures prepared by 4Sight Consulting. Monitoring Protocols which are included in Appendix C.

Monitoring of all parameters, as specified by Condition 10(a) of the revised conditions is required at least once every three months for both stormwater discharge and marine receiving environment monitoring sites.

The last sampling round was undertaken on 16 September 2021 and represented the Quarter 3 2021 sampling.

This report provides the results and analysis of the Quarter 4 2021 sampling undertaken on 3 November 2021 by Linnaeus, a Gisborne service provider and analytical laboratory. The MH11 marine samples were not able to be collected as strong winds caused unsafe sampling conditions. All other sites and parameters were sampled as per the quarterly sampling schedule.

Stormwater discharge quality sampling was undertaken at four locations: Manhole 1 (MH1; Northern Discharge), Manhole 11 (MH11; Southern Discharge), Manhole 9 (MH9) and the manhole after the downstream defender in the debarker area (DSD). An additional stormwater sample was collected at the Kaiti Beach Road catchpit where stormwater runoff from the public road enters the Eastland Port stormwater network.

Receiving environment water quality samples were collected at all MH1 sites. The consented 30m radius MH11 receiving environment mixing zone (Appendix B) was not accessible during this sampling event due to sea conditions on the southern side of the port.

This report has been prepared on behalf of Eastland for submission to Gisborne District Council.

2 SAMPLING DETAILS

Table 1 summarises the sampling details for the 3 November 2021 sample round. Sample locations are presented in Appendix B and photographs are presented in Appendix D.

Table 1: Sample times and dates

Location	Date	Time
Manhole 1 (MH1)	03/11/2021	08:35
Manhole 11 (MH11)	03/11/2021	08:21
Manhole 9 (MH9)	03/11/2021	08:10
Post Downstream Defender (Post DSD)	03/11/2021	08:47
Kaiti Beach Road Catchpit	03/11/2021	09:00
MH1 – Mixing Zone Site 1 – Surface	03/11/2021	09:45
MH1 – Mixing Zone Site 2 – Surface	03/11/2021	09:40
MH1 – Mixing Zone Site 3 – Surface	03/11/2021	09:35
MH1 – Mixing Zone Site 4 – Mid Depth	03/11/2021	09:47
MH1 – Mixing Zone Site 5 – Mid Depth	03/11/2021	09:38
MH1 – Background Site 1 – Surface	03/11/2021	09:53
MH1 – Background Site 2 – Surface	03/11/2021	09:58
MH1 – Background Site 3 – Surface	03/11/2021	10:06

At site 'Manhole 1' two samples were collected approximately 5 minutes apart and composited for analytical purposes.

Observed conditions are recorded in Table 2 and Table 3 below. Completed field forms for the sampling are included in Appendix E.

Table 2: 3 November 2021 stormwater discharge quality sample information

Location	Rainfall event	Number of dry days prior to sampling	Flow (strong/ moderate/ light)	Clarity (Clean/slightly turbid/turbid/ very turbid)	Debris/ foams/scum present
Manhole 1 (MH1)	33.4 mm	0	Moderate	Turbid	Light debris
Manhole 11 (MH11)	33.4 mm	0	Moderate	Turbid	Light debris
Manhole 9 (MH9)	33.4 mm	0	Strong	Turbid	Light debris
Post Downstream Defender (Post DSD)	33.4 mm	0	Strong	Turbid	Light debris
Kaiti Beach Road Catchpit	33.4 mm	0	Moderate	Turbid	Light debris

Table 3: 3 November 2021 receiving environment water quality sample information

Location	Rainfall event	Number of dry days prior to sampling	Clarity (Clean/slightly turbid/turbid/ very turbid)	Debris/ foams/scum present
MH1 – Mixing Zone Site 1 – Surface	33.4 mm	0	Lightly Turbid	No
MH1 – Mixing Zone Site 2 – Surface	33.4 mm	0	Clear	No
MH1 – Mixing Zone Site 3 – Surface	33.4 mm	0	Clear	No
MH1 – Mixing Zone Site 4 – Mid Depth	33.4 mm	0	Clear	No
MH1 – Mixing Zone Site 5 – Mid Depth	33.4 mm	0	Clear	No
MH1 – Background Site 1 – Surface	33.4 mm	0	Clear	No
MH1 – Background Site 2 – Surface	33.4 mm	0	Lightly Turbid	No
MH1 – Background Site 3 – Surface	33.4 mm	0	Clear	No

2.1 Field Observations

High tide was at 4:35 am on 3 November 2021 in the Gisborne Harbour. Receiving environment water quality sampling started at 09:35 am on the outgoing tide and was completed within 31 minutes. There was a small plume from the MH1 discharge extending towards the harbour entry. A diagram showing the MH1 discharge relative to the harbour is included as part of the field notes (Appendix E).

3 ANALYSIS OF LABORATORY RESULTS

3.1 Stormwater Monitoring Results

Table 4 shows the 3 November stormwater discharge quality monitoring results. Refer to Appendix F for a copy of the laboratory analysis results and Appendix G for the chain of custody forms.

Table 4: 3 November 2021 stormwater discharge quality monitoring results

Parameter	Units	Trigger Levels for Assessing Effects		Sampling Locations				
				MH1	MH11	MH9	Post DSD	Kaiti Beach Rd
Turbidity	NTU	n/a		800	480	-	-	-
pH	-log(H^+)	n/a		6.6	6.4	6.6	6.6	7
VSS	g/m^3	n/a		181	136	-	-	-
TSS	g/m^3	300 (median); 450 (75%ile)		630	400	610	1100	420
COD	g/m^3	n/a		680	750	-	-	-
TOC	g/m^3	n/a		176	280	-	-	-
Tannin	g/m^3	n/a		59	88	-	-	-
TPH (C7 – C36)	g/m^3	15		1.2	1.5	-	-	-
		MH1[1]	MH11[2]					
Dissolved Cu	g/m^3	0.09	0.039	0.0145	0.0026	-	-	-
Dissolved Pb	g/m^3	0.198	0.132	0.00012	0.00026	-	-	-
Dissolved Zn	g/m^3	0.69	0.45	0.046	0.057	-	-	-

[1&2] Metal trigger levels are ANZECC 2000 Marine 90% and 95% marine environment protection levels for dissolved metals with 30 times dilution applied to MH1 (northern discharge) and MH11 (southern discharge) respectively (in accordance with Condition 10).

3.2 Findings on Consent Condition Compliance – Stormwater Discharge Quality

3.2.1 Total Suspended Solids (TSS)

TSS concentrations at MH1 and MH11 were slightly below the median TSS concentrations from previous sampling results (median of 720 g/m^3 and 800 g/m^3 for MH1 and MH11, respectively) and well above the interim consented target TSS limits are (median of 300 g/m^3 and 75th percentile of 450 g/m^3 for both MH1 and MH11).

The TSS result at the Kaiti Beach Road catchpit was 420 g/m^3. This public road stormwater discharges into the Eastland Port stormwater network (and ultimately discharges via MH1). It may at times have a significant contributory effect on the MH1 TSS concentration, depending on the relative volumes of the road versus logyard runoff.

TSS results for all sampling since September 2016 (after the consent variation) are shown in Figure 1.

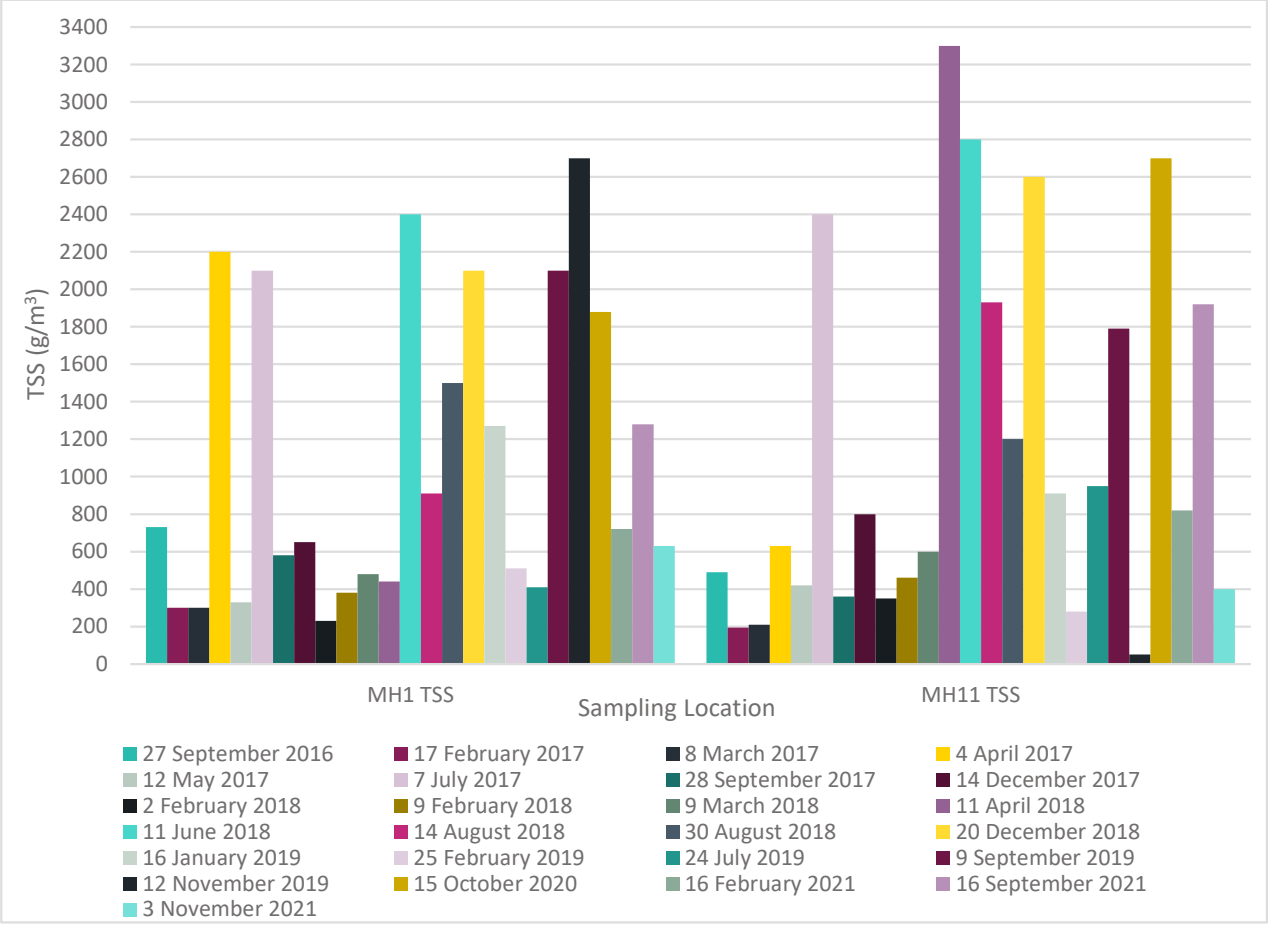


Figure 1: TSS for MH1 and MH11 from September 2016 to November 2021.

3.2.2 Volatile Suspended Solids (VSS)

The levels of VSS show that 28.7% and 34% of the TSS is organic material at MH1 and MH11, respectively. The VSS component is representative of the bark and wood-derived constituents in the TSS. The relative proportions of VSS to TSS recorded in this sampling round are typical of the levels recorded in previous sampling rounds. This likely indicates a similar proportion of bark and wood-derived constituents contributing to the TSS at both MH1 and MH11 relative to previous sampling rounds.

There is no consent trigger limit for VSS at these sites.

3.2.3 Turbidity

Turbidity levels at MH1 and MH11 were in the range of values recorded in previous sampling rounds. There is no consent trigger limit for turbidity.

3.2.4 Total Petroleum Hydrocarbons (TPH)

TPH results were below the consent trigger level at both MH1 and MH11.

3.2.5 Dissolved Metals

Dissolved metal results for MH1 and MH11 are required to be compared against the ANZECC (2000)[2] 90% and 95% levels of protection for marine receiving environment trigger values with 30 times dilution. The dissolved copper, lead and zinc concentrations at both MH1 and MH11 were compliant with the derived consent requirements for the 90% and 95% triggers, respectively[3].

3.2.6 Chemical Oxygen Demand (COD)

Levels of COD were within the range of values with respect to values recorded since September 2016. There is no consent trigger limit for COD.

3.2.7 Total Organic Carbon (TOC)

TOC results were within the range with respect to the values recorded in previous sampling rounds. There is no consent trigger limit for TOC.

3.2.8 Tannin

Tannin levels were within the range with respect to values recorded in previous sampling rounds. There is no consent trigger limit for tannin.

3.3 Receiving Environment Water Quality Results

The receiving environment water quality results from the 3 November 2021 sample round for the MH1 sites are presented in Table 5. Refer to Appendix F for a copy of the laboratory analysis results and Appendix G for the chain of custody forms.

[2] ANZECC, Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

[3] It is noted that as of 29 August 2018 the ANZECC 2000 guidelines were superseded by the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)* (ANZAST 2018). However, none of the guideline values upon which the current monitoring regime is based have changed.

Table 5: 3 November 2021 receiving environment water quality results for the MH1 and MH11 discharge.

Parameter	Units	Trigger Levels for Assessing Effects	Sampling Locations														
			MH1 Mixing Zone Site 1 Surface	MH1 Mixing Zone Site 2 Surface	MH1 Mixing Zone Site 3 Surface	MH1 Mixing Zone Sites 1 & 2 Composite	MH1 Mixing Zone Sites 4 Mid Depth	MH1 Mixing Zone Sites 5 Mid Depth	MH1 Background Site 1 Surface	MH1 Background Site 2 Surface	MH1 Background Site 3 Surface	MH11 Mixing Zone Site 1 Surface	MH11 Mixing Zone Site 2 Surface	MH11 Mixing Zone Site 3 Surface	MH11 Mixing Zone Sites 1 & 2 Composite	MH11 Background Site 1 Surface	MH11 Background Site 2 Surface
Turbidity	NTU	n/a	21	2.7	3.2	-	3.9	10.7	5.1	10.8	7.4	n/a	n/a	n/a	-	n/a	n/a
pH	-log(H^+)	6.7-8.5	8	8.1	8	8	8.1	8.1	8.1	8	8	-	-	-	n/a	-	-
Salinity	ppt	n/a	32.2	33.3	33.3	32.8	32.6	32.9	34.5	26.9	31.1	n/a	n/a	n/a	-	n/a	n/a
TSS	g/m^3	n/a	32	7	8	-	7	22	16	23	12	n/a	n/a	n/a	-	n/a	n/a
Tannins	g/m^3	n/a	-	-	-	1.9	-	-	-	-	-	-	-	-	n/a	-	-
Dissolved Cu	g/m^3	0.003(MH1) 0.0013(MH11)	0.0012	0.0013	0.0014	-	<0.001	<0.001	<0.001	<0.001	<0.001	n/a	n/a	n/a	-	n/a	n/a
Dissolved Pb	g/m^3	0.0066(MH1) 0.0044(MH11)	<0.001	<0.001	<0.001	-	-	-	-	-	-	n/a	n/a	n/a	-	-	-
Dissolved Zn	g/m^3	0.023(MH1) 0.015(MH11)	0.005	<0.004	<0.004	-	-	-	-	-	-	n/a	n/a	n/a	-	-	-

3.4 Findings on Consent Condition Compliance – Receiving Environment Water Quality

3.4.1 pH

pH in the MH1 mixing zone was within consent trigger levels.

3.4.2 Total Suspended Solids (TSS)

TSS concentrations at MH1 mixing zones Site 2 and Site 3 were 7 g/m^3 and 8g/m^3, below the concentration at the indicative background sites (range 12 to 23 g/m^3). MH1 mixing zone Site 1 was taken from within the plume and had a higher concentration of 32 g/m^3 compared to the background sites.

The surface results for the plume field (only Site 1) would suggest a dilution factor in the order of 20-times relative to the discharge concentration. The mid-depth Site 4 mixing zone sample had the same TSS value (7 g/m^3) to the corresponding surface site (Site 2) and the mid-depth Site 5 mixing zone sample had a lower TSS value (22 g/m^3) to the corresponding surface site (Site 1). These results suggest the plume was vertically mixed.

3.4.3 Turbidity

Turbidity results at MH1 mixing zone were 21 NTU, 2.7 NTU and 3.2 NTU and less than the indicative background sites (Site 1 = 5.1 NTU; Site 2 = 10.8 NTU; Site 3 = 7.4 NTU).

There is no consent trigger limit for turbidity.

3.4.4 Salinity

Salinity ranged from 32.2 ppt to 33.3 ppt at the MH1 mixing zone surface sampling locations. Salinity at the mid depth sites was 32.6 ppt and 32.9 ppt. MH1 background salinity results were between 26.9 and 34.5 ppt.

The lower salinities at the background sites 2 and 3 reflect a freshwater influence in the harbour.

There is no consent trigger limit for salinity.

3.4.5 Tannin

Tannin levels of 1.9 g/m^3 were recorded at the MH1 mixing zone edge. There is no consent trigger limit for tannin.

3.4.6 Metals

Metal results at the MH1 mixing zone sites are compared against the ANZECC (2000)[4] 90% marine receiving environment protection levels, which are the consent trigger values.

The dissolved copper concentrations at all sampling locations were below the consent trigger limit (MH1 = 0.003 g/m^3).

The dissolved lead concentrations at all sampling locations were below the consent trigger limit (MH1 = 0.0066 g/m^3).

The dissolved zinc concentration at all sampling locations were below the consent trigger limit (MH1 = 0.023 g/m^3).

3.4.7 Water Clarity

The marine receiving environment vertical water clarity results obtained using a Secchi disk are presented in Table 6 for the MH1 marine site. The reduced vertical clarity at Site 1 is consistent with the plume field being concentrated in this direction. The results for the background sites also suggest a more widespread influence from the rainfall event.

[4] It is noted that as of 29 August 2018 the ANZECC 2000 guidelines were superseded by the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)* (ANZAST 2018). However, none of the guideline values upon which the current monitoring regime is based have changed.

Table 6: Vertical water clarity results MH1 marine site.

	MH1 Mixing Zone Site 1 Surface	MH1 Mixing Zone Site 2 Surface	MH1 Mixing Zone Site 3 Surface	MH1 Background Site 1 Surface	MH1 Background Site 2 Surface	MH1 Background Site 3 Surface
Vertical Water Clarity (m)	0.3	1.0	1.1	0.5	0.3	0.9

3.5 Particle Size

Particle size analysis on each of the stormwater discharge quality sampling locations was undertaken, refer Appendix F for a copy of the laboratory results. A summary of the results is shown in Table 7 and Figure 2.

Table 7: Particle size distribution at 10%, 50% and 90% (µm).

Percentage volume under	MH1	MH11	MH9	Post DSD	Kaiti Beach Rd
10%	2.26	2.4	2.65	2.96	2.79
50%	11.3	12.1	18.2	18.3	16.6
90%	59.3	81.2	122	110	113

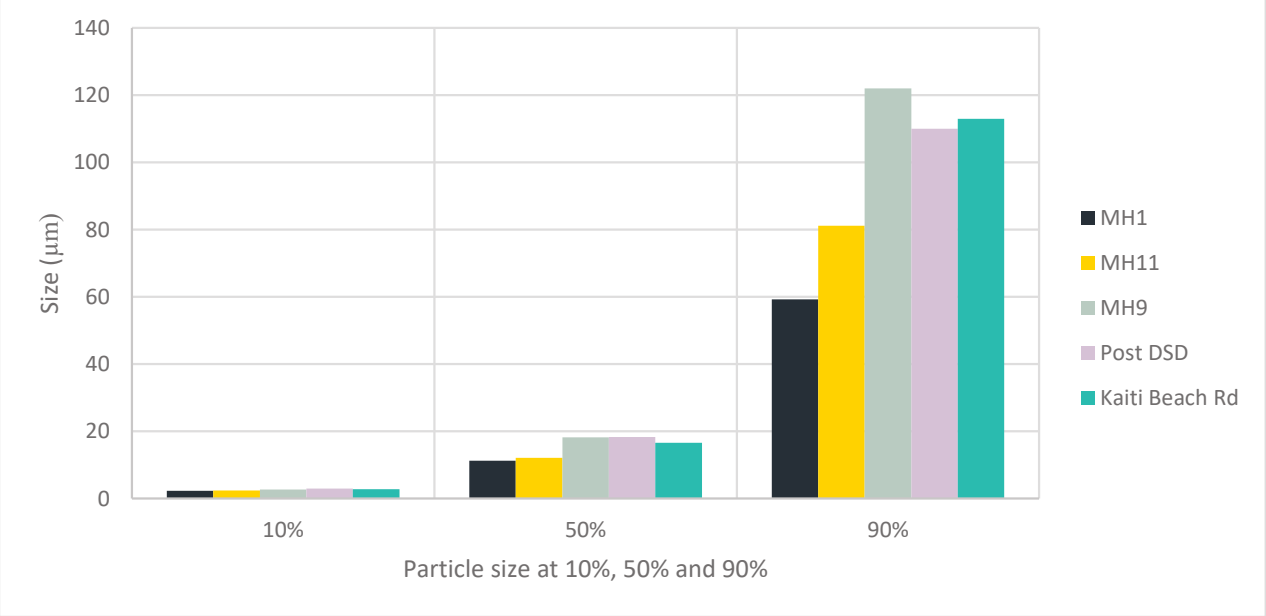


Figure 2: Particle size distribution at 10%, 50% and 90%

The particle size results show similar size particles across the logyard sampling locations, with MH1 and MH11 showing lower proportion of larger particles.

3.6 Logyard Maintenance Requirements

Sweeping of the logyard surface occurs daily. The drains and downstream defender system are cleaned by Intergroup on a monthly basis.

3.7 Further Actions Required

No further actions are required.

4 CONCLUSIONS

- The TSS concentration in the MH1 stormwater discharge was within range of values recorded in the previous sampling rounds. Indicative dilution of the MH1 pipe discharge in the plume at the mixing zone edge was 20 times.
- Median suspended sediment concentration in the MH1 stormwater discharge (currently 720 g/m^3 and 800 g/m^3 for MH1 and MH11 respectively) is currently above the consented interim target median of 300g/m^3.
- Eastland Port are implementing stormwater treatment upgrade as part of the Twin Berth project.
- The next quarterly sampling round is scheduled to be collected by the end of March 2022.

Appendix A:

Decision of the Independent Hearing Commissioner Amended Consent Conditions

Decision of the Independent Hearing Commissioner Amended Consent Conditions

Condition 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 3° 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 3° 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.

Condition 10

a) A Stormwater Monitoring Programme shall be included in the SMP. The monitoring programme shall identify the stormwater quality sampling sites, along with the frequency (that will be at least once every three months) and methods of sampling and methods of testing, including those for total suspended solids and metals (copper, lead and zinc) that are expected to have a receiving environment component where port operations and weather conditions enable this. The aim of the monitoring programme shall be to compare the sampling results with the following trigger and indicator levels.

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 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.
	75 percentile of 450 g/m3	Stormwater discharge	
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
Lead - 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.
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 Solids (VSS)	No value	Stormwater discharge	Analysis of trends in VSS to indicate the quality of 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.

Condition 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.

Condition 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.

Appendix B:

Sampling Locations

N

1:4,000 @A4

0 25 50 75 100 125 m

AA1146 EASTLAND PORT COMPLIANCE PROGRAMME

Southern Logyard (Kaiti Beach Rd) Monitoring Sites

Plan prepared for Eastland Port Ltd. by 4Sight Consulting Ltd.

Date: 29/04/2015
Version: 2.0
Author: Paul Sorensen
Checked: Christine Oakey
Approved: Christine Oakey

4SIGHT CONSULTING

Aerial imagery sourced from Gisborne District Council GIS viewer.

N

Scale 1:8000 @ A4

0 100 200 300m

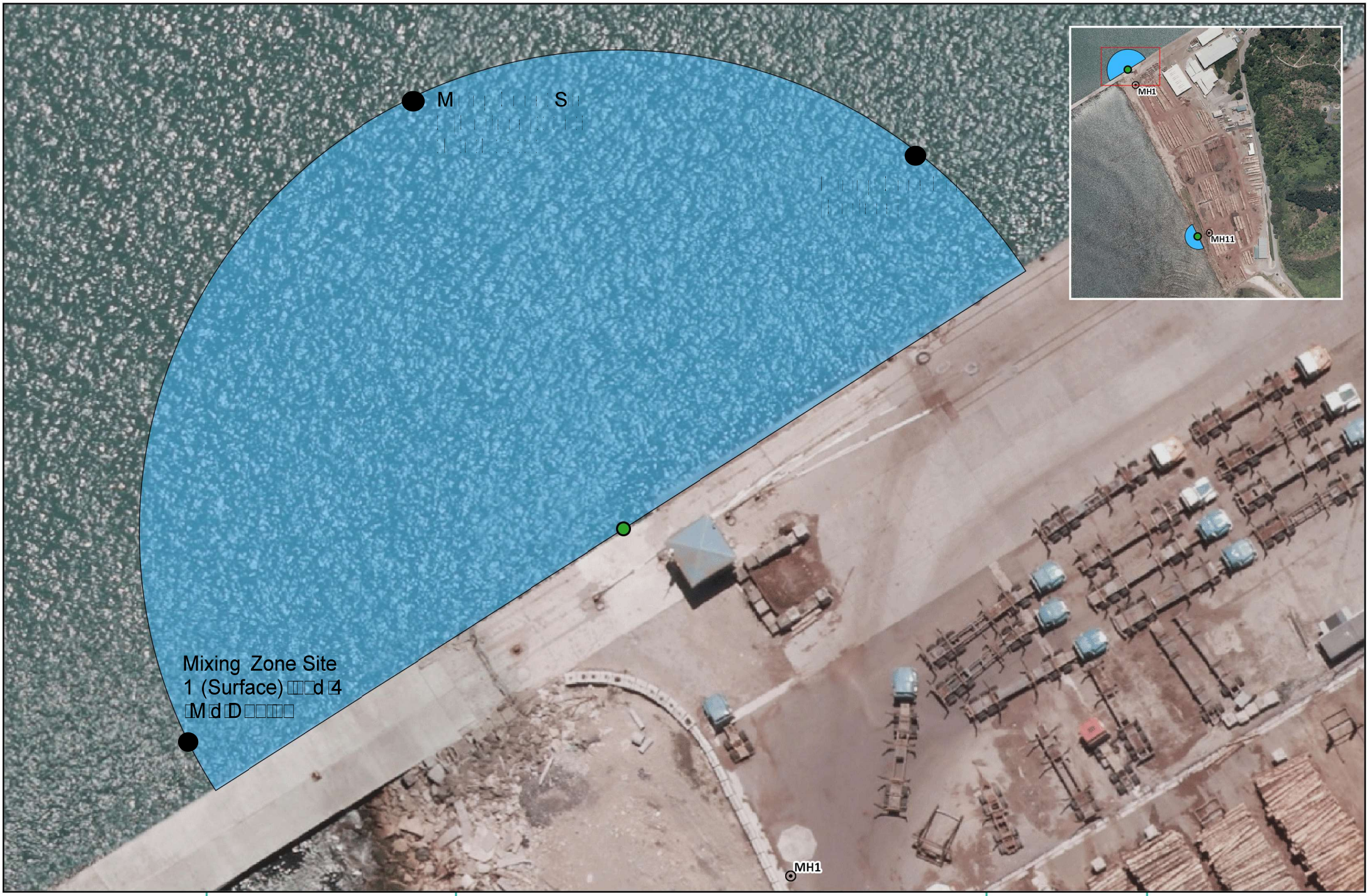
AA1146 - Outsourced Compliance Programme

Southern Logyard Marine Sampling Locations

Plan prepared for Eastland Port Ltd by 4Sight Consulting.

Date: 16/08/2017
Version: 1.0
Drawn: Sam Hendrikse
Checked: Christine Oakey
Approved: Mark Poynter

4SIGHT CONSULTING



Aerial imagery sourced from Gisborne District Council GIS viewer.

N

Scale 1:500 @ A4

0 5 10 15m

AA1146 - Outsourced Compliance Programme

Southern Logyard Marine Sampling Locations

Plan prepared for Eastland Port Ltd by 4Sight Consulting.

4SIGHT CONSULTING

Appendix C:

Southern Logyard Monitoring Protocols

4SIGHT CONSULTING

LAND. PEOPLE. WATER.

Eastland Port

Southern Logyard Sampling Protocol

For Eastland Port

October 2016

CONTENTS

Page

List of Tables

List of Figures

List of Appendices

1 INTRODUCTION

This protocol outlines the methods to undertake stormwater quality sampling at the Southern Logyard, in accordance with the discharge permit and the Stormwater Management Plan.

2 SAMPLING LOCATIONS

2.1 Pipe Sites

The primary sampling locations are the stormwater manholes MH1 and MH11 which are shown indicatively in **Figure 1**.

- Manhole 1 (MH1) is located at the northern end of the logyard near the southern rock breakwater and a short distance from the adjacent outfall which discharges into the port.
- M11 (Manhole 11) 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 sampled and are identified as Manholes 9 and the DASS Facility Downstream Defender shown on **Figure 2**. Eastland Port will also sample the Kaiti Beach Road stormwater sump for any roadside non Eastland Port source contaminants that may enter the Eastland Port stormwater system.

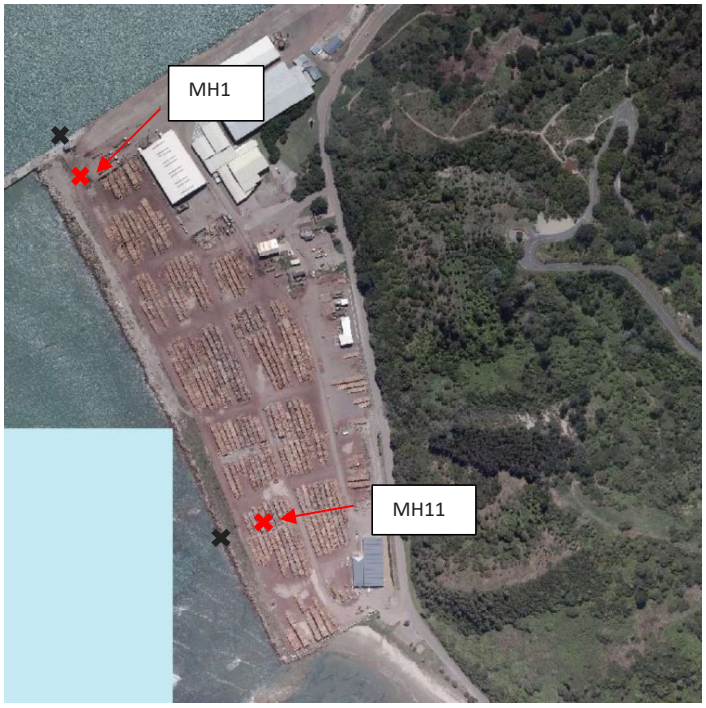


Figure 1: Stormwater Outlet & Sampling Locations

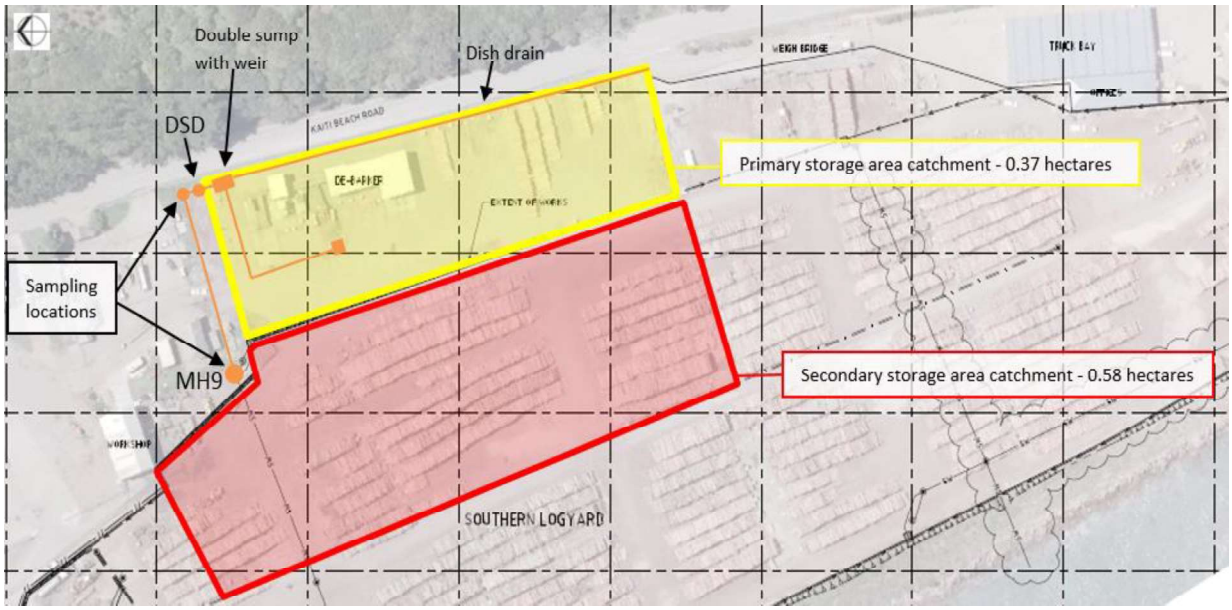


Figure 2: DASS Facility Storage Areas and Stormwater Sampling Locations

2.2 Receiving Environment (Mixing Zone) Sites

Sampling will be carried out where operational and weather conditions permit at the receiving environment locations shown in **Figure 3** on the following basis.

MH1: a 50m radius mixing zone boundary. Three surface grab samples on the approximate boundary. The dispersion of the surface stormwater field will be determined by the release of a small amount of tracer dye (or alternative floating indicator) at the pipe outlet. Where possible two of the three samples shall be within the stormwater plume and the third anywhere else on the notional mixing zone boundary. The two surface samples within the surface stormwater field shall be supported by two mid water samples collected using a Van Dorn sampler (or similar). The 50 m radius mixing zone boundary will at times overlap with a ship and bowline hawsers. Health and safety protocols for the sampling protocols require that at least a 20m distance is maintained from any ship or mooring line. Sampling will be adjusted as appropriate.

MH11: a 30m radius mixing zone boundary. Sampling here is much more problematic and will only be carried out under very calm conditions. Three surface grab samples on the approximate boundary. The dispersion of the surface stormwater field will be determined by the release of a small amount of tracer dye (or floating indicator) at the pipe outlet if possible. Two of the three samples shall be within the stormwater plume and the third anywhere else on the notional mixing zone boundary.

2.3 Receiving Environment (Background) Sites

Surface samples will be collected from five background sites: three within the port to provide reference conditions for the MH1 discharge; and two off Kaiti Reef to provide reference conditions for the MH11 discharge. Indicative sampling locations are shown in **Figure 4**.

Figure 3: Northern & Southern Stormwater Outlets: Indicative Mixing Zones

Figure 4: Indicative Background Sampling Sites

3 FREQUENCY OF MONITORING OF SPECIFIC PARAMETERS

3.1 Monthly Sampling

Stormwater monitoring will be undertaken monthly (or thereabouts as facilitated by suitable rainfall) for TSS, turbidity and salinity for the two years covering the period August 2016 to July 2017 such that at the end of that period 20 sample rounds have been undertaken if possible. This will facilitate statistical calculation of median and 75 percentile concentrations for TSS and turbidity in the pipe and mixing zone and allow calibration of the dilution achieved within each mixing zone and relative to background concentrations. After this period, or such longer period as is required to complete the requisite sampling rounds, monitoring will continue but the specific frequency, monitoring parameters and interim trigger limits specified in the consent condition 10 will be reviewed in consultation with Council.

Where monitoring rounds do not fall at monthly intervals for any reason, in any event monitoring rounds should be separated by at least a week of dry or at least light and intermittent rainfall.

3.2 Quarterly Sampling

In addition to the above sampling, the following parameters will be sampled at least once every 3 months (quarterly): pH, total petroleum hydrocarbons (TPH), dissolved metals (zinc, copper and lead); chemical oxygen demand (COD); total organic carbon (TOC), volatile suspended solids (VSS), tannin.

A sampling schedule is included in **Appendix B**.

3.3 Location of Monitoring of Specific Parameters

Not all parameters need to be sampled at all sites. Table 1 and Table 2 identify the sampling required quarterly and monthly respectively. By way of brief explanation of the pH and tannin sampling. It is considered that receiving environment surface sampling at the mixing zone edge for these parameters can be based on samples being composited into a single sample for analysis. This will provide a fair representation of pH and tannin concentration for comparison with the receiving environment trigger in the case of pH and for comparison with pipe tannin concentration.

Table 1: SLY Stormwater Sampling: Quarterly

Eastland Port Site Number/Sample Name	Sample Type	Tests required	Number of Samples (or measurement Required Quarterly	
				Comment
SLY MH1	SW	pH	1	pipe
		TPH	1	pipe
		Dissolved zinc	1	pipe
		Dissolved copper	1	pipe
		Dissolved lead	1	pipe
		Chemical Oxygen Demand	1	pipe
		Total Organic Carbon	1	pipe
		Tannin	1	pipe
SLY MH1 receiving environment-Mixing Zone	Marine water	pH	1	A composite of 3 surface grab samples at mixing zone edge
		Salinity	5	3 surface, 2 mid water
		Dissolved zinc	3	surface
		Dissolved copper	5	3 surface; 2 mid water
		Dissolved lead	3	surface
		Tannin	1	A composite of 3 surface grab samples at mixing zone edge
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH1 receiving environment-Background	Marine Water	Salinity	3	surface
		Dissolved copper	3	surface
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH11	SW	pH	1	pipe
		TPH	1	pipe
		Dissolved zinc	1	pipe
		Dissolved copper	1	pipe
		Dissolved lead	1	pipe

		Chemical Oxygen Demand	1	pipe
		Total Organic Carbon	1	pipe
		Tannin	1	pipe
SLY MH11 receiving environment - Mixing Zone	Marine water	pH	1	A composite of 3 surface grab samples at mixing zone edge
		Salinity	3	surface
		Dissolved zinc	3	surface
		Dissolved copper	3	surface
		Dissolved Lead	3	surface
		Tannin	1	A composite of 3 surface grab samples at mixing zone edge
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH11 receiving environment- background	Marine water	Salinity	2	surface
		Dissolved copper	2	surface
		Vertical Water Clarity	2	No sample. Measured in situ using Secchi disk
SLY MH9	SW	pH	1	pipe
		Dissolved copper	1	pipe
		TSS	1	pipe
SLY Post DSD	SW	pH	1	pipe
		Dissolved copper	1	pipe
		TSS	1	pipe
SLY Kaiti Beach Road	SW	pH	1	pipe
		Dissolved copper	1	pipe
		Dissolved zinc	1	pipe
		Dissolved lead	1	pipe
		TSS	1	pipe

Table 2: SLY Stormwater Sampling: Monthly

Sample Name	Sample Type	Tests required	Number of Samples (or measurement) Required Monthly	
				Comment
SLY MH1	SW	TSS; VSS; Turbidity	1	Pipe
SLY MH1 receiving environment-mixing zone	Marine water	Salinity; TSS; turbidity	5	3 surface, 2 mid water
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH1 receiving environment-background	Marine water	Salinity; TSS; turbidity	3	surface
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH11	SW	TSS; VSS; turbidity	1	pipe
SLY MH11 receiving environment- mixing zone	Marine water	Salinity; TSS; turbidity	3	surface
		Vertical Water Clarity	3	No sample. Measured in situ using Secchi disk
SLY MH11 receiving environment- background	Marine water	Salinity; TSS; turbidity	2	surface
		Vertical Water Clarity	2	No sample. Measured in situ using Secchi disk
SLY MH9	SW	TSS	1	pipe
SLY Post DSD	SW	TSS	1	pipe
SLY Kaiti Beach Road	SW	TSS	1	pipe

4 SAMPLING METHODOLOGY

At each pipe discharge location, two grab stormwater samples of equal volume will be collected at MH1 and MH11 prior to the discharge entering or being influenced by (e.g. back flooding) the marine waters. The second of the two 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 other pipe sampling points.

The pipe samples are to be collected with reference to the following information which is to be recorded as part of the sampling protocol: the approximate time since rainfall started (if known); an estimate of the magnitude of the rainfall at the time of sampling (mm/hr); the number of days since the preceding rainfall event.

Rainfall data will be taken from reported values from the Paraone Rd gauge (https://www.gdc.govt.nz/sites-list/showSite/170/rainfall). This gauge is located approximately 2.4 km 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:

- SOP 1.0 for Sample Handling, Storage, Shipping, Recordkeeping, and Chain of Custody
- SOP 4.0 for Stormwater Sampling
- SOP 6.0 for Equipment Decontamination
- SOP 7.0 Collection of water samplings from a boat

The SOP manual held by Eastland Port contains a copy of the abovementioned procedures. They are also reproduced in **Appendix G**.

A Guideline for marine sampling at the Southern Logyard is included in **Appendix F**.

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 Eastland Port. 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.

Other information, such as depth and/or the relative strength of flow and photographs (of both the sampling location and receiving environment 'mixing zone'), should be recorded for each sampling event.

5 FIELD SHEETS

The Stormwater Sampling Field Sheet will be filled in for the pipe samples and the Marine Sampling Field Sheet will be filled in for the receiving environmental and background samples. **Appendix C** contains an Eastland Port field sheet template.

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 Eastland Port record. This is described in detail in SOP 1.0: Sample Handling, Storage, and Shipping, Recordkeeping and Chain of Custody.

Copies of the quarterly sampling and monthly sampling COC forms are in **Appendix D**. A guide for which sampling bottles to use for each sample location is included in **Appendix E**.

7 SAMPLING METHODS

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

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.

Appendix A:

SLY Sampling Locations

N

1:4,000 @A4

0 25 50 75 100 125 m

AA1146 EASTLAND PORT COMPLIANCE PROGRAMME

Southern Logyard (Kaiti Beach Rd) Monitoring Sites

Plan prepared for Eastland Port Ltd. by 4Sight Consulting Ltd.

Date: 29/04/2015
Version: 2.0
Author: Paul Sorensen
Checked: Christine Oakey
Approved: Christine Oakey

4SIGHT CONSULTING

Aerial imagery sourced from Gisborne District Council GIS viewer (2017).

N

Scale 1:8,000 @ A4

0 160 240m

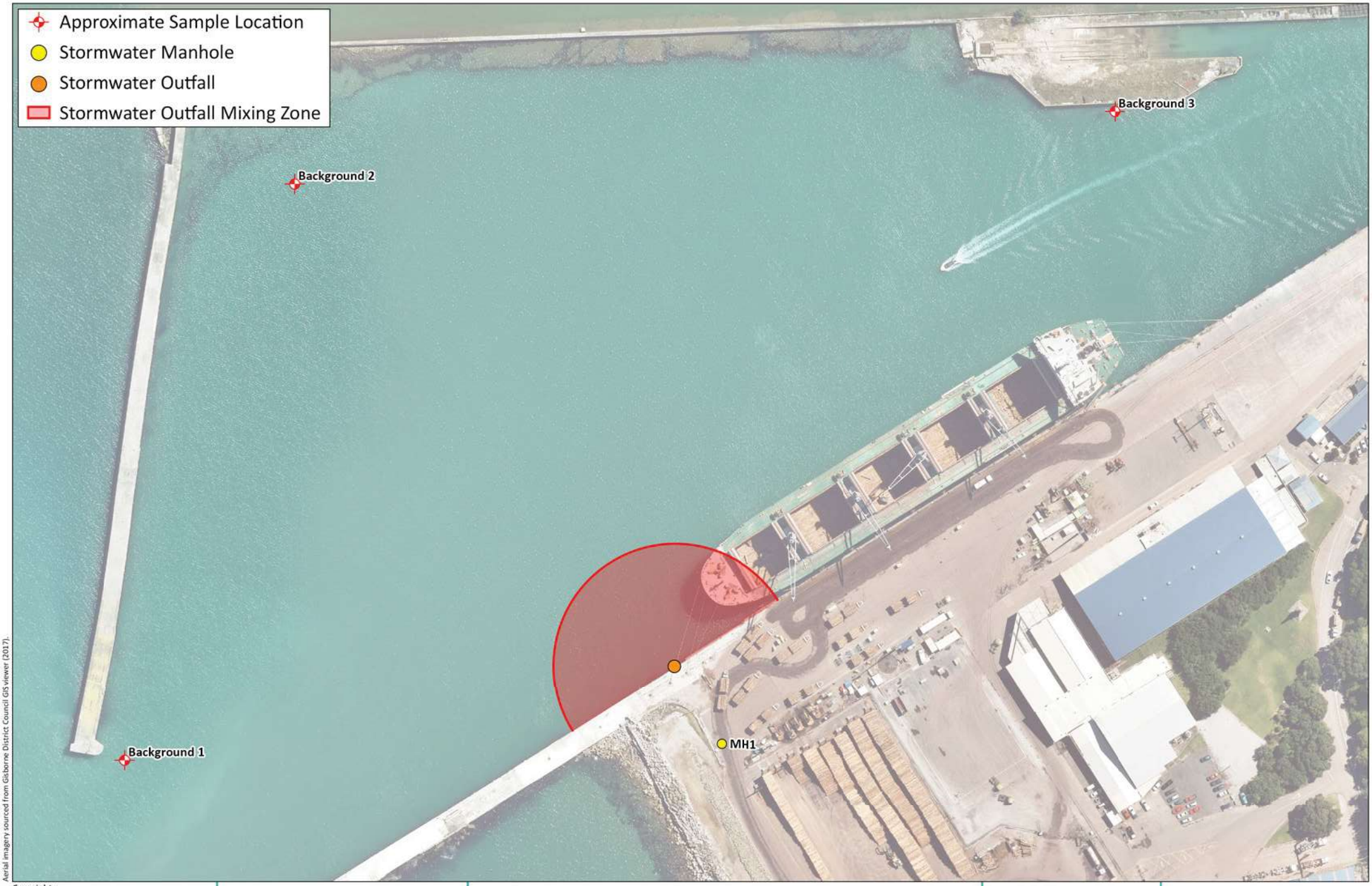
AA1146 - Outsourced Compliance Program

Southern Logyard Stormwater Outfall: **Site Plan**

Figure prepared for Eastland Port Ltd by 4Sight Consulting.

Date: 18/04/2019
Version: 0.1
Drawn: Sam Hendrikse
Checked: Oliver Bone
Approved: Mark Poynter

4SIGHT CONSULTING



Aerial imagery sourced from Gisborne District Council GIS viewer (2017).

N

Scale 1:2,000 @ A4

0 40 80m

AA1146 - Outsourced Compliance Program

Southern Logyard Stormwater Outfall: **Northern Site**

Figure prepared for Eastland Port Ltd by 4Sight Consulting.

Date: 18/04/2019
Version: 0.1
Drawn: Sam Hendrikse
Checked: Oliver Bone
Approved: Mark Poynter

4SIGHT CONSULTING

Aerial imagery sourced from Gisborne District Council GIS viewer (2017).

N

Scale 1:2,000 @ A4

0 40 80m

AA1146 - Outsourced Compliance Program

Southern Logyard Stormwater Outfall: **Southern Site**

Figure prepared for Eastland Port Ltd by 4Sight Consulting.

Date: 18/04/2019
Version: 0.1
Drawn: Sam Hendrikse
Checked: Oliver Bone
Approved: Mark Poynter

4SIGHT CONSULTING

Appendix B:

SLY Sampling Schedule

SLY Sampling Schedule

Quarter 1			Quarter 2			Quarter 3			Quarter 4		
January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Quarterly Sampling – Quote 67532	Monthly Sampling - Quote 79937	Monthly Sampling - Quote 79937	Quarterly Sampling – Quote 67532	Monthly Sampling - Quote 79937	Monthly Sampling - Quote 79937	Quarterly Sampling – Quote 67532	Monthly Sampling - Quote 79937	Monthly Sampling - Quote 79937	Quarterly Sampling – Quote 67532	Monthly Sampling - Quote 79937	Monthly Sampling - Quote 79937

Notes:

- Quarterly sampling needs to be undertaken once within the quarter.
- If the quarterly sampling cannot be taken in the month of January, April, July or October, the quarterly sampling needs to be collected at the earliest possibility. This will also mean that in that month quarterly and monthly sampling needs to be undertaken to ensure the required amount of samples.
- Bottles for the quarterly sampling will be delivered on the last week of December, March, June and September.
- Bottles for the monthly sampling will be delivered on the last week of January, February, April, May, July, August, October, November.

Appendix C:

Field Forms

Stormwater Sampling Form

Job Information			Equipment				
Date:	**Time:** Arrive: Depart:		**Water quality equipment description:**	Calibration Records Filed?	Y	N	NA
Project Name: EPL Outsourced Compliance Programme	**Project Number:** AA1146		**Interface Probe Number:**	Calibration Records Filed?	Y	N	NA
Site Location:	**Operator:**		**Sampling Equipment Type:**				
Weather:	**Rainfall event start time/date:**		**Event Rainfall Depth:**	**Number of dry days before sampling:**			
Reason for sampling: Standard Compliance Programme (**Circle frequency**: Monthly/2 Monthly/Quarterly/6 Monthly) or Additional Monitoring (describe):							

Sample Details					Observations			
EPL Site Number	**Lab Sample ID**	**Sample Time**	**Pipe Flow Depth (m)**	**Flow (Strong/Moderate/Light)**	**Debris Present** (Y/N: type)	**Foams/Scums**	**Clarity** (Clear/Slightly Turbid/Turbid/Very Turbid)	**Photos Reference**

Additional Comments:

Field Quality Control Checks					
Was pre-cleaning sampling equipment used for these samples?	Y	N	Consistent with COC form?	Y	N
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	COC Filled out?	Y	N
Sampling has been undertaken in accordance with the Site Specific Sampling Protocol and SOPs?	Y	N	Signed:		

Marine Water Sampling Form

Job Information			Equipment				
Date:	**Time:** Arrive: Depart:		**Water quality equipment description:**	Calibration Records Filed?	Y	N	NA
Project Name: EPL Outsourced Compliance Programme	**Project Number:** AA1146		**Interface Probe Number:**	Calibration Records Filed?	Y	N	NA
Site Location:	**Operator:**		**Sampling Equipment Type:**				
Weather:	**Rainfall event start time/date:**		**Event Rainfall Depth:**	**Number of dry days before sampling:**			
Reason for sampling: Standard Compliance Programme (Circle frequency: Monthly/2 Monthly/Quarterly/6 Monthly) or Additional Monitoring (describe):							

Sample Details				Observations				
EPL Site Number	**Lab Sample ID**	**Sample Time**	**Depth of sample**	**Debris Present** (Y/N: type)	**Foams/Scums** (Y/N)	**Clarity** (Clear/Lightly Turbid/Turbid/Very Turbid)	**Dredging Influence** (Y/N)	**Photos reference**

Sample Details				Observations				
EPL Site Number	**Lab Sample ID**	**Sample Time**	**Depth of sample**	**Debris Present** (Y/N: type)	**Foams/Scums** (Y/N)	**Clarity** (Clear/Lightly Turbid/Turbid/Very Turbid)	**Dredging Influence** (Y/N)	**Photos reference**

Additional Comments:

Locations not sampled (reasons)**:**

Field Quality Control Checks					
Was pre-cleaning sampling equipment used for these samples?	Y	N	Consistent with COC form?	Y	N
Was pre-cleaning sampling equipment properly protected from contamination?	Y	N	COC Filled out?	Y	N
Sampling has been undertaken in accordance with the Site Specific Sampling Protocol and SOPs?	Y	N	Signed:		