6

WHARF

Dredging and Disposal Management Plan

(Stage 1 & Maintenance Dredging)

HBRC Certified July 2019

NAPIER PORT

DOCUMENT CONTROL

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CONSULTATION

ASSOCIATION	
FISHING LIAISON GROUP	YES
MANA WHENUA HAPŪ	YES

CERTIFICATION PROCESS

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PLAN CERTIFICATED

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CONSENT CL180009E – REFERENCES

CONDITION	PAGE REFERENCE WITHIN THE PLAN
8 (a)	Pages 22, 26, 27 and Appendix 1 Dredge Map, depth and volumes
8 (b)	Page 23 Dredge type, duration, operation hours
8 (c)	Page 23 Dredging methodology
8 (d)	Page 28 and Appendix 1 Locations and quantities of disposed dredged material
8 (e)	Page 36 Maintenance equipment and systems

8 (f)	**Page 35 and 36 Biofoul, waste management and refuelling**
8 (g)	**Page 35 Staff and Contractor responsibilities**
8 (h)	**Page 35 Training**
8 (i)	**Page 35 Environmental incidents and emergency management**
8 (j)	**Page 35 Environmental complaints management**
8 (k)	**Page 35 Compliance monitoring**
8 (l)	**Appendix 2, 3, 4 and 5 Corrective actions and management plans**
8 (m)	**Page 13 and Appendix 2, 3, 4 and 5 Stakeholder Engagement**
8 (n)	**Page 8 and Figure 4-6 Disposal strategy and location**
8 (o)	**Page 32 and Appendix 3 Biosecurity requirements**

CONTENTS

LIST OF ABBREVIATIONS

ADM	Adaptive Dredge Management
AMP	Avian Management Plan
BHD	Backhoe Dredger
BMP	Biosecurity Management Plan
EWMA	Exponentially Weighted Moving Average
FLG	Fisheries Liaison Group
HBRC	Hawke's Bay Regional Council or Consenting Authority
IAPP	International Air Pollution Prevention
IMO	International Maritime Organisation
IOPP	International Oil Pollution Prevention
LINZ	Land Information New Zealand
MBES	Multibeam Survey
MNZ	Maritime New Zealand
MOSS	Maritime Operator Safety System
MPI	Ministry of Primary Industries
NCC	Napier City Council
NTU	Nephelometric Turbidity Units
ODA	Off-shore Disposal Area
PAR	Photosynthetically active radiation
RHM	Regional Harbour Master
RLP	Restricted Limits Plan
QA	Quality Assurance
QC	Quality Control
SBS	Single Beam Survey
SMS	Safety Management System
SSC	Suspended Sediment Concentration
SVOC	Semi Volatile Organic Compounds
TSHD	Trailing Suction Hopper Dredger
TSS	Total Suspended Solids
VDV	Vista Data Vision
WQMP	Water Quality Management Plan

Fisheries Liaison Group input

Napier Port has provided the Fisheries Liaison Group (FLG) the opportunity to provide input into DDMP. All recommendations have been adopted in the plan.

Napier Port shall provide any written recommendations from the FLG to the Hawke's Bay Regional Council (Manager Compliance) at the same time the management plan requiring certification is lodged with an explanation as to how the recommendations (from the FLG) have been included in the plan, and if they have not, the reasons why.

1. INTRODUCTION

1.1 BACKGROUND AND OBJECTIVE

This Dredging and Disposal Management Plan (DDMP) has been developed for Napier Port's 6 Wharf and Dredging Project. The objective of the DDMP is to ensure the dredging and disposal activities associated with the project meet the conditions of consent and are consistent with the measures set out in the Marine Wildlife Management Plan and the Avian Management Plan

Contractors undertaking dredging and disposal works shall meet the requirements of this DDMP, and these shall be reflected in their own plans, policies and procedures.

The DDMP includes key management plans, each separately certified by the consenting authority:

- Water Quality Management Plan (WQMP)
- Biosecurity Management Plan (BMP)
- Marine Wildlife Management Plan (MWMP)
- Avian Management Plan (AMP)

For completeness purposes, the above management plans and 6 Wharf coastal permits are appended to this DDMP.

1.2 PROJECT AREA AND LOCATION

Figure 4-1 in section 3 of the DDMP, shows the dredge footprint for all stages of the Project. *Figure 4-6* in section 3 of the DDMP shows the offshore disposal area (ODA) and existing inshore disposal areas for the Project.

1.3 PURPOSE OF DDMP

The purpose of this DDMP is to describe the dredging plant, work method and management systems used to deliver the dredging component of the 6 Wharf, Stage 1. Stage 1 involves capital dredging beneath the proposed new wharf, in the inner port area, swinging basin and part of the deep water channel.

This DDMP includes the Water Quality Management Plan (WQMP) and Biosecurity Management Plan (BMP) and specify how dredging practices and procedures will ensure that any actual or potential adverse effects on the marine receiving environment are avoided or otherwise mitigated to the greatest extent possible. In addition, the Marine Wildlife Management Plan (MWMP) and the Avian Management Plan (AMP) is attached, along with the 6 Wharf coastal permits.

The content of the DDMP is guided by normal dredging best practice dredge management and the scope and requirements as set out in the conditions of the 6 Wharf consent.

1.4 REVIEW OF THE DDMP

The Plan will be reviewed annually after the initial certification by HBRC for the first five years as a minimum.

1.5 GEOGRAPHICAL CONTEXT

Napier Port is situated on the south-western edge of Hawke Bay adjacent to Napier City. As it is not part of a natural embayment, it is the North Island's only breakwater-based port and is developed largely on reclaimed land.

Napier Port is also the only container port on the east coast of the North Island of New Zealand. It serves as the primary export and import port for the Hawke's Bay region, and further afield into adjacent regions. It is now the fourth largest container terminal in New Zealand, and the sixth port in overall tonnage.

The Port has been progressively developed since the late 19th century, and now comprises a reclaimed land area of approximately 52 hectares. The key features of the Port are its substantial breakwater, the berths and inner harbour, and the land area used for access, cargo storage and handling and Port administration.

1.6 HISTORICAL CONTEXT

Tangata whenua of Hawke's Bay have strong traditional and cultural relationships with the coastal environment. As kaitiaki (or guardians) of their coastal resources, they have assumed the responsibility to ensure the mauri (life force) of these resources is safeguarded. The significance of this traditional and cultural relationship is recognised by the current Port administration, who are developing closer links with local tangata whenua organisations including through involvement in the current application processes.

Early European history includes records by Captain James Cook in December 1769 of the prominent feature of 'bluff head', today known as Bluff Hill or Scinde Island. The site of what was to become the Port is described as…:

"… on each side of the bluff head is a low and narrow sand or stone beach, between these beaches and the mainland is a pretty large lake of salt water as I suppose; on the SE side of this head is a very large flat which seems to extend a good way inland to the westward,…"

The reference to the "large lake of salt water" is the Ahuriri Lagoon. The area connecting the sea and the lagoon saw the development of early port activity including through to mid-1862, including dredging and reclamation within Ahuriri Lagoon, the Inner Harbour and the Iron Pot. Increased development pressure, and natural limitations, such as the shallow depth of the harbour, tidal movement uncertainty and shingle bank migration led to discussion on the merits of a new harbour. As a result the Napier Harbour Board was formed and funds allocated to construct the first groyne (breakwater).

Work on the development of an artificial harbour at Bluff Hill began in 1887. From 1887 - 1890 the construction of the Port's breakwater took place. This breakwater (designed to be 2,470 feet in length), projected eastward out from Bluff Hill shore. The typical breakwater design headed northwards before

arching westward more or less parallel to Bluff Hill, creating a large area of coastal water which was sheltered from the high ocean waves.

The 1931 Napier Earthquake resulted in significant changes to the land and coastal environment, with the bed of the inner harbour rising more than two metres, thereby removing its ability to act as a viable port. This natural disaster resulted in the development of the new Napier Port, with the use of Port Ahuriri changing to better suit the shallow depths[1].

The main concrete armoured breakwater was progressively developed and was not completed until the late 1960s. Construction of the limestone spur breakwater (along with the reclamation within these boundaries) was carried out in the early 1970s.

In 1978-79, the Hawke's Bay Harbour Board carried out a major dredging operation to widen and deepen the entrance channel into the Port. This channel was initially formed in 1973 to a clear overall depth of 12m. The north end alignment of the channel (dredged to a depth of 12m in 1976) had a north-easterly orientation to provide the shortest distance to the natural 12m isobath. However, as ship size increased and with a need for improved navigational safety, pilots preferred to approach the entrance channel from a northerly direction. Before this, the main approach channel to the Port was to the south of Pania Reef on the line of the Westshore beacons. The southern channel between Pania Reef and the Breakwater was surveyed and buoyed in 2003. This channel was for ships arriving from, and departing to the south of Napier in the direction of Cape Kidnappers.

In 2012, limited capital dredging was undertaken to provide a clear overall depth of 12m for the full width of the 200m wide shipping lane as required by international and national standards to allow safe navigation in extreme weather conditions. Further capital dredging took place in 2015 to provide a clear overall depth of 12.4m, the current depth.

1.7 INDUSTRIAL AND COMMERCIAL HISTORY

New Zealand began to be served by container services from 1971/72. From 1978 Napier became the base for regular service in the form of Scan Carriers "roll on/roll off" vessels.

Dedicated container services developed from the early 1990's in Napier, following New Zealand port reform when the Harbour Board was replaced by the port company which invested in the first shore crane.

Containerisation affects not only the method of moving cargo, but equally critically has had a major impact on shipping. Through until the early 1970's, containers were carried on converted cargo vessels. As purpose built container ships began to appear, specialist port infrastructure was needed to service the developing transport system, which eventually reached New Zealand and Napier.

The impact of containers in Napier has been highly significant, from a small number or small containers carrying a handful of tonnes in 1978 to now handling over a quarter of a million TEUs .

To obtain greater economies of scale, international shipping lines have greatly expanded the size of vessels in recent decades – in the process placing pressure on ports to handle ever larger and more complex vessels

[1] Port Ahuriri continues to be used by the Hawke's Bay fishing fleet and a range of recreational activities, alongside commercial and residential activities.

with increasing speed, lower cost and continually improving systems. Proficiency in information technology and systems is now a core operating skill for ports, along with handling shipping and cargo.

As with other ports, the growth of the container trade has led to a need for highly efficient handling processes and the use of off-site facilities for container storage, and in some cases for cargo agglomeration. Napier Port relies on container management, particularly for the storage of empty containers during the busy export period, at its Thames Street, Pandora yard at Ahuriri.

Significant growth has also occurred in bulk trades which do not rely on containers, including log and pulp handling.

While conventional and bulk shipping continues to play a significant role, a further growth area has been in passenger liners, meeting the demand for safe and unique holiday opportunities in the South Pacific.

1.8 6 WHARF

It is proposed to construct a concrete wharf, 350 metres in length and 34 metres wide, alongside the northern face of the existing container terminal.

Construction of the wharf, subject to final design, involves placement of 332 piles and decking. It also involves reshaping and increasing the depth of the existing revetment (faced with limestone and/or concrete armour units) beneath the wharf at a gradient of 2 (horizontal) to 1 (vertical), transitioning back to the existing reclaimed face of the Northern Container Terminal.

The construction site and laydown area for the storage of materials (including any hazardous substances), plant, machinery and associated office and other construction site facilities will be securely fenced and located adjacent to the working area within the Port's operational area.

Construction will involve replacing the existing revetment, driving the piles and laying the decking area.

1.9 DREDGING

The dredging applications involve both capital dredging (dredging that lowers the sea bed to a greater depth than previous dredging) and maintenance dredging (dredging that removes any material that has started to fill in the area that has already been capital dredged).

The capital dredging work will deepen the existing swinging basin and harbour entrance, and progressively extend a larger channel out from the Port, to a final depth of 14.5m. This will be done in five stages (campaigns).

The first stage will provide full depth to 14.5m under the new wharf and an adjacent "berth pocket". It will also include deepening the swinging basin, parts of the inner harbour area and the first part of the area of the new channel closest to the Port to a depth of 12.5m. This will involve approximately 1.14 million cubic metres of dredged material.

Stages 2 to 5 will involve extending the new channel and increasing its depth by 0.5m each campaign. Each of campaigns 2 to 5 involves a similar volume of material; the overall total being approximately 3.2 million cubic metres.

Between campaigns, some material will enter the previously dredged areas. This will be dredged either as part of the next capital dredging campaign or as a separate maintenance dredging activity.

The bulk of the material to be removed in the capital dredging campaigns is the consolidated stiff silt and mudstone which comprises the sea floor in the vicinity of the Port. This requires a type of dredge called a backhoe dredge. This is fixed in place while a long-reach excavator breaks up the material and places it in a nearby barge for transport to the offshore disposal area. For the less consolidated material, including the maintenance dredging material, a trailing suction hopper dredge will be used. This sucks up the material, stores it, and the dredge itself then transports the material to the disposal area.

The first stage of dredging will take approximately 50 weeks, with each of the subsequent four stages (stages 2 to 5) taking eight or nine weeks. As the dredging programme is subject to the demands for larger vessels visiting the Port, the timing of the campaigns will be flexible.

1.10 SPECIFIC CONDITIONS OF RESOURCE CONSENT CL180009E

Condition 7: At least one month prior to commencing Stage 1 capital dredging the consent holder shall submit a Dredging and Disposal Management Plan (DDMP) to the Council for certification. Works shall not commence prior to certification. The objective of the DDMP is to ensure that all dredging and disposal activities are managed in a way that is in general accordance with the information referred to in Condition 1 of this consent and the detailed requirements of the DDMP.

Any changes to a certified DDMP shall be discussed in advance with the Council and the change is to be submitted and certified prior to any activity associated with the change commencing.

Condition 8: The DDMP shall include details of:

a) A map and description of the area to be subject to capital dredging, the intended depth of dredging, and the estimated volume and nature of the dredged material.
b) A description of the number and types of dredges to be used, the intended start date and the duration and expected hours of operation for the stage.
c) A description of dredging methodology to be used.
d) A description of how the location and quantities of disposed dredged material are recorded.
e) A description of the maintenance of equipment and systems.
f) A description of any other measures to avoid or mitigate biofouling, management of waste, and refuelling procedures.
g) Staff and contractors' responsibilities.
h) Training requirements for employees, contractors, any subcontractors and visitors.
i) Environmental incident and emergency management.
j) Environmental complaints management.
k) Compliance monitoring.
l) Corrective actions, if necessary in specified circumstances (including, where necessary, relating to wildlife management).
m) Stakeholder and communication management.
n) The disposal strategy for dredged material (including the chosen location(s)).
o) Any biosecurity requirements arising from Condition 17 of this consent.

Condition 9: The DDMP shall be consistent with, and as appropriate shall give effect to, measures within the Marine Wildlife Management Plan and the Avian Management Plan.

2. MANA WHENUA ENGAGEMENT

A partnership with mana whenua hapū was formed during the consent application process. Engaging and fostering of this relationship resulted in a series of hui-a- hapū.

A cultural impact assessment report capturing the aspirations of mana whenua hapū was developed, along with the desire for cultural monitoring and information sharing.

The Napier Port, Pou Tikanga – Environmental and Cultural Advisor has established a mana whenua based committee as a part of the Marine Cultural Health Programme. The Advisor will be working in partnership with the mana whenua committee having specific regard to the environmental and cultural aspects of the 6 Wharf Project, including the Dredging and Disposal Management Plan.

A summary of the Dredging and Disposal Management Plan will be provided at the next Marine Cultural Health Programme hui.

- The committee to provide input into the annual reviews of the DDMP

3. STATUTORY CONTEXT

3.1 POLICY STATEMENTS AND PLANS

The following provides an analysis of policy that applies to the dredging activities and formed the basis for the application of the conditions of consent.

3.1.1 NEW ZEALAND COASTAL POLICY STATEMENT 2010 (NZCPS)

The NZCPS is a comprehensive policy framework for coastal management. Although it includes a number of restrictive provisions, these only apply to the extent that there are valued areas and resources (such as Pania Reef) which could be affected by the project. The decisions made in formulating the project have avoided, remedied and mitigated effects on such areas and values in ways that have made the project consistent with this policy. The NZCPS also recognises the importance of an efficient and safe national network of ports, and that ports have to locate and carry out their activities at the interface of land and sea.

When assessed directly against the various relevant NZCPS policies, Napier Port's proposed wharf and dredging project is not opposed to or inconsistent with any policy areas, and it gives effect to a number of the policies. The project is largely taking place within the Port Management Area and is subject to evaluation within the series of policies and rules that apply to that area. While there are both actual and potential effects associated with the project, the mitigation which is either inbuilt within the project or is proposed through draft conditions has been able to ensure that effects will all be minor or less.

3.1.2 HAWKE'S BAY REGIONAL POLICY STATEMENT (2006)

The project is not inconsistent with the objectives of the Regional Policy Statement that relate to the coastal environment, and to regionally significant infrastructure. The investment and ongoing development proposed is in line with, and given effect to, this regional policy. The single objective relating to coastal

water quality underpins the water classification applied through the regional coastal plan, with which the dredging and disposal activities are also consistent.

The policy relating to tangata whenua requires respectful and appropriate consultation, which Napier Port is undertaking, and the recognition and protection of waahi tapu and mātaitai areas. By emphasising the intention to minimise adverse effects on Pania Reef, while also providing monitoring information, these regional-level objectives and policies are being given effect to.

3.1.3 HAWKE'S BAY REGIONAL COASTAL ENVIRONMENTAL PLAN (2014)

This plan recognises and provides for Napier Port by identifying various areas as set aside for Port activities, and also sets out rules and policies relevant to the applications. The plan also sets out environmental guidelines which the project has been assessed against, including water quality, deposition of contaminants (including dredged material), and structures and occupation of the coastal marine area.

When evaluated against the policy and guidelines, the project is found to be in accordance with this plan.

3.1.4 2018 CONSENTS FOR CAPITAL AND MAINTENANCE DREDGING

Following over three years of significant investigations and technical studies, Napier Port applied for, and after a hearing by three independent commissions consent was granted by HBRC. The consents came 'into effect' in November 2018 and expires in May 2053. Table 3-1 below sets out the consent number, nature and duration of each respective activity. The relevant capital and maintenance dredging consents are CL180009E, CL180010E and CL180011E.

Table 3-1: Consent number, nature and duration of each respective activity

Napier Port Wharf and Dredging Project		
Consent No.	**Nature of Resource Consent**	**Duration**
Construction, Use and Maintenance		
CL180008C (AUTH-123841-01)	Coastal permit for the construction, use, operation and maintenance of a new wharf (Wharf 6) and associated activities.	35 years (Construction -15 years)
Capital Dredging		
CL180009E (AUTH-123842-01)	Coastal permit for Stage 1 capital dredging beneath the proposed new wharf, in the inner Port area, swinging basin and part of the Deep Water Channel.	35 years
CL180010E (AUTH-123843-01)	Coastal permit for Stages 2 to 5 capital dredging within the inner Port area, swinging basin, in and near to the existing three channels and to form a new channel.	35 years
Maintenance Dredging		
CL180011E (AUTH-123844-01)	Coastal permit for maintenance dredging within the areas for which capital dredging permits are sought (Stages 1 to 5).	35 years

Napier Port Wharf and Dredging Project		
Consent No.	**Nature of Resource Consent**	**Duration**
Disposal of Dredged Material		
CL180012W (AUTH-123842-01)	Coastal permit for deposition and disposal of dredged material from capital and maintenance dredging into deposition and disposal areas shown in the application.	35 years
Occupation		
CL180013O (AUTH-123841-01)	Coastal permit for the occupation of the common marine and coastal area for existing Port activities (replacing the existing coastal permits held by Napier Port to occupy an area for Port purposes), the proposed new wharf, the adjacent berth pocket including the areas on both sides of the dolphins, and the new swinging basin, as shown in the plan attached to the application.	35 years

A full copy of the 6 wharf coastal permits is attached as Appendix 6.

3.1.5 EXISTING CONSENTS

Under the Hawke's Bay Regional Coastal Environment Plan, maintenance dredging within the Port Management Area is a permitted activity The disposal of that material being subject to coastal permit CL970159D, provides for the deposition of material in two disposal areas located off the coast of Westshore Beach in disposal areas "IA" and "R" ext, as shown in *Figure 3-1* below.

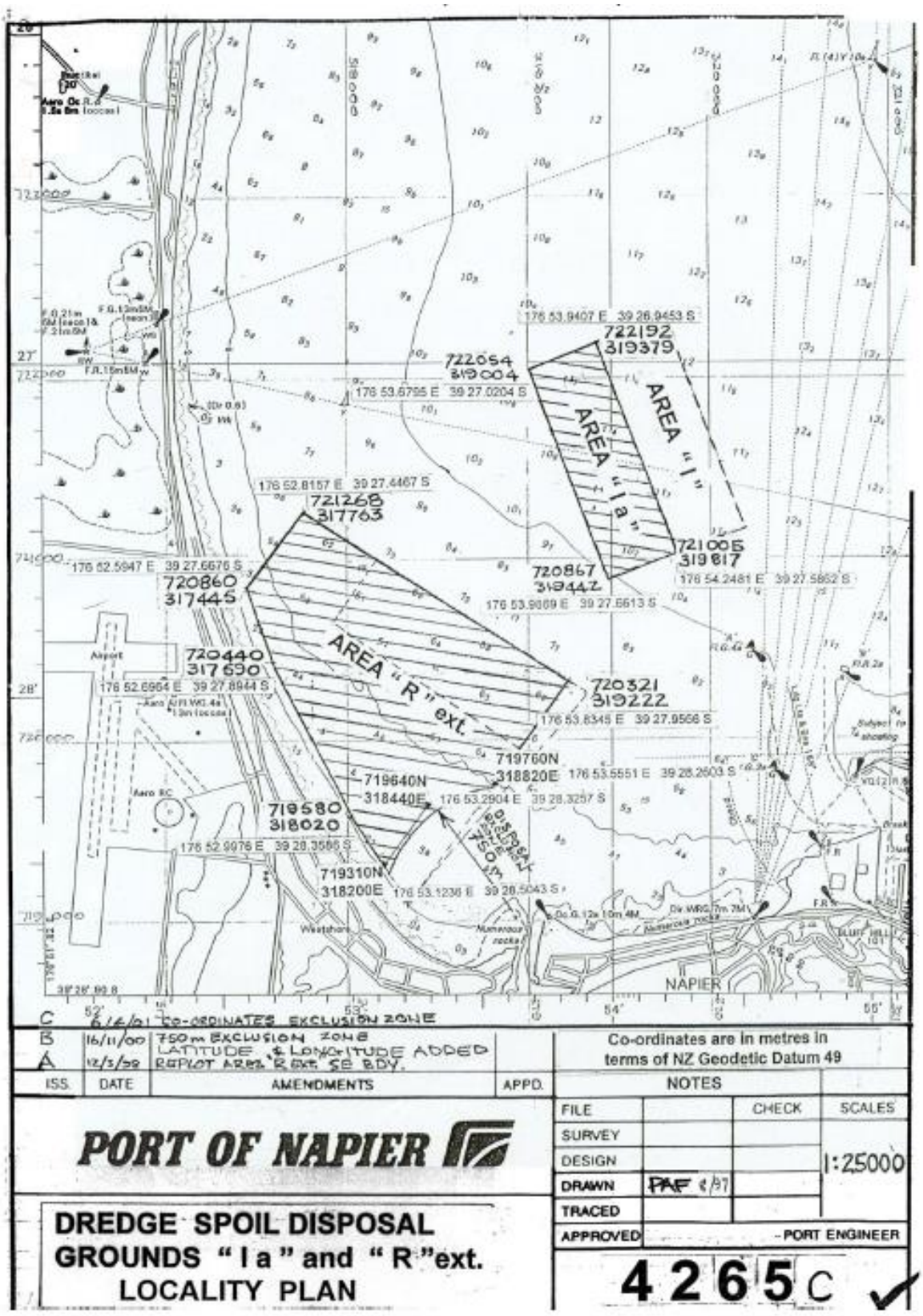

Figure 3-1 Dredge Disposal Areas "IA" and "R" ext.

A copy of coastal permit CL970159D is attached as Appendix 7.

3.2 SUMMARY OF EFFECTS

A summary of environmental effects and effects following the implementation of any mitigation measures where relevant for 6 Wharf is set out in Table 3-2 below.

Table 3-2: Summary of 6 Wharf Effects and Extent of Effects following Mitigation Measures

Type of Effect	Nature of Effect	Commentary	Extent of Effect following Mitigation	Mitigation
Coastal Processes	Wave height and direction (north of Port).	Small potential for changes to wave height and direction on some parts of coastline north of Port due to changes to Swinging Basin and Fairway.	Negligible	Mitigation already built into design of extended swinging basin and channel
	Sediment supply in coastal zone north of Port.	Already little contribution from south of Port to north of Port.	Negligible	Not needed
	Wave height and direction (south of Port).	Small potential for changes to wave height at Marine Parade/Town Reef due to dredge disposal. No change to direction of waves.	Negligible	Not needed
Water Quality	Discharge to water of any hazardous contaminants.	Dredged material is "clean" (i.e. contains no problem chemical or organic contaminants).	No effect	Not needed

Type of Effect	Nature of Effect	Commentary	Extent of Effect following Mitigation	Mitigation
	Discharge of sand, silt and clay during and following dredging and disposal of dredged material.	Localised and temporary effects of turbidity and suspended sediments near to dredged and disposal areas during dredging activity.	Less than minor	Monitoring of suspended sediments and turbidity at Pania Reef during dredging campaigns
		Longer-term potential for resuspension of material disposed at offshore site to affect Pania Reef.	Negligible	Mitigated through choice of disposal location and size of area
Benthic Ecology	Direct effect of dredging.	Removal of benthic sediments and lowering of sea bed over 117ha – associated with Stage 1 to 5 dredging.	Less than minor	Not needed
	Direct effect of disposal of dredged material.	Smothering of 350ha of offshore sea bed area with disposal material to a depth of approximately 1m.	Less than minor	Not needed
	Indirect effects of dredging of disposal of dredged material on Pania and other reef areas through sediment plumes and elevated turbidity, during dredging campaigns.	Risk of sediment plumes in unusual and adverse conditions reaching Pania Reef, or other reef areas.	Less than minor	Not needed, but turbidity monitoring proposed. Dredging would cease temporarily if Pania Reef was exposed to long duration sedimentation events associated with dredging activities.
	Indirect effects of dredging and disposal of dredged material on soft	Within immediate proximity (up to 100m) of active dredging and disposal areas.	Less than minor	Not needed

Type of Effect	Nature of Effect	Commentary	Extent of Effect following Mitigation	Mitigation
	sediment benthos close to project areas.			
	Longer term impacts of resuspension of sediment from disposal area.	Risk of resuspension of disposal material in longer term	Negligible	Not needed. However, ongoing monitoring of reef ecology proposed.
Commercial and Recreational Fishing	Direct and indirect effects of dredging and disposal of dredged material, and any dredge plume.	Modification of habitat in which fish breed or feed	Negligible	Not needed.
Marine Mammals	Noise and disturbance from wharf construction.	Implications of underwater noise from pile driving and other construction activities, including disturbance or damage to hearing.	Negligible	Management plan, including observation and response to any marine mammals in proximity.
Avifauna	Disturbance of habitat during wharf construction.	Potential to disturb and/or damage Little Blue Penguins living in existing revetment.	Potentially significant	Management plan, including rescue and relocation and/or offset contribution to alternative habitat or population.
		Potential effects on other birds nearby.	Minor or less	Not needed, but monitoring proposed.
Wharf Construction	Specific impacts on nearby population.	Potential impacts from noise, vibration and construction traffic.	No more than minor (will meet all standards in residential areas)	Noise management plan, construction traffic management

Type of Effect	Nature of Effect	Commentary	Extent of Effect following Mitigation	Mitigation
				plan (within overall construction management plan)
Coastal Access and Recreational Use and Values	Potential impacts on recreational fishing, beach use, coastal access, boating and surfing.	Potential impacts which may change recreational fishing	Negligible	Not needed
		Potential impacts which may change beach use or coastal access	No effect	Not needed
		Potential impacts on boating	Negligible	Not needed
		Potential impacts on surfing	Negligible – may be minor benefit on closest break	Not needed. Potential impact on surfing mitigated through design of channel
Natural Character and Visual and Landscape Values	Landscape and visual impacts of new wharf.	Assessed from a number of local viewpoints.	No more than minor	Not needed
	Natural coastal character.	Assessed on the basis of additional structure and activities in the coastal area.	Less than minor. Negligible in relation to marine environment	Not needed
Tangata Whenua Cultural Values	Adverse or beneficial cultural impact.	Implications of changes on cultural values, including Pania Reef, ecological values and customary use.	Minor.	Cultural monitoring proposed.

Type of Effect	Nature of Effect	Commentary	Extent of Effect following Mitigation	Mitigation
Marine Archaeology	Effect on items identified in the HBRCEP.	Assessed on the basis of effects on coastal processes.	Negligible	Not needed
Navigation and Safety	Risk management.	Taken into account in design of whole project.	No effect	Mitigation already built into design of all aspects of project
Climate Change and Natural Hazards	Implications in terms of coastal natural hazards.	Considered in location and design.	No effect	Not needed
	Lifelines implications.	Benefit in terms of additional capacity, modern structure.	Minor benefit	Not needed
Occupation	Occupation of defined coastal marine area for Port purposes.	Application includes replacement of existing permit to occupy, and extension to allow safe commercial operation and maintenance of new facilities (wharf and swinging basin).	Less than minor adverse effects. Moderate to significant benefit	Not needed
Economic Impacts and Benefits	Contribution of additional wharf and larger channel.	Implications of increased business and multiplier effect in wider regional economy – both short-term and long-term.	Moderate to significant benefit	Not needed

4. SCOPE OF WORKS

4.1 DREDGING LIMITS AND DEPTHS

4.1.1 STAGE 1 CAPITAL WORKS

The Stage 1 Capital dredging works consists of the following areas and as specified in *figure 4.1.*

- Swinging Basin to -12.5m
- Berth Pocket to -14.5m, plus an allowance for scour protection
- Existing channel widening to -12.5m
- Depending of the existing entrance to -12.5m

4.1.2 MAINTENANCE DREDGING

All channels, swing basins and berth pockets are subject to in-filling and require ongoing maintenance dredging. The limits for maintenance dredging are restricted to that of previous capital dredging campaigns both recent and historical.

Maintenance dredging depths are limited to that of previous capital dredging, otherwise are considered capital dredging and are subject to the limits of capital dredging allowed under the capital dredging consents.

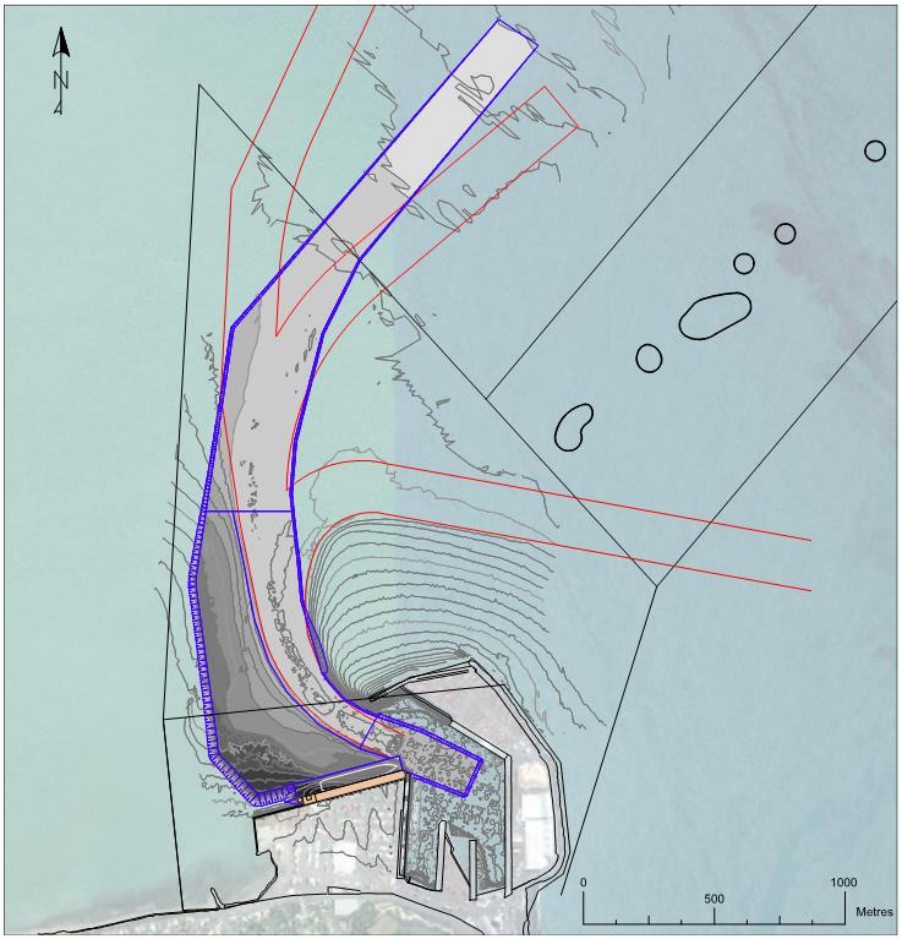

Figure 4-1 – Extents of Dredge Area (All Stages)

4.2 WORK METHOD

4.2.1 EQUIPMENT

BACK HOE DREDGE (BHD)

The majority of the Stage 1 capital dredging will be undertaken by the Back Hoe Dredge (BHD) GVK. This comprises a long-reach hydraulic excavator on a stationary floating pontoon which is stabilised in place by three “spuds” or poles which anchor the pontoon while it works, and which allow it to be relocated as necessary in accordance with the positioning system to be used. Such systems also ensure that the appropriate depths are achieved within acceptable tolerance levels. The weight of the dredge provides stability on the sea bed through the spuds. The dredge excavates the seabed and will fill a split-hopper barge, which will be towed by tug to the appropriate area for disposal. A continuous process of tugs moving back and forth will ensure the intended dredging and disposal programme is maintained to optimise the use of the dredging barges.

The tugs will be fitted with GPS to allow high accuracy placement of the dredge material.

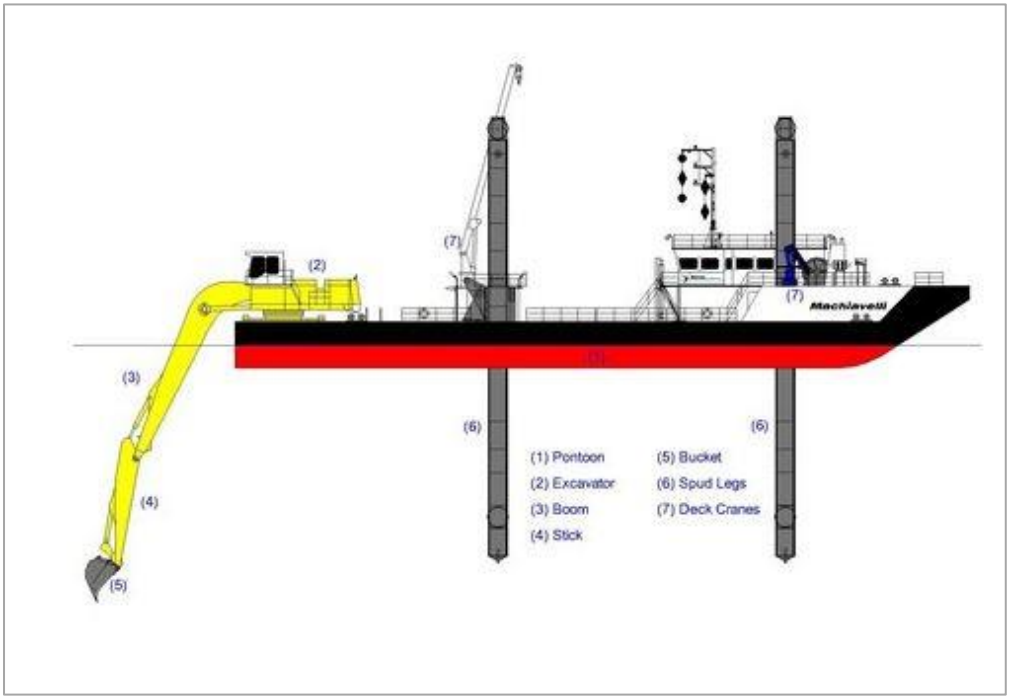

Figure 4-2 – Typical BHD

TRAILER SUCTION HOPPER DREDGE (TSHD)

A Trailer Suction Hopper Dredge (TSHD) will be utilised for Area A and some of Area A1 and in general for ongoing maintenance dredging. The TSHD that will utilised for the Stage 1 Capital Work, particularly in the areas of the Fairway and channels, and ongoing maintenance dredging until at least 2025 is the TSHD Albatros, as shown in *Figure 4-3* (or similar alternative) which regularly undertakes maintenance dredging activities at the port.

A TSHD is self-contained and self-propelled dredge that utilises a suction pipe and drag head which is placed on the bottom and through a combination of cutting forces, jet water and dredge pumps the material is sucked up and deposited into the hopper (hold) of the dredge barge. As the material

is mixed with water, excess water is removed from the hopper through an 'overflow'. The overflow material will contain a level of fine materials which is known to produce a plume which required management.

Figure 4-3 Albatros (TSHD)

On completion of loading, the TSHD will raise and store the suction pipe and drag head and proceeds to the disposal area, where once in position the load is released through bottom doors directly depositing dredged material towards the sea floor.

The TSHD is required to be fitted with GPS to allow accurate placement of the dredge material at the disposal site.

SWEEP BAR

In some instances, the use of a tug mounted sweep bar will be utilised. This method is effectively an underwater grader which can be used to smooth the bottom to the required depth, removing high spots and infilling low spots.

This method does not remove material from the seabed and does not involve disposal at an alternative location.

4.3 DREDGING OPERATIONAL TIMEFRAMES

Table 4.1 – Summary of approximate timeframes

Campaign	Start Date	Duration (weeks)	Hours of Operation
Maintenance/Capital Stage 1.	September 2019	4-6 weeks	24hrs/day
Capital Stage 1	March 2020	52- 66 weeks	24hrs/day

4.4 HYDROGRAPHIC SURVEYS

Hydrographic Surveys are required both for operational needs and to meet conditions of consent. Hydrographic surveys can be either Single Beam Survey (SBS) or Multibeam Survey (MBES), the latter providing a much higher density of sounding, but at a significantly greater cost in terms of time and effort. The following specifies the minimum standard of survey:

- Pre-dredge surveys of dredging areas – MBES
- Pre-dredge survey of ODA– MBES[2]
- Progress surveys Dredge Areas and ODA– SBES
- Payment Surveys – MBES
- Post Dredge Surveys – MBES as per LINZ requirements for navigation purposes
- Post Dredge Survey of ODA- SBES as per LINZ requirements for navigation purposes.

Contractors shall develop survey plans for all survey activities that include the following details and if required in accordance with LINZ requirements:

- Equipment
- Tolerances
- Benchmarks
- Calibration procedures
- Lines spacing or in the case of MBES coverage and overlap
- Data processing

4.5 GEOLOGICAL MATERIAL

The 1:250,000 Geology of the Hawke's Bay area map shows the Napier Port site to be underlain by reclamation fill. The cliff immediately south of Napier Port (Bluff Hill) is mapped as Pliocene Scinde Island Formation (Mangaheia Group) comprising calcareous sandstone and limestone. The Scinde Island Formation at Bluff Hill is overlain by early Pleistocene Kidnappers Group comprising gravel, silt and sand deposits.

A key element of the project was gaining a good understanding of the local geology, as shown in *Figures 4-4 and 4-5* below, which is known to be highly variable. Specific investigations were undertaken in 2015 and 2016, these being the most detailed undertaken by the port in its history[3].

- Nine land based machine boreholes to depths between 18.62 and 41.0m below ground level
- 16 barge based machine boreholes to depths between 2.8 and 27.65m below sea bed level
- 27 vibrocores to depths between 0.65 and 4.67m below sea bed level
- Three downhole shear wave velocity tests conducted in BH601, BH604 and BH606
- Laboratory testing

[2] Completed as part of ODA Benthic Baseline Survey 2019
[3] 6 Wharf Development – Geotechnical factual Report, Beca Ltd (Beca), 3 October 2016

The results of these investigations were coupled with historical geotechnical investigation data to develop a 3D Geological Model[4]. Modelling and analysis indicated the following major material types:

- Recent Marine Sediments- this unit representing the upper layer and consist of predominately soft to firm clayey silt, however lenses of sandy silt and stiffer silt are present.
- Quaternary Marine Sediment - this material predominantly comprises a firm to stiff clayey silt, however zones of medium dense sands and silty sands are also present within this layer.
- Residual Mangaheia Formation - this unit represents sandstone and siltstone of the underlying Mangaheia Formation rock that has been residually weathered to very stiff to hard fine sandy silt with some clay.
- Mangaheia Formation – this rock comprises bedded sandstone, siltstone and limestone with SPT-N typically greater than 50 blows/300mm.

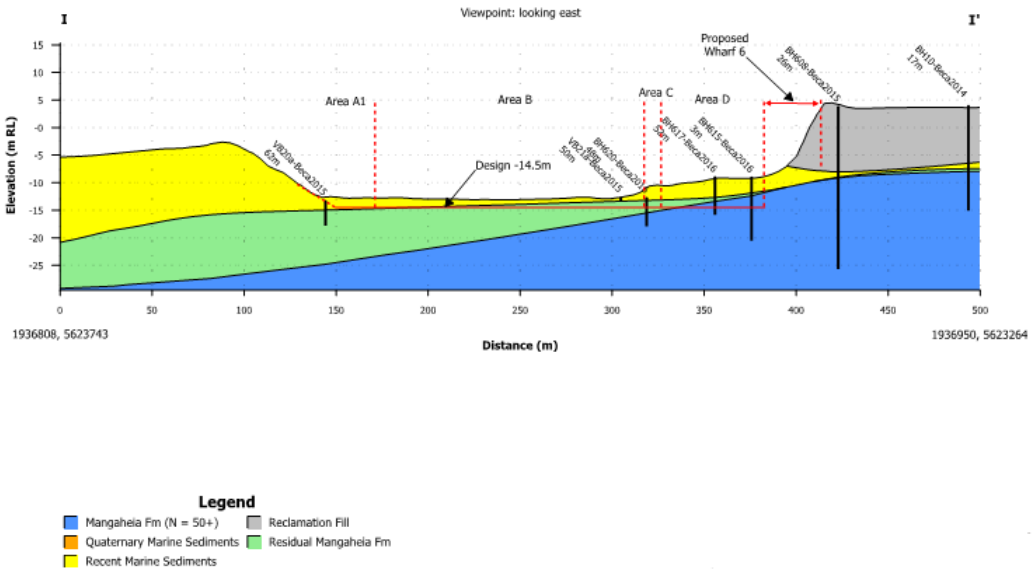

Figure 4-4 – Typical Geological Cross Section

[4] 6 Wharf Development – 3D Geological Model and Dredge Volumes, Beca Ltd (Beca), 15th May 2017

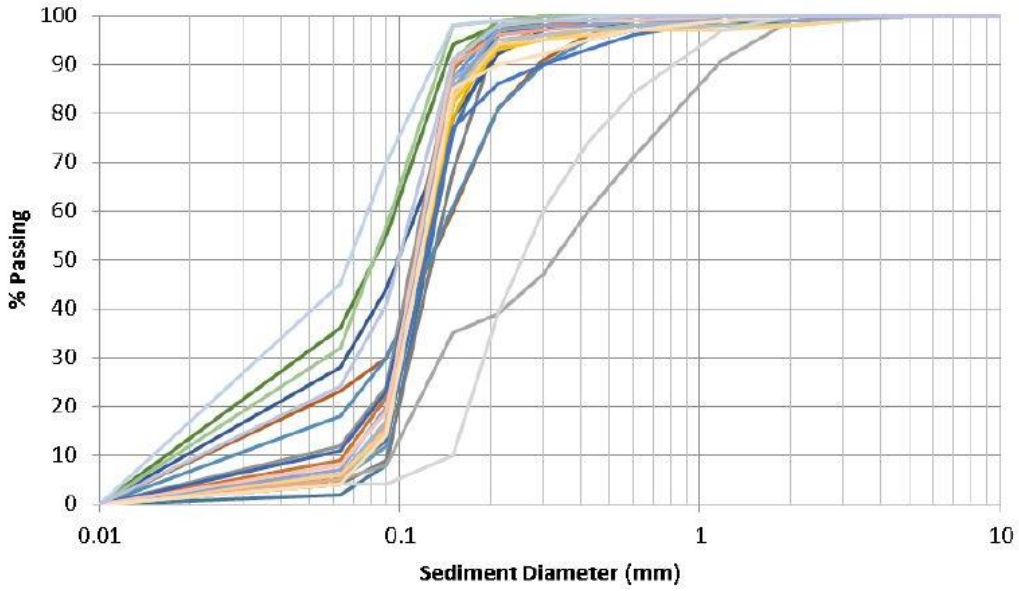

Figure 4-5 – Material Characteristics

4.6 DREDGING QUANTITIES

4.6.1 STAGE 1 CAPITAL WORKS

The following table indicates volumes for the Stage 1 Capital works[5].

Table 4-2 – Stage 1 Volumes

Area	Dredge Depth (mCD)	Unit Volume (m^3)							
		Recent Marine Sediment	Quaternary Marine Sediment	Residual Mangaheia Group	Mangaheia Group	Reclamation Fill	Total (Excl. over dredge)	Over dredge	Total (incl. Over dredge)
A	-12.5	25,400	0	0	0	0	25,400	14,500	39,900
A1	-12.5	5,000	0	0	0	0	5,000	4,000	9,000
B	-12.5	23,600	0	1,900	0	0	25,500	10,700	36,200
C	-12.5	850,900	700	100	0	0	851,700	59,400	911,100
D Berth Pocket	-13.00	142,500	17,000	26,400	6,600	0	192,500	6,500	199,000
Under Wharf	Varies (Total)	52,400	12,400	14,700	12,200	28,700	120,400	1,700	122,100
Overall Total		**1,099,800**	**30,100**	**43,100**	**18,800**	**28,700**	**1,220,500**	**96,800**	**1,317,300**

4.6.2 MAINTENANCE DREDGING

Maintenance dredging volumes are variable and subject to a number of factors including time between campaigns, operational requirements and frequency and intensity of storm events. Maintenance dredging campaigns are expected to be in the range of 100,000m^3 and 200,000m^3.

[5] Subject to minor change as wharf design progresses from developed to detailed design.

4.7 DISPOSAL

4.7.1 OFFSHORE DISPOSAL AREA

All material from Stage 1 will be deposited at the approved offshore disposal area (ODA) approximately 5km east of the Port, and in accordance with the conditions of consent. The ODA has the required capacity for all stages of the development and maintenance dredging for the duration of the consent (35 years).

In consultation with local commercial and recreational fishers, material from Stage 1 will deposited in the south-East portion of the ODA, with the aim to limit direct impacts on fishing grounds and deposit at the maximum distance from Pania Reef.

Any rock or hard material sourced from dredging will be deposited in the north-east corner of the ODA with the aim to cluster 'like' material in a dedicated location. This will also have an added benefit of creating an enhanced habitat for fish.

The baseline survey conducted by Cawthron in 2019 has not identified any areas of high ecological significance, and no areas where disposal is restricted within the ODA.

Material shall be deposited in an even manner with disposal locations and track plots recorded and provided to the Port on a regular basis. Hydrographic surveys shall be undertaken when required to confirm placement of material and where required as a condition of consenting provided to the consenting authority (HBRC).

Dredges and barges shall where possible utilise the shortest route from the dredging area to the ODA, being the through the South Pania Channel.

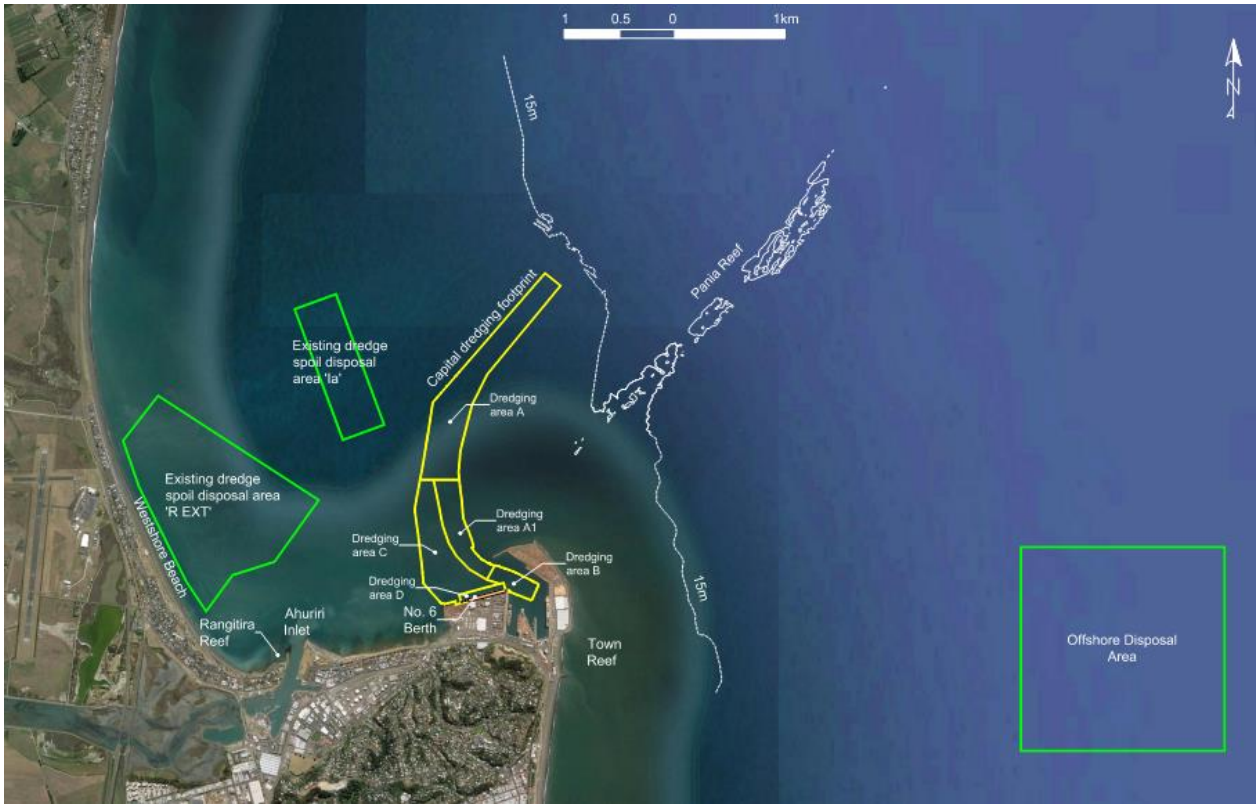

Figure 4-6 - Disposal Areas

4.7.2 INSHORE DISPOSAL AREAS

"R" EXT DISPOSAL AREA

The Port, with Napier City Council has agreed to deposit 'suitable' material at the existing consented disposal area "R" ext, this material being material where sampling confirms a maximum of 12% sediment with size less than 0.0625mm and maximum of 5% clays, or in other words sandy material with minimal silt. There is no 'suitable material' expected from the Stage 1 capital dredging works, although a large portion of future maintenance dredging activities are likely to be assessed as being 'suitable'

This is a continuation of previous maintenance dredging activities, with an aim to provide nearshore re-nourishment to limit erosion at Westshore. Material will be deposited as agreed with HBRC and NCC, likely in shallow waters, subject to tide and weather conditions and in cases completely subject to the dredge masters discretion.

"R" ext is relatively close to the port and dredging areas, with a direct route navigable. The dredge contractor shall liaise with the Regional Harbour Master to manage the interface with recreational boating, in particular sailing or other organised water-based events conducted on weekends in the area of the disposal area.

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5. ENVIRONMENTAL MANAGEMENT

5.1 KEY ISSUES AND RESPONSES

5.1.1 PANIA REEF

Pania Reef has been identified as the key marine ecological receptor due to proximity, high ecological, cultural and amenity values and the very limited occurrence and extent of such habitats in southern Hawke Bay. The importance of the reef is supported through its identification as a Special Conservation Area.

While the key marine ecological receptor in the vicinity of the proposed project is Pania Reef, shoreline reef areas are also potentially vulnerable by virtue of proximity to plume propagation paths (Town Reef) or limited flushing characteristics (the embayment immediately west of the Port reclamation). While no soft sediment benthic habitats have been identified as being unique or limited in the wider area, these are potentially locally important as foraging grounds for recreationally and/or commercially targeted fisheries species. (Cawthron Institute 2017)[6].

Cawthron (2017) describes the potential impacts of elevated turbidity at the Reef:

Impacts to reef communities can result when sediment deposition occurs to the extent of covering over encrusting, sedentary or less-mobile biota. The amount of deposition required to lead to significant adverse effects will vary with the specific habitat and community assemblage. However, such smothering impacts generally do not occur in areas of high wave energy.

[6] Sneddon R, Dunmore R, Berthelsen A, Barter P 2017. Assessment of Effects on Benthic Ecology and Fisheries Resources from Proposed Dredging and Dredge Spoil Disposal for the Port of Napier. Prepared for Port of Napier Ltd. Cawthron Report No. 2895. 158p. plus appendices.

Pania Reef communities are accustomed to periodically elevated turbidity, but the exposure of the Reef to persistent wave action also ensures that sediments tend to remain in suspension until settlement can occur in quiescent zones in deeper waters. Even where silt veneers deposit on Reef surfaces during periods of high turbidity and calm conditions, these will be easily resuspended and removed by subsequent wave events hence variable silt conditions are part of the natural conditions of the Reef. This mechanism will prevent or limit the build-up of settled silt even under increased sediment loading from dredging plumes. At peak levels of suspended solids (from all sources), silt veneers may be more prevalent at lower energy sites on the Reef, but these will still be rapidly resuspended and dispersed by swell events.

High turbidity reduces light levels (as photosynthetically active radiation – PAR) reaching the seabed. When this is sustained, photosynthetic organisms can be adversely affected. On reefs, a reduction in PAR may affect structurally and trophically important seaweeds.

Reef-dwelling suspension feeders vary in their tolerance to suspended inorganic particulates based on their ability to selectively remove organic food particles to maintain growth. The predominant filter feeders observed on Pania Reef were green-lipped mussels (*Perna canaliculus*), ascidians and sponges, most of which are relatively tolerant of elevated concentrations of inorganic particulates.

All filter feeding bivalves are affected by the quality and quantity of seston. Mussels are relatively tolerant of high levels of suspended particulates but feeding efficiency will be affected if the proportion of useable organic particulates relative to the inorganic fraction drops below a certain level.

Negative effects from sedimentation on the abundance of gastropod grazers have been documented in numerous observational and manipulative studies. Deposited sediment can impair the movement and attachment of grazers. The reduction in grazing activity by sedimentation has been postulated as one of the mechanisms through which sedimentation controls algal structure on rocky shores.

Sedimentation plays a significant role in structuring rocky reef communities, both intertidal and subtidal. However, it is important to recognise that gradients in sedimentation rates and water turbidity are a natural feature of coastal systems. Specific areas of the New Zealand coast feature naturally large sediment loads (e.g. South Canterbury) and, increasingly, natural inputs are augmented by those associated with catchment modification.

Advisian (2017)[7] reports that only isolated peaks of SSC above background of 1 mg/L are predicted to occur for the project with the predicted SSC above background remaining less than 5 mg/L for Stage 1 works and less than 7 mg/L above background for subsequent stages.

Cawthron (2017) observes that background concentrations of 10 mg/L may be reasonably typical of Reef waters, and this level may be considerably exceeded during swell or run off events and remain elevated for several days.

Cawthron (2017) also report that natural sediment deposition may be significant, especially at deeper points of the inshore Reef sections, and the project plumes predicted by Advisian (2017) are likely to add only incrementally to existing background deposition. The amount of sedimentation occurring naturally on the Reef will furthermore be in equilibrium from episodic events that lift and disperse

[7] Adamantidis C 2017. Napier Port Proposed Wharf and Dredging Project Dredge Plume Modelling. Prepared for Port of Napier Ltd. Advisian Report No. 301015-03651-003 61p.

material that has settled in calm periods. This mechanism will prevent or limit the build-up of settled silt even under increased sediment loading from dredging plumes. (Cawthron 2017).

5.1.2 TOWN REEF

Cawthron (2017) describes the potential impacts of elevated turbidity on Town Reef:

Town Reef is located adjacent to the base of the main Port breakwater at the northern end of Marine Parade Beach. It is approximately 2 km to the south of the proposed Fairway dredging operations and represents a well-flushed, high-energy environment due to considerable exposure to both wave action and along-shore currents. While not surveyed for this assessment, the ecological communities it supports are expected to be well-adapted to highly turbid conditions. Natural sediment transport processes operating at this exposed location are expected to be significant, with considerable volumes of shoreline and near-shore sediments likely to move through the area.

The orientation of the currents identified in the vicinity of the Port Fairway makes inshore areas more likely to experience elevated turbidity from the proposed dredging than Pania Reef, and this is a notable feature of the modelling outputs. However, Town Reef is at sufficient distance from the proposed dredging and spoil disposal operations that the SSC exceedance envelopes show potential exposure which is unlikely to be ecologically significant relative to expected background levels for this location.

The shoreline morphology at this location indicates no potential for sediment plumes to be entrained and trapped within the area of Town Reef and its shallow, wave-exposed nature is expected to preclude the accumulation of settled fine sediments.

5.1.3 FISHERIES

Fisheries, both recreational and commercial has been identified as a key issue for both the capital and maintenance dredging activities. Whilst the recreational fisheries aspects are covered under protection of Pania and Town Reefs, monitoring the effects of commercial fisheries is a key part of the proposed works.

A key element in managing the fisheries aspects include the formation of the Fisheries Liaison Group (FLG). This group has been established as a result of the consenting process and includes representatives from recreational fishers, commercial fishing operators and Napier Port. The potential impacts on fisheries have been addressed in the fishing baseline proposal and monitoring section within the Water Quality Management Plan (WQMP) as noted below and attached to this DDMP.

5.2 WATER QUALITY MANAGEMENT PLAN

A Water Quality Management Plan (WQMP) has been developed for 6 Wharf to manage the impacts of turbidity generated by the Project dredging activities, in particular at Pania Reef which Napier Port recognises as being both environmentally and culturally significant. The WQMP also covers the management of commercial and recreational fisheries.

This WQMP covers the dredging and disposal activities, specifically:

- The dredging associated with creation of the berth pocket and swing basin.

- The dredging associated with the widening and lengthening of the approach channel.
- Management of approximately 3.2 Mm^3 of dredge material being dredged from the Project area (i.e. stages 1 to 5), including ongoing maintenance dredging.
- Disposal of dredge material at the ODA.

The WQMP describes the approach proposed and approved through the consenting process for managing any effects of the project and ongoing maintenance dredging, this being through a system of live water quality monitoring and an associated adaptive management approach, supported by a suite of ongoing assurance monitoring.

As a condition of consent the WQMP requires endorsement by the FLG and subsequent approval and certification by the consenting authority (HBRC).
The WQMP is included as part of this DDMP at *Appendix 2*

5.3 BIOSECURITY MANAGEMENT PLAN

Marine invasive pests are a key of concern to Hawke Bay, in particular the potential incursion of the Mediterranean Fanworm and Clubbed Tunicate, which although prevalent in other areas of New Zealand have to date been absent from the coastal waters in and around the Port.

In response to the threat of any unwanted marine organism incursion and to meet the conditions of consent, a Biosecurity Management Plan (BMP), endorsed by the FLG and approved and certified by the consenting authority has been developed for the project and ongoing maintenance dredging activities. The key aims of the BMP are:

- No incursion and/or spread of any unwanted organisms in the marine environment as a result of the dredge vessels or activities of the project.
- All vessels have provided evidence of a clean hull prior to departing that high-risk area, as identified in (MPI – Marine High Risk Site Surveillance Programme. Annual Synopsis Report for all high risk sites 2016/17 – SOW18048, dated June 2017), before arriving to dredge or conduct associated activities on the 6 Wharf project.

The certified BMP is included as part of this DDMP as *Appendix 3*

5.4 CONTAMINANTS OF CONCERN

Samples from the area to be dredged were collected in December 2015. These included samples at depth (deep core sediments down to -15.7m), and surface sediments which included material in areas subject to earlier capital and more recent maintenance dredging. The sediment samples were taken from widely across the area within the capital dredging footprint, including within the current swinging basin and Port entrance where ship movement is currently greatest.

The samples were tested for a range of potential chemical contaminants, including organic content and heavy and trace metals[8]. Contaminant concentrations were found to be very low in all samples analysed. All trace metals were at concentrations well below the accepted Interim Sediment Quality Guidelines (ANZECC 2000), low guideline values[9], usually at least by an order of magnitude. Semi-volatile organic compounds (SVOCs) and organotin compounds were all below detection levels[10].

This analysis was consistent with earlier investigations of surface sediments in the same general area undertaken in 2004 by Cawthron Institute.

In addition, Napier Port is required by its current resource consent for maintenance dredge spoil disposal to ensure that there is no statistically significant toxicity to marine life from the dredged sediment. As a minimum, this involves annual Microtox ecotoxicological testing of composite sediment samples from the berths, swing basin and fairway, undertaken by the National Institute of Water and Atmospheric Research (NIWA). Testing carried out since 2006 has reported no evidence of toxicity for any sediment sample. This has included areas within the Port inner harbour area and berths which are not directly involved in the current dredging proposal, but where it might be expected that any elevated levels of metals or organic substances may be found.

The Cawthron report notes that the capital dredging programme involves disturbing sea bed sediments which have not been disturbed in the past and are not subject to risk of human influence such as modern contaminants. Thus, it can be concluded that there is minimal contaminant risk associated with the dredging and dredge material disposal activities

Notwithstanding the lack of contaminated material, the Port will conduct due diligence sediment sampling for metals from the material being taken from the inner Port Basin, and at the ODA. Contaminants to be tested include heavy metals/metalloids arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc as specified in the approved WQMP.

5.5 DREDGING NOISE

Generally, the noises produced from dredging activities are continuous, broad-band sounds mostly below 1 kHz. Dredges produce relatively lower sound levels than a large ship. However, the two differ in that a dredge may be actively operating within one general area for long periods of time (weeks or months) while a ship rarely remains in the same area for long (minutes or hours). The associated noise characteristics of dredging activities can also vary depending on the type of dredge, operational stage, and ambient conditions.

The Cawthron report[11] found that TSHD and BHD, the two dredge types to be used for this project, produce mostly low frequency, omni-directional sounds between 100-500Hz. However, their

[8] Arsenic, cadmium, chromium, copper, lead, mercury, nickel, tin and zinc.
[9] The ANZECC 15Q Guidelines, Low Values, indicate the lowest level at which biological effects are *possible*. This compares with the High Values, at which a *probable* biological effect will occur.
[10] These are all very low compared with sediments tested at other New Zealand and international ports. See Cawthron Report, Appendix H, Volume 3.
[11] Clement D 2017. Assessment of Effects on Marine Mammals from Proposed Capital Dredging and Spoil Disposal for the Port of Napier Ltd. Prepared for Port of Napier Ltd. Cawthron Report No. 2907. 38p plus appendix.

bandwidths could fluctuate as low as 20Hz and as high as 20 kHz. The exact ranges are dependent on the process and the types of sediment being extracted, with coarser gravel causing greater sound levels, (which the project is not expected to encounter).

Underwater noise generated by dredge plant shall be verified through measurement and any updates to the modelling and monitoring zones shall be included in the approved MWMP included at *Appendix 4*

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Construction noise, including that from dredging shall meet the New Zealand Standard 6803:1999 "Acoustics – Construction Noise Measurement and Assessment of Noise from Construction, Maintenance and Demolition Works".

Dredge plant shall ensure that all noise suppressions equipment, such as mufflers and ventilation baffles shall be maintained in good working order, and where practical plan for maintenance activities that may generate noise to daylight hours.

5.6 MARINE WILDLIFE MANAGEMENT PLAN

5.6.1 MARINE SPECIES

The only marine mammal species commonly sighted in the vicinity of the project area is:

- New Zealand Fur Seal (*Arctocephalus forsteri*)

Other marine mammal species identified to reside or regularly visit the coastal waters of Hawke Bay are:

- Common Dolphins (*Delphinus delphis/capensis*)
- Orca – Killer Whales (*Orcinus orca*)
- Southern Right Whales (*Eubalaena australis*)
- Pygmy Sperm Whale (*Kogia breviceps*)
- Pilot Whales (*Globicephala melas*)
- Other whale species include various beaked whales, humpback and sperm whales.

5.6.2 PROTECTION MEASURES AND RESPONSES

A Marine Wildlife Management Plan (MWMP) has been developed in conjunction with the Ports environmental advisors and the Department of Conservation. The MWMP requires approval and certification by the consenting authority (HBRC). Although the dredging activities are not expected to adversely affect marine mammals, a number of measures are included in the MWMP:

- The use of designated observers
- Interaction restrictions with sighted marine mammals
- Control measures to minimise potential for entanglement
- Speed restrictions when in the vicinity of sighted marine mammals

The MWMP is included as part of this DDMP at *Appendix 4*

5.7 AVIAN MANAGEMENT PLAN

The Avian Management Plan (AMP) specifies requirements and management of the project to protect birds, in particular the Little Blue Penguin. Day time dredging activities are not expected to directly impact bird species. Dredge lighting shall be minimised at night where practical, whilst not affecting the safe operation of the dredge plant. Where possible lighting shall be pointed downwards towards the dredge barge deck and side rails.

The AMP is included as part of this DDMP at *Appendix 5*

5.8 TRAINING, INCIDENT AND REPORTING

5.8.1 TRAINING REQUIREMENTS

All Napier Port staff and contractors shall be provided information relevant to 6 Wharf through internal newsletters, email and other media, including the use of targeted contractor notices and 'tool-box' meetings.

Key Napier Port personnel will provide, where relevant, 6 Wharf project training requirements for employees, contractors, any subcontractors and visitors to the 6 Wharf project site.

Normal health and safety inductions will be carried out by appropriate Port staff and Contractors in control of the construction site, in line with the provisions of the Health and Safety in Employment Act 2015.

5.8.2 ENVIRONMENTAL INCIDENT AND EMERGENCY MANAGEMENT

At all times, equipment, spill response and reporting shall be in accordance with the dredge plant normal responses, policies and procedures.

5.8.3 ENVIRONMENTAL COMPLAINTS AND COMPLIANCE MONITORING AND REPORTING

The Napier Port Environmental Advisors shall respond and report upon all environmental complaints and compliance monitoring requirements following an incident and where necessary in co-ordination with the HBRC Compliance Officer and other agencies, depending on the scale and nature of any reported incident.

5.9 MARITIME SAFETY

5.9.1 GENERAL

All dredging vessels shall be classed with an internationally recognised classification society (e.g. BV, Lloyds, DNV) or locally through MOSS. This shall include an approved Safety Management System (SMS), which shall be maintained through the life of the project.

All operations shall be conducted in accordance with the HBRC Navigation and Safety Bylaw 2018, or any amendments, in particular pilotage and pilot exemption requirements.

All operators, including that for small work boats and punts shall be suitably qualified.

If required a Restricted Limits Plan (RLP) shall be developed and approved by MNZ.

5.9.2 SITE CONDITIONS

Site specific wind, wave and swell limits shall be established for each key dredging plant. No designed limits shall relieve the vessel Master of their primary responsibility for the safe operation of their vessels.

Napier Port shall (subject to maintenance requirements) provide through existing infrastructure or services:

- Metocean Solutions supplied 6 hourly wind wave and Infra Gravity Wave forecasts.
- Live wind, wave and rainfall data.
- Live swell and current data at the ODA.

6.0 WASTE MANAGEMENT

All dredging activities lie within local authority coastal waters (HBRC). No discharge of oily water or sewage is permitted within the project area and must be landed ashore for disposal. On-board oily water discharge overboard valves shall be locked shut for the duration of the project.

Each vessel shall have an approved International Oil Pollution Prevention Certificate (IOPP) or recognised local equivalent.

An Oil Record Book or similar shall be maintained by dredging vessels in accordance with their respective classification (e.g. MOSS, MNZ, IMO) and be made available to Napier Port or the consenting authority if requested.

All solid waste, including food scraps shall be landed ashore for disposal.

Napier Port encourages recycling and requires all recyclable material to be separated for collection by Napier Port.

A record of waste management shall be maintained by all dredging plant.

6.1 AIR DISCHARGE

All dredge plant equipment shall be maintained in good order to prevent unwanted air emissions.

Where applicable by international regulations, dredge plant shall have and maintain a current International Air Pollution Prevention Certificate (IAPP).

6.2 HYDROCARBONS

6.2.1 EQUIPMENT

A Maintenance System shall be in place for each plant for the maintenance of key equipment, the failure of which has the potential to cause marine pollution. In particular this shall include the register of all hydraulic hoses and an inspection and replacement programme.

6.2.2 STORAGE

All hydrocarbons shall be adequately stored and secured at all times, if on deck, storage shall be on or in a suitable bunded area.

6.2.3 TRANSFER AND BUNKERING

All dredge plant shall have an approved bunkering procedure as part of their safety management system (e.g., ISM or MOSS).

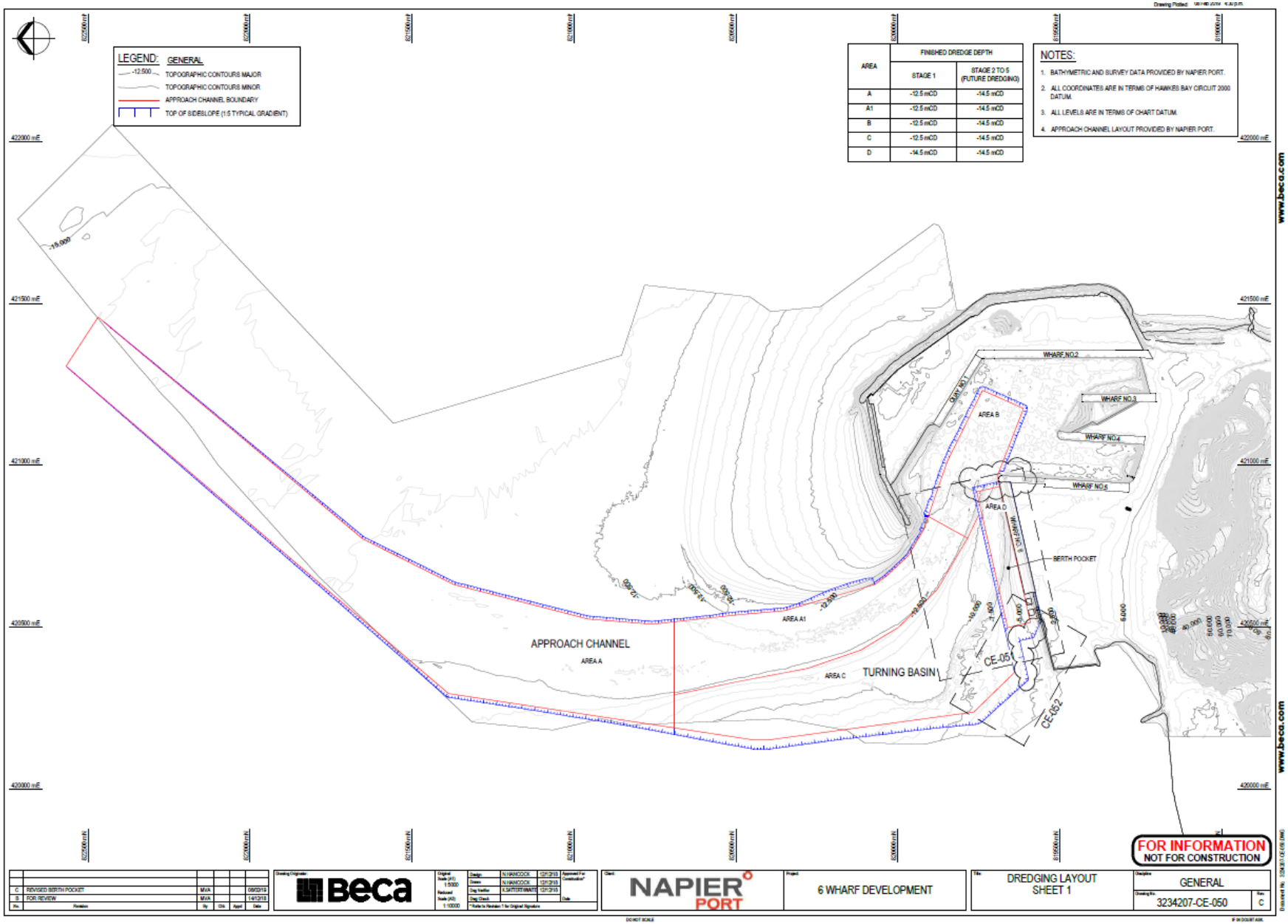
All bunkering or bulk hydrocarbon transfers at Napier Port require the issuance of a Bunkering Permit, issued by the Regional Harbour Master (RHM).

6.2.4 HYDROCARBON SPILLS

At all times, equipment, spill response and reporting shall be in accordance with the dredge plant normal responses, policies and procedures.

APPENDIX 1

DREDGE AREA (STAGE 1 CAPITAL WORKS)


LEGEND: GENERAL
-12.500 TOPOGRAPHIC CONTOURS MAJOR
TOPOGRAPHIC CONTOURS MINOR
APPROACH CHANNEL BOUNDARY
TOP OF SIDESLOPE (1:5 TYPICAL GRADIENT)
AREA | FINISHED DREDGE DEPTH | STAGE 1 | STAGE 2 TO 5 (FUTURE DREDGING)
A | -12.5 mCD | -14.5 mCD
A1 | -12.5 mCD | -14.5 mCD
B | -12.5 mCD | -14.5 mCD
C | -12.5 mCD | -14.5 mCD
D | -14.5 mCD | -14.5 mCD
NOTES:
1. BATHYMETRIC AND SURVEY DATA PROVIDED BY NAPIER PORT.
2. ALL COORDINATES ARE IN TERMS OF HAWKES BAY CIRCUIT 2000 DATUM.
3. ALL LEVELS ARE IN TERMS OF CHART DATUM.
4. APPROACH CHANNEL LAYOUT PROVIDED BY NAPIER PORT.
APPROACH CHANNEL
AREA A
AREA A1
AREA B
AREA C
AREA D
TURNING BASIN
BERTH POCKET
WHARF NO.2
WHARF NO.3
WHARF NO.4
WHARF NO.5
CE-051
CE-052
FOR INFORMATION
NOT FOR CONSTRUCTION
C REVISED BERTH POCKET MVA 09/07/19
B FOR REVIEW MVA 14/12/18
Beca
NAPIER PORT
6 WHARF DEVELOPMENT
DREDGING LAYOUT SHEET 1
GENERAL
3234207-CE-050
C
www.beca.com

APPENDIX 2

WATER QUALITY MANAGEMENT PLAN (WQMP)

[Previously provided to the FLG]

APPENDIX 3

BIOSECURITY MANAGEMENT PLAN (BMP)

[Previously provided to the FLG]

APPENDIX 4

MARINE WILDLIFE MANAGEMENT PLAN (MWMP)

APPENDIX 5

AVIAN MANAGEMENT PLAN (AMP)

APPENDIX 6

6 WHARF COASTAL PERMITS

APPENDIX 7

COASTAL PERMIT CL970159D