

BEFORE THE ENVIRONMENT COURT  
I MUA I TE KOOTI TAIAO O AOTEAROA

**ENV-2018-AKL-000078**

**IN THE MATTER** of the Resource Management  
Act 1991 (**RMA**)

**AND**

**IN THE MATTER** of the direct referral of  
applications for resource  
consent for the necessary  
infrastructure and related  
activities associated with  
holding the America's Cup in  
Auckland

**BETWEEN** **PANUKU DEVELOPMENT  
AUCKLAND**

**Applicant**

**AND** **AUCKLAND COUNCIL**

**Regulatory Authority**

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**REBUTTAL EVIDENCE OF KURT ADRIAN GRANT ON BEHALF OF  
PANUKU DEVELOPMENT AUCKLAND  
(CONSTRUCTION METHODOLOGY)**

**4 September 2018**

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**1. INTRODUCTION**

**1.1** My full name is Kurt Adrian Grant. I have prepared a primary statement of evidence dated 7 August 2018<sup>1</sup>, and confirm my qualifications and experience as set out in paragraphs 1.4 and 1.5 of that evidence.

**2. CODE OF CONDUCT**

**2.1** I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and to the extent that I am giving expert evidence I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise.

**3. SCOPE OF EVIDENCE**

**3.1** I have read the following evidence:

- a) Evidence in chief of Mr Rob Van de Munchof (on behalf of Auckland Council) dated 21 August 2018 relating to NES soil;<sup>2</sup>
- b) Evidence in chief of Ms Marija Jukic (on behalf of Auckland Council) dated 21 August 2018 relating to contaminant discharges;<sup>3</sup>
- c) Evidence in chief of Mr Richard Simonds (on behalf of Auckland Council) dated 21 August 2018 relating to groundwater;<sup>4</sup>
- d) Evidence in chief of Mr Matt Byrne (on behalf of Auckland Council) dated 21 August 2018 relating to earthworks;<sup>5</sup>
- e) Evidence in chief of Mr Paul Crimmins (on behalf of Auckland Council) dated 21 August 2018 relating to air discharges;<sup>6</sup>

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1 EB Vol 1, E9.  
2 EV Vol 3, E39.  
3 EB Vol 3, E40.  
4 EB Vol 3, E44.  
5 EB Vol 3, E47.  
6 EB Vol 3, E49.

- f) Evidence in chief of Mr Bob Hawkins<sup>7</sup> and Mr Mark Gibson<sup>8</sup> on behalf of Sealink Travel Group New Zealand Limited dated 21 August 2018; and
- g) Evidence of Colin Williams (on behalf of Sanford Limited) dated 21 August 2018.<sup>9</sup>

**3.2** Since the time of writing my primary statement of evidence, the Wynyard Edge Alliance (**WEA**) has received further feedback from stakeholders and amendments have been made to the draft management plans that were attached to my evidence in chief.

**3.3** Therefore, in this statement of rebuttal evidence, I respond to the matters raised in evidence on behalf of Auckland Council and section 274 parties, and provide an update to the Court in relation to further stakeholder input as follows:

- a) Further stakeholder feedback and Community Liaison Group (**CLG**) meetings;
- b) Changes to the draft Construction Environmental Management Plan;
- c) Update on the draft Erosion and Sediment Control Plan and draft Groundwater Monitoring and Contingency Plan;
- d) Changes to the draft Monitoring Plan for the Dredging and Placing of Mudcrete; and
- e) Comments in relation to matters raised by Sealink and Sanford and the agreed conditions of consent.

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7 EB Vol 3, E60.

8 EB Vol 3, E61.

9 EB Vol 3, E68.

#### **4. FURTHER STAKEHOLDER FEEDBACK AND COMMUNITY LIAISON GROUP MEETINGS**

- 4.1** Since lodging my primary evidence with the Court, Panuku and WEA have sought to engage with stakeholders, submitters and s274 parties through the establishment of the CLG, in the spirit of the proposed consent conditions 22 – 22C.
- 4.2** Two meetings have been held to date, on 14 August 2018 and then a week later on 21 August 2018. I attended both CLG meetings.
- 4.3** The first meeting provided an overall summary of the AC36 project, and a resource consent process update to the attendees. I presented the visual construction programme that was attached to my primary evidence to provide attendees with an overview of potential timeframes of construction as it related to their specific areas of interest.
- 4.4** Prior to the second meeting, the draft management plans (appended to the evidence in chief of Panuku experts) were made available for CLG members to review and to feed back through a workshop-style CLG session on 21 August 2018.
- 4.5** At that time, the specific management plans that proposed conditions 22 – 22C identified as key consultation documents were the Construction Environmental Management Plan (**CEMP**), the Construction Traffic Management Plan (**CTMP**), the Construction Noise and Vibration Management Plan (**CNVMP**), alongside two event related plans: the Event Management Plan (**EMP**) and the Event Travel Management Plan (**ETMP**). Mr Lala and Mr Cook were in attendance to discuss the details of the EMP and the ETMP, whilst myself, other members of the WEA and Panuku specialists were on hand to discuss the other construction plans with the CLG.
- 4.6** Condition 22C has subsequently been amended as per Mr Cook and Mr Lala's rebuttal evidence (Applicant's Proposed Conditions (Rebuttal) dated 4 September 2018) and also includes the Hobson Wharf Base B Construction Management Plan (**HWMP**) as a matter for consultation with the CLG. I expect that these matters will be discussed at a later date with the CLG.
- 4.7** As a result of these two first CLG meetings, further feedback on the draft management was asked to be provided to WEA for consideration by 27 August 2018.

**4.8** A range of issues were raised at the two CLG meetings. In summary, the issues primarily related to:

- a) Traffic management and traffic controls around Wynyard Quarter. Concerns were raised about the potential interaction of users of the shared path, construction vehicles, and other users of the space in Wynyard Quarter. I understand that there is an existing Wynyard Quarter traffic coordination meeting group, and WEA has committed to participating in this forum during the construction phase.
- b) Concern around the ability to continue to adequately access the shared path and road for access to Te Wero Island, alongside the potential construction yard area in the Eastern Viaduct. I have now set a specific path and road width to allow for a shared allocation of space in this location to be included in the CTMP.
- c) Seeking some further clarity around potential effects that specific properties or work places might experience. I am aware of a number of discussions about noise and vibration, traffic management and broader environmental management matters as they pertained to individual stakeholders' concerns.

**4.9** The feedback received during these first two CLG sessions, as well as the further feedback through emails and party to party discussions have been incorporated into the updated draft construction management plans. As Mr Fitzgerald and Mr Phillips address detail of amendments to the CNVMP and CTMP in their rebuttal evidence respectively, I will focus on changes made to the CEMP, ESCP, GWMCP and MPDPM.

## **5. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)**

**5.1** At paragraph 8.5 of his evidence, Mr Crimmins seeks extra certainty around the management of potential dust effects that may arise from the project. He is specifically seeking some further, regular monitoring of dust in the vicinity of the project and suggests amendments to sections 6.14 and 8 of the draft CEMP.

**5.2** It is common practice during construction to do regular monitoring of effects such as deposited dust. A check for deposited dust on a regular basis will allow for the early identification of a site's works that may have had an influence on off-site deposition of dust, and allow for these issues to be addressed quickly, and for the site team to also

identify what issues may have led to the generation (and subsequent deposition) of dust. Frequent checks allow for frequent environmental responses and will help better planning for such works in the future. The draft CEMP has been updated to reflect these changes sought by Mr Crimmins. WEA will make it clear in the regular site environmental procedures that a visual assessment of deposited dust be made on a daily and weekly basis as part of the environmental management site review.

**5.3** Stakeholders at the CLG also provided some feedback, which seeks a broader ability to engage with the WEA via internet social media such as Twitter and Facebook profiles. The CEMP identifies a broad engagement approach as a baseline (e.g specific contact people to be available, specific roles identified, project hotline). WEA will consider these avenues of engagement and contact in detail as we implement processes of engagement with the public on the construction phase of the project. We have not made changes to the CEMP at this stage of the project but will actively consider this as we develop the engagement and outreach channels further in the programme.

**5.4** An updated draft CEMP is attached to this rebuttal evidence as **Appendix A**. There are minor changes through many of the sections of the CEMP; but in summary, the further amendments generally are:

- a) An update to the relevant conditions references shown in the table in section 1 of the CEMP;
- b) Updates that reflect the requirements of the conditions to engage with the CLG and separate mana whenua forum;
- c) Updates to the construction methodology, construction yards and construction programme as refined since the lodging of my EIC; and
- d) A specific inclusion of dust monitoring protocols in the weekly environmental site walkover to reflect how WEA proposes to address Mr Crimmin's concerns on dust.

## **6. EROSION AND SEDIMENT CONTROL PLAN (ESCP) AND GROUNDWATER MONITORING AND CONTINGENCY PLAN (GWMCP)**

**6.1** No specific feedback has been received on either the draft ESCP or the draft GWMCP attached to my evidence in chief by Auckland Council or other stakeholders. No changes have been made to these plans other than to reflect updates to the relevant conditions that are shown in the table in section 1 of the plans. For this reason, I have not provided copies of these updated management plans.

## **7. MANAGEMENT PLAN FOR DREDGING AND PLACEMENT OF MUDCRETE (MPDPM)**

**7.1** In order to address slight drafting amendments to the conditions relating to the MPDPM, some minor changes have been made to the draft MPDPM<sup>10</sup> attached to my evidence in chief.

**7.2** The updated draft MPDPM is attached to this rebuttal evidence as **Appendix B**. In summary, the further amendments are:

- a) An update to the relevant conditions references shown in the table in section 1 of the MPDPM;
- b) An acknowledgement of the matters that may be relevant in the Biosecurity Management Plan; and
- c) An addition requiring that the physical characteristics of dredged material and its substrate composition will also be visually assessed and noted for each barge load arising from the dredging process.

## **8. CONSTRUCTION STAGING – MATTERS RAISED BY SEALINK AND SANFORD**

**8.1** The construction sequencing programme attached to my evidence in chief showed that the planned phasing of the Breakwaters 1, 2 and 3 to allow the existing Sealink ferry operations to continue in situ for as long as possible. I am aware that Panuku has agreed to a number of changes to the proposed consent conditions to address the concerns

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<sup>10</sup> EB Vol 1, E9, page 0508.

raised by Sealink and Sanford. These changes reflect the construction sequencing proposed by WEA (constructing the breakwaters in order from 3, 1 then 2).

**8.2** I have reviewed the Applicant's Proposed Conditions (Rebuttal) dated 4 September 2018 (as attached to the rebuttal evidence of Mr Karl Cook and Mr Vijay Lala) and I confirm that I am comfortable with the conditions proposed relating to the continued operation of Sealink and Sanford from a construction and delivery perspective (prior to their respective relocations). WEA is preparing a draft Navigation Safety Management Plan which will show how these works will be sequenced and constructed.

## **9. CONCLUSION**

**9.1** WEA is continuing to engage with the community and stakeholders. The construction programme and methodologies are progressing and early works have commenced. Subject to the grant of the consent, I remain confident that the infrastructure required for the America's Cup can be delivered in the timeframes required.

**Kurt Adrian Grant**

4 September 2018





## **Wynyard Edge Alliance**

# **America's Cup – Wynyard / Hobson Construction Environmental Management Plan**

## Revision History

Revision N°	Description	Prepared By	Reviewed by	Approved on behalf of Wynyard Edge Alliance	Date
A	Draft plan for Auckland Council pre-submission comment	Rachel Purdy	Brendon Barnett Bob Mawdsley Edwin Zwanenburg Kurt Grant Lesley Hopkins Michael Goudie	Ian Campbell	4-07-18
B	Draft following submitter feedback	Rachel Purdy	Brendon Barnett Bob Mawdsley Kurt Grant Michael Goudie	Ian Campbell	24-07-18
C	Draft for inclusion in evidence	Rachel Purdy	Brendon Barnett Bob Mawdsley Kurt Grant Michael Goudie	Ian Campbell	03-08-18
D	Updated draft plan for inclusion in rebuttal evidence	Rachel Purdy	Brendon Barnett Bob Mawdsley Kurt Grant Michael Goudie	Ian Simmons	04-09-18

### Disclaimer

This report has been prepared by the Wynyard Edge Alliance for the benefit of the Panuku Development Auckland Limited. No liability is accepted by the Alliance Partners or any employee of or sub-consultant to the Alliance Partners companies with respect to its use by any other person.

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**Erosion and Sediment Control Plan**

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**Groundwater Monitoring and Contingency Plan**

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**Protected Objects Act and Accidental Discovery Protocol**

**Appendix R**  
**Community Liason Group Feedback on the CEMP**

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## Glossary

Acronym/Abbreviation	Definition
ACKEP	Americas Cup Kaitiaki Engagement Plan
ARC	Auckland Regional Council
BMP	Biosecurity Management Plan
CD	Chart Datum
CEMP	Construction Environmental Management Plan
CHI	Cultural Heritage Inventory
CLG	Community Liaison Group
CLMP	Construction Lighting Management Plan
CMA	Coastal Marine Area
CNVMP	Construction Noise and Vibration Management Plan
CSTP	Construction Staff Travel Plan
CTMP	Construction Traffic Management Plan
DBMP	Decommissioning Biosecurity Management Plan
ESCP	Erosion and Sediment Control Plan
GD05	Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016, Guideline Document 2016/005.
GWMCP	Groundwater Monitoring and Contingency Plan
HDPE	High Density Polyethylene
IVHEMP	Inner Viaduct Harbour Environmental Management Plan
JSEA	Job Safety Environmental Analysis
MPDPM	Management Plan for Dredging and Placement of Mudcrete
MPI	Ministry for Primary Industries
MWEP	Mana Whenua Engagement Plan
NCR	Non Conformance Report
NSMP	Navigation and Safety Management Plan
NUO	Network Utility Operator
OFI	Opportunity for Improvement
OVH	Outer Viaduct Harbour
PTN	Permit to Notify
PTW	Permit to Work
RAP	Remediation Action Plan

# 1 Relevant Consent Conditions

The consent conditions relevant to this Construction Environmental Management Plan (CEMP) are summarised in Table 1-1 below. The conditions referenced are as per the proposed draft resource consent conditions provided in Appendix A to this CEMP<sup>1</sup>.

Table 1-1: Summary of consent conditions relevant to the Construction Environmental Management Plan.

Ref	Condition requirement	Section referenced in the Plan
<b>Construction Environmental Management Plan</b>		
29	The consent holder shall prepare a <b>Construction Environmental Management Plan (CEMP)</b> for the infrastructure construction and works in consultation with the CLG in accordance with Condition 22C. The consent holder shall submit the CEMP to the Team Leader Compliance Monitoring – Central for certification that the CEMP gives effect to the objectives in Condition 30 and complied with the requirements in Conditions 31 to 36. The CEMP shall be in general accordance with the Draft Construction Environmental Management Plan as referenced in Annexure B.	This Plan
30	The objectives of the CEMP are to: <ol style="list-style-type: none"> <li>a) ensure that the construction works remain within the limits and standards approved under the consent and set out the management procedures and construction methods to be undertaken in order to avoid, remedy or mitigate potential adverse effects arising from construction activities; and</li> <li>b) Give effect to the objectives in the management plans listed in Condition 31</li> </ol>	Section 2.1
31	The CEMP shall incorporate or refer to the following management plans and documents: <ol style="list-style-type: none"> <li>a) Management Plan for Dredging and Placement of Mudcrete in the CMA (MPDPM);</li> <li>b) Erosion and Sediment Control Plan (ESCP);</li> <li>c) Remediation Action Plan (RAP);</li> <li>d) Groundwater Monitoring and Contingency Plan (GWMCP);</li> <li>e) Construction Traffic Management Plan (CTMP);</li> <li>f) Construction Staff Travel Plan (CSTP);</li> <li>g) Construction Noise and Vibration Management Plan (CNVMP);</li> <li>h) Construction Lighting Management Plan (CLMP);</li> <li>i) Biosecurity Management Plan (BMP);</li> <li>j) Inner Viaduct Harbour Environmental Management Plan (IVHEMP);</li> <li>k) Navigation and Safety Management Plan (NSMP); and</li> <li>l) Project Geotechnical Design Report (PGDR)</li> </ol>	Section 2.2 and appendices
32	The CEMP shall provide details of the responsibilities, reporting frameworks, coordination and management required for effective site management. The CEMP shall provide information on the following matters: <ol style="list-style-type: none"> <li>a) Construction quality assurance;</li> <li>b) Construction works programming including:               <ol style="list-style-type: none"> <li>(i) An outline construction programme;</li> <li>(ii) Confirmation of the proposed staging and sequence of construction</li> </ol> </li> <li>c) Site management;</li> <li>d) Wharf, breakwater, berthage and building construction ;</li> <li>e) The geotechnical-related earthworks matters addressed in condition 135B(b);</li> <li>f) Consultation and communications, including the methods for communicating and consulting with the Community Liaison Group (Conditions 22 to 22C); and</li> </ol>	Sections 5 and 8 Section 3.11 Section 3.7, 6.9 Section 3 Section 3 Section 3.1 Section 7

<sup>1</sup> Unio Environmental, 4 September 2018. America's Cup Wynyard Hobson – Applicant's Revised Conditions



Ref	Condition requirement	Section referenced in the Plan
	g) For each stage, the open area of earthworks and detail on the erosion and sediment control measures to be used with reference to the measures confirmed for the wider site in the ESCP in Conditions 70 to 74.	Section 6.10 Section 3.3.1.2, 6.2 and Appendix D
<b>Construction Quality Assurance</b>		
33	This part of the CEMP requires the establishment of management frameworks, systems and procedures to ensure quality management of all on-site construction activities and compliance with the conditions of this consent. This section shall provide details on the following:	
	(a) Contact details of the contractor's site supervisor or project manager and the consent holder's Project Liaison Person (phone, postal address, email address);	Section 5.2
	(b) Confirmation of the construction methodology, including for permanent and temporary structures;	Section 3 and Appendix B
	(c) System for Hot Work Permits and Underground Services Work Protocols / Permits in general accordance with the Construction Environmental Management Plan Draft Table of Contents in Appendix B, America's Cup 36 Physical Infrastructure Technical Report (Beca, April 2018) (for information only) as referenced in Annexure A;	Section 5.4.4
	(d) Location of construction site infrastructure including site offices/amenities, contractors' yard access, equipment unloading and storage areas, construction access to the CMA, contractor car parking and security;	Section 3.6-3.8
	(e) Methods and systems to inform and train all persons working on the site of potential environmental issues and how to avoid remedy or mitigate any potential adverse effects;	Section 5.3 and 5.4
	(f) Procedures for ensuring that residents, businesses, network utility operators and road users in the immediate vicinity of construction areas are given prior notice of the Commencement of Construction and are informed about the expected duration and effects of the work;	Section 7
	(g) Procedures for responding to, recording and reporting complaints about construction activities;	Section 7.7
	(h) Means of providing for the health and safety of the general public;	Section 3.7
	(i) Measures to be adopted to maintain the CMA and land affected by the works in a tidy condition in terms of disposal / storage of rubbish, storage and unloading of construction materials and similar construction activities;	Section 3.9 and 6.16
	(j) Procedures for controlling sediment run-off, dust and the removal of soil, debris, demolition and construction materials (if any) from public roads or places adjacent to the work site/s;	Section 3.9 and 6.2
	(k) Contingency plans in case of unexpected sediment discharges to the CMA during works;	Section 6.2 and 6.17
	(l) Proposed temporary or permanent fencing or other structures along the boundary of the construction areas with adjacent sites in order to delineate site boundaries, maintain site security, prevent unauthorised access, ensure the safe and practical operation of adjacent sites, and to avoid intrusion of construction works beyond the construction area;	Section 3.7
	(m) Measures to manage the potential impacts of construction on Council street trees and vegetation;	Section 3.5 and 6.15
	(n) Measures to manage the potential impacts of construction lighting on residents, businesses and on local fauna;	Section 6.10
	(o) Methods to ensure that barges and equipment used in the CMA are clean and certified as free of invasive species identified by the Ministry of Primary Industries;	Section 6.3

Ref	Condition requirement	Section referenced in the Plan
	(p) Procedures for the refuelling, cleaning, maintenance and storage of plant and equipment, methods to be used to minimise the need for these activities in the CMA, and measures to avoid discharges of contaminants from these activities in the CMA;	Section 3.9, 6.3, 6.6
	(q) Measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, along with contingency procedures to address emergency spill response(s) and clean up;	Section 6.6
	(r) Procedures for incident management, monitoring and reporting including review and corrective and preventative action;	Section 6.17
	(s) Site clean-up following completion of works, including removal of construction materials, temporary structures;	Section 3.8 and 3.13
	(t) Maintenance of plant in a good state of repair so as not to produce excessive fumes or leakage of contaminants when parked or in operation; and	Section 6.14
	(u) Measures to monitor and minimise discharges of dust so that any offensive or objectionable effects are immediately identified and are mitigated.	Section 6.14
<b>Construction Works Programme</b>		
34	This part of the CEMP is to ensure that the consent holder has prepared a programme of works that will enable the Infrastructure and all other associated land based works, to be constructed in a manner that is timely, adequately co-ordinated and minimises the adverse effects of construction on existing users of the affected land and water space. This section shall, among other matters, provide details of the programme for the construction works throughout all stages of the Infrastructure development process.	Section 3.11
<b>Site Management</b>		
35	This part of the CEMP is to ensure that procedures are in place to ensure that the site is managed safely and in a tidy condition throughout the entire construction process. This section shall provide details on the following:	
	(a) The measures to be adopted to maintain the construction zone and adjacent parts of the CMA in a tidy condition in terms of storage and unloading of materials, refuse storage and disposal and other activities;	Section 3.6 and 3.9
	(b) The provision of any site office, parking for workers' vehicles and workers' conveniences (e.g. portaloos);	Section 3.6 and 3.8
	(c) The location of construction machinery access and storage during the period of site works, including any temporary mooring of the barge(s);	Section 3.6
	(d) The procedures for controlling sediment run off into the CMA, and the removal of any debris and construction materials from the CMA; and	Section 6.2
	(e) The provision of any artificial lighting associated with construction works and the effects of any such lighting.	Section 6.10
<b>Implementation</b>		
37	All personnel working on the site shall be made aware of the requirements contained in the CEMP. A copy of the approved CEMP shall be held on each of the project sites at all times while any activity associated with construction is occurring. The approved CEMP shall be implemented and maintained throughout the entire period of the works.	Section 5.3

## 2 Introduction

The 36<sup>th</sup> America's Cup regatta is scheduled to be held in Auckland in December 2020 to May 2021. The event will be held in and around Freemans Bay, on the Auckland Waterfront. Construction of marine and land-based infrastructure ('the Project') is required to facilitate hosting of the regatta.

Specifically, the Project includes:

- Marine based works associated with a number of wharves: Hobson Wharf, Halsey Wharf (comprising the Halsey Street Extension Wharf and Western Viaduct Wharf) and the southern portion of Wynyard Wharf;
- Works in the water space in the vicinity of these wharves, including within the Outer Viaduct Harbour;
- Land based works around the south-eastern portion of Wynyard Point, between Hamer Street and Wynyard Wharf, south of the northern Stolthaven tank farm; and
- Works to network utility services.

An overview of the key Project components is shown in Figure 2-1 with further detail provided in Section 3 of this Plan.

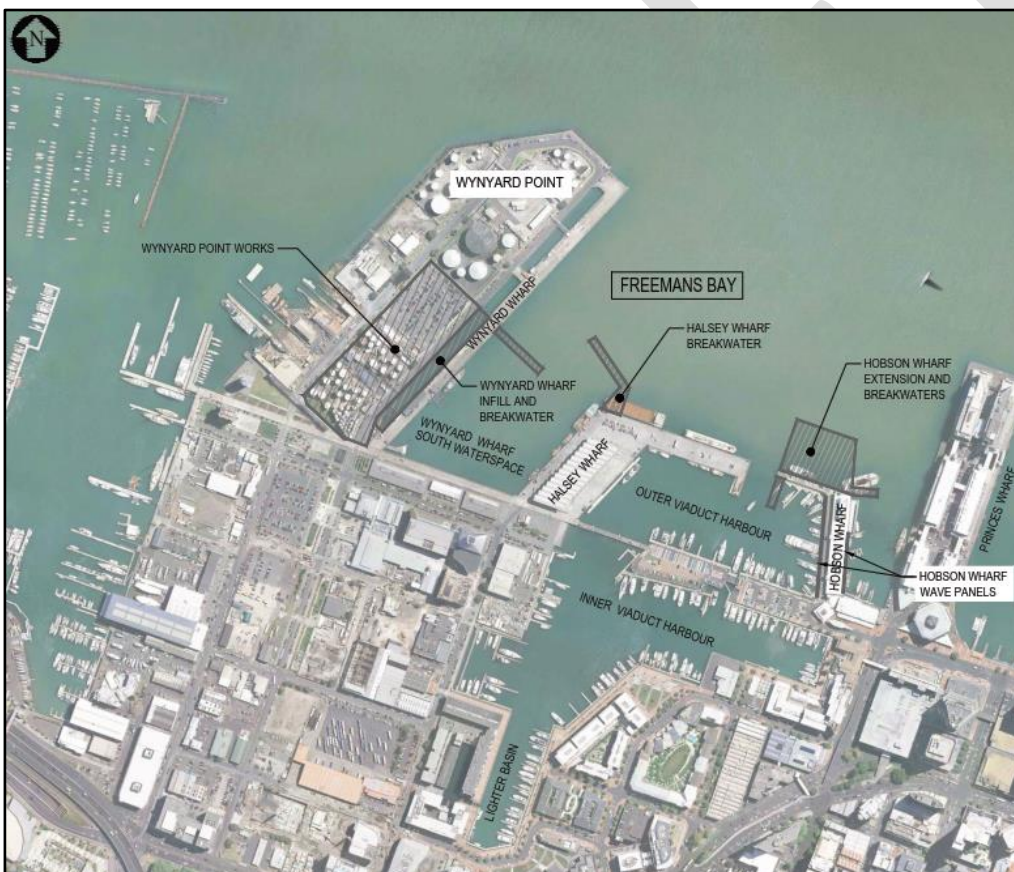


Figure 2-1: Overview of the key Project components

This Construction Environmental Management Plan (CEMP) forms part of a comprehensive suite of environmental controls for the Project associated with construction of the America's Cup base infrastructure.

The Project is being delivered by the Wynyard Edge Alliance ("the Alliance").

This CEMP provides the overarching framework for the management of construction effects on the environment associated with the Project activities. Further management plans are included as appendices to the CEMP and detail the specific environmental controls for particular aspects of the Project.

## 2.1 Scope and Objectives of the CEMP

This CEMP is required by consent Condition 29. The objectives of the CEMP, as outlined in consent Condition 30, are *“to ensure that the construction works remain within the limits and standards approved under the consent and set out the management procedures and construction methods to be undertaken in order to avoid, remedy or mitigate potential adverse effects arising from construction activities as well as giving effect to the objectives in the management plans required by Condition 31.”*

The consent conditions also require the preparation of a suite of management plans that provide detailed methods for avoiding, remedying or mitigating adverse effects. The CEMP and management plans will be implemented throughout the construction period for the Project.

Overall, implementation of this CEMP and the management plans will ensure:

- Appropriate management of adverse environmental effects associated with construction of the Project;
- Compliance with the Project resource consent conditions; and
- Compliance with environmental legislation.

## 2.2 CEMP Framework

Figure 2-2 shows the relationship between the CEMP, management plans and design certification requirements, along with the Project’s resource consent conditions (i.e. the environmental management framework for the Project).



Figure 2-2 Environmental Management Framework

Table 2-1 details the specific consent conditions that cover the management plans.

Table 2-1: Management plans and relevant consent conditions

Plan	Appendix ref	Relevant Consent Condition(s)
Construction Environmental Management Plan	This document	29 - 44
Management Plan for Dredging and Placement of Mudcrete in the CMA	Appendix C	51 - 69
Erosion and Sediment Control Plan	Appendix D	70 - 81
Remediation Action Plan	Appendix E	85 - 92
Groundwater Monitoring and Contingency Plan	Appendix F	93 - 102
Construction Traffic Management Plan	Appendix G	103 - 105
Construction Staff Travel Plan	Appendix H	106 – 108
Construction Noise and Vibration Management Plan	Appendix I	109 – 110C
Construction Lighting Management Plan	Appendix J	111 - 113
Inner Viaduct Harbour Environmental Management Plan	Appendix K	117 - 119
Biosecurity Management Plan	Appendix L (pending)	114 - 116
Navigation and Safety Management Plan	Appendix M (pending)	46
Project Geotechnical Design Report	Not appended to the CEMP	135B
<b>Other Construction Phase Plans</b>		
America's Cup Kaitiaki Engagement Plan (ACKEP) <i>Note: this Plan does not form part of the CEMP and will be provided at a later date prior to the commencement of construction</i>	Not applicable	5-5F

Where specific construction related requirements are not addressed by the management plans required by the consent conditions, the CEMP includes measures to address these aspects (e.g. hazardous substances and spill management, tree management and protection, waste management). The CEMP also outlines methods to engage with stakeholders during construction and details the Project complaints protocol.

### 2.3 Other America's Cup Management Plans

The scope of this CEMP and the appended management plans relate to the construction of the America's Cup base infrastructure. Separate management plans will be prepared by Panuku Development Auckland related to other construction related aspects of the Project, in particular construction of the syndicate based buildings, following the completion of the base infrastructure.

In addition, the resource consent conditions require a number of other management plans to be prepared at various times for the America's Cup:

- **Post construction** - following the completion of syndicate base construction and prior to occupation of the syndicate bases, this includes the Industrial and Trade Activities Management Plan(s); and
- **Pre-occupation and the America's Cup event** (with event being defined in the consent conditions), including the Servicing, Delivery and Guest Transport Plans for the syndicate bases, the event management plans and associated plans (lighting, noise, transport etc).

These plans do not form part of this CEMP and will be prepared and submitted to Auckland Council by Panuku Development Auckland at a later date.

## 2.4 Amendments to the CEMP

This CEMP will be updated, with the necessary discussion and approval from the Team Leader Compliance Monitoring – Central, throughout the course of the Project to reflect any material changes in design, construction methods or management of effects.

### 2.4.1 Minor changes

In accordance with consent Condition 19, any amendments to the certified plan that reflect minor changes in design, construction methods or management of effects shall be discussed with and submitted to the Team Leader Compliance Monitoring – Central for confirmation in writing prior to implementation of the change (unless the amendment would result in a materially different outcome to that described in the original plan).

### 2.4.2 Material changes

In accordance with the consent Condition 20, approval from the Team Leader Compliance Monitoring – Central will be required for any revisions involving a materially different outcome to that described in the original certified plan. Any material change must be consistent with the purpose of the relevant Management Plan and the requirements of the relevant conditions of these consents. Where a Management Plan was prepared in consultation with affected parties, any material changes to that Plan shall be prepared in consultation with those same parties.

## 2.5 CEMP Structure

This CEMP is structured as follows:

- **Section 1** outlines the resource consent conditions relevant to this CEMP.
- **Section 2** details the Project background, outlines the scope and structure of the CEMP and associated management plans.
- **Section 3** provides a description of the Project scope, overall sequence of works and construction methodology.
- **Section 4** outlines the legislative and compliance requirements applicable to the environmental aspects of the Project.
- **Section 5** outlines the implementation and operation of the CEMP and describes roles and responsibilities and training requirements.
- **Section 6** outlines the environmental management framework that will be implemented during the construction of the Project to avoid, remedy and mitigate the potential adverse environmental effects. This section also outlines the Project's emergency and incident management protocols.
- **Section 7** details the methods to engage with Project stakeholders during construction, along with the Project complaints process.
- **Section 8** details monitoring and monitoring review requirements, auditing procedures, and corrective actions addressed by the CEMP.

### 3 America's Cup Infrastructure Works

#### 3.1 Overview of Construction Activities Relevant to this Plan

An overview of the key activities to be undertaken in the main construction areas is outlined in Table 3-1.

Table 3-1: Overview of construction activities

Key Construction Area and Works Duration	Construction Works
<p><b>Hobson Wharf Extension and Modifications</b></p> <p>Construction Duration: 12 months Nov 18 – Nov 19</p>	<ul style="list-style-type: none"> <li>Construction of an approximately 74m extension off the northern face of Hobson Wharf to accommodate America's Cup syndicate Base B. The area of the extension will be approximately 6,700m<sup>2</sup>.</li> <li>Construction of breakwaters to the east and south of the wharf (approximately 35m and 42m long respectively) to manage the wave climate within the Hobson east (Maritime Museum) area and provide more sheltered berthing conditions in the Outer Viaduct Harbour (OVH).</li> <li>Installation of wave panels/piles alongside the existing Hobson Wharf to reduce wave transmission and penetration in the OVH.</li> <li>Removal of existing fenders adjacent to the wharf to enable installation of the new wave panels and wharf extension.</li> <li>Provision of new services beneath the wharf extension and upgrades of the utilities as necessary under the existing wharf.</li> </ul>
<p><b>Halsey Wharf Modifications</b></p> <p>Construction Duration: 24 months Nov 18 – Nov 20</p> <p>Main construction will be between Nov 18 – Dec 19</p>	<ul style="list-style-type: none"> <li>Modifications to Halsey Wharf to support the use of the Viaduct Events Centre by Emirates Team New Zealand (Base A), including construction of new breakwaters to the north west of the existing wharf (an approximately 39m structure off the north-western face of the wharf and an 84m structure off the north-western face of that new breakwater) to provide sheltered berthing conditions in the Wynyard South Waterspace.</li> <li>Upgrading utilities and services for the Viaduct Events Centre and adjacent racing yacht and superyacht berths.</li> </ul> <p><i>Note: The modifications to the Viaduct Events Centre are being undertaken by others and do not form part of the scope of this CEMP</i></p>
<p><b>Wynyard Wharf Repair &amp; Infill</b></p> <p>Construction Duration: 15 months Dec 18 – March 20</p>	<p>Upgrading the southern portion of Wynyard Wharf, including:</p> <ul style="list-style-type: none"> <li>Removal of redundant piles, pipelines and services;</li> <li>Infilling and ground improvements between the existing wharf and the Brigham Street seawall (approximately 18m in width and 220m in length), which will serve to accommodate the syndicate yard areas; and</li> <li>Construction of a new breakwater (approximately 81m in length) at the northern end of the infill, to provide sheltered berthing conditions in the Wynyard South Waterspace.</li> </ul>
<p><b>Wynyard Point</b></p> <p>Construction Duration: 22 months Nov 18 – Sept 20</p>	<ul style="list-style-type: none"> <li>Closure of the southern portion of Brigham Street and construction of a new Northern Connector Road between Brigham and Hamer Streets.</li> <li>Redevelopment of brown-field sites between the Brigham Street seawall and Hamer Street for use as America's Cup syndicate Bases C to G, including ground disturbance and remediation of contaminated fill.</li> <li>Strengthening the Brigham Street seawall to support a link slab from the Wynyard Wharf infill, and an increase in the ground level along Brigham Street.</li> </ul>

Key Construction Area and Works Duration	Construction Works
	<ul style="list-style-type: none"> <li>Utility services will be relocated, redundant services removed, and new services installed.</li> <li>Construction of concrete base slabs for the syndicate bases C through G between Hamer and Brigham streets.</li> </ul> <p><i>Note: as outlined in Section 2, construction of the syndicate buildings and associated works is being undertaken by others and does not form part of the scope of this CEMP</i></p>
<p><b>Outer Viaduct Harbour and Wynyard Basin</b></p> <p>Construction Duration: 12 months Nov 18 – Nov 19</p>	<ul style="list-style-type: none"> <li>Dredging of OVH, its approach channel to the depth required for the AC36 race yachts.</li> <li>Dredging part of the Wynyard Basin to the depth required for the AC36 race yachts, and part to the depth required for superyachts.</li> <li>Removal of OVH berths and their replacement with berths for J-Class yachts and America’s Cup race yacht and support vessels.</li> <li>Construction of new berths for America’s Cup race yachts and support vessels in Wynyard Basin, along with new berths for superyachts with Mediterranean moorings.</li> <li>Construction of a double superyacht berth on the north-eastern corner of the Hobson Wharf extension.</li> </ul>

A detailed description of the proposed construction works is provided below.

## 3.2 Marine-Based Works

This section outlines the construction method for the marine based aspects of the Project.

### 3.2.1 Hobson Wharf Extension

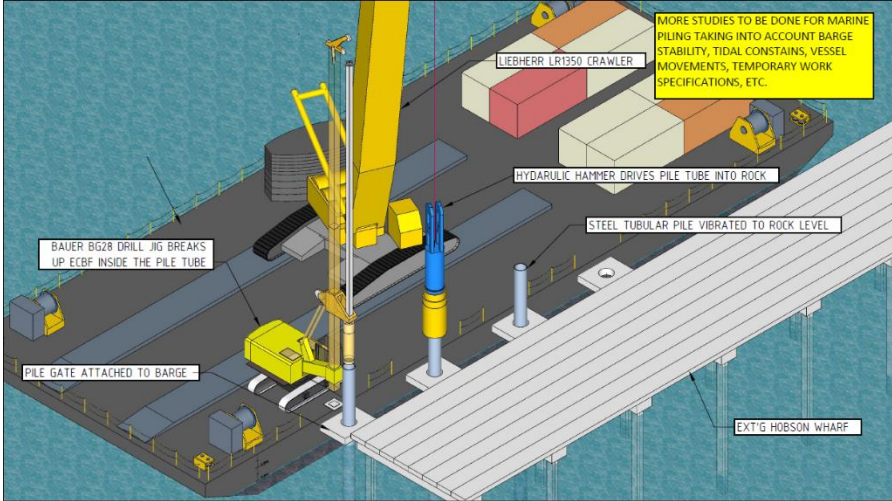
An extension to the existing wharf structure will be constructed adjacent to the northern face of Hobson Wharf as follows:

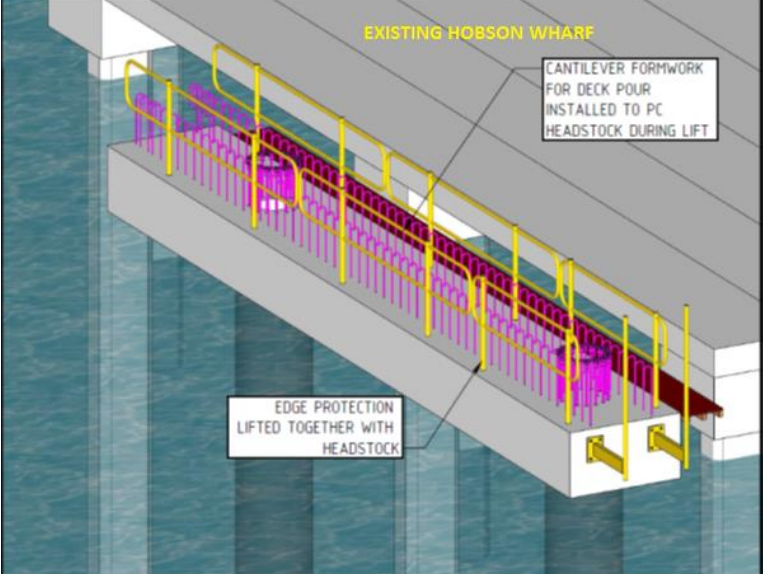
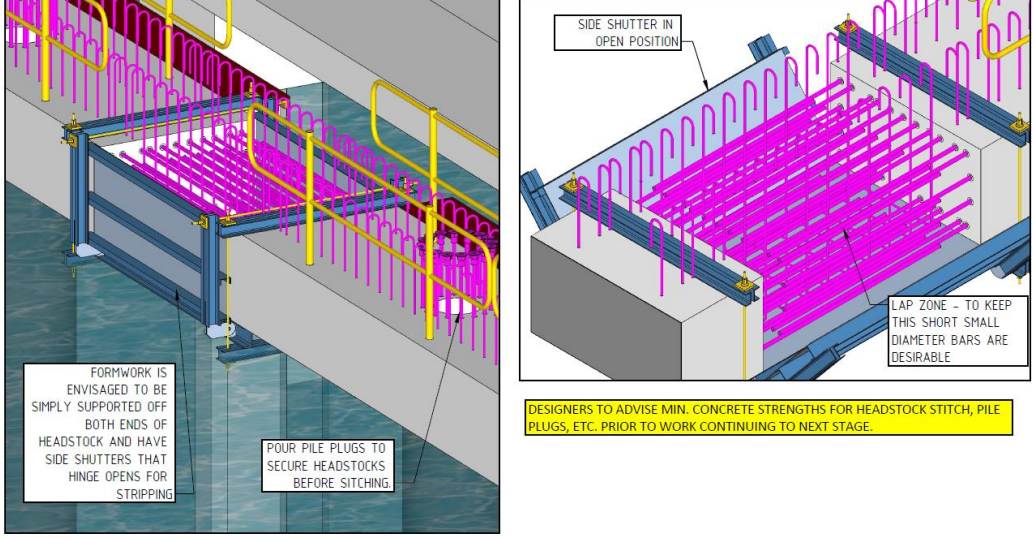
- The wharf structure will be approximately 72m wide and extend 84 to 102m in an east-west direction. The area of the extension will be approximately 6,700m<sup>2</sup>, to provide sufficient area for a double syndicate base (“Base B”). The finished level will be generally the same as that of the existing adjacent wharf (approx. +5.5m Chart Datum (CD)).
- A piled breakwater with a capping beam will extend approximately 35m from the south-eastern extent of the wharf extension, creating a solid wall breakwater towards Princes Wharf. This will provide more sheltered berthing conditions for moorings adjacent to the Maritime Museum. The deck level of the Hobson Wharf breakwater will be lower than the existing wharf at +4.5m CD. It is anticipated steps and a ramp will provide maintenance access between the breakwater and the main wharf deck.
- A piled and decked breakwater with wave panels/piles on the outer faces will extend some 42m off the south-western end of the existing Hobson Wharf. This will provide a training wall for the entrance and additional protection to the Base B berths.

The proposed construction method for the Hobson Wharf extension is outlined in Table 3-2.



Table 3-2: Hobson Wharf construction method and sequencing

Construction Stage	Construction Works
<p><b>Piling and headstock installation</b></p>	<ul style="list-style-type: none"> <li>• A piling barge will be positioned parallel to the wharf. The installation of each row of piles will be undertaken in a west to east direction with piles cut to the correct height upon installation.</li> <li>• To construct each pile, a steel pile casing will be vibrated into the seabed until it reaches the underlying East Coast Bays Formation (ECBF) rock, which comprises layers of sandstone, siltstone and mudstone. The casing will then be driven with a light impact hammer to seal it into the rock. Marine sediments inside the casing will be removed and then a hole drilled up to 8 metres into the ECBF. Excavated material will placed on the barge for disposal or reuse.</li> <li>• The top of the pile casing will be cut to the correct finished level, and a protective HDPE sleeve slid down over the pile. A reinforcing steel cage will be installed, along with a short precast concrete pile cap and then the casing and drilled hole will be filled with concrete.</li> <li>• Following the completion of each pile, the pile head will be prepared green-cutting or scabbling the top of the concrete filling.</li> <li>• Once each row of piles is complete, the barge will work its way back along the same row installing precast concrete headstocks then precast deck units, spanning between the headstocks.</li> <li>• Headstocks along the northern and southern ends of the extension will incorporate kerbs, slot drains and pipes to collect stormwater and covey it to treatment devices.</li> <li>• The barge will proceed in this manner until all piles, headstocks and deck units are complete - a period of approximately 8 months.</li> </ul>  <p>MORE STUDIES TO BE DONE FOR MARINE PILING TAKING INTO ACCOUNT BARGE STABILITY, TIDAL CONSTAINS, VESSEL MOVEMENTS, TEMPORARY WORK SPECIFICATIONS, ETC.</p> <p>BAUER BG28 DRILL JIG BREAKS UP ECBF INSIDE THE PILE TUBE</p> <p>LIEBHERR LR1350 CRAWLER</p> <p>HYDRAULIC HAMMER DRIVES PILE TUBE INTO ROCK</p> <p>STEEL TUBULAR PILE VIBRATED TO ROCK LEVEL</p> <p>PILE GATE ATTACHED TO BARGE</p> <p>EXT'G HOBSON WHARF</p>

Construction Stage	Construction Works
	 <p>EXISTING HOBSON WHARF</p> <p>CANTILEVER FORMWORK FOR DECK POUR INSTALLED TO PC HEADSTOCK DURING LIFT</p> <p>EDGE PROTECTION LIFTED TOGETHER WITH HEADSTOCK</p>
<p><b>Construction of pile plugs and headstock stitches</b></p>	<ul style="list-style-type: none"> <li>As the precast headstocks are installed by the piling barge, short sections of formwork that join the sections together will be installed by a crane on Hobson Wharf, followed by reinforcing in the stitch section.</li> <li>Concrete will be placed in the voids where the piles penetrate through the headstocks; and in the stitch pours between the precast headstock sections. The concrete will be wet cured for 7 days e.g. potable water slowly sprayed onto the top of the stitch to dampen the surface.</li> <li>The crane will then lift out the sections of formwork, assisted by workers underneath and on top of the headstock.</li> </ul>  <p>FORMWORK IS ENVISAGED TO BE SIMPLY SUPPORTED OFF BOTH ENDS OF HEADSTOCK AND HAVE SIDE SHUTTERS THAT HINGE OPENS FOR STRIPPING</p> <p>POUR PILE PLUGS TO SECURE HEADSTOCKS BEFORE SITCHING</p> <p>SIDE SHUTTER IN OPEN POSITION</p> <p>LAP ZONE - TO KEEP THIS SHORT SMALL DIAMETER BARS ARE DESIRABLE</p> <p>DESIGNERS TO ADVISE MIN. CONCRETE STRENGTHS FOR HEADSTOCK STITCH, PILE PLUGS, ETC. PRIOR TO WORK CONTINUING TO NEXT STAGE.</p>
<p><b>Deck installation</b></p>	<ul style="list-style-type: none"> <li>The precast deck units will be brought to site on a barge and lifted into place by a crane.</li> </ul>
<p><b>Concreting of topping slab</b></p>	<ul style="list-style-type: none"> <li>Following construction of the deck units, reinforcing steel will be installed to form the topping slab, and above the headstocks in the gap between deck units.</li> <li>A concrete pump will be mobilised to complete the topping slab (likely 2 to 3 concrete pours per span).</li> </ul>
<p><b>Edge beam installation</b></p>	<ul style="list-style-type: none"> <li>Edge beams will be installed at the same time as the other precast deck planks, followed by required reinforcing steel and construction of the in-situ topping slab.</li> </ul>

Construction Stage	Construction Works
Wharf infrastructure	<ul style="list-style-type: none"> <li>Wharf lighting, furniture and services will be installed progressively as the deck structure is constructed.</li> </ul>
Wharf fendering	<ul style="list-style-type: none"> <li>Wharf fenders and mooring facilities will be installed after the deck structure is complete.</li> </ul>

### 3.2.2 Breakwater and Wave Panel Construction

Breakwaters will be constructed adjacent to Wynyard Wharf, Halsey Wharf and Hobson Wharf to provide sheltered berthing conditions in the Outer Viaduct Harbour and Wynyard basin. Each breakwater will generally comprise a load resisting jetty structure with concrete piles (800-1200 mm in diameter), precast capping beams and a concrete deck.

Along the sides of the breakwaters, precast concrete panels or closely spaced tubular piles will be installed to form screens to block and attenuate waves and wakes. Refer to Figure 3-1 and Table 3-3 for further detail on the breakwater and wave break structures.

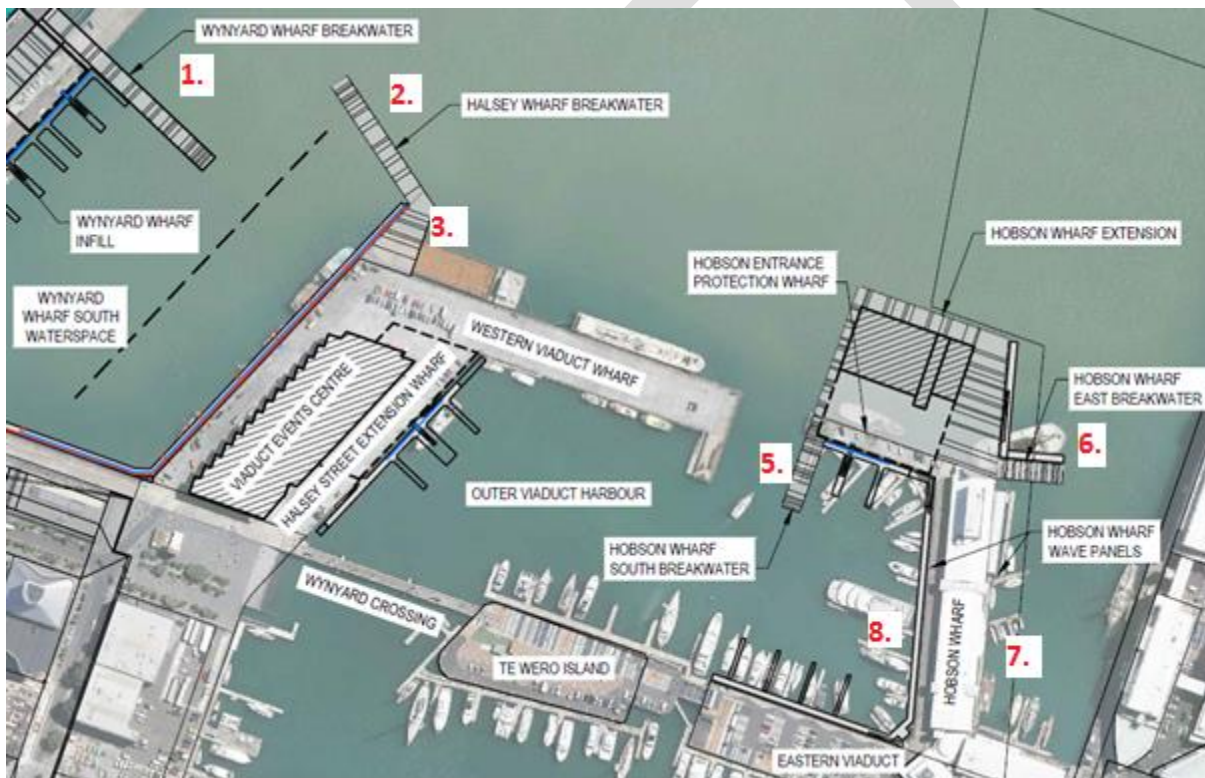


Figure 3-1: Location of breakwaters and wave break structures

Table 3-3: Breakwater and wave break structure typologies

Structure	Structure Typology
1. Wynyard Wharf Breakwater 1	Portal frame structure consisting of two rows of bored cast in situ piles headstocks and decks to connect the portal frames and form the structure. Continuous wave screen on inshore face, intermittent wave screen on offshore face.

Structure		Structure Typology
2.	<b>Halsey Wharf Breakwater 2 (Rectangular Section)</b>	Portal frame structure consisting of two rows of bored cast in situ piles headstocks and decks to connect the portal frames and form the structure. Continuous wave screen on inshore face, intermittent wave screen on offshore face.
3.	<b>Halsey Wharf Breakwater 3 (Trapezoidal Section)</b>	A suspended deck structure, similar to the Hobson wharf, with wave screen along the western side.
4.	<i>Wave break underneath the Hobson extension (not required)</i>	
5.	<b>Hobson Wharf South Breakwater 5</b>	Portal frame structure consisting of two rows of bored cast in-situ piles headstocks and decks to connect the portal frames and form the structure. Continuous wave screen on inshore face, intermittent wave screen on offshore face.
6.	<b>Hobson Wharf East Breakwater 6</b>	Single row of closely spaced bored piles, HDPE sleeves that slot over the piles to create a solid wall with a concrete cap.
7.	<b>Hobson Wharf East Breakwater 7</b>	Floating pontoon – small number of bored piles to which a number of floating pontoon sections will be connected.
8.	<b>Hobson Wharf – West Breakwater 8</b>	Single row of closely spaced bored piles, HDPE sleeves that slot over the piles to create a solid wall.

The construction method for these structures is outlined in Table 3-4.

Table 3-4: Breakwater and Wave Panel Installation

Structure	Methodology
<b>Breakwater Structures 1, 2, 3, and 5,</b>	<p>These breakwaters will be constructed as follows:</p> <ul style="list-style-type: none"> <li>• Install pairs of piles;</li> <li>• Install the precast headstocks;</li> <li>• Install precast deck planks and in-situ topping (approximately 8m in width), which will be done either using a crane from land or using a piling barge;</li> <li>• Install wave screen panels or piles along each side the break water structure; and</li> <li>• Complete edge strips/capping for wave break/piles.</li> </ul>
<b>Breakwater 6</b>	<p>Wave-break 6 will be installed using the same basic design as wave-break structure 8, however the work will be performed from a floating piling barge rather than from land.</p> <ul style="list-style-type: none"> <li>• The barge will move along and install the row of piles at close centres. The piles will be drilled, vibrated and impacted into place.</li> <li>• HDPE liners will be placed over the steel tubes, and the gap inside filled with pea gravel.</li> <li>• A reinforced concrete capping beam will be constructed along the line of the piles.</li> </ul>
<b>Breakwater 8 (land based piling)</b>	<p>Breakwater 8 will be constructed using a crane and a drill rig working off the existing Hobson Wharf as follows:</p> <ul style="list-style-type: none"> <li>• The existing pontoon mooring structures will be removed from the western side of Hobson Wharf. Hobson wharf will be closed to public access and a piling rig and a crane mobilised to site.</li> <li>• A supply barge carrying the steel pile casings will be moored against the wharf.</li> </ul>

Structure	Methodology
	<ul style="list-style-type: none"> <li>The piling equipment will move along and install the row of piles at close centres. The piles will be constructed as cast in-situ bored piles using the method described above for the Hobson Wharf Extension piles.</li> <li>HDPE sleeves will be placed over the piles, and the annular gap between the steel and HDPE tubes filled with pea gravel.</li> <li>A reinforced concrete capping beam will be constructed along the line of the piles, with its top level with the deck of the existing Hobson Wharf, but separated by about 300 mm to avoid transferring load from the Breakwater to the existing wharf.</li> <li>A sliding cover plate will bridge the gap and a new handrail will be installed along the seaward edge of the capping beam.</li> </ul>

As outlined in consent Conditions 45C and 45D, the construction sequencing of the breakwaters within the Wynyard waterspace will be undertaken in a manner that maintains safe navigational access and passage of ferries and commercial fishing vessels using the waterspace. Breakwater 3 (Halsey Wharf base element, immediately adjacent to the wharf) will be constructed first, followed by breakwater 1 (Wynyard Wharf). Breakwater 2 (Halsey Wharf east-west finger) will be built only after Sealink have been relocated from their current premises on Wynyard Wharf (and the existing Sealink ferry ramp facility has been removed). Refer to the Navigation and Safety Management Plan (Appendix M) for further detail in relation to the breakwater construction.

### 3.2.3 Dredging

Dredging of seabed materials will be undertaken in the locations outlined in Table 3-5 and shown in Figure 3-2. The total volume of dredged material will be in the order of 67,650m<sup>3</sup>.

Table 3-5: Approximate dredging volumes

Dredging Area	Description
<b>Wynyard Basin</b>	<ul style="list-style-type: none"> <li>An area of water space at the south end of Wynyard Wharf (between Wynyard Wharf and Halsey Wharf) will require maintenance dredging to achieve a design depth of -4.5m below CD to accommodate the superyachts. For the America's Cup race vessels, a depth of -5.5m CD will be provided.</li> <li>Seabed sediments will be dredged to an average depth of up to 1.5m over an approximate area of 17,000m<sup>2</sup> of the basin, with a total dredged volume of approximately 11,650m<sup>3</sup></li> <li>Dredged material is expected to predominantly comprise Recent Marine Sediments, characterised as mud (sand, silt and clay sized particles).</li> </ul>
<b>Navigation Channel</b>	<ul style="list-style-type: none"> <li>Maintenance and capital dredging will be required to provide a navigation channel for America's Cup race boats access to the Outer Viaduct Basin marina.</li> <li>Dredging will likely occur to a depth of -5.5m below CD. The approximate quantity of dredged material will be in the order of 19,200m<sup>3</sup></li> </ul>
<b>Outer Viaduct Harbour</b>	<ul style="list-style-type: none"> <li>Maintenance and capital dredging will be required within the OVH to accommodate the America's Cup race boats.</li> <li>Dredging will likely occur to a depth of -5.5m below CD with total volume of around 36,800m<sup>3</sup> anticipated.</li> <li>Dredged material is expected to predominantly comprise Recent Marine Sediments, characterised as mud (sand, silt and clay sized particles) but clays, sandstone and ECBF rock may also be encountered in some parts of the basin.</li> </ul>
<b>Pile construction</b>	<ul style="list-style-type: none"> <li>Bored pile construction will also generate spoil, with a volume of around 9,000m<sup>3</sup> anticipated</li> </ul>

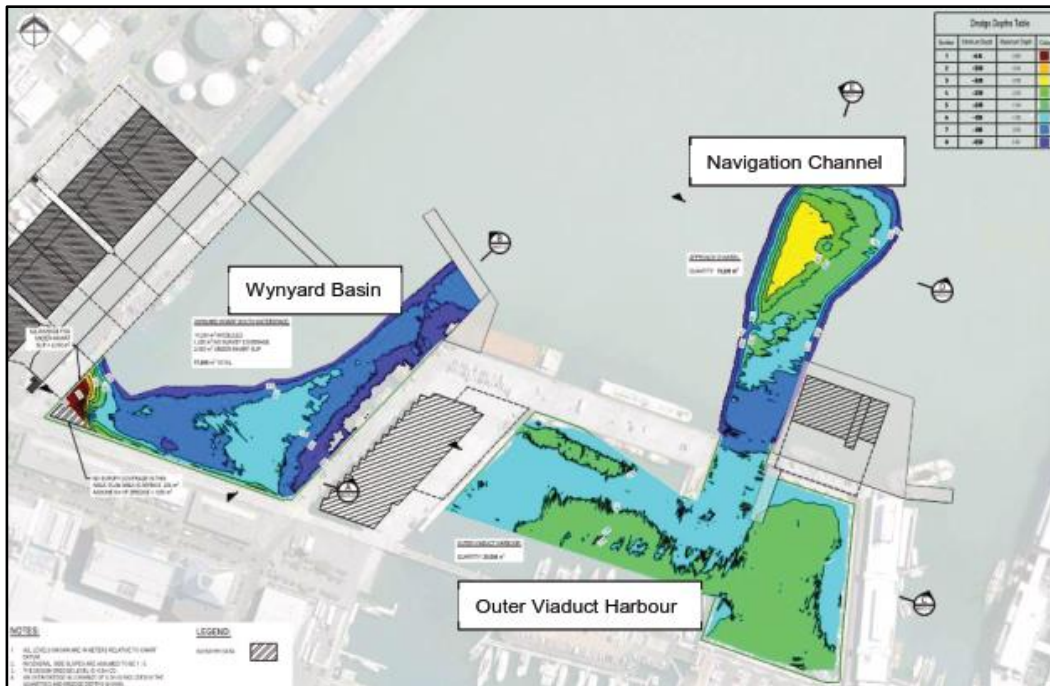


Figure 3-2: Dredging locations

The dredging operation will likely occur over approximately a 4-6 month period but may occur in several stages depending on construction phasing and availability of disposal options. Production rates will typically be 1,000 – 2,000 m<sup>3</sup> per day.

Dredged material that meets the receiving site criteria will be transported by split hopper barges to a permitted offshore disposal site. The barges will typically operate in a relay system, with between 7 and 12 barge movements per week. Dredged material from Wynyard basin not suitable for disposal at sea, may be used in mudcrete placed in the CMA (beneath Wynyard Wharf, Breakwater 1), cement stabilised and placed on land, or transported off-site for disposal. Any truck movements associated with the off-site disposal of dredged material will be managed in accordance with the Construction Traffic Management Plan (CTMP).

Dredging will be undertaken by a backhoe dredger - a hydraulic excavator mounted on a spudded barge. Refer to the Management Plan for Dredging and Placement of Mudcrete in the CMA (MPDPM) for further detail.



Figure 3-3: Typical backhoe dredge loading a barge

### 3.2.4 Wynyard Wharf Infill and Wynyard Point Ground Improvement Works

The Wynyard Wharf infill will involve constructing a new wharf to fill the 18 metre gap between the wharf and Brigham Street, over a length of approximately 220 metres. The new wharf deck will be at the same level as the existing Wynyard Wharf (varying from approximately +5.0m CD to +5.3m CD).

Wynyard Wharf infill will require the installation of approximately 42 steel piles. Approximately 21 steel piles 1.1m diameter, will be installed at 12 m centres along the eastern edge of Brigham Street. Approximately 21 piles, 1.1m diameter, will be installed at 12 m centres along the western edge of the existing Wynyard Wharf.

The construction method for the infill and ground improvements will be as outlined below.

#### 3.2.4.1 Wynyard Wharf infill

- The southern half of Brigham Street will be closed except for construction traffic and emergency services. Tanker access to the BST tank farms will be maintained from the southern end of Brigham Street, exiting on to Hamer Street as per the CTMP.
- Utilities within the work area will be removed or relocated prior to the commencement of works.
- Construction plant on Brigham Street will be set back from the seawall and will sit on timber, steel or concrete crane mats.
- The existing Wynyard Wharf will be repaired prior to constructing the adjacent section of infill and construction plant on the wharf will sit on steel or concrete crane mats.
- The piles will be installed by driving steel casings down to the underlying bedrock, boring out the soil and rock inside the casings and filling them with reinforcing cage and concrete.
- All wharf infill piles will need to penetrate through the basalt rock bunds that support the seawall and the inshore side of Wynyard Wharf. This will be achieved by one of the following techniques:
  - Oversize steel casings will be vibrated into the rock bund until refusal then basalt rock within the casing will be excavated, the casing re-driven and the inside re-excavated repeatedly until the casing reaches the underside of the bund. Excavated basalt boulders will be reused on site or stockpiled for use at a later date.
  - A “down the hole hammer” will be used to drill a series of holes through the rock bund forming a circle larger than the pile diameter. As each hole is complete it will be filled with weak concrete, and once the full circle is complete the centre of the circle will be bored to create a hole for the wharf infill pile.
- Once a hole has been created through the basalt bund, a set of pile gates will be welded to the top of the oversize casing (if used). The permanent pile casing will be installed and driven into the underlying ECBF bedrock, then drilled out. Excavated spoil will likely be wet and stored in a banded spoil bin before being transported off-site.
- The casing will be reinforced and filled with concrete. Gaps between the permanent and the temporary casing will be backfilled with clean rock or gravel. The oversize casing will be extracted and reused, if possible.
- Capping beams will then be installed on top of both rows of piles and precast infill deck panels installed.

#### 3.2.4.2 Wynyard Point ground improvement works

To strengthen the Brigham Street seawall, accommodate the increase in the ground level along Brigham Street, and to support a link slab from the Wynyard Wharf infill, ground improvements will be undertaken as follows:

- A trench will be dug behind the seawall and precast concrete L-shaped retaining wall units installed.
- The area behind the L wall will be backfilled with structural fill on which a strip foundation will be laid to support the inshore end of the link slab.
- The gap between the front face of the new retaining wall and the existing seawall will be left to maintain structural separation between the old wall and the new structures.

### 3.2.5 Floating Infrastructure

Floating pontoons and piles will be installed to support the berthing of race boats, support craft and superyachts. Pontoons will generally be comprised of concrete, expanded polystyrene and galvanised mild steel with wood whalers. They will be connected to piles (typically steel with a polyethylene sleeve or Universal Column). The pontoons will include gangways, services (power, water and telecom) and other attachments as necessary. Mooring piles, similar to the pontoon piles, will also be provided where necessary. Figure 3-4 provides an overview of the floating infrastructure to be installed for the Project.

Pontoons will likely be delivered to the site by truck and lifted into the water from Halsey or Wynyard Wharf, or alternatively launched from a site within the Westhaven marina, preassembled and towed as larger units to their final location. This will typically be done early in the morning to avoid traffic congestion or disruption to surrounding businesses or residents.

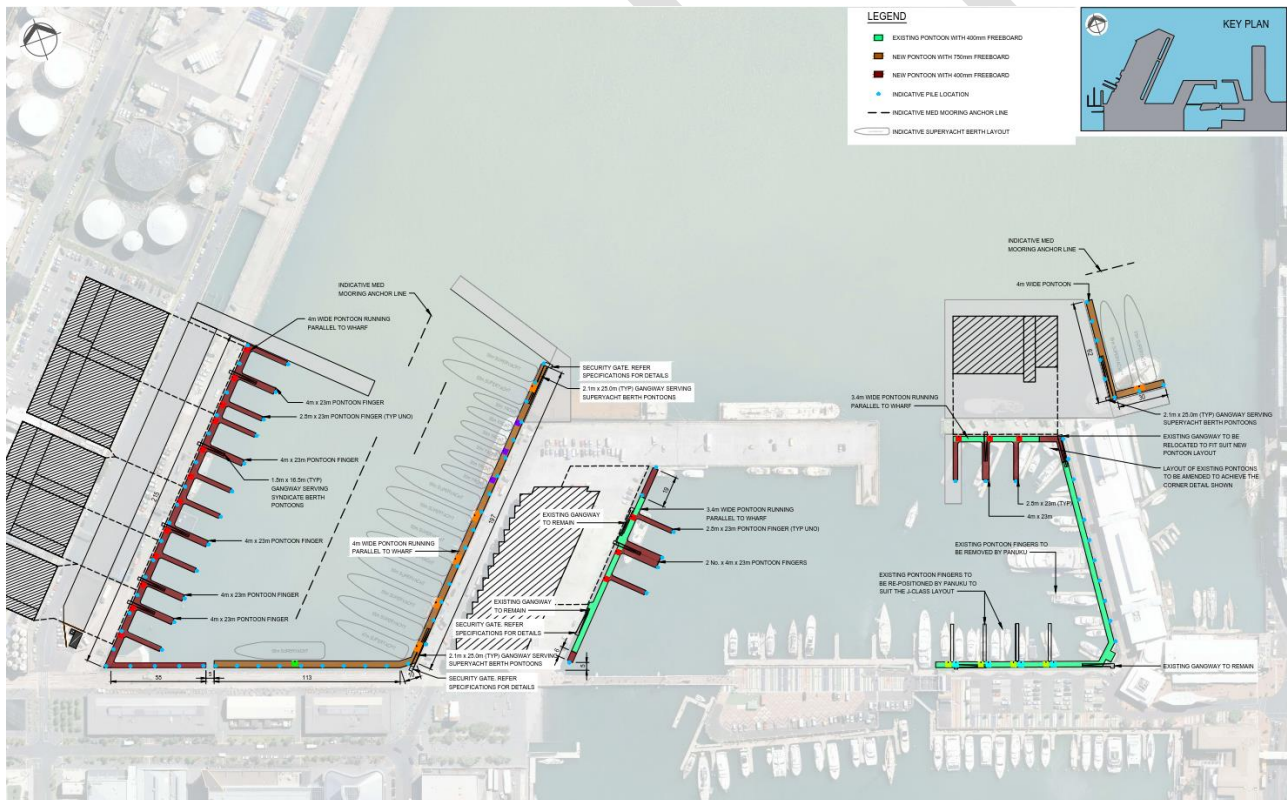


Figure 3-4: Floating infrastructure

### 3.2.6 Temporary Construction Platforms

If temporary work platforms and associated support piles are installed for construction access, the temporary piles will likely be vibrated into position and finished by driving to a set depth. This will enable the piles to be removed from the site following completion of the works.



### 3.3 Land-Based Works

The construction method for the land-based works is outlined below.

**Note:** *The Alliance is responsible for construction of the building platforms for the land based Syndicate Bases only. Construction of the base buildings will be undertaken by others and is not within the scope of this CEMP*

#### 3.3.1 Wynyard Point

Construction works will be undertaken on Wynyard Point to provide building platforms for Syndicate Bases C-G and associated infrastructure. These will include:

- **Site preparation** – surficial excavation and/or minor filling to create a level building platform, management of contaminated land, construction of a shallow pad for building foundations.
- **Ground improvements** - along Brigham Street and the coastal edge to stabilise and strengthen the existing seawall and ensure the hardstand areas for the syndicate bases are structurally sound (addressed in Section 3.2.4).
- **Relocation, protection and provision of new services** - involving minor excavations/trenching. New services such as wastewater, water supply, power, lighting and communications) will be provided via underground reticulation and connect into existing networks in Hamer or Brigham Streets.
- **Construction of a new road** - between Brigham Street and Hamer Street to enable the permanent closure of existing southern end of Brigham Street.

The site preparation and ground improvements occur over a length of approximately 220 m from the eastern boundaries of 8-34, 36, 56 and 90 Brigham Street to the seaward edge of Brigham Street.

All existing bulk liquid storage tanks (at the BST and Stolthaven South sites) and any other buildings located on the site will be removed (in part by others) unless retained as part of landscape design elements.

All earthworks will be undertaken in accordance with the Project Erosion and Sediment Control Plan ((ESCP) Appendix D) to minimise the potential discharge of sediment laden water to the CMA. Disturbance of contaminated land or areas of potential contamination will be managed in accordance with the Remediation Action Plan (RAP; refer to Appendix E).

Further information regarding geotechnical design in relation to natural hazards is included in the Project Geotechnical Design Report as required by consent Condition 31(l).

##### 3.3.1.1 Site Preparation Works

Site preparation will involve the construction of a level hardstand for building platforms, paving and underground services. The general approach to managing contaminated land is to leave the material in place wherever possible, reuse existing materials, reduce long-term infiltration into the underlying material, and prevent direct human contact. This can usually be achieved by having a hardstand sealed area as is proposed for most of the landside works. The construction methodology for the works will likely be as follows:

- Clear site and remove existing paving, structures, buried infrastructure and foundations only as required, using excavators. Existing live services affected by the works will either be decommissioned, diverted or protected.
- Undertake ground improvements and seawall strengthening works as required (refer to Section 3.2.4).
- Remove and stockpile surface aggregate.
- Remove unsuitable subgrade material (i.e. weak or organic material) from the site.

- Replace unsuitable subgrade material with either mudcrete or aggregate.
- Grade the site using stabilised on-site aggregate/sub-base/base course to form the pavement.
- Form building platforms using plant such as excavators, cranes, concrete trucks and pumps and place a vapour barrier if required (refer to the RAP in relation to the latter).
- Excavate service trenches, lay and connect services and backfill service trenches using excavators and trench shields (if required).
- Lay kerbs and paving for yard areas and accesses using kerbing and paving machines.

The syndicate base buildings will subsequently be built on the building platforms by the individual race syndicates.

### 3.3.1.2 Earthworks

The land area of the Wynyard Point syndicate bases is approximately 2.4ha. It is anticipated that around 50% of this area will be earth-worked at any one time during construction works in this area.

Earthworks will comprise the following, as further detailed in the ESCP (Appendix D):

- Wynyard Point ground levels will be raised approximately 1.0m above existing ground levels;
- Approximately 2,000m<sup>3</sup> of cut and 5,000m<sup>3</sup> of fill will be generated by the works (the fill will be cement stabilised cut material or cement stabilised material from the ground improvement piles, otherwise clean structural fill material will be used); and
- A 500mm capping layer of clean material/top soil will be required in landscaped areas along Wynyard Point.

## 3.4 Network Utility Works

The Project will require the relocation and protection of various network utilities during the construction works, along with new network utility installations and connections. These works will primarily be undertaken as outlined in Table 3-6.

Table 3-6: Network Utility Works

Location	Description
Wynyard Point	<ul style="list-style-type: none"> <li>• Provision of new utilities to Wynyard Point syndicate bases, including: <ul style="list-style-type: none"> <li>– Power – upgrading and relocation of the existing transformers on Wynyard Wharf and off Hamer Street (by Vector) and low voltage reticulation to serve buildings and infrastructure. Potential works may be required in Jellicoe Street to serve the syndicate buildings.</li> <li>– Communications – provision of new fibre reticulation to serve proposed Base buildings and connection to existing network at the southern end of Brigham Street.</li> <li>– Water supply – potable, firefighting and irrigation reticulation to serve buildings and new infrastructure and connection to existing 250mm diameter line at the southern end of Hobson Wharf and Brigham Street.</li> <li>– Wastewater–sewer connections from base buildings, and superyacht pump out system, with connection to the newly diverted Watercare sewer in the closed section of Brigham Street.</li> <li>– Stormwater drainage and proprietary treatment devices with outlets to Wynyard Basin.</li> </ul> </li> <li>• Diversion of existing utilities on Wynyard Point – services currently below the western berm of Brigham Street will be relocated to avoid clashes with proposed foundations or infrastructure.</li> <li>• Product pipelines on Brigham Street to be decommissioned and removed by others.</li> </ul>

	<ul style="list-style-type: none"> <li>• Gravity connection for the proposed sanitary sewer rising main from the superyacht pump out facility on the Wynyard Basin floating berths. Connection to new Watercare sewer at the southern end of Brigham Street.</li> </ul>
Breakwaters	<ul style="list-style-type: none"> <li>• Power supply for lighting to new breakwaters off Hobson, Halsey and Wynyard Wharves.</li> <li>• Water supply to new breakwaters off Hobson, Halsey and Wynyard Wharves.</li> </ul>
Hobson Wharf	<ul style="list-style-type: none"> <li>• Provision of new utilities to Hobson Wharf extension, including; <ul style="list-style-type: none"> <li>– Power – upgrading of existing substation (by Vector) and reticulation to serve syndicate base and superyacht berths.</li> <li>– Communications – new fibre connection to serve syndicate base and superyacht and J-class berths at the southern end of Hobson Wharf.</li> <li>– Water supply – new watermain for potable, firefighting supply to syndicate base and superyacht berths connecting to the existing Watercare network at the southern end of Princes Wharf.</li> <li>– Sanitary Sewer – rising main to serve syndicate base building with gravity connection into the existing Watercare sewer at the southern end of Princes Wharf.</li> <li>– Stormwater drainage and proprietary treatment devices with treated runoff discharging to the harbour.</li> </ul> </li> </ul>

### 3.5 Trees

A number of street trees are located within the Project area (refer to Figure 3-5). As a result of the Project works, including the earthworks required to stabilise the site, network utility works and the construction of the syndicate bases, Trees 1-3 and 15 – 18 will likely be impacted by the works.

While best endeavours will be taken to retain the trees or relocate them, the resource consents have been sought for the removal of trees on Hamer and Brigham Streets and provide for transplanting and retention where appropriate and replacement planting where they cannot be. Where trees are to be retained they will be subject to best practice tree protection measures during the works. Refer to Section 6.15 for further detail on tree protection measures during the works.



Figure 3-5: Location of existing trees within the Project area<sup>2</sup>

<sup>2</sup> Source: Assessment of Environmental Effects America's Cup Wynyard Hobson.

### 3.6 Construction Yard and Support Areas

The main construction yards for the duration of the Project will be established on Halsey Wharf and Wynyard Point. Each yard will comprise:

- Site offices for construction staff likely to be comprised of 3 or more 40 foot containers and a smoko shed;
- Toilets and shower facilities;
- Limited parking for site vehicles; and
- Areas for plant and equipment storage.

The establishment and operation of the Wynyard Point yard will be progressively phased as the construction works progress in this area. In general, the yard area within the current ASB carpark site will be established first, followed by that in the current Stolthaven site<sup>3</sup> and operate until around the end of 2019. The area of yard within the current BST site will operate from around late 2019 through to the end of the Project.

A smaller construction support area will be located on Hobson Wharf to serve works in this area. A support yard / truck assembly point will be established on Panuku owned land on Hamer Street, adjacent to Firth Concrete.

Refer to the site compound drawing in Appendix B for the location of these yards.

Marine loadout to support barge-based access and construction will be undertaken from within the repaired section of Wynyard Wharf or Halsey Wharf.

### 3.7 Site Safety and Security

The primary means of providing for the safety of the general public is the effective isolation of active construction zones from public areas. Generally, safety isolation and site security will be maintained by establishing temporary construction fences (likely mesh or plywood fencing depending on the duration the fencing will be in place) across the landward perimeter of all Project construction areas.

Gates will be provided at construction entry and exit points and locked shut when the site is unattended. During construction hours, Project staff members will manage vehicle and personnel movements into and out of the gates and ensure no unauthorised entry into the construction areas.

Where physical separation cannot be achieved through the use of construction fencing, management measures will be implemented in accordance with the CTMP to avoid any conflict between the construction areas and vehicles, pedestrian and cycle movements during construction. Within the site, pedestrian and cycle access routes will be clearly marked with appropriate signage.

The Alliance will work with the Auckland Harbourmaster to control the access of the public from the CMA to active construction areas, such as during dredging or piling operations. Temporary mooring locations for barges used during construction will be confirmed with the Harbour master prior to the commencement of marine based construction works. Barges and other plant operating within the CMA will be actively managed and positioned so as to minimise disruption to other craft and waterspace users to the extent practicable. Further information on the active management of the harbour during construction activities is included in the Navigation and Safety Management Plan (refer to Appendix M).

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<sup>3</sup> The existing tanks on the Stolthaven and BST sites are to be removed prior to the establishment of the Wynyard Point construction yard – refer to Section 3.3.1 of this CEMP

### 3.8 Site Parking

As outlined in the CTMP (Appendix G), a limited number of parking spaces will be provided on site as follow:

- Wynyard Point – 50 spaces;
- Halsey Wharf – 30 spaces; and
- Hobson Wharf – 10 spaces.

These parking spaces will be allocated to:

- Minor trades – spaces will be assigned at the discretion of the Construction Manager, based on those needing to bring tools to site for specialist activities, etc;
- Priority for car / van pooling;
- Staff working outside standard hours; and
- Mobility impaired staff/visitors.

It is intended that staff vehicle trips will be minimised through carpooling, use of public transport, off-peak shift starts as appropriate. Further details are provided in the Construction Staff Travel Plan (CSTP) provided at Appendix H. Implementation of the CSTP will serve to reduce congestion in the Project area as far as practicable.

### 3.9 Site Housekeeping

All work sites will be maintained in a tidy and neat condition, and due care shall be taken to prevent damage to any adjoining public or private property. All litter and liquid contaminants will be removed and disposed of in an appropriate manner. Equipment and materials will be stored safely, securely and in an orderly manner. No plant, buildings, debris, or other materials shall be placed or allowed to roll, wash, slide or blow across adjacent boundaries or into the CMA. Erosion and sediment control will be implemented in accordance with the ESCP and avoid tracking dirt from the site onto the surrounding road network and public spaces. Any dirt tracked from the site will be promptly cleaned up.

On completion of construction work in individual areas, and after the completion of each Project stage, all plant, temporary facilities, debris surplus and foreign materials will be removed from the site as far as practicable.

### 3.10 Project Signage

Project notice boards or similar will be located in prominent locations around the Project area. Notice boards will identify:

- The Project name; and
- The Project hotline and email address.

Signage will be used to show traffic detours and changes to pedestrian or cycle routes during construction, as required.

The Alliance will work with Panuku Development Auckland in relation to the design of Project signage and any construction hoardings installed around the Project site during works.

### 3.11 Programme

The construction timeframe for the delivery of the infrastructure is over a period of 24 months, between late 2018 and late 2020. A detailed programme of works is provided in Appendix N.

The nature of the wider scheme involving multiple structures and sites (e.g. dredging, wharf construction, ground improvements, site grading and pavement), means that multiple construction activities will occur in parallel to achieve the delivery timeframe.

### 3.12 Hours of work

Due to the constrained construction programme and site constraints, some of the works may be undertaken 24 hours per day, 7 days per week. However, activities with an impulsive or tonal character, such as impact pile driving and concrete cutting, will not be undertaken at night due to the potential to result in adverse effects on nearby sensitive receivers. In addition, the consent conditions include restrictions on impact and vibro piling at times during the day to minimise adverse impacts on receivers (refer to the Construction Noise and Vibration Management Plan (CNVMP) for further detail in this regard). The hours of work will also be influenced by the traffic restrictions that apply to areas of the Project.

### 3.13 Removal of Construction Materials

Following the completion of construction, all construction materials and plant will be removed from the site (for both the land-based and marine works), along with any temporary, construction-phase structures.

The site will then be handed over to Panuku Development Auckland in preparation for occupation by the America's Cup syndicates prior to the America's Cup.

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## 4 Statutory Framework

### 4.1 Legislative and Other Requirements

This section details the statutory framework and other requirements for environmental management of the Project and outlines the relevant legislation, policies and plans.

#### 4.1.1 National Legal Requirements and Policies

Construction of the Project must comply with a range of national legislation, regulations, strategies and policies in order to provide for the management of environmental effects. The key documents, national environmental legislation and regulations relevant to the Project are outlined in Table 4-1.

Table 4-1: Key Legislative Requirements

<b>National legislation, regulations and policy</b>
Resource Management Act 1991 (RMA)
Hazardous Substances and New Organisms Act 1996
Dangerous Goods Act 1974 and Regulations
Heritage New Zealand Pouhere Taonga Act 2014
Protected Objects Act 1975
New Zealand Coastal Policy Statement 2010
Hauraki Gulf Marine Park Act 2000
Marine and Coastal Area Act (Takutai Moana) 2011
Maritime Transport Act 1994
National Environmental Standard – Air Quality 2004 (NES Air Quality)
National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NES Soil)
Health and Safety at Work Act 2015
Health and Safety at Work (Hazardous Substances) Regulations 2017
Health and Safety at Work (Asbestos) Regulations 2016
Biosecurity Act 1993
Wildlife Act 1953
Marine Mammal Protection Act 1978

## 4.1.2 Project Approvals

### 4.1.2.1 Resource Consents

Activities not permitted by a relevant plan require resource consents. The Project is seeking resource consent under the following statutory planning documents:

- Auckland Unitary Plan (Operative in Part);
- Auckland Council Regional Plan: Coastal Section; and
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011.

## 4.2 Compliance

In accordance with the resource consent conditions, the provisions within this CEMP shall be complied with, implemented and maintained throughout the entire Project construction phase.

The management plans provide the overarching principles, methodologies and procedures for managing the effects of construction of the Project to achieve the environmental outcomes and performance standards required by the consent conditions.

The Alliance is responsible for maintaining compliance with the conditions relevant to its scope of works. The Alliance will maintain a register of compliance requirements, actions and status for the purpose of tracking consent compliance.

## 4.3 Environmental Risk Register

The Project Risk Register will include environmental risks associated with the Project's construction activities. The information contained in the register will provide a guide for the implementation of environmental management activities, controls and monitoring, thus avoiding and minimising environmental impacts.

The Risk Register is a 'living document' and will be updated during the course of the Project to address revised construction methodologies. The Risk Register will be reviewed prior to the commencement of construction activities (taking into account finalised construction methodologies) and at regular intervals during construction, including when there is a new or changed activity, equipment or location or following an environmental incident. Changes to legislative requirements may require review and update of the Project Risk Register.



## 5 Implementation

### 5.1 Roles and Responsibilities

This section describes the project organisational structure in relation to the environmental management for the Project.

#### 5.1.1 Overview of Responsibility for this Plan

There are three key groups with responsibility for environmental management:

- **Panuku Development Auckland** - as the Project owner and consent holder with overall responsibility for compliance with the consent conditions and other Project approvals;
- **The Wynyard Edge Alliance** –undertaking the works with overall responsibility for site environmental management; and
- **Auckland Council** - who audit the works and monitor compliance with resource consent conditions, the CEMP and management plans.

All Project employees have a responsibility to identify and report all environmental and aspects within the workplace to their immediate supervisor, and for monitoring the environmental awareness practices of subcontractors. These responsibilities will be communicated during the site inductions and during tool box meetings.

#### 5.1.2 Specific Roles and Responsibilities

Project roles and responsibilities with respect to environmental management during construction of the Project are outlined in Table 5-1.

Table 5-1: Alliance Team Roles and Responsibilities

Project Role	Responsibilities
<b>All Project Staff</b>	<ul style="list-style-type: none"> <li>• Attending tool-box talks and environmental training, including familiarisation with the requirements of the CEMP and management plans;</li> <li>• Responsible for reporting environmental incidents, complaints, defects and other problem areas to senior staff as they arise on site;</li> <li>• Ensuring that environmental management processes and procedures are followed;</li> <li>• Ensuring that environmental mitigation and protection measures are maintained and working correctly;</li> <li>• Within day to day work responsibilities, ensure the environment both on site and adjacent to the site is protected and respected; and</li> <li>• Ensure the site is tidy and all litter is placed in the correct bins.</li> </ul>
<b>Alliance Project Director</b>	<ul style="list-style-type: none"> <li>• The Alliance Project Director has overall responsibility for the Alliance achieving compliance with resource consent conditions and site environmental management;</li> <li>• The Alliance Project Director has ultimate responsibility for achieving the Project environmental goals;</li> <li>• Reviews and approves management plans prior to issue;</li> <li>• Ensures adequate resources are provided to manage environmental issues and meet Project compliance obligations; and</li> <li>• Sets the Project environmental culture.</li> </ul>

Project Role	Responsibilities
<b>Alliance Construction Manager</b>	<ul style="list-style-type: none"> <li>● Reviews work packages against Project environmental objectives and targets, along with CEMP and management plans to ensure a high level of performance is achieved;</li> <li>● Develops, implements and monitors construction methods ensuring compliance with resource consent conditions, the CEMP and management plans;</li> <li>● Comply with all legislation, regulations and consent conditions in relation to the Project;</li> <li>● Demonstrate understanding of environmental issues and environmentally sensitive areas;</li> <li>● Implement environmental protection measures in accordance with the contract, the CEMP and management plans;</li> <li>● Ensure that all workers are trained in relation to environmental measures;</li> <li>● Manages environmental interfaces with consultants, subcontractors and suppliers;</li> <li>● Report all incidents, system defects and complaints to the Alliance Project Director;</li> <li>● Ensure all workers and others (e.g. subcontractors and suppliers) comply with environmental operating procedures;</li> <li>● Coordinates emergency responses; and</li> <li>● Reinforce the Project environmental culture.</li> </ul>
<b>Alliance Construction Environmental Manager</b>	<ul style="list-style-type: none"> <li>● Provides leadership so staff are motivated to achieve environmental standards, and comply with all resource consent conditions;</li> <li>● Develops, implements and reviews environmental management systems, including the CEMP and management plans for the Project;</li> <li>● Coordinates the interfaces and communications with external agencies and stakeholders in relation to environmental management of the Project in conjunction with the Stakeholder Engagement and Communication Manager;</li> <li>● Attends meetings with Council Monitoring Officers;</li> <li>● Undertakes regular site inspections and monitoring to assess compliance with the CEMP, management plans and consent conditions and manages compliance system;</li> <li>● Assists Construction Manager in managing environmental interfaces with consultants, subcontractors and suppliers;</li> <li>● Manages internal Project communications regarding environmental information;</li> <li>● Manages staff training and site specific environmental procedures;</li> <li>● Manages maintenance and monitoring of the effectiveness of erosion and sediment controls and other control devices;</li> <li>● Notifies the Alliance Project Director of any significant environmental non-compliances for which they have jurisdiction;</li> <li>● Reports to the Alliance Project Director and Panuku Development Auckland any changes to construction techniques or natural environmental changes, which may require changes to existing consents or new consents; and</li> <li>● Reinforces the Project environmental culture.</li> </ul>
<b>Alliance Communications and Stakeholder Manager</b>	<ul style="list-style-type: none"> <li>● Responsible for notifying Project neighbours / property owners of works occurring (activities, timing, duration) within proximity and managing mitigation as required;</li> <li>● Disseminates information to key Project stakeholders;</li> <li>● Primary contact for Project related enquiries and complaints and manages the complaints response process;</li> <li>● Manages the Project stakeholder database.</li> </ul>
<b>Project Engineers</b>	<ul style="list-style-type: none"> <li>● Provide leadership to the site team to achieve Project environmental objectives and targets to ensure a high level of performance is achieved;</li> </ul>

Project Role	Responsibilities
	<ul style="list-style-type: none"> <li>• Provide input into the implementation of the CEMP and management plans;</li> <li>• Responsible for ensuring environmental controls and erosion and sediment control works are installed, modified and maintained as appropriate for each construction area/stage;</li> <li>• Assist in the implementation and review of Project environmental objectives;</li> <li>• Ensure staff on-site are aware of environmental requirements at all times; and</li> <li>• Reinforce the Project environmental culture.</li> </ul>
<b>Site Supervisors</b>	<ul style="list-style-type: none"> <li>• Monitor operations in accordance with this CEMP and management plans;</li> <li>• Take appropriate action to prevent unsound environmental practices;</li> <li>• Ensure all subcontractors comply with these requirements;</li> <li>• Ensure all employees and subcontractors are inducted prior to commencing work on site;</li> <li>• Arrange for necessary work permits, i.e. excavation permit, permit to pump, hot works permit etc.;</li> <li>• Report and record all accidents, incidents, injuries and near misses accurately and within specified time frames; and</li> <li>• Reinforce the Project environmental culture.</li> </ul>

## 5.2 Project Contacts

Contact details for those with key responsibilities in the implementation of this CEMP from the Alliance, along with Auckland Council and Auckland Transport are provided in Table 5-2.

Table 5-2: Project contact details

<b>Wynyard Edge Alliance</b>		
<b>Alliance Project Director</b>	Iain Simmons	Mob: 021 814 416 Email: <a href="mailto:Ian.Simmons@wynyardedge.nz">Ian.Simmons@wynyardedge.nz</a>
<b>Alliance Construction Manager</b>	Kurt Grant	Mob: 021 834 512 Email: <a href="mailto:Kurt.Grant@wynyardedge.nz">Kurt.Grant@wynyardedge.nz</a>
<b>Alliance Communications and Stakeholder Manger</b>	Michael Goudie	Mob: 021 810 194 Email: <a href="mailto:Michael.gouldie@wynyardedge.nz">Michael.gouldie@wynyardedge.nz</a>
<b>Alliance Construction Environmental Manager</b>	Brendon Barnett	Mob: 021 527 461 Email: <a href="mailto:brendon.barnett@wynyardedge.nz">brendon.barnett@wynyardedge.nz</a>
<b>Alliance Health &amp; Safety Manager</b>	Dave Young	Mob: 021 224 9670 Email: <a href="mailto:david.young@wynyardedge.nz">david.young@wynyardedge.nz</a>
<b>Auckland Council / Auckland Transport</b>		
<b>Auckland Council Compliance Officer</b>	Tim O'Grady	Mob: 021 834 584 Email: <a href="mailto:timothy.ogrady@aucklandcouncil.govt.nz">timothy.ogrady@aucklandcouncil.govt.nz</a>
	Max Gander-Cooper	Mob: 021 523 071 Email: <a href="mailto:max.gander-cooper@aucklandcouncil.govt.nz">max.gander-cooper@aucklandcouncil.govt.nz</a>
<b>Auckland Harbour Master</b>	Andrew Hayton	Mob: 021 021 11430 Email: <a href="mailto:Andrew.hayton@at.govt.nz">Andrew.hayton@at.govt.nz</a>

The postal address for the Alliance is:

Wynyard Edge Alliance  
 Generator Building  
 139 Pakenham Street  
 Wynyard Quarter  
 Auckland 1010

## 5.3 Environmental Induction and Training

### 5.3.1 Induction

All Project staff (including subcontractors) will undergo a Project induction prior to commencing work on-site. The induction will include specific environmental information on the surrounding natural, physical and cultural environment, and outline Project staff responsibilities under the CEMP and management plans. The induction will cover the following matters:

- Requirements of Project consent conditions and other approvals/permits, including the Project CEMP and management plans;
- Environmental responsibilities of all Project staff;
- Matters of cultural significance;
- Sensitive receivers and key Project stakeholders;
- Importance of conforming with the Project CEMP and management plans;
- Actual or potential environmental effects associated with the Project construction works and the importance of mitigation in order to avoid or minimise these effects;
- Site environmental controls to minimise environmental effects;
- Site housekeeping and the management;
- Spill response and emergency procedures;
- Hazard and risk management to ensure personnel understand the potential impacts and proposed mitigation measures;
- Project communications and the complaints management procedures; and
- Environmental monitoring.

Further detail on the above matters will be provided as part of Project training, appropriate to a Project staff member's position.

Staff who have completed the induction will be provided with an appropriate form of identification, such as a sticker to display on the front of their hard hat or an induction card, in order to identify that they have been appropriately inducted onto the Project site.

All visitors to site must undergo a visitor's induction so they are aware of the environmental and health and safety requirements while on-site.

### 5.3.2 Environmental Awareness Training

In addition to the Project inductions, all staff (including subcontractors) will undergo environmental awareness training during the Project as relevant to their area of work. Training will further develop the

team's understanding of the consent requirements and environment management/controls, which will contribute to a strong environmental culture. Training will be led by the Construction Environmental Manager (or his nominated delegate) with assistance from the relevant technical specialist as outlined in the management plans.

Training will include specific focus on matters, such as cultural protocols, erosion and sediment control, construction noise and vibration and traffic management.

### 5.3.3 Training and Induction Resources and Records

Environmental induction and training records will be maintained on site and will include:

- Who was trained;
- When the person was trained;
- The name of the trainer;
- General description of training content;
- Level of competence achieved by the trainee; and
- Expiry dates of training courses/certifications as appropriate.

The Construction Environmental Manager will be responsible for:

- Project staff receiving appropriate environmental training in relation to their position and that appropriately trained personnel are undertaking site activities; and
- Dissemination of all Project environmental procedures to staff.

## 5.4 Additional Training and Work Requirements

Additional training and specific site work requirements that relate to environmental and health and safety management are outlined below.

### 5.4.1 Site Rules/Hazard Board

The sites rules/hazard board will be displayed in an area where all can see and review upon entering the site. It will list the relevant environmental hazards and controls that have been identified and assessed in relation to the works being undertaken. The board will be reviewed and updated regularly to take account of new hazards and environmental risks, or changes in the degree of risk or hazards.

New hazards or changes in risk will be identified in the work planning and method statement or in the daily pre-start meeting. In addition, hazards will be reported during toolbox meetings, weekly safety and environmental inspections.

### 5.4.2 Daily Pre-Start Meetings

Prior to the start of each shift, each crew will attend a pre-start meeting that will cover all relevant construction activities. The approved Job Safety and Environmental Analysis (JSEA) will be used as the reference information for that briefing as follows:

- The briefing will include discussion of safety, quality and environmental aspects of the activities to be undertaken in that shift.
- Team members will have the opportunity to improve the risk management elements of the work plan.
- All team members will sign on to the daily pre-start document before they commence work. The daily pre-start will identify construction activities to be undertaken, environmental and health and safety controls to be implemented, along with any other relevant work requirements.

- The work will then be performed in accordance with the Job Start Briefing, and the approved JSEA. An environmental management representative will attend as applicable to explain new environmental controls or reiterate existing controls.

All JSEAs will be reviewed and signed-off by the Health and Safety Manager, Construction Environmental Manager and the Construction Manager before any works subject to the JSEA can commence.

### 5.4.3 Toolbox Talks

Environmental matters will form part of site-wide weekly toolbox meetings to ensure all site staff are aware of the key issues. Toolbox talks will be coordinated by the Health and Safety team, Construction Environmental Manager and construction superintendents with all staff, including subcontractors, required to attend. The Project's environmental specialists (e.g. noise and vibration) will be invited to attend toolbox talks as required.

### 5.4.4 Permit to Work System

A "Permit to Work" (PTW) system will be implemented by the Alliance as part of the construction planning process for critical risk activities. The system provides an additional layer of control and risk management over and above general site hazard control and specific construction activity controls (JSEA and construction team/pre-start briefings etc.).

The PTW system includes requirements for permits to be obtained for activities such as:

- Hot Work Permits - to control risk of fire or explosion when working in proximity to the existing petroleum and chemical storage tanks on Wynyard Point (Stolthaven and BST sites).
- Ground Disturbance Permits - to control the risk of striking underground services during any ground disturbance or excavation.

Features of the PTW system include:

- Specific training and competency requirements for staff managing the PTW system;
- Specific hazard control equipment requirements and risk mitigation measures;
- Frequent renewal of permits to capture and respond to changes in site conditions or construction activities/method; and
- Exclusion of other site workers from the PTW area to manage health and safety risk.

All construction personnel undertaking works where a PTW has been issued will be briefed on the permit prior to the commencement of works to which the permit applies.

## 6 Environmental Management

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This section outlines the environmental management measures that will be implemented during construction of the Project to avoid, remedy or mitigate adverse environmental effects. More detail is provided in the individual management plans appended to the CEMP.

### 6.1 Dredging and Placement of Mudcrete in the CMA

As outlined in Section 3 of this CEMP, the Project will require the dredging within the Wynyard Wharf South water space area and the OVH and access channel to achieve the required navigable depth for safe vessel movement.

A Management Plan for Dredging and Placement of Mudcrete in the CMA (MPDPM) is included in Appendix C. The objectives of the plan (in accordance with consent Condition 52) are to ensure appropriate environmental practices are utilised, roles and responsibilities are identified, adequate vessel draft depths are achieved and access to and from the Outer and Inner Viaduct Harbour is maintained for vessels at all times as far as practicable. In accordance with the consent conditions, the plan provides details on matters including:

- Details of the equipment and methods to be used for dredging and mixing and placement of mudcrete in the CMA;
- Details of the locations, quantities and timing of dredging and placement of mudcrete in the CMA;
- Measures to ensure that material is not placed outside the co-ordinates of the offshore disposal grounds at any time;
- Details of the physical (textural and geological) and chemical (bulk chemistry and leaching potential) characteristics of the dredged materials;
- Water quality monitoring and reporting to be undertaken during the Project; and
- Methods of disposal and location of disposal sites for dredged material.

### 6.2 Erosion and Sediment Control

Earthworks have the potential to generate sediment laden discharges to the surrounding receiving environment if not appropriately managed. Particular emphasis shall be placed on erosion protection rather than sediment control, given that prevention of sediment generation represents the most effective means of minimising the potential for sediment discharge.

The Project Erosion and Sediment Control Plan (ESCP) is provided in Appendix D. The objectives of the ESCP (in accordance with consent Condition 71A) are to minimise potential erosion effects and minimise discharge of sediment beyond the boundaries of the site and into the CMA.

The ESCP provides for the management of all bulk earthworks to minimise any discharge of debris, soil, sediment or sediment-laden water beyond the site to land, stormwater drainage systems or the receiving environment of the Waitemata Harbour. The ESCP follows the principles of erosion and sediment control which are well understood by the contracting industry, and have their basis in the Auckland Council GD05<sup>4</sup>.

The ESCP outlines various measures to be implemented during land based construction activities to minimise the potential discharge of sediment laden water from the site, including:

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<sup>4</sup> Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016, Guideline Document 2016/005.

- A Site Water Treatment Plant (SWTP) that allows for the pumping of sediment laden runoff into a storage tank;
- Staging of earthworks associated with the construction of the Syndicate Bases;
- Perimeter bunds to isolate areas of cut or fill;
- Internal bunds and drains within the perimeter bunds to collect surface runoff to be pumped to the STWP;
- Stockpiling of material in areas where runoff can be captured and directed to the SWTP if contaminated or potentially contaminated;
- Immediate removal of spilt material from clean areas or haul roads/access ways during loading and transport; and
- Prevention of vehicles from traversing 'dirty' areas of the site.

All sediment control measures will be fully established within each working area, as required, before physical works commence in that area.

### 6.3 Biosecurity Management

Biofouling is the accumulation of aquatic organisms (micro-organisms, plants, and animals) on surfaces and / or structures immersed in, or exposed to, the aquatic environment. Biofouling includes both native and exotic species and can comprise:

- **Microfouling** - microscopic organisms such as bacteria and diatoms, and the slimy substance that they produce; and
- **Macrofouling** - organism such as barnacles, tubeworms, or fronds of algae.

All vessels have some degree of biofouling, even those recently cleaned or with a new anti-fouling coating application. The biofouling found on barges or equipment is influenced by factors, including:

- The design and construction of the equipment, particularly the number, location, and/or design of niche areas;
- The operating profile of the vessel or equipment, including factors such as operating speed, ratio of time underway compared with time alongside, moored or at anchor;
- Locations visited and routes taken; and
- Maintenance history, including the type, age and condition of any anti-fouling coating system, installation and operating of anti-fouling systems, dry-docking/slipping and hull cleaning practises.

The Project will involve the regular movement of vessels (barges and equipment) between the Project area in the Waitemata Harbour and Northport, near Whangarei.

#### 6.3.1 Biosecurity Management Plan

A Biosecurity Management Plan (BMP) will be prepared in relation to marine based Project aspects, specifically the installation of structures and dredging operations. The objectives of the BMP, in accordance with consent Condition 115, are to:

- Avoid the spread of any unwanted/biosecurity risk species to and from the site to other locations by construction vessels during construction works, construction decommissioning and post-event decommissioning;



- Ensure that decommissioning of America's Cup infrastructure is carried out in a manner that minimises the risk of any threats from unwanted/biosecurity risks species and/or the transfer of those threats off-site;
- Ensure that any operators of any vessels visiting the event are aware of their obligations to avoid the spread of any unwanted/biosecurity risk species to Hauraki Gulf or offshore islands.

The BMP, in accordance with consent condition 116, will include:

- The identification of any unwanted/biosecurity risk species present;
- The identification of the potential for transfer of threat species off-site;
- Measures to avoid or minimise transfer of unwanted/biosecurity species, during construction works, construction decommissioning and post event decommissioning of infrastructure in the CMA; and
- Measures to ensure that any operators of any vessels visiting the event are aware of their obligations to avoid the spread of any unwanted/biosecurity risk species to Hauraki Gulf or offshore islands.

## 6.4 Contaminated Land Management

The Project will require land disturbance on Wynyard Point associated with site clearance/remediation, services and building foundations and for the ground improvement works on Brigham Street. Network utility works and ground/groundwater investigations, will also result in smaller areas of disturbance.

A Preliminary Site Investigation (Contamination) report<sup>5</sup> identifies that the areas of proposed land disturbance have been subject to contamination from hydrocarbons, oil spills, tallow spills, gas works waste, and heavy metals. As such, all areas of ground disturbance have been identified 'at a more likely than not' level of certainty to have had an activity on the Hazardous Activities and Industries List (HAIL) undertaken on them. There may be a potential risk to human health and the environment during the disturbance of the land and therefore the proposed works requires adequate management, controls and remediation. A Detailed Site Investigation will be undertaken prior to the excavation or soil disturbance within areas of known or potentially contaminated land, and the report provided to Council for review, in accordance with consent Condition 85.

A Remediation Action Plan (RAP) is included in Appendix E, the objectives of which are to minimise harm from any potential human exposure from contaminants, manage environmental risk from contaminated material and identify any unknown contaminated material (consent condition 87). The RAP outlines:

- A description of the current site condition and proposed works;
- Procedures for undertaking the works and for handling contaminated spoil generated during earthworks;
- Procedures relating to exposure of potentially contaminated soils and water to protect health and safety for workers and general public during the redevelopment works;
- Contingency measures should adverse effects become evident during the works; and
- Compliance monitoring and validation requirements.

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<sup>5</sup> Beca Limited (Beca), April 2018, *America's Cup Preliminary Site Investigation (Contamination) for Resource Consent Application, Wynyard Hobson* Prepared for Panuku Development Auckland (Client) and Ministry for Business, Innovation and Employment (MBIE)

## 6.5 Groundwater Monitoring

Construction activities associated with the landside development of bases on Wynyard Point, are expected to include:

- Surficial excavation and / or minor filling to create a level building platform, or capping for containment of contaminated soils;
- Shallow pad for building foundations;
- Minor excavations associated with network utility works; and
- Ground improvement works along Brigham Street, in combination with piling for the Wynyard Wharf Infill.

The proposed activities above the water table (surficial excavation, filling or capping) will not have any impact on the groundwater regime. However, the ground improvement works along Brigham Street may encounter groundwater and require dewatering to be undertaken and these are addressed in the Project Groundwater Monitoring and Contingency Plan (GWMCP) in Appendix F).

The objectives of the GWMCP, as outlined in Condition 96A, are to:

- Minimise potential settlement of surrounding properties and structures; and
- Ensure any changes in groundwater levels are monitored and appropriate contingency actions are provided.

The GWMCP addresses the potential effects on the groundwater regime that might result from the Project's physical works and sets out the practices and procedures to be adopted to monitor any changes in groundwater levels as a result of works, and provide for contingency actions if Alert Levels are exceeded. Specifically, the Plan includes detail on:

- Groundwater monitoring locations and monitoring bore types;
- Groundwater monitoring programme to be implemented prior to, during and after the construction period;
- Contingency actions in the event of any damage to buildings, structures or services as a result of the Project's construction activities impacting groundwater levels resulting in ground settlement; and
- Groundwater monitoring reporting during construction.

## 6.6 Hazardous Substances / Spill Response

The Project will involve the use of a variety of construction plant and machinery. The majority of this plant will be motorised and will require a regular supply of fuels and oils. These can become a pollutant if discharged to ground or water. Other materials used in the construction process including concrete, bonding agents, sealants, and degreasers, can result in environmental impacts if they are not managed carefully and are discharged to the environment in an uncontrolled manner.

Industry best practice will be used for the storage, handling, transport and disposal of hazardous substances during construction as required by guidelines set up under the HSNO. Specifically:

- Spills will be contained within the Project area as far as practicable.
- Fuel for construction plant will be delivered by mini-tanker. Refuelling of construction plant will be carried out in areas separated from the CMA as practicable. Where refuelling is required in, or in proximity to, the CMA precautions will be taken during any refuelling or oil transfer operations to avoid fuel or oil entering the marine environment.

- Spill kits will be located throughout the construction site and immediately adjacent to high risk activities.
- Hydraulic oils, greases and other construction materials including small quantities of fuel required for hand tools and pumps may be stored at the site compound, in a secure, covered and bunded area, away from the CMA.
- Marine grade/biodegradable oils will be used for marine based plant, and land-based plant, as practicable. Refer to the MPDPM for further detail on the dredge vessels and equipment in this regard.
- A copy of all relevant Safety Data Sheets will be kept on site, including at specific storage locations.
- Concrete wash-out will be undertaken in skip bins positioned in proximity to areas of concrete works, if required.
- Major plant maintenance will not be carried out onsite unless absolutely necessary. Minor repairs will be undertaken away from the CMA.
- Incoming plant condition inspections will be carried out when plant arrives on site, including inspection of all hoses and fittings for leaks or maintenance issues.

A **Spill Response Plan** for the Project has been prepared (refer Appendix O) and details the procedure to follow in the event of a spill to minimise any discharge of contaminants to the wider receiving environment. All workers will be trained in spill management and the Project spill response procedure as part of site inductions.

## 6.7 Cement Management

The use of cement will be required in a number of construction activities, including:

- **Mudcreting** – likely to require a barge based system with a hopper and pugmill to mix cement with dredged material to produce mudcrete, prior to the transported and placement on site. The barge will have silos for cement storage, with the cement likely loaded into the barge silos from an adjacent wharf (likely to be Wynyard Wharf). The operation will be similar to that shown in Figure 6-1.

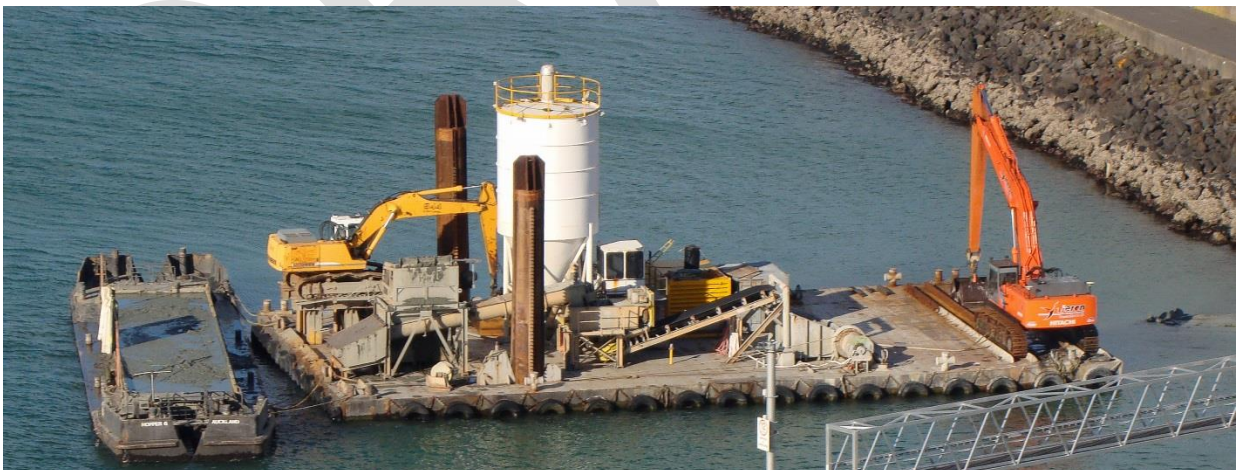


Figure 6-1: Typical Marine-based Mudcrete Plant

- **Concrete** - ready mixed concrete will be transported to site for use in cast in-situ construction. Wharf deck soffit panel, headstock beams and similar elements will be precast off-site and transported to site. No cement will be stored on-site for the purpose of concrete manufacture.
- **Grouting** - some small scale grouting will likely be undertaken on site. This will involve bringing in bagged grout mix to site, which is then mixed up on site as required for the construction works.

Cement will be stored and managed in accordance with the hazardous substances procedures outlined in Section 6.6 in order to minimise the potential for adverse environmental effects. It will also be appropriately managed so as to avoid or mitigate any adverse discharges to air.

## 6.8 Inner Viaduct Harbour Management

The Project will require the installation of breakwaters and wave panels that may change the flushing regime within the Inner Viaduct Harbour. The Inner Viaduct Harbour Environmental Management Plan (IVHEMP), as required by Condition 117, provides for the appropriate management of adverse effects on the Inner Viaduct Harbour environment as a result of the Project through gaining an understanding of the effects on ecology and water quality within the Inner Viaduct Harbour. The objective of the Plan is to provide for monitoring of water quality within the Inner Viaduct Harbour water space to identify any ecological changes to the environment of the Inner Harbour from the proposed works (Condition 118).

Specifically, the Plan sets out:

- Monitoring to be undertaken to determine the effects on the water quality and ecological communities within the Inner Viaduct Harbour due to modelled changes in flushing regimes; and
- Provision of information on the state of the Inner Viaduct Harbour to be used for future management.

This will be achieved by:

- Monitoring water quality (and aesthetic) parameters; and
- Monitoring ecological communities within the Inner Viaduct Harbour.

## 6.9 Construction Traffic

Construction of the Project will generate additional traffic movements within and adjacent to the Project area and on the surrounding transport network. Activities during construction that will impact the traffic network include trucks delivering plant and equipment, construction material, trucks removing spoil, rubbish removal, the pouring of concrete and site vehicles.

Given the marine-based nature of aspects of the works, some of the plant, equipment and a large amount of construction material will be transported to site by barge, which will reduce the number of heavy vehicle movements associated with the Project. The Alliance aims to minimise road transport, and associated disruption and congestion, and maximise the use of barges.

A Construction Traffic Management Plan has been prepared for the Project (Appendix G), the objectives of which, in accordance with Condition 104, are to:

- Provide for the safety of everyone at all times;
- Ensure maintenance of access at all times for all modes of transport to/from properties in Wynyard Precinct and Viaduct Harbour Precinct and on any street loading zones in or adjacent to those precincts;
- Minimise disruption from construction traffic on occupants in Wynyard Precinct and Viaduct Harbour Precinct;
- Minimise adverse effects on amenity caused by construction traffic in Wynyard Precinct and Viaduct Harbour Precinct;
- Avoid full road closures and minimise any partial or managed closures;
- Manage integration with other construction projects and Auckland Transport projects;

- Provide for prior engagement with stakeholders when access to properties will be affected by construction traffic; and
- Provide a mechanism for addressing queries and responding to complaints.

The CTMP includes detail on the following matters:

- Construction vehicle routes and site access points, including restrictions on vehicle routes;
- Restrictions on heavy truck movements during certain construction times;
- Provision of access to private properties during construction;
- Site parking;
- Minimise congestion on the surrounding road network and delays to the travelling public and road users;
- Pedestrian and cycle access and safety during construction;
- Engagement with any directly affected persons, key stakeholders and the wider public in relation to traffic management during construction; and
- Co-ordination with others involved in the management of construction activity in the Wynyard Precinct and Downtown area.

A Construction Staff Travel Plan (CSTP) has been prepared for the Project (Appendix H). The objectives of the CSTP are to encourage and promote travel by public transport, walking and cycling and to minimise private vehicle travel associated with construction. The CSTP outlines methods for encouraging travel to the site using forms of transport other than private vehicle to assist in mitigating localised traffic effects and car parking management. The plan includes monitoring to determine the effectiveness of the measures.

## 6.10 Construction Lighting

During construction, temporary lighting will be required in the main construction areas where work is carried out during the hours of darkness. Light spill has the potential to cause nuisance to surrounding residents and businesses, while glare from temporary lighting has the potential to impact motorists. Light spill may also impact local fauna within the Project area during night works.

A Constructing Lighting Management Plan (Appendix J) has been prepared, in accordance with Condition 111, the objective of which is to minimise potential impacts of construction lighting required by the works including minimising adverse effects on amenity caused by construction lighting on residential and visitor accommodation in the Viaduct Harbour and Wynyard Precincts.

The key management measures include:

- Conducting training so construction staff understand the location of sensitive receptors;
- Using lighting equipment/fittings/positioning that minimise light spill and glare, such as mounting lights in elevated positions to point down towards the works, instead of across the works space increasing the risk of shining beyond the site; and
- Adopting work methods that minimises light spill and glare such as not 'over' lighting or using more light than necessary for safety and work activities; and
- Planning for night works so that appropriate construction lighting is available and receptors who may be affected by construction lighting illuminance are notified prior to the works being undertaken.

## 6.11 Construction Noise and Vibration

The Project will create changes to the existing noise environment during construction, with noise and vibration generating machinery operating in relatively close proximity to noise and vibration sensitive receptors. Marine based construction works (particularly piling) also have the potential to result in underwater noise effects on marine mammals.

Construction noise and vibration during the Project works (including underwater noise) is addressed by the Construction Noise and Vibration Management Plan (CNVMP) (Appendix I), prepared in accordance with consent Condition 110.

The objectives of the CNVMP are to:

- Identify and implement the Best Practicable Option (BPO) for the management of all construction noise and vibration effects;
- Define the procedures to be followed when the noise and vibration standards in the Construction Noise and Vibration conditions are not met following the implementation of the BPO;
- Set out the methods for scheduling works to minimise disruption;
- Ensure engagement with affected receivers and timely management of complaints; and
- Protect wellbeing of marine mammals.

The Plan includes detail on the following matters:

- The Project construction noise and vibration performance standards that must, as far as practicable, be complied with;
- The locations of affected sensitive receivers within or surrounding the Project area;
- Management and mitigation measures that shall be implemented during the construction works, including in relation to night works and day time works in proximity to sensitive receivers where additional restrictions on construction activities are required to minimise adverse effects;
- Mitigation and management measures for works that cannot comply with the Project noise and/or vibration limits;
- Communication and consultation to be undertaken with sensitive receivers in relation to construction noise and vibration effects; and
- Construction noise and vibration monitoring to be undertaken during construction.

## 6.12 Marine Navigation and Safety

The Project will involve dredging and marine based construction activities within the Wynyard Wharf South Waterspace, the Outer Viaduct Harbour and Freemans Bay. These areas are heavily utilised by a number of vessels, including Sealink ferries, Auckland Seaplanes and fishing fleets (located on Halsey Wharf), along with various private vessels. The marine based construction will require active management in order to maintain efficient operation of the waterspace and the navigational safety of all water users.

Navigation and safety procedures during the Project works will be addressed by the Navigation and Safety Management Plan (NSMP), prepared in accordance with consent conditions 46-50.

The objectives of the NSMP are to:

- Provide for efficient operation of the waterspace affected by construction;
- Provide a safe environment for all water users;

- Ensure water users are appropriately notified of construction activities and any changes to the operation of the waterspace affected by construction;
- Ensure safe navigation access to berths is maintained for vessels at all times as far as practicable to enable continued operations by Sealink (Wynyard Terminal), Sanford and the wider commercial fishing fleet prior to their respective relocation;
- Maintain safe navigation for and access to other berth-holders and water space users; and
- Ensure access to and from the Outer and Inner Viaduct Harbour is maintained for vessels at all times as far as practicable.

The NSMP will include detail on the following matters:

- How navigation access shall be maintained for vessels using berthing facilities within the construction area; and
- Requirements such as the showing of day mark, placement of buoys and beacon lights, shielding or use of other means to prevent glare and reflection from construction related lights, and operational communications.

### 6.13 Accidental Discovery

In accordance with consent condition 45, in the event that the construction works encounter any protected New Zealand objects as defined in the Protected Objects Act 1975, the Alliance shall implement the Protected Objects Protocol in Appendix Q, which overrides the accidental discovery rules in the Auckland Unitary Plan Operative in part (AUP) in so far as they relate to protected New Zealand objects.

The accidental discovery rules in the AUP, in accordance with consent condition 45A, apply for the discovery of other sensitive material, including human remains and kōiwi, archaeological sites, Māori cultural artefacts/taonga tuturu and lava caves greater than 1m in diameter. The AUP accidental discovery protocol is attached as Appendix Q.

In accordance with consent condition 45B, any object encountered during construction not managed under the Heritage New Zealand Pouhere Taonga Act or Protected Objects Act shall be offered to the National Maritime Museum. If the offer of the object is not accepted and the object is of sufficient material suitability, retention of this object in a location within the Wynyard Precinct area should be considered or the object can be safely stored if an appropriate location cannot be identified.

### 6.14 Air Quality Management

During the construction phase of the Project there is potential for air to be polluted by contaminants such as dust, odour and exhaust emissions from plant and equipment.

#### 6.14.1 Construction machinery and vehicle emissions

Excessive smoke and odour from diesel-fuelled trucks, generators and other construction machinery is primarily caused by poor engine maintenance. Failure to maintain air filters, fuel filters, and fuel injectors to manufacturers' specifications may cause excessive black smoke and objectionable odour. These discharges are unlikely using modern machinery as practicable, and regular servicing of construction vehicles. Plant shall be maintained in a good state of repair so as not to produce excessive fumes or leakage of contaminants when parked or in operation.

#### 6.14.2 Dust and odour

Construction works will be managed to minimise adverse effects from discharges to air, including dust from ground disturbance and odour from the disturbance of contaminated land. Dust generation will largely be limited to the land disturbance works occurring on Wynyard Point. Other specific construction activities, such as concrete grinding or pile scabbling may also generate some dust. Measures to minimise any dust

generation and discharges associated with dust and odour are outlined in the RAP (Appendix E). These may include:

<b>Odour</b>	<ul style="list-style-type: none"> <li>● Minimising the open areas of excavations where practicable, including covering or temporarily backfilling excavations when not excavating;</li> <li>● Use of water carts with boom sprays or hand held hoses or sprinkler systems to dampen down construction areas so that the emission of dust and its effects are mitigated;</li> <li>● Attending to incidental spillage (e.g. sweeping up and/or washing down) as soon as possible;</li> <li>● Limited stockpiling of excavated spoil; and</li> <li>● Additional controls, such as odour suppressants, as required.</li> </ul>
<b>Dust</b>	<p>Should dry or dusty conditions prevail on-site, the following control and monitoring may be implemented, as appropriate to the nature and scale of the works being undertaken at the time:</p> <ul style="list-style-type: none"> <li>● Maintain damp conditions using a water truck or portable water sprays in trafficked areas and within the Wynyard Point excavation area;</li> <li>● Reducing vehicle speeds;</li> <li>● Cleaning paved surfaces if affected by the tracking of transported dust;</li> <li>● Dampening surfaces during construction activities that could generate dust, such as concrete grinding or scabbling;</li> <li>● Full height fence with dust cloth;</li> <li>● Minimising drop heights from loaders;</li> <li>● The relocation of pedestrian flows to areas where there is less chance of dust exposure if possible;</li> <li>● Consider timing of activities to take account of prevailing wind direction; and</li> <li>● The availability of dust masks for use by all site personnel,</li> </ul> <p>Dust controls shall comply with ARC Technical Publication No. 152<sup>6</sup> and the <i>Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions</i>, Ministry for the Environment (2001).</p> <p>Visual monitoring of dust across the construction site will be undertaken on a daily basis as outlined in Section 8.2 of this CEMP, or as required if conditions change. Weather forecasts will also be checked on a daily basis (wind speed, wind direction, rainfall) to assist in managing site activities and implementing dust controls as appropriate.</p> <p>Dust generating activities will be monitored daily or as new activities commence so that dust generation and emissions are effectively controlled, particularly during dry or windy conditions.</p>

## 6.15 Trees

A suitably qualified and experienced arborist will be engaged by the Alliance to monitor, supervise and direct all works within the dripline or in the vicinity of trees to be retained during the works. The arborist shall advise the Alliance as to best practice arboricultural management and protection measures in order to maintain and protect the health of these trees. The arborist will also advise on any tree removal for relocation and replacement planting.

<sup>6</sup> Assessing Discharges of Contaminants into Air (Draft). Auckland Regional Council Technical Publication 152, April 2002.



In accordance with the consent Conditions 133 – 135:

- Replacement planting shall be carried out for each protected tree that is removed and not transplanted. Within the planting season following the completion of work within Brigham Street, a minimum of 5.0m high replacement trees shall be planted on a one for one basis for those removed.
- Replacement planting shall be carried out in accordance with correct arboricultural practices in locations that provide for the trees' long-term growth and development and shall be maintained in accordance with correct arboricultural practices for a minimum period of 2 years after planting.
- Any replacement or transplanted tree that dies within the 2 year maintenance period shall be replaced like-for-like.

Existing trees not impacted by construction works will be retained, and trees along Hamer Street suitably protected during works.

## 6.16 Waste Management

Opportunities around resource efficiency and waste management will be implemented during construction of the Project. Construction sites have a variety of waste streams including:

- officer paper;
- lunch wastes;
- cans and bottles from smoko sheds;
- concrete;
- wood (treated and untreated);
- steel;
- plastics;
- packaging; and
- general waste.

With construction and demolition wastes accounting for 30% of all landfill waste, opportunities for re-using and recycling construction materials will be investigated and implemented where practicable.

Opportunities for reusing and recycling waste within the local community through the Waste Exchange will also be investigated.

Appropriate bins will be located throughout the site to ensure waste materials and recyclable materials are stored and disposed of appropriately. These will be identified clearly identifying what materials go in which bins.

Skip bins will be located be at construction yards where the bulk of construction materials will be delivered to. Wrapping and packaging will be recycled as practicable. Officer paper, cardboard and bottles, cans and plastic will be recycled as practicable.

Opportunities for recycling concrete, plastics and wood into other value added products and possible reuse back on site will be investigated.

The tidiness of the site will be assessed during weekly site inspections and corrective actions provided to relevant supervisors to ensure all areas of the site are kept in a tidy state. General site tidiness will be a matter covered during the project induction training sessions.

## 6.17 Emergency and Incident Management

There is the potential for unforeseen events to occur that may impact on the environment and will require emergency response.

Prompt and effective emergency preparedness and response reduces losses and the consequences of natural and man-made disasters. The following sections detail how environmental incidents or emergencies will be managed by the Alliance.

### 6.17.1 Environment Incident Management

An environmental incident is an occurrence which has (or potentially could have had) an 'adverse' effect on the environment. An adverse effect is something that causes (or could have caused) environmental harm. An environmental incident can also be a deviation from the Project environmental management system, this CEMP or management plans. This means there has been a failure to follow the established process or procedures that help the Project achieve best practice (e.g. failure to report a spill).

Environmental incidents include but are not restricted to:

- Significant (large volume) chemical or oil spill;
- Excessive discharge of sediment to the stormwater system;
- Inappropriate material disposal;
- Tree damage;
- Hazardous substance release to air;
- Significant ground instability; and
- Reoccurring or major exceedances of construction noise or vibration limits.

### 6.17.2 Emergency Response

The Alliance's emergency response procedure will be displayed in prominent locations around the site and all Project personnel, subcontractors and relevant emergency agencies will be instructed in the requirements of the emergency response procedure.

The procedure is based on the following:

- SAFETY FIRST – if it is not safe to mitigate the effects of the incident in accordance with the Project Safety Management Plan, contact immediately emergency services who will attend the site as required.
- If it is safe to do so:
  - Stop the source of pollution;
  - Relocate the polluting source to an area where it can be contained;
  - Use available site resources to prevent any further migration of the pollution off site; and
  - Use available resources to clean up any contamination.
- Contact the Construction Environmental Manager (or delegate) who will notify the Alliance Project Director and will contact regulatory agencies.

The emergency response procedure will incorporate the following components:

- Emergency contact list;
- Emergency Reporting Instructions;

- Emergency Muster Point Location;
- Emergency Response Co-ordinator Action Plan; and
- Emergency Personnel and Equipment.

### 6.17.3 Spill Response

The Project Spill Response Plan (Appendix O) outlines the specific procedures to follow in the event of a spill on site to minimise any discharge of contaminants to the wider receiving environment. The management of spills at the site will differ depending on the quantity, type of material and location of the spill.

Due to construction activities being undertaken within or adjacent to the coastal marine environment, the Project spill response strategy will align with the New Zealand spill response strategy, using a three-tiered system relative to the size and severity of the spill. These tiers in an ascending order of severity (refer to Table 6-2). Measures implemented to minimise the potential of environmentally hazardous substances entering the water during dredging are included in the MPDPM (Appendix C).

Given the limited volumes of hydrocarbons that will be stored and used on site during construction, it is likely that all spills will be manageable at a Tier one 'site based level'. However, there is potential for a Tier two – 'regional level' response to be required in the event of a larger spill beyond the capability of the Project personnel or spill response contractors. Tier three 'national response' is shown below for completeness but is not expected to be required.

Table 6-1: Spill Response Strategy

<b>Tier one – Site Based</b>	<ul style="list-style-type: none"> <li>• Project Spill Response Plan – Site spill equipment, boats, marine booms etc.</li> <li>• Spill response contractor if required:               <ul style="list-style-type: none"> <li>– 24 hour emergency phone - 0800 877 455</li> <li>– <a href="mailto:rick.brown@spillresponse.co.nz">rick.brown@spillresponse.co.nz</a></li> </ul> </li> </ul>
<b>Tier two – Regional Response</b>	<ul style="list-style-type: none"> <li>• AT Harbourmaster:               <ul style="list-style-type: none"> <li>– 24 hour emergency phone - 09 362 0397</li> <li>– <a href="mailto:HarbourMaster@at.govt.nz">HarbourMaster@at.govt.nz</a></li> </ul> </li> </ul>
<b>Tier three – National Response</b>	<ul style="list-style-type: none"> <li>• Maritime NZ – Marine Pollution Response Service (MPRS):               <ul style="list-style-type: none"> <li>– 0508 22 55 22 / 09 834 3908</li> <li>– <a href="mailto:mprs@maritimenz.govt.nz">mprs@maritimenz.govt.nz</a></li> </ul> </li> </ul>

Spill kits and signage relating to spill response procedures will be located at each vehicle entrance to the site during each stage of work. All workers will be trained in spill management and the Project spill response procedure as part of site inductions. All spill kits will be checked and re-stocked regularly through weekly environmental inspections and following an environmental incident.

### 6.17.4 Environmental Incident/Emergency Response Forms

Should an incident occur, a full environmental investigation will be carried out utilising the Project Environmental Incident Reporting and Investigation process provided at Appendix P to this CEMP.

Investigations are not undertaken to lay blame but to identify improvements in order to prevent incidents reoccurring. The findings and learnings from the investigation carried out following the event will be

disseminated to the Project team and discussed at appropriate Project meetings or tool box talks, with the aim of avoiding similar issues or occurrences in the future.

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## 7 Communication and Stakeholder Interface

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The purpose of stakeholder engagement and communications is to inform stakeholders and the wider community of the Project, the construction works, progress and timing so there is a 'no surprises' approach during works. The Alliance will provide all stakeholders with easy and timely access to Project communications. The Alliance stakeholder and communications team will be responsive to stakeholder needs, in order to minimise disruption to the community and minimise the potential for stakeholder issues during works.

The focus of communications and stakeholder management during the Project will involve direct and regular communications with particular stakeholders including regulatory groups and those directly impacted by the Project, including affected interest and industry groups in order to manage specific activities and construction effects, using proactive notification and response procedures.

The Alliance will implement a number of stakeholder engagement and communications methods during the Project to manage communication and engagement with Project stakeholders and the wider community throughout construction of the Project.

### 7.1 Key Project Stakeholders

The key Project partners and stakeholders include (but are not limited to):

- Auckland Council Group;
- Auckland Transport, including the Auckland Harbour Master;
- Emirates Team New Zealand;
- Mana Whenua;
- Regional Facilities Auckland, who manage the Viaduct Events Centre and New Zealand Maritime Museum;
- Ports of Auckland Limited;
- Fishing industry, including Sanford Limited and Auckland Fishing Port Limited;
- Sealink Travel Group New Zealand Limited;
- Stolthaven;
- NZ Bus Limited;
- New Zealand Maritime Museum;
- Spirit of Adventure Trust;
- The Tug William C Daldy Preservation Society Inc.;
- Auckland Seaplanes;
- Wynyard Quarter Transport Management Association;
- Network Utility Operators where utilities may be affected by the construction works;
- Residents and businesses adjacent to, or surrounding the Project area i.e. within the Wynyard and Eastern Viaduct Precincts, in particular:
  - Businesses: ASB, Auckland Theatre Company, Firth Industries, Hirepool, business located on North Wharf and Princes Wharf, Sail World NZ; and

- Residents: The Point Apartments, Princes Wharf Apartments, Orcacom House (Viaduct Basin);
- Local business / residents associations, in particular the St Marys Bay Association, Auckland City Centre Residents Group, Heart of the City; and
- The Project Community Liaison Group (refer to Section 7.4 for further detail on this group).

This list of key Project stakeholders will be reviewed during the construction phase and amended as appropriate to reflect the nature of construction activities and any adverse effects, along with changes in land use surrounding the Project area and consultation outcomes.

## 7.2 Engagement Methods

To ensure an effective level of communication with stakeholders and the wider community, a number of different communication tools and methods will be adopted by the Alliance. The frequency of communication for the various tools outlined below will be as required, depending on the nature of the activity to be undertaken and the potential impacts on various stakeholders.

The Alliance will have a dedicated Communications and Stakeholder Manager supported by a stakeholder engagement team who will be the face of the Project to stakeholders and the community, and the voice of the community to the Project team. Their role is to keep all Project stakeholders and local community informed of works ('no surprises') and manage any concerns/issues in a responsive and empathetic manner.

The team will engage in relation to matters such as:

- The commencement of construction, including the nature of proposed work and contact details for the Alliance should stakeholders have queries or concerns;
- Notice periods for changes to the transport network (e.g. the closure of Brigham Street), pedestrian and vehicle access;
- Regular updates on construction progress;
- Key dates for major milestones; and
- Communication on any other matters potentially affecting residents or business operations in the vicinity of the works.

The stakeholder team will work closely with any stakeholders who may be directly impacted by construction works as outlined in Section 7.4.

Table 7-1 provides an overview of the types of methods and tools that may be used to engage and communicate with stakeholders during construction of the Project.

Table 7-1: Communication and Engagement Methods

Channel	Details
<b>Face-to-face contact</b>	<ul style="list-style-type: none"> <li>• Regular meetings/presentations/briefings/hui with key stakeholders will be held during construction.</li> <li>• Formats for this interaction will be tailored to suit stakeholders and their interests in order to build trust, inform and educate, enable feedback and manage potential impacts and issues.</li> </ul>
<b>Website</b>	<ul style="list-style-type: none"> <li>• Project information will be available on the Project website either as a standalone or part of Panuku's Wynyard Quarter Website, which will be regularly updated throughout the life of the Project with information including Project updates and milestones, videos and photos, Project newsletters, FAQs, and Project contact details.</li> <li>• The website will also include a 'Contact Us' section with key Project contact details</li> </ul>

Channel	Details
<b>Project email address</b>	<ul style="list-style-type: none"> <li>• A dedicated Project email enabling people to contact the Project directly with enquiries.</li> <li>• The email will be monitored by the stakeholder engagement and communications team and all incoming issues or enquires acted upon as soon as possible.</li> </ul>
<b>Project hotline</b>	<ul style="list-style-type: none"> <li>• A Project hotline (Freephone) will operate for the duration of the Project to provide easy access for stakeholder queries and any complaints.</li> <li>• The hotline will be managed by the stakeholder engagement and communications team, manned 24/7, on a weekly roster basis.</li> </ul>
<b>Construction Look-aheads</b>	<p>E-notices that provide advance notification of the proposed work activities and potential impacts. These are also an opportunity to seek clarification or provide feedback on potential impacts based on the residents or individual stakeholder's situation.</p> <p>Topics will include:</p> <ul style="list-style-type: none"> <li>• upcoming works;</li> <li>• activities and their expected impact;</li> <li>• major complaints; and</li> <li>• feedback.</li> </ul>
<b>Social media</b>	<ul style="list-style-type: none"> <li>• Social media channels, such as Facebook and Twitter will be used to inform and respond to local communities and other stakeholders about Project activities.</li> </ul>
<b>Works notifications</b>	<ul style="list-style-type: none"> <li>• Works notifications will be prepared as required during works, to provide stakeholders with detail on upcoming works, potential impacts or to address a particular issues with a specific stakeholder.</li> </ul>
<b>News media</b>	<ul style="list-style-type: none"> <li>• Media releases about key activities or Project milestones. They are invited to provide coverage of the activity to a broader community.</li> <li>• Other media opportunities maybe looked at throughout the Project phases.</li> </ul>
<b>Information kiosk / pop-up</b>	<ul style="list-style-type: none"> <li>• Information kiosk providing key Project information, including photos, flyovers shots and information panels keep communities informed about the Project's progress.</li> </ul>
<b>Project billboards / signage</b>	<ul style="list-style-type: none"> <li>• Project signage will be erected at appropriate locations to inform the public of the Project, who is working in the area and how to contact the Alliance</li> </ul>
<b>Public notices</b>	<ul style="list-style-type: none"> <li>• Public notices will be placed in local media, as required, to inform the wider community about key Project related activities, such as traffic disruptions</li> </ul>

The adoption of the above tools, along with the frequency of communication will be as appropriate depending on the nature of the construction activity to be undertaken and potential adverse effects and/or stakeholder disruption.

### 7.3 Engagement with Mana Whenua

An America's Cup Kaitiaki **Engagement Plan (ACKEP)** will be prepared for the Project, in collaboration with mana whenua, prior to the commencement of construction activities. The purpose of the ACKEP is to assist mana whenua to express tikanga, fulfil their role as kaitiaki, and establish the engagement process before, during and after the completion of construction activities for implementation throughout the project. The ACKEP shall be formulated through:

- a) Providing the framework for a collaborative approach between the consent holder and mana whenua to address the matters which impact cultural values / interest, before, during and after the completion of the construction activities; and
- b) Identifying how the consent holder and the America's Cup Mana Whenua Kaitiaki Forum (ACMWKF) will ensure that effective relationships are provided for throughout the Event.

The objectives of the ACKEP are to:

- a) Acknowledge the cultural and spiritual importance of the Waitemata and its surrounds to mana whenua;
- b) Acknowledge mana whenua as kaitiaki;
- c) Recognise the importance of engagement and identification of key mana whenua values, areas of interest and matters concern in relation to the Project;
- d) Provide mana whenua with an opportunity to be actively involved with the formulation and implementation of the ACKEP; and
- e) Facilitate engagement between the consent holder and mana whenua in relation to the activities authorised by this consent, and to assist mana whenua to fulfil their role as kaitiaki.

As a minimum, the ACKEP will include detail on the following matters:

- How mana whenua who have historic associations with the Project area and its surrounding waters have been involved in the formulation of the ACKEP and are to be involved in its implementation;
- The process for involvement of mana whenua in the preparation and implementation of the engineering design, construction management, and operational plans as they relate to:
  - Managing water quality during the construction and operation of the Infrastructure;
  - Managing underwater noise during construction so as to protect marine animals;
  - Protecting the waters of the area from biosecurity risks;
  - Providing cultural markers within the Infrastructure to recognise the historic associations of mana whenua with the area and the significance of the land and seascapes of Waitematā to mana whenua; and
  - Enabling use of the Infrastructure for cultural activities.
- Mana whenua shall be included in the preparation and implementation of the following construction phase management plans:
  - Management Plan for Dredging and Placement of Mudcrete in the CMA (MPDPM);
  - Erosion and Sediment Control Plan (ESCP);
  - Remediation Action Plan (RAP);
  - Groundwater Monitoring and Contingency Plan (GWMCP);
  - Construction Noise and Vibration Management Plan (CNVMP);
  - Biosecurity Management Plan (BMP); and
  - Inner Viaduct Harbour Environmental Management Plan (IVHEMP).
- Accidental discovery protocols;



- Procedures for the cultural induction of construction workers and Event staff;
- Timing, frequency, location and methods of cultural monitoring procedures and protocols during construction activities to demonstrate achievement of the objective(s) for the ACKEP;
- Ongoing mana whenua engagement procedures following the completion of construction; and
- The process by which amendments can be made to the ACKEP.

## 7.4 Community Liaison Group

A Community Liaison Group (CLG) will be established for the wider AC36 Project, the objectives of which are to:

- Provide a means for members to give and regular updates on the Project;
- Enable concerns and issues to be reported to and responded to by Panuku and the Alliance during construction of the America's Cup infrastructure (and Panuku and relevant parties for subsequent aspects of the wider AC36 Project);
- Provide feedback on the development of management plans.

The members of the CLG will include representatives of the consent holder, representative(s) of the Auckland Council and Council Controlled Organisation's, and shall be open to interested submitters and s274 parties, and body corporates of the apartments in the Viaduct Harbour and Wynyard Precincts. A summary of the feedback received from the CLG on the draft CEMP is attached as Appendix R to this CEMP.

The CLG shall continue for the full duration of the Project construction works and as outlined in consent Condition 44D(f).

## 7.5 Notification of Construction Works

The Alliance Stakeholder and Communications Manager will work closely with the Construction Environmental Manager and construction team to monitor construction progress and identify activities that may impact key surrounding residents, businesses and local road users. This includes assisting the construction team with understanding the types of construction activities that may cause particular concern to the Project stakeholders such as activities that may result in construction noise or vibration effects, disruption to transport networks, pedestrian or property access, construction lighting or glare effects at night time. Project delivery teams who are planning works that impact on stakeholders are required to inform the Stakeholder and Communications Manager in advance.

The Project's communication approach is to engage and inform key stakeholders directly impacted by the Project and those within the surrounding Project area about the Project before construction commences. This will prioritise face-to-face interaction and access to information to ensure affected parties are aware of the Project scope and effects, and measures being implemented by the Alliance to reduce potential disruption or nuisance effects.

A secondary audience of the wider public will be serviced through a predominantly online and electronic communications strategy.

### 7.5.1 Permit to Notify

Construction staff who are planning works that may adversely impact stakeholders, are required to inform the Communications and Stakeholder Manager in advance of undertaking these works. This will ensure timely preparation of construction notifications to potentially impacted parties, being notified no less than 2 business days in advance. The nature of the activity, scale and effect will determine what parties are considered to be affected and notified and the appropriate notification period.

A Permit to Notify (PTN) system will be used by the Alliance to facilitate internal approvals for works that are likely to impact Project stakeholders. This provides a way to activate communication about potential impacts on stakeholders and ensures that notification timeframes can be met. The PTN process is set out in Table 7-2.

Table 7-2: Permit to Notify Process

Steps	Responsibility	Description
1	<b>Alliance construction team members</b>	Submit a PTN to the Communications and Stakeholder Manager and the Construction Environmental Manager in advance of the works. The PTN shall include: <ul style="list-style-type: none"> <li>• identification of scheduled works, and</li> <li>• details of works in advance including: <ul style="list-style-type: none"> <li>– description of the works</li> <li>– anticipated impacts as a result of the works</li> <li>– description of any mitigation measures employed</li> <li>– times and duration of the works, and</li> </ul> </li> </ul>
2	<b>Construction Manager</b> <b>Alliance Technical Team Member (as appropriate)</b>	Signs off the PTN prior to the commencement of works to which the PTN applies are undertaken Where notifications contain technical content, the relevant Wynyard Edge Alliance team member approves the content prior to sign off.
3	<b>Stakeholder and Communications Manager</b>	Approve construction notifications prior to distribution to stakeholders. Provides a copy of construction notifications affecting access to targeted organisations who have agreed to be contacted. These may include: <ul style="list-style-type: none"> <li>• Police and emergency services</li> <li>• Refuse collection services</li> <li>• Network Utility Operators</li> </ul>
4	<b>Stakeholder and Communications Manager</b> <b>Construction Manager</b>	Communicates with stakeholders in relation to the proposed construction works including: <ul style="list-style-type: none"> <li>• identification of scheduled works, and</li> <li>• details of works in advance including: <ul style="list-style-type: none"> <li>– description of the works</li> <li>– anticipated impacts as a result of the works</li> <li>– description of any mitigation measures employed</li> <li>– times and duration of the works, and</li> <li>– contact details for enquiries.</li> </ul> </li> </ul>

## 7.6 Stakeholder Database

A stakeholder database will be used to log and track all communication and correspondence with project stakeholders and the community for the duration of the Project.

## 7.7 Complaints Management

All complaints will be managed, investigated and resolved (as appropriate) in accordance with the Complaints Management process as follows:

- Enquiries and complaints will be dealt with in a responsive manner so that stakeholders know that their concerns are being seriously dealt with and not dismissed. This will assist in building a relationship of trust and reliability between the community and project team.
- The Communications and Stakeholder Management team will handle the enquiries and complaints that arise on a project.
- Prior to commencement of construction, a 24 hour free-phone number and email address for enquiries, complaints and suggestions/feedback will be established. Project notice boards will clearly display Project contact details, including the Project hotline number.
- If any member of the Project team is approached in the field by someone distressed or concerned about the project, they will notify the Communications and Stakeholder Manager immediately.
- When a complaint or enquiry is received, either electronically or via telephone, immediate acknowledgement shall be provided. Where possible, a response will be provided the same day. Where the inquiry demands a more detailed response, this will be provided within two working days or an alternative timeframe where this is communicated to the people who made the complaint.
- When a complaint or enquiry is received by a member of the wider Project team, details of this shall be forwarded to the Communications and Stakeholder Manager. On receipt of this information, the Communications and Stakeholder Manager shall contact the complainant / enquirer directly and follow the protocols outlined above.
- Details of all enquiries and complaints are to be recorded and maintained in the stakeholder database. The database will have the facility to raise and close out 'actions'. Each month a record of activity will be printed out, to ensure all actions have indeed been closed out.
- All complaints shall be responded to in accordance with the relevant management plans (as appropriate), which may require the monitoring of an activity by a suitability qualified expert and implementation of mitigation measures.
- A report detailing complaints and responses will be provided to Auckland Council every two months or on request.

Complaints will be discussed at regular meetings held between the Alliance Project Director, Construction Manager, Communications and Stakeholder Manager and the Construction Environmental Manager.

### **7.7.1 Complaints Form**

The Project complaints form will record the following information:

- Name and address of complainant (unless they elect not to provide this information);
- Identification of the nature of the complaint;
- Date and time of the complaint and alleged event;
- Weather conditions at the time of the complaint, including wind direction and cloud cover if the complaint relates to noise or air quality;
- Known Project construction activities occurring on site at the time of the complaint;
- Any other activities in the surrounding area unrelated to the Project construction that may have contributed to the concern or complaint, such as non-Project construction, fires, traffic accidents or unusually dust conditions;
- Remedial actions undertaken (if any) and the outcome of these, including monitoring of the activity and/or the result of any investigation or inquiry carried out in respect to the complaint; and
- Relevant parties, including the complainant, informed of the results of the complaints inquiry and actions taken.

## 7.8 Co-ordination with Other Construction Projects

The Alliance will co-ordinate with relevant stakeholders as appropriate in relation to other construction projects being undertaken within the Wynyard and Viaduct Precincts, along with the Downtown area at the time of within the works, in order to minimise adverse effects and disruption to the extent practicable.

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## 8 Monitoring and Reporting

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This section describes the procedures for monitoring construction activities undertaken during the Project in order to evaluate compliance with legal requirements, the Project resource consent conditions, the CEMP and management plans, along with relevant standards and guidelines.

### 8.1 Environmental Monitoring

Monitoring of environmental compliance in accordance with the Project consent conditions will be undertaken throughout construction of the Project. This will enable the overall effectiveness of the environmental controls and compliance measures to be determined and allows areas of non-compliance or opportunities for improvement identified and appropriate actions taken.

In general, monitoring will be undertaken on a routine basis. Additional monitoring may be required in the event of a complaint or incident, after a rain event in the case of water quality monitoring, or in the instance of potential cumulative effects. The management plans outline monitoring requirements for particular environmental disciplines, the frequency of the monitoring to be undertaken and the appropriate responsible person.

The Construction Environmental Manager is responsible for planning and implementing all Project environment monitoring. Monitoring results will be reported to relevant parties as required by the resource consent conditions.

### 8.2 General Site Monitoring

Site inspections are a process of assessing a task or work situation through observation, discussion, reinforcement of positive effects, and correction of any negative aspects. A key purpose of the site inspection is to raise awareness of environmental, safety and operational issues.

In addition to formal environmental monitoring co-ordinated by the Construction Environmental Manager, the following general site monitoring will be undertaken:

- **Daily** – Informal inspections/observations in relation to key activities to check compliance with this CEMP and relevant management plans, such as daily inspections of erosion and sediment control measures, dust - generation/deposits, management measures and weather observations.
- **Weekly** – Formal site inspections are to be completed by the Construction Environmental Manager or appropriate delegate. Site specific checklists will be developed to check compliance with resource consent conditions, this CEMP and the management plans. Issues will be noted if they present significant environmental risks (e.g. erosion and sediment control device maintenance and dust management). Opportunities for improvement will also be considered.
- **Monthly** – The Construction Environmental Manager along with the Construction Manager (or appropriate delegate) will undertake a monthly site inspection. The purpose being to confirm that environmental monitoring programmes and work procedures containing environmental controls are being implemented in accordance with the CEMP, management plans, work instruction and resource consent conditions.

General on site issues identified by the wider Project team will be recorded using an Event Pad/Hazard Identification form and provided to the relevant manager (including the Construction Environmental Manager for all environmental related issues).

#### 8.2.1 Monitoring Review

The Construction Environmental Manager and Construction Manager or delegate(s) will regularly review the site inspection / event pad/ hazard identification forms to confirm that the checks and subsequent works required are being carried out, and additional inspections are included as per construction progress.

The review will also focus on the results of the monitoring and assist with identifying opportunities for continual improvement of environmental practices. Learnings or findings from Project monitoring reviews will be disseminated to the Project team and discussed at appropriate Project meetings or tool box talks.

### 8.3 Corrective Action

Corrective action is required on the basis of the occurrence of substandard performance being observed or experienced, resulting in an environmental complaint, incident or emergency or where a significant environmental incident or emergency could have occurred.

As soon as practicable after an incident, the Construction Environmental Manager and the Construction Manager (or delegate) shall:

- Determine the immediate actions to be taken to re-establish control measures where these have failed or have not been implemented in accordance with the relevant management plan as soon as possible.
- The corrective actions shall be implemented as soon as practicable, taking into account health and safety issues.
- As appropriate, liaise with Auckland Council to establish what remediation or rehabilitation is required and whether this is practicable to implement.

Corrective or preventative actions identified during environmental audits shall be appropriate to the magnitude of the problem and appropriate to the environmental harm encountered.

Ultimately the Construction Manager has responsibility for closing out any corrective or preventative actions resulting from the inspections, audits and external regulatory compliance monitoring. Additionally, assessment and follow-up reviews on the effectiveness of corrective and preventive actions will be undertaken and the outcomes documented, communicated and implemented.

Compliance shall be included as a regular agenda item at management meetings and project meetings. Minutes from each meeting shall record and assign actions to individuals where appropriate. Any lessons learnt as a result of the incident will be communicated to all site staff via the weekly Tool Box Talks.

The Construction Environmental Manager is responsible for ensuring all relevant documentation is submitted and maintained within the Project filing and document control system.

Applicable documentation will include but not be limited to:

- All environmental incidents reports and investigation outcomes;
- Weekly and fortnightly environmental checklists and reports files by contractors;
- Formal and informal audit and environmental inspection reports;
- Any laboratory analysis submitted by external consulting groups;
- Records of environmental training;
- Chain of custody records; and
- Minutes of meetings.

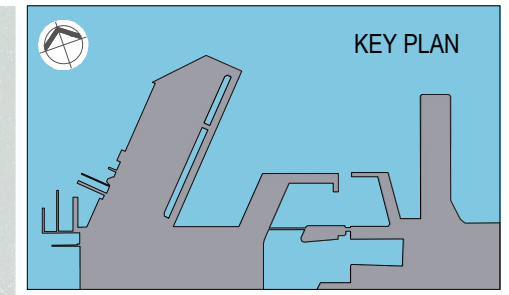
**Appendix A**

**Resource Consent Conditions  
(once confirmed)**

**Appendix B**

**Site Compound Layout**





1:1250 (A1) 0 10 20 30 40 50m  
 1:2500 (A3)  
 1:1000 (A1) 0 10 20 30 40m  
 1:2000 (A3)  
 1:500 (A1) 0 5 10 15 20m  
 1:1000 (A3)  
 1:250 (A1) 0 5 10 15 20m  
 1:500 (A3)  
 1:200 (A1) 0 5 10 15 20m  
 1:400 (A3)  
 1:200 (A1) 0 5 10 15 20m  
 1:400 (A3)



**PRELIMINARY**  
 NOT FOR CONSTRUCTION

No.	Revision	By	Chk.	Appd.	Date
A	FOR INFORMATION	WCC	--	---	31/08/18

**WYNYARD EDGE ALLIANCE**  
  
 ALL LEVELS IN CHART DATUM - CD - 1.743 = AUCKLAND VERTICAL DATUM 1946

Original Scale (A1)	Design	WCC	31/08/18
Reduced Scale (A3)	Drawn	WCC	31/08/18
	Dig Verifier		
	Dig Check		

**Panuku Development Auckland**  
 An Auckland Council Organisation

**MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT**  
 HIKINA WHAKATUTUKI

AC36 PROJECT AND ASSOCIATED DOWNTOWN WORKS  
 FREEMANS BAY - AUCKLAND VIADUCT

SITE COMPOUND LOCATIONS

Discipline	TEMPORARY WORKS
Drawing No.	AC36-SKT-103010-TW-0101
Rev.	A

**Appendix C**

**Management Plan for  
Dredging and Placement of  
Mudcrete in the CMA**

**Appendix D**

**Erosion and Sediment  
Control Plan**

**Appendix E**

**Remedial Action Plan**

**Appendix F**

**Groundwater Monitoring and  
Contingency Plan**

**Appendix G**

**Construction Traffic  
Management Plan**

**Appendix H**

**Construction Staff Travel Plan**

**Appendix I**

**Construction Noise and  
Vibration Management Plan**



**Appendix J**

**Construction Lighting  
Management Plan**

**Appendix K**

**Inner Viaduct Harbour  
Management Plan**

**Appendix L**

**Biosecurity Management  
Plan - Pending**

**Appendix M**

**Navigation and Safety  
Management Plan - Pending**

**Appendix N**

**Indicative Construction  
Programme**



**Appendix O**

**Spill Response Plan**

# SPILL RESPONSE PLAN

## SPILL RESPONSE CONTACTS

**Construction Manager**  
**Environmental Manager**  
**Health and Safety Manager**

**Kurt Grant**  
**Brendon Barnett**  
**Dave Young**

**021 834 512**  
**021 527 461**  
**021 224 9670**



**Assess and Be Safe**

### LEVEL OF RESPONSE REQUIRED:

- ANY SPILL to WATER - notify Brendon and Kurt immediately.
- **CALL UNTIL YOU TALK TO SOMEONE—DON'T JUST LEAVE A MESSAGE.**
- Spill within 20m of water and/or more than 10L - notify Brendon immediately.
- Spill 20m or more away from water and less than 10L - Clean up and notify Supervisor



**Stop the Source**



**Protect the Stormwater**

### IMPORTANT STEPS TO FOLLOW:

#### Assess

- Identify the spilled material.
- Check Safety Data Sheet (SDS) if unsure (found in hazardous goods container).
- Get required PPE.
- Ensure your safety and safety of others before addressing the spill.

#### Stop the Source

- Stop machine, stand up container, turn off the tap, plug the leak.

#### Protect Waterways / Contain

- Use spill kit pads, pillows and socks to hold spilt material.
- Use floating spill booms to contain any spills in the ocean.

#### Notify Supervisor

- Notify Supervisor immediately.
- For spill to water and large spill Brendon will notify Auckland Council.

#### Clean Up

- Use pads, pillows, socks and ANA-fibre to begin clean up.
- Collect contaminated material and equipment and dispose of in a contaminated waste bin or store in hazardous goods container for collection.
- If needed, dig up contaminated soil and dispose of in contaminated waste bin.

#### Complete Report

- Complete hazard report card for any spills less than 10L and submit to Supervisor.
- Brendon to complete environmental incident report for larger spills over 10L.

#### Replace Materials in Spill Kit

- Ensure all used spill kit materials are replaced immediately.



**Notify**



**Clean Up**



**Dispose Responsibly**



**Restock and Review**



**Absorbent granules or peat**  
 Sprinkle over spill, allow to soak up liquid then sweep up to remove.



**Absorbent pads**  
 Use to mop up or catch smaller spills and leaks.



**Absorbent boom**  
 For containing spills and protecting waterways. Place around spilled material or drain to act a barrier.



**Plug 'n' dike**  
 For temporarily plugging punctured tanks and drums.



**Rubber cesspit protector**  
 Place cover nearby storm water inlets.



**Appendix P**

**Environmental Incident  
Response Form**



2721  
**ENVIRONMENTAL INCIDENT  
 INVESTIGATION REPORT**

MMS #  
 025-F004-100

**Project Name:**

**Project No:**

**Incident No:**

<b>Incident Reported</b>							
<b>Actual Incident Date:</b>				<b>Actual Incident Time:</b>			
<b>Incident Reported Date:</b>				<b>Incident Reported Time:</b>			
<b>Company Performing Work:</b>			<input type="checkbox"/> Direct			<input type="checkbox"/> Indirect	
<b>Reported by:</b>	<b>Name:</b>				<b>Company:</b>		
<b>Incident Details</b>							
<b>Shift Details:</b>			<input type="checkbox"/> Day Shift – Permanent / Office Work			<input type="checkbox"/> Afternoon Shift	
<input type="checkbox"/> Other Roster Arrangements			<input type="checkbox"/> Day Shift - Rostered			<input type="checkbox"/> Night Shift	
<b>Shift Start Date:</b>				<b>Shift Start Time:</b>			
<b>Shift End Date:</b>				<b>Shift End Time:</b>			
<b>% of shift worked:</b>				<b>Days of rostered work:</b>			
				<b>Total days in roster:</b>			
<b>Incident Location</b>							
<b>Specific Location:</b>							
<b>Description of Incident – steps leading up to the Incident / Activity being completed / what happened:</b>							
<b>Immediate Actions Taken:</b>							
<b>Attachments</b>							
<b>Images / Documents:</b>		Insert below or attach at end of report					



2722  
**ENVIRONMENTAL INCIDENT  
 INVESTIGATION REPORT**

MMS #  
 025-F004-100

Witness Statements:	Fill in Incident Witness Statement ( <b>020-F018-100</b> ) and attach to end of report		
<b>Categorise Incident</b>			
<input type="checkbox"/> Environmental Impact <b>Level 1 to 3</b> (continue using this form)			
<input type="checkbox"/> Environmental Impact Near Miss <b>Level 1 to 3</b> (use form 025-F005-100)			
<input type="checkbox"/> Non Conformance <b>Level 1 to 3</b> (use Environmental Non-Conformance form 025-F007-100)			
<b>Review</b>			
Reviewers should review the initial incident and decide if the Incident is accepted. When making changes to the initial incident report or discarding the report the reviewer should enter comments into the Reviewers Comments field.			
Reviewer's Name:		<input type="checkbox"/> Accept Incident	<input type="checkbox"/> Discard Incident
Reviewer's Comments:			
Is this report a duplicate or non-HSEC incident?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<b>Is this a notifiable Incident?</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<b>Incident Notifiable to Government Agency or Regulators</b>			
Agency Notified:			
Person Notified:			
Notification Method:	<input type="checkbox"/> Email	<input type="checkbox"/> In person	<input type="checkbox"/> Phone
Notification Date:		Notification Time:	
Notification Comments:			

<b>Environmental Impacts</b>			
<b>Note:</b> For the impacts selected below, refer to the sections after to add in more specific details.			
<input type="checkbox"/> Air	<input type="checkbox"/> Fauna		
<input type="checkbox"/> Flora	<input type="checkbox"/> Complaint (no sub-section)		
<input type="checkbox"/> Land	<input type="checkbox"/> Cultural Heritage		
<input type="checkbox"/> Noise & Vibration	<input type="checkbox"/> Groundwater		
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Waste		
<b>Air</b>			
<input type="checkbox"/> Dust	<input type="checkbox"/> Emissions	<input type="checkbox"/> Black Smoke	
<b>Flora</b>			
<input type="checkbox"/> Loss of habitat	<input type="checkbox"/> Damage to protected flora		
<input type="checkbox"/> Introduction of weed species	<input type="checkbox"/> Introduction of disease		
Species Affected:			
<b>Land</b>			
<input type="checkbox"/> Soil Erosion	<input type="checkbox"/> Spill to land (choose below) <sup>1</sup>		
<input type="checkbox"/> Disturbance of existing contamination	<input type="checkbox"/> Acid sulphate soils		
Area (M <sup>2</sup> ) of land affected? (leave blank if n/a)			
<sup>1</sup> Type of spill to land:	<input type="checkbox"/> Hydrocarbon	<input type="checkbox"/> Chemical	<input type="checkbox"/> Effluent
<b>Noise &amp; Vibration</b>			
<input type="checkbox"/> Noise	<input type="checkbox"/> Vibration		
<b>Surface Water</b>			
<input type="checkbox"/> Spill to Water <sup>2</sup>	<input type="checkbox"/> Release to Surface Water	<input type="checkbox"/> Unauthorised abstraction of Groundwater	
Type of Spill to Water <sup>2</sup> :	<input type="checkbox"/> Hydrocarbon	<input type="checkbox"/> Chemical	<input type="checkbox"/> Effluent
Estimated Quantity / Volume of Discharge:			
<b>Fauna</b>			
<input type="checkbox"/> Injury to Animal	<input type="checkbox"/> Death to Animal		
<input type="checkbox"/> Introduction of Pest Species	<input type="checkbox"/> Introduction of Disease		
Species Detail:			

<b>Cultural Heritage</b>			
<input type="checkbox"/> Disturbance or damage		<input type="checkbox"/> New discovery	
<b>Groundwater</b>			
<input type="checkbox"/> Spill to Water <sup>3</sup>	<input type="checkbox"/> Release to Marine Water	<input type="checkbox"/> Unauthorised abstraction of Groundwater	
Type of Spill to Water <sup>3</sup> :	<input type="checkbox"/> Hydrocarbon	<input type="checkbox"/> Chemical	<input type="checkbox"/> Effluent
Estimated Quantity / Volume of Discharge:			
<b>Waste</b>			
<input type="checkbox"/> General Waste		<input type="checkbox"/> Hazardous Waste	
<b>Impact Report</b>			
Provide a description of the impact report and include any data that helps quantify the impact:			
<b>Estimated Cost (\$)</b>			
<input type="checkbox"/> <\$5k	<input type="checkbox"/> \$5k - \$50k	<input type="checkbox"/> >\$50k	
<b>Environmental Impact Incident Severity Rating</b>			
<b>Actual Rating</b>	<b>Description of Environmental Impact</b> Please rate the actual severity based on the actual consequence of this incident		<b>Consequence Descriptor</b>
A <input type="checkbox"/>	Spills of hydrocarbons and chemicals that are contained and do not result in environmental impact		Low
B <input type="checkbox"/>	Low level environmental impacts to the localised area. Easily rectified with minimal effort and cost		Moderate
C <input type="checkbox"/>	Environmental impacts that affect individual protected species or small areas of protected habitat Impact to cultural heritage artefacts.		Serious
D <input type="checkbox"/>	Significant environmental impact at the local level. Death of protected species of loss of habitat without permission.		Major
E <input type="checkbox"/>	Severe environmental impacts to the local or regional environment. The death of multiple protected species or the widespread loss of protected habitat without permission.		Catastrophic

Potential Rating	Description of Potential Environmental Impact Please rate the potential severity based on what could have occurred during this incident relevant to maximum reasonable consequence	Consequence Descriptor
A <input type="checkbox"/>	Spills of hydrocarbons and chemicals that are contained and do not result in environmental impact	Low
B <input type="checkbox"/>	Low level environmental impacts to the localised area. Easily rectified with minimal effort and cost	Moderate
C <input type="checkbox"/>	Environmental impacts that affect individual protected species or small areas of protected habitat Impact to cultural heritage artefacts.	Serious
D <input type="checkbox"/>	Significant environmental impact at the local level. Death of protected species or loss of habitat without permission.	Major
E <input type="checkbox"/>	Severe environmental impacts to the local or regional environment. The death of multiple protected species or the widespread loss of protected habitat without permission.	Catastrophic

**Ranking of Likelihood - Please rate the likelihood of the incident occurring on the project again**

Rank	Probability (Frequency)	Description	Likelihood Descriptor
1 <input type="checkbox"/>	< 5% chance of occurrence during the project	The event may occur only in exceptional circumstances	Rare
2 <input type="checkbox"/>	≥ 5% & < 15% chance of occurrence during the project	The event could occur at some time	Unlikely
3 <input type="checkbox"/>	≥15% & < 35% chance of occurrence during the project	The event should occur at some time	Possible
4 <input type="checkbox"/>	≥35% & <65% chance of occurrence during the project	The event will probably occur in most circumstances	Likely
5 <input type="checkbox"/>	≥65% chance of occurrence during the project	The event is expected to occur in most circumstances	Almost certain

**Risk Rating (Level of Risk) - Select the Risk Rating using the table below. Choose the highest of either the Actual Rating or the Potential Rating against the likelihood to get the correct rating:**

Likelihood	Severity				
	A- Low	B- Moderate	C- Serious	D-Major	E-Catastrophic
5 Almost certain	<input type="checkbox"/> Moderate A-5	<input type="checkbox"/> High B-5	<input type="checkbox"/> Very High C-5	<input type="checkbox"/> Extreme D-5	<input type="checkbox"/> Extreme E-5
4 Likely	<input type="checkbox"/> Low A-4	<input type="checkbox"/> Moderate B-4	<input type="checkbox"/> High C-4	<input type="checkbox"/> Very High D-4	<input type="checkbox"/> Extreme E-4
3 Possible	<input type="checkbox"/> Low A-3	<input type="checkbox"/> Moderate B-3	<input type="checkbox"/> High C-3	<input type="checkbox"/> High D-3	<input type="checkbox"/> Very High E-3
2 Unlikely	<input type="checkbox"/> Low A-2	<input type="checkbox"/> Low B-2	<input type="checkbox"/> Moderate C-2	<input type="checkbox"/> High D-2	<input type="checkbox"/> High E-2
1 Rare	<input type="checkbox"/> Low A-1	<input type="checkbox"/> Low B-1	<input type="checkbox"/> Low C-1	<input type="checkbox"/> Moderate D-1	<input type="checkbox"/> High E-1

**Golden Rule Breaches – Select rules**

<input type="checkbox"/> Start Safe	<input type="checkbox"/> Cranes & Lifting
<input type="checkbox"/> Working at Height	<input type="checkbox"/> Working Near Mobile Plant
<input type="checkbox"/> Operating Mobile Plant	<input type="checkbox"/> Driving Vehicles
<input type="checkbox"/> Energised Equipment	<input type="checkbox"/> Electrical Equipment
<input type="checkbox"/> Trenching & Excavation	<input type="checkbox"/> Confined Space
<b>Environmental Green Rule Breaches – Select rules</b>	
<input type="checkbox"/> Spills	<input type="checkbox"/> Noise & Vibration
<input type="checkbox"/> Soil & Erosion	<input type="checkbox"/> Hazardous Materials
<input type="checkbox"/> Plant & Equipment	<input type="checkbox"/> Dust & Emissions
<input type="checkbox"/> Water & Wastewater	<input type="checkbox"/> Fauna & Flora
<input type="checkbox"/> Archaeology & Heritage	<input type="checkbox"/> Recycling
<b>Investigation Selection</b> – All actual <b>Very High</b> and <b>Extreme</b> ratings must use the Critical Incident Investigation Form. For <b>High</b> incidents, discuss which form to use with the Region Environmental Manager (or equivalent in your Region).	
<input type="checkbox"/> Basic Root Cause (continue below)	
<input type="checkbox"/> <b>ICAM</b> - Incident Cause Analysis Method (Use Critical Incident Investigation Form MMS # <b>020-F103-100</b> )	
<b>Select all Contributing Factors that apply to this incident / near miss</b>	
<b>Absent or Failed Defences (DF)</b>	
<input type="checkbox"/> <b>DF1:</b> The hazardous condition was not recognised by any persons involved.	
<input type="checkbox"/> <b>DF2:</b> Inspection systems were missing that should have detected the hazardous condition.	
<input type="checkbox"/> <b>DF3:</b> Inspection systems existed but failed to detect the hazardous condition.	
<input type="checkbox"/> <b>DF4:</b> The correct isolation was not used.	
<input type="checkbox"/> <b>DF5:</b> Safety devices were inoperative at the time of the incident.	
<input type="checkbox"/> <b>DF6:</b> The hazardous substances were not clearly identified.	
<input type="checkbox"/> <b>DF7:</b> Standard Work Practices existed but were not in use.	
<input type="checkbox"/> <b>DF8:</b> Standard Work Practices were missing for the task.	
<b>Organisational Factors (OF)</b>	

<input type="checkbox"/> <b>OF1:</b> The design / quality of the equipment / tools / work area contributed to the incident / near miss.
<input type="checkbox"/> <b>OF2:</b> The written / known SWP / JSEA did not anticipate the factors / hazards which led to the incident / near miss.
<input type="checkbox"/> <b>OF3:</b> Changes had been made to equipment, the environment, procedures or personnel.
<input type="checkbox"/> <b>OF4:</b> There was insufficient communication and discussion of hazards and Stand Work Practices (i.e. Toolbox Talks).
<input type="checkbox"/> <b>OF5:</b> The person(s) involved were not aware that protective equipment was required.
<b>Task / Environment Conditions – Human Factors (HF)</b>
<input type="checkbox"/> <b>HF1:</b> The person(s) involved were not physically capable of performing the job (good health, no impairment, vision, hearing, etc.)
<input type="checkbox"/> <b>HF2:</b> The person(s) involved were affected by drugs / alcohol.
<input type="checkbox"/> <b>HF3:</b> The person(s) involved were affected by fatigue.
<input type="checkbox"/> <b>HF4:</b> The person(s) involved had known personal issues that could have affected the person(s) actions.
<input type="checkbox"/> <b>HF5:</b> The person(s) involved had a slip up / lapse in concentration (lapse of attention, inadvertent omissions).
<b>Task / Environmental Conditions – Workplace (TE)</b>
<input type="checkbox"/> <b>TE1:</b> Fault(s) in the equipment / tools / work area contributed to the incident / near miss.
<input type="checkbox"/> <b>TE2:</b> Unacceptable standards of housekeeping contributed to the incident / near miss.
<input type="checkbox"/> <b>TE3:</b> Inadequate means of access contributed to the incident / near miss.
<input type="checkbox"/> <b>TE4:</b> Unsafe equipment contributed to the incident / near miss.
<input type="checkbox"/> <b>TE5:</b> Poor visibility contributed to the incident / near miss.
<input type="checkbox"/> <b>TE6:</b> Noise contributed to the incident / near miss.
<input type="checkbox"/> <b>TE7:</b> The poor condition of roads contributed to the incident / near miss.
<input type="checkbox"/> <b>TE8:</b> Slippery or uneven footing contributed to the incident / near miss.
<input type="checkbox"/> <b>TE9:</b> Inclement weather (rain, wind, heat, fog, snow, etc.) contributed to the incident / near miss.
<input type="checkbox"/> <b>TE10:</b> Adverse atmospheric conditions (toxic or hazardous fumes, gas, dust) contributed to the incident / near miss.
<b>Individual / Team Actions (IT)</b>
<input type="checkbox"/> <b>IT1:</b> Person(s) involved had not been instructed / trained in the SWP / JSEA / Permit.







2729  
**ENVIRONMENTAL INCIDENT  
 INVESTIGATION REPORT**

MMS #  
 025-F004-100

<b>Contributing Factors</b>

<b>Incident Review &amp; Investigation Approval</b>			
<b>Report Author Name:</b>			
<b>Date:</b>		<b>Signature:</b>	

<b>Superintendent Name:</b>			
<b>Date:</b>		<b>Signature:</b>	

<b>Environmental Advisor Name:</b>			
<b>Date:</b>		<b>Signature:</b>	

<b>Project Manager Name:</b>			
<b>Date:</b>		<b>Signature:</b>	

**Appendix Q**

**Protected Objects Act and  
Accidental Discovery  
Protocol**

## Protected New Zealand Objects Protocol

### Purpose

1. The purpose of this protocol is to provide procedures to be followed in the event that works associated with the construction of infrastructure for the America's Cup Point-Halsey project reveal protected New Zealand objects as defined in the Protected Objects Act 1975.
2. This protocol overrides the accidental discovery rules in the Auckland Unitary Plan: Operative in Part in so far as they relate to protected New Zealand objects. Resource consent has been sought for disturbance of contaminated land, so the accidental discovery rules relating to contaminated land are also excluded.
3. The Auckland Unitary Plan: Operative in Part accidental discovery rules continue to apply for the discovery of other sensitive material, including human remains and kōiwi, archaeological sites, Māori cultural artefacts/taonga tuturu and lava caves greater than 1m in diameter.

### Protocol

4. The Auckland Council Cultural Heritage Inventory (CHI) includes the following entries that may be affected by the site preparation and piling works associated with the America's Cup Point: Halsey application (although the specific location of the objects is unknown):
  - (a) CHI 401, hulk, *Chelmsford*;
  - (b) CHI 18609, industrial, *Vos boatbuilding yards*;
  - (c) CHI 404, hulk, *Kaniere*.
5. In the event of discovery of the above items, or any protected New Zealand object as defined in the Protected Objects Act 1975, the procedures in this Protocol shall apply instead of the accidental discovery standards and procedures set out in Rules E11.6.1 and E12.6.1 of the Auckland Unitary Plan: Operative in Part.
6. The consent holder shall employ at its expense a qualified archaeologist (the Project Archaeologist) who shall:
  - (a) carry out regular inspections of the works area during site preparation and piling at Wynyard Point;
  - (b) provide records of site inspections to the Council [Heritage department];
  - (c) be available on call to inspect any discoveries of any objects that might be protected New Zealand objects encountered during excavation or piling works, and to enable identification of any objects;
  - (d) advise the Council in writing within 24 hours if any protected New Zealand objects have been discovered;
  - (e) advise the Ministry for Culture and Heritage in writing within 28 days if any protected New Zealand objects have been discovered.
7. Any discoveries of protected New Zealand objects, such as hulls of ships, shall be recorded, including to identify the location and expected source of the object. Where practicable, damage to these objects will be minimised.

8. For the avoidance of doubt, works are not required to stop on the discovery of a protected object, except as necessary for the Project Archaeologist to carry out the above procedures.
9. The final repatriation of artefacts is a matter for the Ministry of Culture and Heritage.

## Auckland Unitary Plan Accidental Discovery Rule

### E12.6.1. Accidental discovery rule

- 1) Despite any other rule in this Plan permitting earthworks or land disturbance or any activity associated with earthworks or land disturbance, in the event of discovery of sensitive material which is not expressly provided for by any resource consent or other statutory authority, the standards and procedures set out in this rule must apply.
- 2) For the purpose of this rule, 'sensitive material' means:
  - a. Human remains and kōiwi;
  - b. An archaeological site;
  - c. A Māori cultural artefact/taonga tuturu;
  - d. A protected New Zealand object as defined in the Protected Objects Act 1975 (including any fossil or sub-fossil);
  - e. Evidence of contaminated land (such as discolouration, vapours, asbestos, separate phase hydrocarbons, landfill material or significant odour); or
  - f. A lava cave greater than 1m in diameter on any axis
- 3) On discovery of any sensitive material, the owner of the site or the consent holder must take the following steps:

#### *Cease works and secure the area*

- a. Immediately cease all works within 20m of any part of the discovery, including shutting down all earth disturbing machinery and stopping all earth moving activities, and in the case of evidence of contaminated land apply controls to minimise discharge of contaminants into the environment.
- b. Secure the area of the discovery, including a sufficient buffer area to ensure that all sensitive material remains undisturbed.

#### *Inform relevant authorities and parties*

- c. Inform the following parties immediately of the discovery:
  - i. The New Zealand Police if the discovery is of human remains or kōiwi;
  - ii. The Council in all cases;
  - iii. Heritage New Zealand Pouhere Taonga if the discovery is an archaeological site, Māori cultural artefact, human remains or kōiwi;
  - iv. Mana Whenua if the discovery is an archaeological site, Māori cultural artefact, or kōiwi.

#### *Wait for and enable inspection of the site*

- d. Wait for and enable the site to be inspected by the relevant authority or agency:
  - i. If the discovery is human remains or kōiwi the New Zealand Police are required to investigate the human remains to determine whether they are those of a missing person or are a crime scene. The remainder of this process will not apply until the New Zealand Police confirm that they have no further interest in the discovery; or
  - ii. If the discovery is of sensitive material, other than evidence of contaminants, a site inspection for the purpose of initial assessment and response will be arranged by the Council in consultation with Heritage New Zealand Pouhere Taonga and appropriate Mana Whenua representatives; or

- iii. If the discovery is evidence of contaminants, a suitably qualified and experienced person is required to complete an initial assessment and provide information to the Council on the assessment and response.
- e. Following site inspection and consultation with all relevant parties (including the owner and consent holder), the Council will determine the area within which work must cease, and any changes to controls on discharges of contaminants, until the requirements of E12.6.1 (3)(f) are met.

*Resumption of work*

- f. Work within the area determined by the Council at E12.6.1(3)(e) must not recommence until all of the following requirements, so far as relevant to the discovery, have been met:
  - i. Heritage New Zealand has confirmed that an archaeological authority has been approved for the work or that none is required;
  - ii. Any required notification under the Protected Objects Act 1975 has been made to the Ministry for Culture and Heritage;
  - iii. The requirements of E30 Contaminated land and/or the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health 2011 have been met;
  - iv. Any material of scientific or educational importance must be recorded and if appropriate, recovered and preserved;
  - v. If the discovery is a lava cave as outlined in E12.6.1(2)(f) above and if the site is assessed to be regionally significant, reasonable measures must be taken to minimise adverse effects of the works on the scientific values of the site; and
  - vi. Where the site is of Maori origin and an authority from Heritage New Zealand Pouhere Taonga is not required the Council will confirm, in consultation with Mana Whenua, that:
    - Any kōiwi have either been retained where discovered or removed in accordance with the appropriate tikanga; and
    - Any agreed revisions to the planned works to be/have been made in order to address adverse effects on Maori cultural values.
  - vii. Resource consent has been granted to any alteration or amendment to the earthworks or land disturbance that may be necessary to avoid the sensitive material and that is not otherwise permitted under the Plan or allowed by any existing resource consent.
  - viii. There are no requirements in the case of archaeological sites that are not of Maori origin and are not covered by Heritage New Zealand Pouhere Taonga Act 2014.

**Appendix R**

**Community Liason Group  
Feedback on the CEMP**



- Community Liaison Group Comments

Comments received from the CLG are as follows:

Date	CLG Member	Comment	Response
21st August 2018	ASB and Sanford representatives	General interest around the removal of tanks on Wynyard Point and who is responsible for these works	Responsibility for the removal of tanks within the BST and Stolthaven sites is subject to agreement with Panuku.  No change required to this CEMP.
		Discussion as to whether dredging works are likely to affect the ASB building.	This is unlikely as the works aren't particularly noisy. The group was provided with an explanation of dredging operations.  No change required to this CEMP.
		Discussed concrete supplier and the potential route concrete trucks will use. Concern raised around the traffic and safety implications at the intersection with Madden Street and Halsey Street. Sanford also have trucks that use Madden Street.	This matter, along with additional CLG feedback, is addressed in the CTMP.  No change required to this CEMP.
	Lance Wiggs (Inner Viaduct Harbour resident)	Discussed the channels through which complaints will be received. Suggested that multiple platforms should be used (e.g. phone number, text message, Twitter, Facebook, forms). Suggested that the complaints portals should be serviced 24/7.	Complaints will likely be received through a range of communication mechanisms as appropriate during construction. The project hotline will be serviced 24/7 as outlined in this CEMP.  No change required to this CEMP.
		Suggested that the use of Twitter for complaints should be a two-way system through which responses are also provided to the complainant.	Communication and engagement methods will be implemented as appropriate during construction, with a range of tools that may be used outlined in Section 7.2.  No change required to this CEMP.
		Raised concern around pedestrian safety due to truck movements throughout the works especially up and down Daldy and Beaumont Streets.	This matter, along with additional CLG feedback, is addressed in the CTMP.  No change required to this CEMP.
		Discussed the risk of exposure to gases and odour during the works. Suggested that sensors are implemented and monitored in locations surrounding the works.	The Remediation Action Plan sets out the measures to be implemented during construction to manage any potential effects from the disturbance of contaminated soils, along with

Date	CLG Member	Comment	Response
			<p>odour and vapour management during the works.</p> <p>No change required to this CEMP.</p>
26 August 2018	Auckland City Centre Residents' Group	<p>Suggests that construction hoardings should display resource consent conditions as well as the Wynyard 24/7 contact information, Twitter/Facebook and web contact information and QR codes. Suggests that displaying this information is proactive and demonstrates transparency and good intentions.</p> <p>If this suggested material is mixed up with the art, heritage and promotional information that is likely to be displayed on the hoardings then you will have an engaging informative portfolio of options.</p>	<p>The design and information displayed on construction hoardings will be determined in collaboration with Panuku prior to the commencement of construction as outlined in Section 3.10 of the CEMP.</p> <p>No change required to this CEMP.</p>

WYNYARD EDGE ALLIANCE



## Wynyard Edge Alliance

### America's Cup – Wynyard / Hobson Management Plan for Dredging and Placement of Mudcrete in the Coastal Marine Area

## Revision History

Revision N <sup>o</sup>	Description	Prepared By	Reviewed by	Approved on behalf of Wynyard Edge Alliance	Date
A	Draft plan for Auckland Council pre-submission comment	Malea Zygado Raymond Chang	Brendon Barnett Bob Mawdsley Edwin Zwanenburg Kurt Grant Niksa Sardelic	Ian Campbell	3-07-18
B	Draft plan for inclusion in evidence	Malea Zygado Raymond Chang	Bob Mawdsley Kurt Grant Brendon Barnett	Ian Campbell	03-08-18
C	Updated draft plan for inclusion in rebuttal evidence	Malea Zygado Raymond Chang	Bob Mawdsley Kurt Grant Brendon Barnett	Iain Simmons	04-09-18

### Disclaimer

This report has been prepared by the Wynyard Edge Alliance for the benefit of the Panuku Development Auckland Ltd. No liability is accepted by the Alliance Partners or any employee of or sub-consultant to the Alliance Partners companies with respect to its use by any other person.

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## Appendices

### Appendix A Plant Specification Sheet

# 1 Relevant Consent Conditions

The consent conditions relevant to the Management Plan for Dredging and Placement of Mudcrete in the Coastal Marine Area (“MPDPM”) are summarised in Table 1.1 below. The conditions referenced are as per the proposed draft resource consent conditions<sup>1</sup>.

Table 1.1: Summary of Consent Conditions Relevant To the MPDPM.

Condition Number	Condition Requirement	Section Referenced In The Plan
51	The consent holder shall prepare a Management Plan for Dredging and Placement of Mudcrete in the CMA (MPDPM). The consent holder shall submit the MPDPM to the Team Leader Compliance Monitoring – Central for certification that the MPDPM gives effect to the objectives in Condition 52 and complies with the requirements in Condition 53. The MPDPM shall be in general accordance with the Draft Management Plan for Dredging and Placement of Mudcrete in the CMA as referenced in Annexure B.	This Plan
52	The objectives of the MPDPM are to: a) Ensure that appropriate environmental practices are utilised; b) Identify roles and responsibilities for preparation and implementation of the MPDPM; c) Ensure that adequate vessel draft depths are achieved; and d) Ensure access to and from the Outer and Inner Viaduct Harbour is maintained for vessels at all times as far as practicable.	This Plan
53	The MPDPM shall include the following matters:	As below
53 a)	Details of the equipment and methods to be used for dredging and mixing and placement of mudcrete in the CMA;	Section 3.4 and 3.5
53 b)	Details of the locations, quantities and timing of dredging and placement of mudcrete in the CMA;	Section 3.1 and 3.2
53 c)	Measures to ensure that at no time shall any material be placed outside the co-ordinates of the offshore disposal grounds;	Section 3.4.1
53 d)	Details of the physical characteristics of the dredged material, based on visual observation, to be provided to the Council throughout the physical works period;	Section 3.1, 3.2 and 4.1
53 e)	Monitoring and reporting (refer to Conditions 55 to 64);	Section 4
53 f)	Roles and responsibilities of the personnel involved; and	Section 2
53 g)	Method/s of disposal and location of disposal site/s for dredged material.	Section 3.3
55	The Consent Holder shall undertake one-off comprehensive water quality monitoring during the initial phase of the dredging of the North Wharf area and placement of mudcrete in the CMA. The purpose of this monitoring during the initial phase is to confirm the mixing zone and proposed trigger level specified in Condition 62. Water quality samples shall be collected: a. For a neap tide; b. At an up-drift control site located approximately within the Waitemata Harbour main channel (for ebb tide) and at least 500 m beyond the operations (for flood tide);	Section 4.1.1

<sup>1</sup> Unio Environmental, 4 September 2018. America’s Cup Wynyard Hobson –Applicants Revised Conditions.

Condition Number	Condition Requirement	Section Referenced In The Plan
	<ul style="list-style-type: none"> <li>c. At dilution gradient sites 10m, 20m and 50m down-drift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel; and</li> <li>d. At a compliance site 200m down-drift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel.</li> </ul>	
56	<p>Following the initial phase of dredging and placement of mudcrete in the CMA, the consent holder shall undertake water quality monitoring once per week whilst dredging and any placement of material in the CMA is underway. Water quality samples shall be collected:</p> <ul style="list-style-type: none"> <li>a. On an ebb tide;</li> <li>b. At an up-drift control site located at least 500m beyond the operations;</li> <li>c. At a dilution gradient site 50m down-drift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel; and</li> <li>d. At a compliance site 200m down-drift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel.</li> </ul>	Section 4.1.2
57	<p>During each sampling run carried out in accordance with Conditions 55 and 56, records shall be kept of:</p> <ul style="list-style-type: none"> <li>a. Sampling date and time;</li> <li>b. Weather conditions;</li> <li>c. Sea state;</li> <li>d. Sampling location;</li> <li>e. Water depth;</li> <li>f. Time that dredging and placement of dredged material in the CMA commenced; and</li> <li>g. Time of low and high tide on day of sampling.</li> </ul>	Section 4.1.2
58	<p>Water samples collected in accordance with Conditions 55 to 56 shall be individual samples from the surface (approximately 0.5 m below surface) and at depth (approximately 0.5m above the seabed) at each site.</p>	Section 4.1
59	<p>Water samples shall be collected on a day that dredging is occurring.</p>	Section 4.1.2
60	<p>Dilution gradient and compliance site samples shall be representative of the plume generated by the operations (i.e. not collected before the plume has had a chance to develop upon the start of the operations and not after the plume has had a chance to dissipate upon completion of the operations), and shall be collected as close as practicable to mid-tide to capture the maximum extent of any plume.</p>	Section 4.1
61	<p>Samples for water quality monitoring of dredging shall be analysed for total suspended solid levels (TSS). Samples for water quality monitoring of mudcrete placement in the CMA shall be analysed for total suspended solid levels (TSS) and pH.</p>	Section 4.1
62	<p>Unless amended in accordance with Condition 65, the proposed trigger level for total suspended solids shall be 25g/m<sup>3</sup> above TSS at the control site; and for mudcreting, a pH of 8.5.</p>	Section 4.2
63	<p>Following two months of weekly sampling, and subject to written approval of the Team Leader Compliance Monitoring - Central, the monitoring programme may be amended, for example compositing of surface and depth samples, and reduction of the frequency (e.g. to fortnightly / monthly).</p>	Section 4.1.2
64	<p>Within three months of completion of all the dredging works, the consent holder shall provide the Team Leader Compliance Monitoring - Central with the best available estimates of the in-situ volumes of:</p>	Section 4.3

Condition Number	Condition Requirement	Section Referenced In The Plan
	<ul style="list-style-type: none"> <li>a. Material dredged; and</li> <li>b. Material placed as mudcrete in the CMA.</li> </ul>	
65	<p>The consent holder shall review the proposed TSS trigger level of 25g/m<sup>3</sup> and pH trigger level of 8.5 set out in Condition 62 against the results of the one-off comprehensive monitoring undertaken during the initial phase of the dredging operations. The consent holder shall provide a report to the Team Leader Compliance Monitoring - Central confirming the above trigger level(s) or proposing alternative trigger level(s) with the basis for the alternative(s). The report shall be provided within twenty (20) working days of the receipt by the consent holder of the analytical results for the one off comprehensive water sampling required in Condition 55. The alternative trigger level(s) may be used for regular monitoring subject to approval in writing by the Team Leader Compliance Monitoring - Central.</p>	Section 4.1 and 4.2
66	<p>During regular monitoring, an exceedance shall be:</p> <ul style="list-style-type: none"> <li>a. For dredging and for mudcrete placement: a TSS level in any sample collected at the compliance site that exceeds the trigger level plus the TSS level measured in the updrift control sample collected during the same sampling run. The TSS level shall be identified from the analytical results of the water quality samples in accordance with Conditions 56 to 61; and</li> <li>b. For mudcrete placement: a pH in any sample collected at the compliance sites that exceed the pH trigger level. The pH shall be identified from the analytical results of the water quality samples in accordance with Conditions 55 to 61.</li> </ul>	Section 4.1 and 4.2
67	<p>In the event of an exceedance the consent holder shall prepare a Contingency Plan which sets out the actions to be undertaken. These shall include further monitoring measures, in the first instance, or a site specific effects assessment, and practical modifications to the relevant activities where further monitoring identifies repeated exceedances. Such modifications may include suspending or altering the dredging approach, reducing production rates, focusing dredging activities around slack tide, and using silt fences or other containment approaches. The Contingency Plan shall be provided to the Team Leader Compliance Monitoring – Central no later than five (5) working days after the exceedance occurs.</p>	Section 4.2
68	<p>The Consent Holder shall take aerial photographs of the extent of any plume during the dredging. Where water quality for dredging is also being undertaken, the photograph shall be completed at the same time as the sampling runs. Aerial photography sites shall be selected to correspond only to those areas where dredging or placement of dredged material in the CMA is occurring, to confirm sediment plume distribution and aid sampling.</p>	Section 4.1
69	<p>The consent holder shall provide monitoring reports to the Team Leader Compliance Monitoring - Central and the Mana Whenua groups that participate in the preparation of the ACKEP as follows:</p> <ul style="list-style-type: none"> <li>a. At completion of the one-off comprehensive water quality monitoring; and</li> <li>b. Every six weeks for the duration of dredging and placement of mudcrete in the CMA for routine water quality monitoring.</li> </ul>	Section 4



## 2 Introduction

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This Management Plan for Dredging and Placement of Mudcrete in the Coastal Marine Area (“MPDPM”) forms part of a comprehensive suite of environmental controls within the Construction Environmental Management Plan (“CEMP”) for the America’s Cup Infrastructure Project (“the Project”).

The Project is being delivered by the Wynyard Edge Alliance (“the Alliance”).

### 2.1 Scope and Objectives of the Management Plan For Dredging and Placement of Mudcrete in the Coastal Marine Area

The MPDPM provides a framework for the development and implementation of methodologies to avoid or reduce adverse effects in the Coastal Marine Area (CMA) as a result of dredging activities, and to monitor the extent of those effects when undertaking the works.

The consent application is based on allowing for the dredging of marine sediments, the addition of cement and then the re-placement of mudcrete within the CMA for certain portions of the port/harbour interface associated with the development of the Project. ‘Mudcrete’ is an engineered fill material – in this context, primarily dredged silts and marine sediments stabilised with the addition of cement to form a concrete-like substance.

The objectives of the MPDPM, as outlined in Condition 52, are to:

- a) Ensure that appropriate environmental practices are utilised;
- b) Identify roles and responsibilities for preparation and implementation of the MPDPM;
- c) Ensure that adequate vessel draft depths are achieved; and
- d) Ensure access to and from the Outer and Inner Viaduct Harbour is maintained for vessels at all times as far as practicable.

This Plan addresses the matters in Conditions 51-69 (refer to the quick reference guide to conditions in Section 1 at the front of this Plan).

The final version of this MPDPM will be submitted to the Team Leader Compliance Monitoring – Central for certification in accordance with Condition 16 and Condition 51.

The MPDPM will be updated if necessary to reflect changes in design, construction methods or to manage effects. In accordance with the consent Condition 19, any amendments to the certified MPDPM shall be discussed with, and submitted to the Team Leader Compliance Monitoring – Central in writing prior to implementation of any changes. Any changes to the MPDPM that would result in a materially different outcome to the certified plan shall be submitted to the Team Leader Compliance Monitoring – Central for certification (Condition 20). Any material change must be consistent with the purpose of the MPDPM and the requirements of the relevant conditions. A copy of the original MPDPM and subsequent versions will be kept for the Project records, and marked as obsolete. Each update of the Plan will be issued with a version number and date.

### 2.2 Project Description

For a description of the Project, refer to the Project Description within the CEMP. The construction details relevant to this Plan encompass all dredging and mudcrete placement works.

### 2.3 Associated Management Plans

The CEMP outlines the environmental management framework for the Project and details the relationship between the CEMP, environmental management plans, design certification requirements and the resource

consent conditions. It also provides an overview of the management plans required by the conditions (their purpose and content etc.) and other environmental mitigation measures to be implemented during construction.

Associated management plans that are particularly relevant to the implementation of this MPDPM include:

- Remediation Action Plan (Appendix E to the CEMP);
- Construction Traffic Management Plan (Appendix G to the CEMP);
- Construction Noise and Vibration Management Plan (Appendix I to the CEMP);
- Construction Lighting Management Plan (Appendix J to the CEMP);
- Inner Viaduct Harbour Management Plan (Appendix K to the CEMP); and
- Biosecurity Management Plan (Appendix L to the CEMP).

## 2.4 Responsibilities

The Alliance Project Director has the overall responsibility for the Alliance complying with the requirements outlined in this MPDPM.

The Alliance Construction Environmental Manager will implement the MPDPM, including aerial photography of a potential dredging plume, water quality sampling and reporting of monitoring to Auckland Council.

The dredging and mudcreting will be undertaken by a specialist contractor (Heron Construction Co Ltd). Heron will report to the Wynyard Edge Alliance through the Construction Manager and overall organisation outlined in the CEMP.

Refer to the CEMP for more detail on roles and responsibilities within the Alliance as they relate to construction environmental management of the Project.

## 2.5 Project Contacts

Table 2.1 provides the contact details for key Alliance staff as they relate to the MPDPM, along with the Project hotline, for general queries or complaints.

Table 2.1: Project Contact Details Relevant To the MPDPM

<b>Project hotline</b>	0800 WYNYARD (0800 996 9273)	
<b>Stakeholder Manager</b>	Michael Goudie	021 810 194
<b>Construction Manager</b>	Kurt Grant	021 834 512
<b>Construction Environmental Manager</b>	Brendon Barnett	021 527 461

Further Project contact details are provided in the CEMP.

## 3 Dredging Methodology

### 3.1 Scope of Dredging Work

As described in the application documents, the dredging of seabed materials will be in the following locations (Figure 3.1):

- Between southern Wynyard and Halsey Street Extension wharves (Wynyard Wharf South Waterspace);
- Within the Outer Viaduct Harbour; and
- For the navigation channel to/from the Outer Viaduct Harbour.

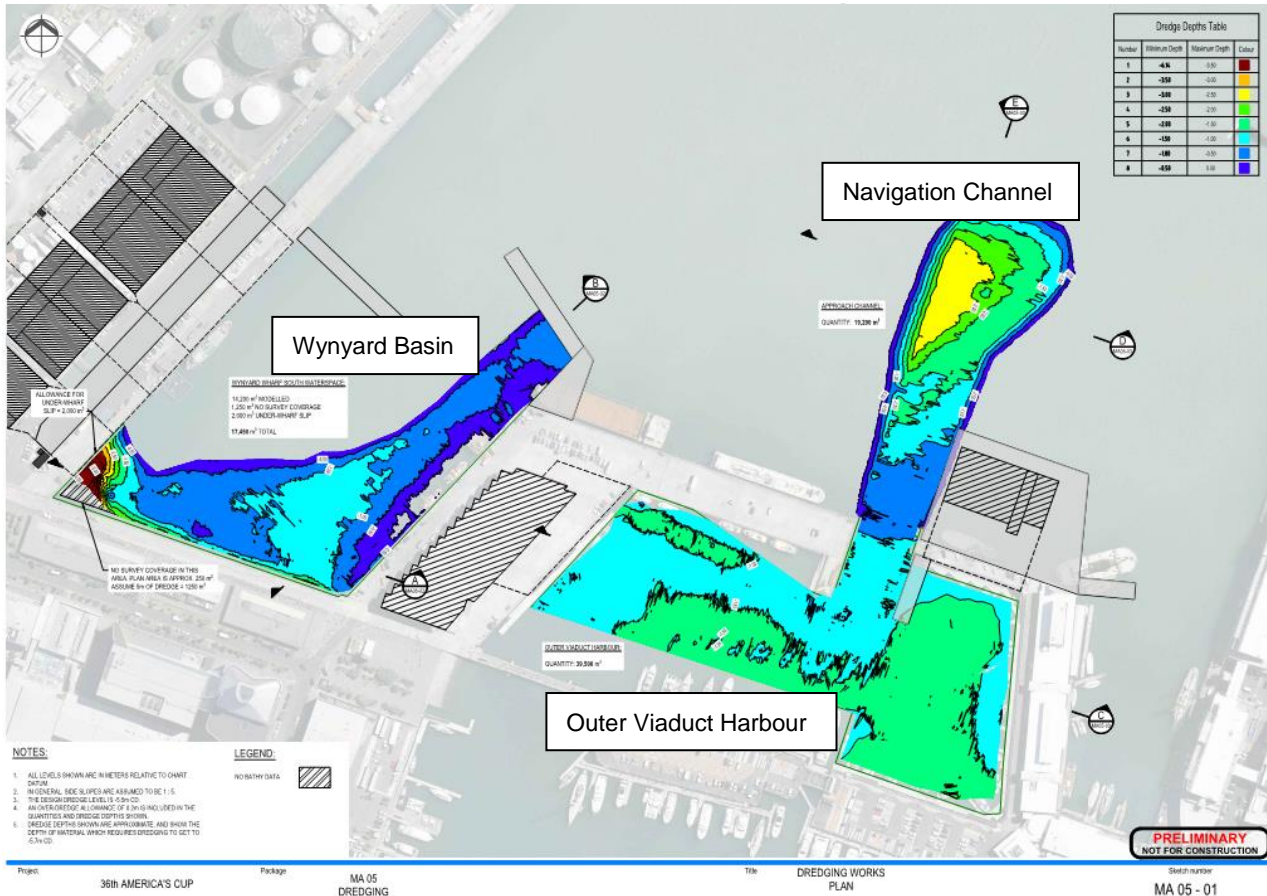


Figure 3.1: Dredging Locations

Approximate dredging areas, volumes and depths are outlined in Figure 3.2 and in Table 3.1 overleaf.

# Dredging – Scope and Sequence

## 1. Access Channel

Nov/Dec/Jan 2018-19

## 2. OVH West

Jan/Feb 2019

## 3. OVH East

Feb/Mar 2019

## 4. Wynyard Basin

March/April 2019

## 5. WY Contaminated

September 2019

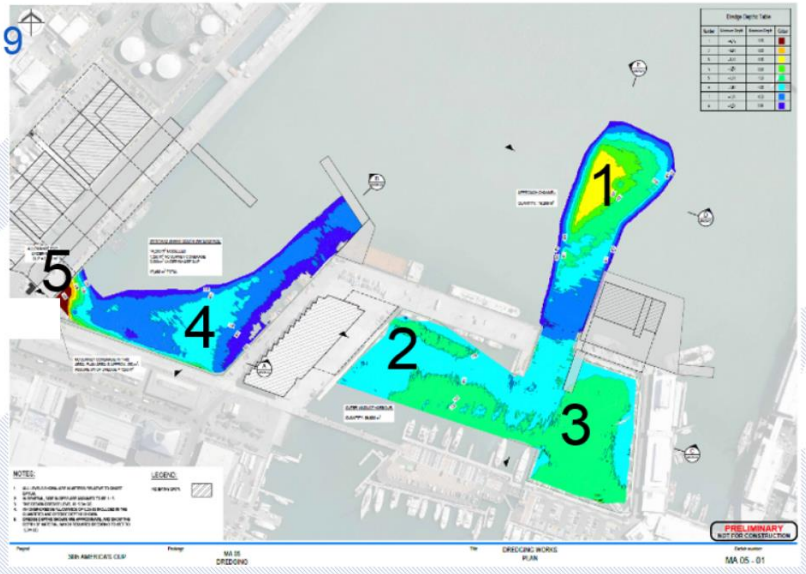


Figure 3.2: Approximate Timings and Locations for Dredging

### 3.1.1 Dredging Quantities

The proposed dredged areas and quantities have been updated from the consent application. While some areas have increased, others have decreased; however the overall total volume remains similar to that outlined in the consent application (refer to Table 3.1).

It is noted that the estimated 'in-situ' dredging quantities required to achieve the design dredge levels, include a 200mm over-dredge<sup>2</sup> allowance.

Table 3.1: Approximate dredging volumes

Dredging Area	Consent		Reviewed Quantity (m <sup>3</sup> )
	Quantity (m <sup>3</sup> )	Quality	
Wynyard Basin	18,000	Contaminated	11,650
Navigation Channel	30,000	Clean	19,200*
Outer Viaduct	30,000	Clean	36,800*
Total	78,000		67,650

Note:

\* A change in boundary (Entrance Channel / Outer Viaduct) in the 3D dredging model is largely responsible for the changes from consent requirements

### 3.1.2 Wynyard Wharf South Waterspace

A portion of the water space at the south end of Wynyard Wharf (between Wynyard Wharf and Halsey Wharf) will require maintenance dredging to achieve a design depth of -5.5 metres below Chart Datum to accommodate the America's Cup race vessels and -4.5 metres below Chart Datum for the superyachts. A

<sup>2</sup> Overdredge is a construction tolerance allowed for in order to provide the required navigable depth for safe vessel movement.

significant part of this area is already below -4.5m CD level, however recent hydrographic survey data indicates that southern Wynyard, and areas adjacent to Halsey Wharf and North Wharf, have silted up and require dredging to attain the design dredged levels. Dredged material is expected to predominantly comprise Recent Marine Sediments, characterised as mud (sand, silt and clay sized particles). Where dredging is necessary, an average of up to 0.5 metres depth of seabed sediments will be dredged over an approximate area of 17,000m<sup>2</sup> of the basin.

Accurate volumes of the materials to be dredged from the south-west corner (under the existing SeaLink ramp) is not known at this stage, as recent hydrographic surveys of this area could not be carried out.

### 3.1.3 Outer Viaduct Harbour

Maintenance and capital dredging is required within the Outer Viaduct Harbour to accommodate the America's Cup race boats at Base A (Halsey Wharf) and at Base B (Hobson Wharf). The design dredge level for this area is -5.5 metres below Chart Datum. Dredged material is expected to predominantly comprise clean Recent Marine Sediments, characterised as mud (sand, silt and clay sized particles), but geotechnical information indicates that clays and sandstone may also be encountered in some parts of the basin. There are two locations in the basin where it is anticipated that small amounts of ECBF rock will require dredging.

### 3.1.4 Navigation Channel

Maintenance and capital dredging is required to provide a navigation channel for America's Cup race boats access to the Outer Viaduct Basin. The design dredge level for the navigation channel is -5.5 metres below Chart Datum. Dredged material is expected to predominantly comprise Recent Marine Sediments, characterised as mud (sand, silt and clay sized particles).

### 3.1.5 Pile Drilling

In addition to the above dredged quantities, the consent application provides for up to 9,000m<sup>3</sup> of material obtained from pile drilling. The volume of material will vary depending on the piling option selected for construction of the wharf and breakwater structures.

## 3.2 Scope of Mudcrete Placement in CMA

Whilst the application documents envisage the potential need to place the dredged material entirely as mudcrete within the CMA, it is not expected that all of the volume will be placed within the CMA at this stage of the project. The potential mudcrete placement locations is Wynyard Wharf breakwater 1 and Breakwaters 2 and 3 within Wynyard Basin.

Approximate volumes of mudcrete placement within the CMA are outlined in the disposal section below (Section 3.3).

## 3.3 Disposal Options

It is expected that up to 40,000m<sup>3</sup> of dredged material will be disposed of at a consented sea disposal ground. Remaining volumes for disposal are based on this volume. There are several options being considered for the disposal of the remaining dredged material including:

- Mudcreting and use within Wynyard Point area (i.e. outside of the CMA) as the hard-standing for AC36 syndicate bases (approximately 3,000m<sup>3</sup>); and/or
- Mudcreting and use off site in a consented reclamation or project; and/or
- Mudcreting and disposal at a consented landfill site (approximately 3,000m<sup>3</sup> confirmed); and/or
- Mudcreting and use within the CMA (approximately 3,000m<sup>3</sup>).

While volumes of dredged material can be estimated, the potential options for use of this material at various locations are not confirmed at this stage. Disposal options and quantities for disposal will also

depend on the extent and level of contamination of dredged material found in the samples of dredged material. While disposal and / or use of dredged material is not fully finalised, the sections below outline potential dredged volumes for management at potential disposal sites.

Mudcrete placement within the CMA is currently proposed to be undertaken beneath breakwaters 1, 2 and 3. There may be other opportunities for mudcrete placement within the CMA. Should these opportunities arise, this management plan will be updated to reflect the additional areas of placement.

The mudcrete placement will raise the seabed level beneath Structure 1 to approximately -6 meters below Chart Datum. In doing so, it avoids the need to have the breakwater structure extending to -11 m CD.

The disposal and mudcreting sequence detailed in Section 3.5 outlines the methodology for the options listed above.

### 3.3.1 Wynyard Wharf South Waterspace

Preliminary testing of the marine sediment samples obtained from this area as part of the preparation of the consent application indicates that some dredged material from Wynyard Wharf South Waterspace may have elevated levels of contaminants and may not be suitable for disposal at sea. Additionally, some asbestos has been found in samples of this material. This material is therefore considered 'contaminated'. Disposal options therefore include various options of mudcreting prior to land based disposal. Any above-water processing of Wynyard Basin sediments will require asbestos-related works controls including equipment decontamination and use of personal protection equipment (PPE) such as P2 masks, nitrile gloves and disposal coveralls. Any aspects addressing contaminated land-based activities are covered in the Remediation Action Plan (RAP).

### 3.3.2 Outer Viaduct Harbour

Preliminary testing of the marine sediment samples carried out as part of the preparation of the consent application indicates that all dredged material from Outer Viaduct Basin is suitable for disposal at sea. A significant portion of this volume is expected to be able to be disposed of at sea. At this stage, the remaining volume is expected to be a combination of the mudcrete and use options listed above (Section 3.3 and Figure 3.2).

### 3.3.3 Navigation Channel

Preliminary testing of the marine sediments carried out for the consent application indicates that all dredged material from the navigation channel area is suitable for disposal at sea. A significant portion of this volume is expected to be able to be disposed of at sea. At this stage, the remaining volume is proposed to be mudcreted and used off-site in a consented reclamation project.

## 3.4 Equipment and Methodology

The dredging spread proposed is as follows:

- Backhoe Dredge (BHD) GPK fitted with a Liebherr P9150 Excavator
- Split Hopper barges H1201 and H1202 (or similar)
- Seagoing tug Kurutai or similar
- Pugmill barge Mesenge (refer specification sheets in Appendix A).

### 3.4.1 BHD – Machiavelli

The Machiavelli will undertake all dredging within the dredging area. Machiavelli is fitted with a Liebherr P994 excavator, see Appendix A for Specification Sheet.

A backhoe dredger is basically a hydraulic excavator placed on a pontoon. Dredging is executed by the excavator which sits at the front of the pontoon. The main parts of a backhoe dredger include (refer Figure 3.3):

- Pontoon
- Hydraulic excavator, consisting of the upper structure (engine, hydraulic pumps, fuel and oil reservoirs, operator's cabin), boom, stick and bucket.
- Spud legs and spud carrier. The spud legs provide a stable platform during the dredging cycle. The spud carrier enables the pontoon to move forwards and backwards when the aft spuds are lifted.

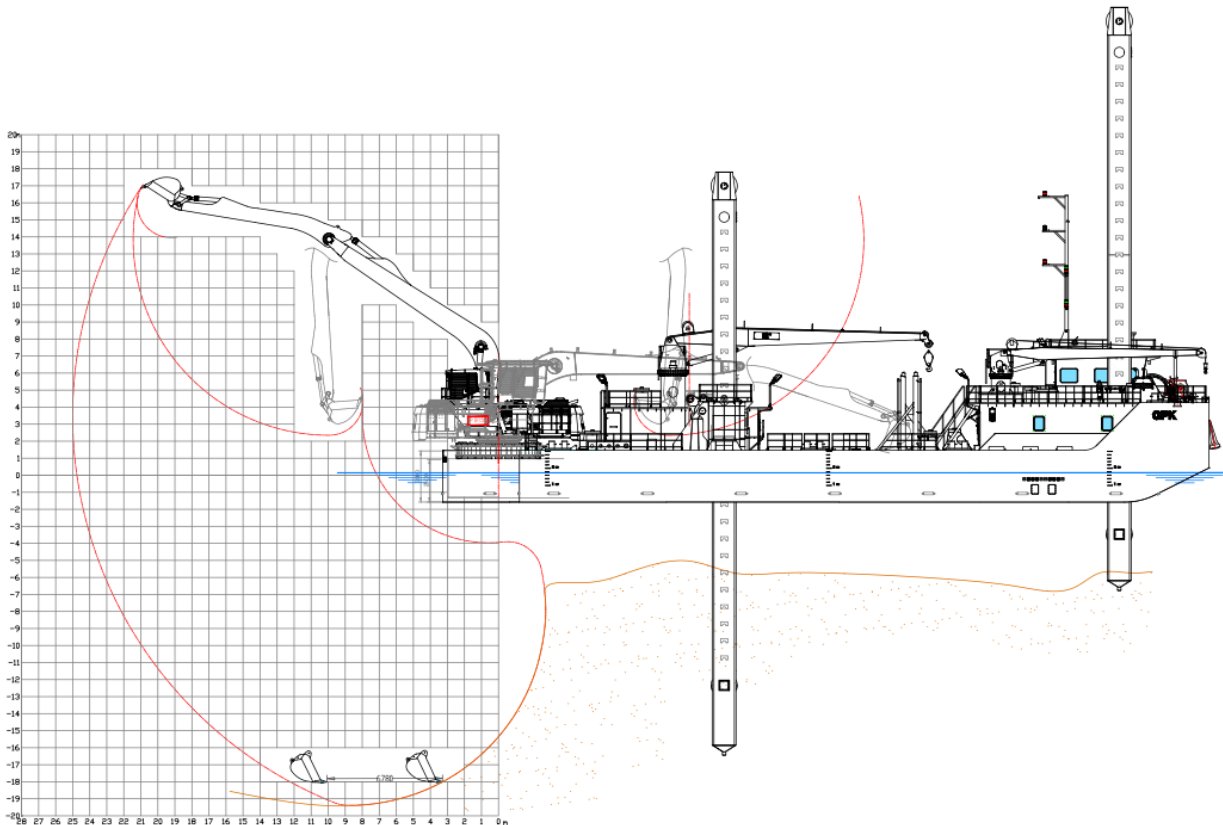


Figure 3.3: General layout BHD GPK

### 3.4.2 Dredging Control

The excavator on Machiavelli uses a 'Seatools' electronic dredging programme called DipMate. This programme allows the operator to accurately determine the position of the excavator's bucket, boom and dipper. The information the operator receives from the monitor is in real time so the position, angle, depth and reach of the bucket are known at any stage throughout the excavation cycle (refer Figure 3.4). In addition to the elevation view, a plan view of the dredge is also provided showing the actual position of the dredge and excavator in relation to the project Coordinate System.

The dredging monitor receives data from rotation sensors mounted on the excavator's attachments and from RTK GNSS receivers mounted on the excavator. Both the rotation sensors and the GNSS receivers supply data to the electronic monitor meaning that any time the x, y, z (northing, easting & reduced level) position of the bucket is known.

A feature of the Seatools system is the ability to data log or "map" the movement of the bucket in terms of x,y,z positions. This information can be downloaded from the dredging computer via a simple ASCII format file. The data can be used to create long sections and cross sections to prove that the bucket has achieved the design dredge profile.

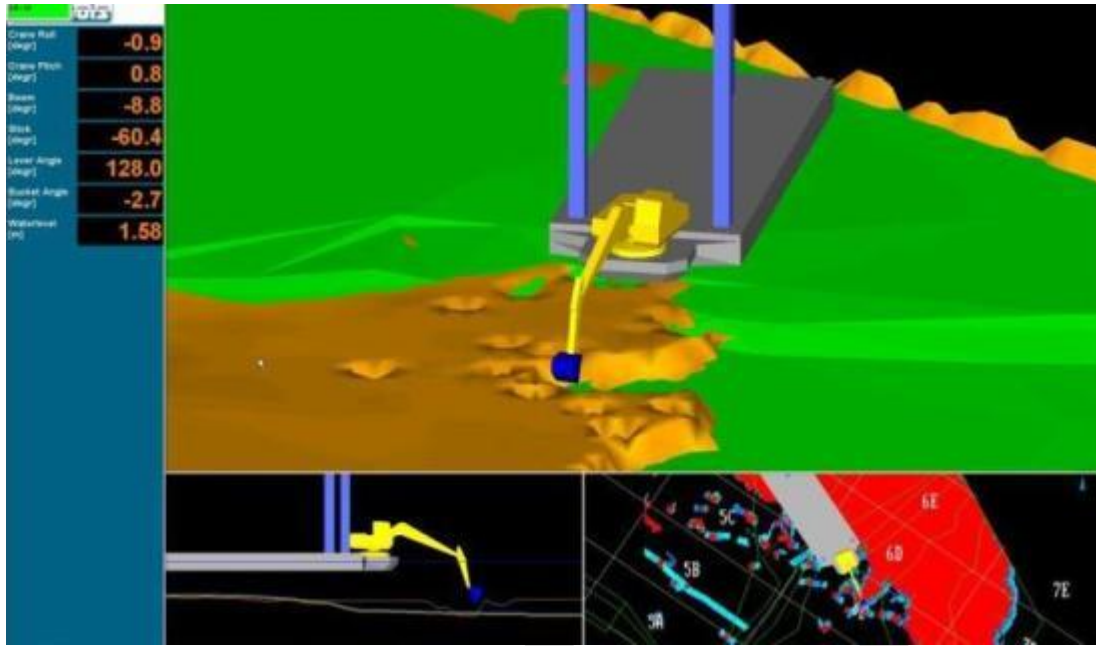


Figure 3.4: One of the possible views the dredge operator has LCD monitors.

### 3.4.3 Position Control

The DipMate electronic dredging programme is connected to two Trimble RTK GPS receivers, giving position, height and heading information. Hydrographic survey data in the form of 'DXF' files are downloaded into the dredging monitor. These files show such details as beacons, foreshore, wharves, extent of dredge areas, pre-dredge seabed contours, and most importantly, the position of the dredge relative to the features.

The combination of the DipMate electronic dredging program and the Trimble RTK GPS system allow the dredge operator to dredge to the design depth and methodically cover the dredge area in a minimum number of passes to dredge to required level.

### 3.4.4 Dredge Positioning

The Machiavelli is positioned by three "spud" legs. The two aft legs are fixed and operate up and down. The third forward walking spud is able to be hydraulically moved, enabling the Machiavelli to manoeuvre while it is dredging without assistance from tugs, anchors, cables or winches. These spuds are lowered to the seabed and hold the Machiavelli in position for the dredging operation. They are controlled from the operator cab on the excavator. The movement of these is seen in real-time on the DipMate screens by the operator.

The manoeuvring of the dredge with the spud legs is done only whilst dredging. For movements to and between dredge areas a tug is employed.

### 3.4.5 Dredge Profile

A dredge profile is the design model for the dredge to target. Dredge profiles can be designed using a CAD package, then imported into Seatools as a DXF (Drawing Exchange Format) file. Due to the ability to utilise CAD, these profiles can be made to be as complex as the design surface requires.

Once the profile is imported into DipMate, the dredging margins are assigned. These margins are set to suit the soil conditions and accuracy requirements specific to the project dredge area(s). Generally the over-dredge limit is set as the lower margin.



When dredging to remove contaminated material, the operator will generally bulk excavate the material to the upper margin level – indicated by the **Upper Margin** line as detailed below. Once the operator has completed removing all the material he can reach in his current location, he will undertake a resweep of the area targeting the gap between the **Design Depth** and the **Lower Margin** (Refer figure 3.5). This will ensure that all the contaminated material has been removed and any spillage from the bucket has been recovered.

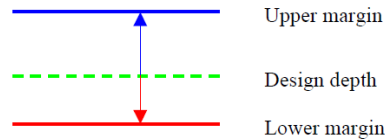


Figure 3.5: Dredging Margins

### 3.4.6 Method and Precision for Matrix Establishment and Maintenance

Before dredging commences, a pre dredge survey of the dredge area will be completed. This will establish the matrix which will be presented in real time on the dredge screens on board the Machiavelli. As the bucket of the Machiavelli excavator penetrates the matrix, it will update in real time to reflect where the bucket has been. This is purely a tool for the operator to monitor progress, and is a representation of the dredged seabed. Regular progress surveys may be conducted, and results uploaded into the excavator's dredge monitor system. The matrix is then updated to give the actual levels of the seabed (refer figure 3.6).

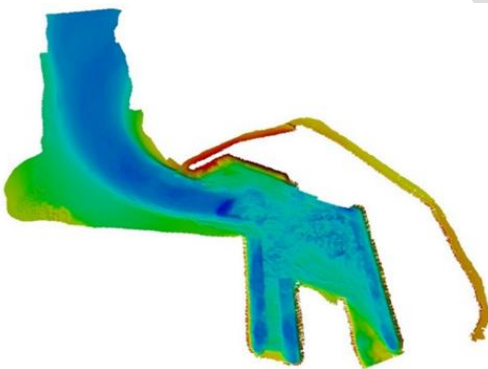


Figure 3.6: An Example of a Dredge Matrix from a Survey at Napier Port

The dredge design model can be imported from a DXF file into the dredge monitor system on board Machiavelli. DXF files are created in CAD packages, so complex designs can be handled easily. Once the design model is uploaded, parameters such as overdredge allowances can be added.

### 3.4.1 Disposal

The majority of dredged materials are proposed to be disposed of outside of the general works area. Whilst not specifically controlled in this suite of consents (as no consents for disposal were sought as part of this project), accurate disposal is an essential component of dredging projects to maximise the capacity at spoil grounds and to ensure material is not disposed outside the designated environmental boundaries. To best achieve this, Heron split hopper barges are fitted with DGPS systems that transmit their position to the tug so that the masters of the tug can see the actual position of the split hopper barge, not an assumed position based on the tug position.

Masters of the tugs towing the barge also take a screen print of the dumping position of the barge and send this to the Superintendent as part of the daily report.

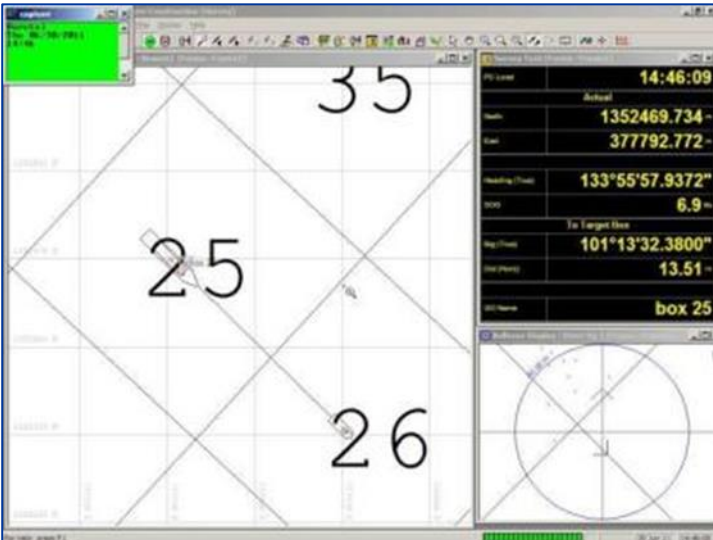


Figure 3.7: An example of a Heron Vessel print screen

### 3.4.2 Redundancy

Heron shall provide appropriate redundancy for all survey and positioning equipment. For survey this may include:

- Spare system equipment parts
- Hiring in an accredited external hydrographic survey organisation i.e. port surveyor

In the unlikely event that GPS functionality fails, tracking redundancy of barges may include:

- AIS (Automatic Identification System) co-ordinates
- Master logbook entries detailing disposal information

## 3.5 Management of Hydrocarbons

The dredging procedures proposed for the Project utilises several measures to firstly prevent hydrocarbons and / or other environmentally hazardous substances from entering the water or impacting on the marine environment.

The prevention measures include but are not limited to:

- Periodic documented preventative maintenance program which includes 6 hourly documented inspections;
- Replacement of high risk hydraulic hoses after a predetermined time (machine hours), not after they have failed;
- A hydraulic hose register that records the details of every hose. E.g. Manufacturer, date of manufacture, date of installation, type, size, length, etc.

Some of the measures implemented that minimise the potential of environmentally hazardous substances entering the water are:

- All hydraulic systems on BHD Machiavelli and hopper barges use Panolin HLP Synth 46 biodegradable hydraulic oil;
- Sealed belly plates fitted to the underside of the excavator to prevent hydrocarbons from the engine and hydraulic pump compartments being lost on the barge deck and potentially entering the water;

- Deck area beneath the excavator is banded off and all liquids from this area are pumped through an oily water separator and then stored in waste oil or oily water storage tanks.

### 3.6 Dredging, Reuse and Mudcreting Sequence

The following is the proposed methodology for the dredging, use and disposal of uncontaminated sediments and sandstone rock from the Outer Viaduct Harbour and Entrance Channel as well as contaminated sediments from the Wynyard Basin.

The sandstone rock and up to 40,000m<sup>3</sup> of the uncontaminated material will be loaded into split hopper barges for transportation and disposal at sea.

As outlined in Section 3.3, various mudcreting and disposal options are proposed for the contaminated sediment and remaining material from the Wynyard Basin.

#### 3.6.1 Disposal of Uncontaminated Dredged Material

##### 3.6.1.1 Applicability

This section sets out, for information purposes, the potential disposal areas of dredged material. The disposal of dredged material (outside of use as mudcrete) is not within the scope of the AC36 resource consent application and hence not a certification matter, however this detail is provided conceptually to demonstrate that dredged material will be disposed of and managed appropriately.

##### 3.6.1.2 Offshore Disposal Ground

Where dredged material is disposed within consented sea disposal sites, at no time shall any material be placed outside the co-ordinates of the offshore disposal grounds (ODG). Tugs will tow the barges to the offshore disposal grounds and once inside the boundary of the area the barges will be remotely opened by the master of the tug.

Accuracy and methodical placement is essential to ensure even distribution of dredging's throughout the ODG.

The tugs are fitted with navigation software, which gives the master real time positioning and will be used when towing the hopper barges to the ODG. A 'screen dump' from the navigation computer is taken at the moment the barge opens. Screen dumps are taken for each load placed to ensure that the ODG is fully utilised.

##### 3.6.1.3 Towing and Voyage

The preferred method of connection between the tug and barge when departing from the dredge site or arriving at the dredge site will be to "Hip Up" to the hopper barge and push the barge, the method gives the tug total control of the barge for close quarter manoeuvring (refer Figure 3.9).

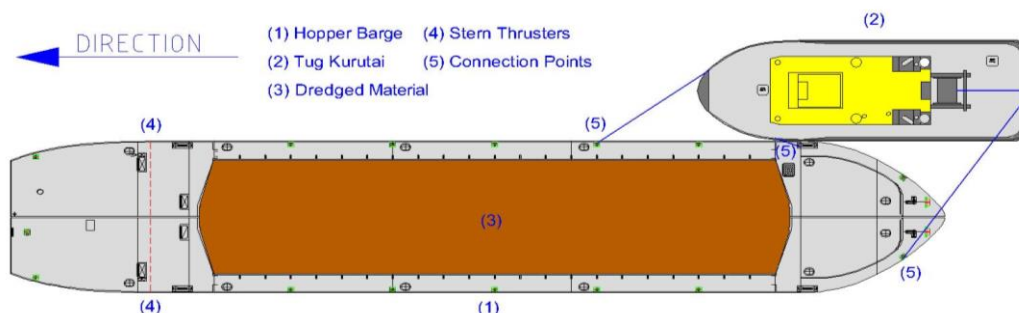


Figure 3.8: Tug Hipped Up To Split Hopper 1

Barges will be towed by the tug when transiting to and from the ODG on a tow line from the tug (refer Figure 3.10). All tugs will be fitted with heavy duty towing winches so that barges can be retrieved to the

tug quickly and safely. An emergency tow line will be deployed from the barge at all times when it is being towed. This enables the barge to be recovered quickly in the unlikely event that the main tow line breaks.

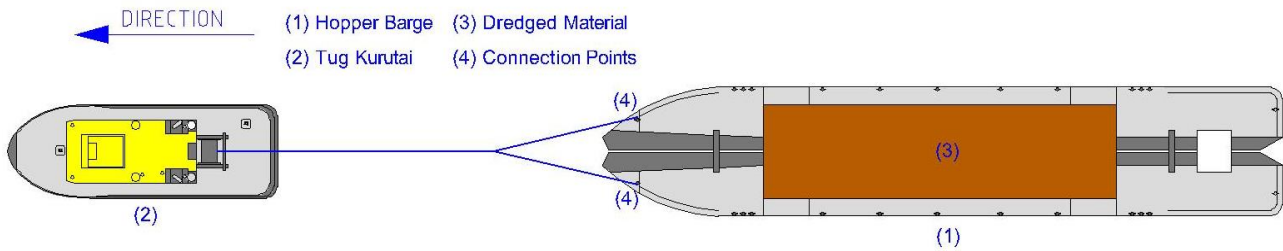


Figure 3.9: Tug Towing Split Hopper Barge

All tugs will run Trimble HydroPro software. This will be used as a navigation tool and a data logging tool so that continuous track plot of the tugs can be produced which will detail transits to and from the ODG (refer Figure 3.11).

Should the systems fail, data will be available from AIS which is on all the tugs. This is the backup system should the primary DGPS fail, this will allow a continual track plot to be provided. The timing of opening and closing of the barges is not recordable using AIS. This information will be obtained from the tug master bridge log.

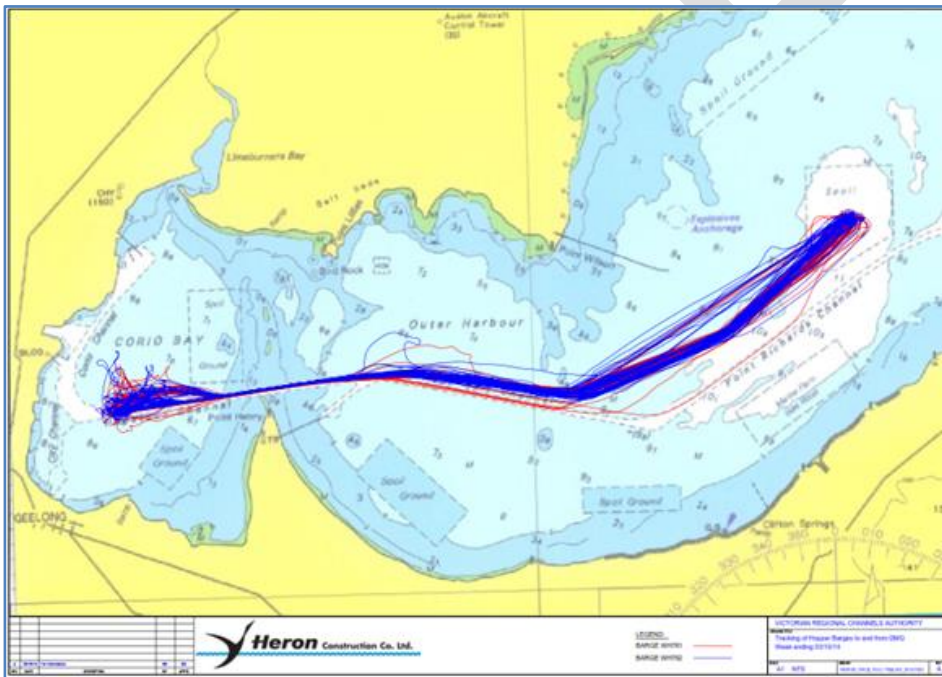


Figure 3.10: An Example of Tug Track Plot

### 3.6.2 Disposal of Contaminated Dredge Material

It is proposed that all contaminated dredged material be stabilised with cement in a pugmill to form *mudcrete*. Mudcrete comprises marine mud which is well mixed with 60 to 100 kg/m<sup>3</sup> of cement. When well mixed the material is hygroscopic which encourages seawater to be entrained rather than the material to be released into the surrounding environment. When cured (after 1 to 2 days) mudcrete tends to contain most contaminants. Heron Construction's pugmill barge Mesenge is a fully self-contained cement stabilisation barge. It is fitted with a 40 tonne excavator for unloading the sediment, a 100 tonne capacity cement silo, pugmill, and a 70 tonne longreach excavator for mudcrete placement (refer Figure 3.12).



Figure 3.11: Pugmill Barge Mesenge Working on POAL Fergusson Reclamation

The contaminated sediment will be delivered to Mesenge in hopper barges. These hopper barges have been sealed up to ensure that the dredged material does not leak out or that the barges accidentally open discharging their load. The hopper barge is unloaded with a 40 tonne excavator. This machine is fitted with a clamshell so as to minimise spillage during the transfer process. The dredged material is placed on a vibrating grizzly so as to remove unsuitable material such as rocks, steel, rubbish, wood etc.

Once the sediment has passed the grizzly, it falls into a screw hopper. In the bottom of the screw hopper are inclined screw augers. These augers feed the product into the pugmill at a constant rate. The augers are powered by variable speed drives, which by increasing or decreasing the speed of these augers will increase or decrease the production on the plant.

At the top of the screw augers the material will drop into the pugmill for blending with cement. The cement additive is stored adjacent to the pugmill in a 100 tonne silo. The silo has a variable speed vane feeder that meters the cement. The cement is transferred from the silo to the pugmill in a completely enclosed screw auger to prevent any spills

With the marine sediment and cement having been added into the pugmill, the blending process commences in the pugmill. This is achieved by two counter retaining shafts that have large paddles attached, these paddles are fixed to the shafts which slowly forces the product through the pugmill as it is being blended. The blended product drops from the pugmill onto the primary belt conveyor. This belt conveyor is fitted with a continuous belt-weigh system that weighs the mass of the product passing over the belt. This data is linked to the system controller in the control room.

By knowing the mass of material passing over the conveyor belt, the system controller automatically adjusts the speed of the cement vane feeder to ensure that the correct dosage of cement being added. This is the key to producing a consistent high quality mudcrete and at the same time minimising the use of additives to achieve consistent results.

As the mudcrete leaves the final conveyor belt, it drops into a storage bin in front of the longreach excavator. As with the unloading excavator, the longreach excavator is also fitted with a clamshell so as to minimise spillage of the mudcrete, to prevent segregation of the mudcrete as it is placed through the water, and minimise air voids and water entrapment.



Figure 3.12: 70 Tonne Longreach Placing Mudcrete at POAL Reclamation

The longreach is fitted with a Seatools Dredging monitor (identical to the BHD GPK) which enables the operator to build underwater structures such as bund walls extremely accurately minimising the need for trimming.

The longreach excavator can also load the mudcrete directly into trucks if the material is required to be transported on site to the Wynyard Point area (i.e. outside of the CMA) as the hard-standing for syndicate bases C-G (approximately 3,000m<sup>3</sup>); and/or off site for disposal at a consented landfill site or another project that can accept the material.

## 4 Monitoring And Reporting

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### 4.1 Monitoring Overview

Condition 53 d) requires reporting of the physical characteristics of the dredged material based on visual observations to be reported to Auckland Council during the physical works. Physical characteristics will be noted for each barge load as an approximate percentage of marine sediments, marine clay, and / or sandstone. Results will be included in the water quality monitoring reports detailed below.

Conditions 55 – 69 detail the requirements around water quality monitoring for dredging in the CMA. In summary, these require an initial comprehensive monitoring regime (Section 4.1.1), followed by regular interval monitoring (weekly) during dredging and mudcrete placement (Section 4.1.2).

Specific details of the one-off comprehensive monitoring programme and regular monitoring required by Conditions 55 and 56 respectively are detailed in the sections below. The following requirements apply to all water quality sampling undertaken in relation to monitoring dredging and mudcrete placement for the project.

- Water samples will be collected on a day that dredging is occurring and be representative of the plume generated by the operations.
- Individual samples will be collected at each site as per below:
  - Approximately 0.5m below the **surface**; and
  - At **depth**, approximately 0.5m above the seabed.
- All sampling rounds will record the following:
  - Sampling date and time;
  - Weather conditions;
  - Sea state;
  - Sampling location (GPS coordinates);
  - Water depth;
  - Time that dredging in the CMA commenced; and
  - Time of low and high tide on day of sampling.
- Samples from dredging activity will be analysed for total suspended solids (TSS). For samples collected during mudcrete placement, TSS and pH will be analysed.

#### 4.1.1 Comprehensive Monitoring

Condition 55 requires an initial one-off comprehensive monitoring programme during the initial phase of the dredging and placement of mudcrete in the CMA. This monitoring will confirm the mixing zone and proposed trigger levels of 25 g/m<sup>3</sup> above the control site and pH of 8.5.

Depending on the dredging programme, it may be that separate comprehensive monitoring is required for the placement of mudcrete in the CMA. If mudcreting occurs during the initial phase of dredging, the initial comprehensive monitoring will be amalgamated.

The initial comprehensive monitoring will be carried out in accordance with the following requirements:

Samples will be collected during the **first neap tide** during the initial phase of dredging. Should a neap tide not fall within the initial phase for dredging, the initial comprehensive monitoring should be undertaken as

close to a neap tide as practicable. Samples will be collected prior to and during dredging activity, over a whole tidal cycle or the time taken to fill one barge, at approximately 0.5 hour intervals.

Samples will be taken at:

- An updrift control site located approximately
  - within the Waitemata Harbour main channel (Ebb tide); or
  - at least 500m beyond the operations (Flood tide).
- Dilution gradient sites 10m, 20m and 50m downdrift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel; and

A compliance site 200m downdrift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel.

At completion of the one-off comprehensive monitoring, a report will be provided to the Team Leader Compliance Monitoring – Central and Mana Whenua<sup>3</sup>.

The trigger levels will be reviewed against the results of the one-off comprehensive monitoring undertaken during the initial phase of the dredging operations. A report will be provided to the Team Leader Compliance Monitoring – Central confirming the above trigger levels or proposing alternative trigger levels with the basis for the alternative.

The report will be provided within 20 working days of receipt of the analytical results of the comprehensive monitoring. The alternative trigger levels may be used for regular monitoring subject to approval in writing by the Team Leader Compliance Monitoring – Central.

Condition 68 sets a requirement for aerial photography to be taken. It states that *Aerial photographs should be taken of the extent of any plume during the dredging. Where water quality for dredging is also being undertaken, the photograph should be completed at the same time as the sampling runs. Aerial photography sites shall be selected to correspond only to those areas where dredging in the CMA is occurring, to confirm sediment plume distribution and aid sampling.*

Aerial photography will be undertaken in conjunction with the comprehensive monitoring regime. Results from the photography and samples will be reviewed and the continuance of aerial photography may be amended or discontinued, subject to written approval of the Team Leader Compliance Monitoring– Central.

#### **4.1.2 Regular Monitoring**

Immediately following the initial comprehensive sampling regime, sampling will occur once per week whilst dredging and any placement of material in the CMA is occurring. The regular monitoring should not wait for the results and report of the comprehensive monitoring. Water quality samples will be collected:

- On an ebb tide;
- As close as practicable to mid-tide to capture the maximum extent of any plume;
- At an updrift site located at least 500m beyond the operations;
- At a dilution gradient site 50m downdrift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel;

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<sup>3</sup> In accordance with Condition 69, the reports shall be provided to the Mana Whenua Groups that participate in the preparation of the Mana Whenua Engagement Plan



- At a compliance site 200m downdrift of the operations aligned approximately along the centreline of the Waitemata Harbour main channel.

The 200m sample is at the edge of the mixing zone. The 50m sample will be used to assess the TSS and pH gradients.

Monitoring reports for routine water quality monitoring will initially be provided to the Team Leader Compliance Monitoring – Central and Mana Whenua every **six weeks** for the duration of dredging. The regularity of monitoring reports may be reduced subject to written approval from the Team Leader Compliance Monitoring – Central should results consistently show no exceedances.

In the event of an exceedance (being 25 g/m<sup>3</sup> above the control TSS or pH greater than 8.5) during regular monitoring, a Contingency Plan will be prepared which sets out the action to be undertaken. These will include further monitoring measures, in the first instance, or a site specific effects assessment, and practical modifications to the relevant activities where further monitoring identifies repeated exceedances. Such modifications may include:

- Suspending or altering the dredging approach;
- Reducing production rates;
- Focusing dredging activities around slack tide; and
- Using silt curtains or other containment approaches.

Following two months of weekly sampling, and subject to written approval of the Team Leader Compliance Monitoring – Central, the monitoring programme may be amended, for example compositing of surface and depth samples, and reduction of the frequency (e.g. fortnightly / monthly).

## 4.2 Trigger Levels

The proposed trigger levels during dredging (TSS) and mudcrete placement (TSS and pH) during regular monitoring are:

- TSS is 25 g/m<sup>3</sup> above TSS at the control site; and
- pH of 8.5

Should these triggers be exceeded, a contingency plan should be followed as outlined in Section 4.1.2 above.

## 4.3 Completion of Works

Within three months of completion of all the dredging works, the Consent Holder shall provide the Team Leader Compliance Monitoring – Central with the best available estimates of the in-situ volumes of material dredged and material placed as mudcrete in the CMA.

Appendix A

Plant Specification Sheet

DRAFT

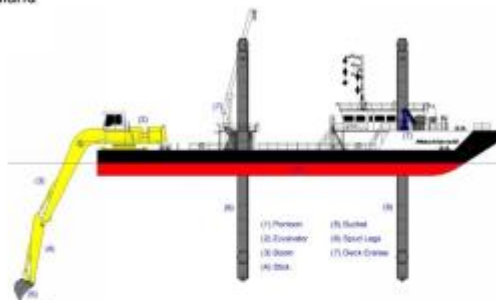
# Machiavelli

## Backhoe Dredger



Name: Machiavelli  
 Type: De Donge 'D' Type Backhoe Dredge  
 Operators: Heron Construction Company Ltd  
 Port of registry: Auckland, New Zealand  
 Class: Bureau Veritas  
 MNZ #: 131883  
 Official Number: 876411  
 Year built: 2005  
 Gross tonnage: 648  
 Displacement: 1,200 tonne  
 Length overall: 53.0m  
 Breadth: 15.0m

Excavator: Liebherr P994  
 Max dredge depth: 23.0m  
 Monobloc (boom) length: 16.0m, 19.0m  
 Stick (dipper) lengths: 4.0m, 5.6m, 8.0m and 9.5m  
 Bucket sizes: 4.0m<sup>3</sup>, 5.0m<sup>3</sup> and 5.7m<sup>3</sup>, 6.0 m<sup>3</sup>  
 Clamshell sizes: 3.5 m<sup>3</sup> Heavy duty and 6.0m<sup>3</sup> Environmental  
 Dredging control: DipMate v3 by Seatools  
 Position and height control: Twin 5700 Trimble RTK GPS  
 Aft spuds: Two @ 30m long x 60 tonne each  
 Forward spuds: One @ 30m long x 60 tonne in carrier  
 Spud carrier stroke: 7.5m  
 Jackup capacity: 780 tonnes



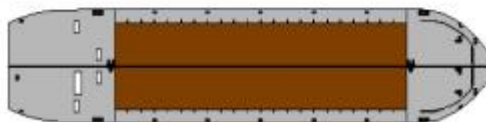
73 Boundary Road, Papakura 2110  
 P.O. Box 73-561, Papakura 2244  
 Auckland, New Zealand  
 Telephone: +64 9 299 9767 Fax: +64 9 299 9510  
 www.heronconstruction.co.nz

## H1201 & H1202

### Non-propelled Split Hopper Barges



Names: H1201 & H1202  
 Type: Non propelled, Split Hopper Barge  
 Class: Bureau Veritas: BV 1 + HULL  
 Official Numbers: 876380 & 876384  
 MNZ Numbers: 135367 & 135368  
 Operators: Heron Construction Company Ltd  
 Port of registry: Auckland, New Zealand  
 Year Built: 2015  
 Manoeuvring: Stern tunnel thruster  
 Thruster Power: Cummins QSM 11 (425hp)  
 Hopper capacity: 1200m<sup>3</sup>  
 GRT: 1148  
 Length overall: 66.2m  
 Breadth moulded: 12.0m  
 Draft loaded: 4.25m  
 Draft lightships: 1.5m  
 Displacement lightships: 750 tonne  
 Hopper dimensions at coaming: 39.6m x 9.0m  
 Hopper bottom opening: 3.6m (max.)



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 P.O. Box 72-561, Papakura 2204  
 Auckland, New Zealand  
 Telephone: +64 9 299 9767 Fax: +64 9 299 9510  
[www.heronconstruction.co.nz](http://www.heronconstruction.co.nz)

**Kurutai****Ocean Going Tug**

Name:	Kurutai
Type:	Ocean Going Tug
Class:	MNZ – Unlimited
Operators:	Heron Construction Company Ltd
Port of registry:	Auckland, New Zealand
Year Built:	1990
Official Number:	875798
IMO Number:	9038921
MNZ Number:	101883
Call Sign:	ZMA 2815
Gross tonnage:	199
Nett tonnage:	94
Displacement:	312 tonne
Length overall:	23.46m
Breadth:	8.0m
Max draft:	3.8m
Main engines:	2 x Caterpillar 3512B
Power:	2 x 1117Kw (2234Kw)
Auxiliaries:	1 x 6BT Cummins, 1 x 6CT Cummins
Propellers:	Twin screw, 4 blade Kaplan type inside kort nozzles
Bollard pull:	30 tonne
Towing specifications:	Tow winch 80 tonne brake capacity with 730m x 48mm dia, including tandem tow link
MMSI #:	512016000
Satcom:	Furuno Saturn C Felcom 15 & PP - 510
S/S radio telephone:	Furuno FS1550 - 15
VHF radio telephone:	Sailor RT 2048
2182 Watch receiver:	Sailor RT 501
EPIRB:	ACR Satellite 406FH Auto
Radar Transponder:	Kannad Rescuer
Radar:	Furuno
GPS:	Furuno GP50
Plotter:	Furuno GP 1610CF
Echo Sounder:	Furuno LS 6100
Auto Plotter:	FAP 330



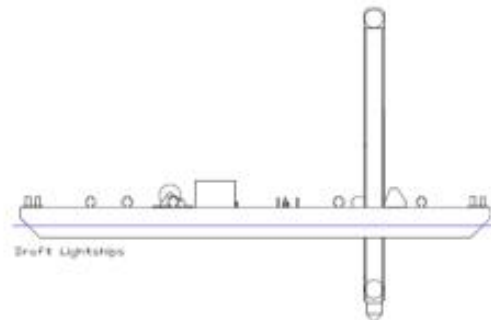
73 Boundary Road, Papakura 2110  
P.O. Box 72-561, Papakura 2244  
Auckland, New Zealand  
Telephone: +64 9 299 9757 Fax: +64 9 299 9510  
www.heronconstruction.co.nz

# Mesenge

## Spudded Pugmill Barge



Name: Mesenge  
 Type: Flat Top Barge  
 Operators: Heron Construction Company Ltd  
 Class: MNZ Barge Safety Certificate  
 Official Number: MNZ 133374  
 Gross tonnage: 396  
 Nett tonnage: 118  
 Displacement: 460 tonne  
 Length overall: 35.2m  
 Breadth: 19.4m  
 Depth: 2.3m  
 Fuel capacity: 90,000 litres  
 Aft spuds: Two @ 24m long x 32 tonne each  
 Jackup capacity: 140 tonnes



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