

**APPLICATION TO THE
ENVIRONMENTAL PROTECTION AUTHORITY
FOR A
MARINE DUMPING CONSENT
TO UNDERTAKE A NON-NOTIFIED ACTIVITY**

AND IMPACT ASSESSMENT

AT

**THE AUTHORISED LOCATION
WITHIN A CIRCLE OF 4 NAUTICAL MILES RADIUS
CENTRED ON POSITION 36⁰28'S 176⁰17'E
(27 NAUTICAL MILES EAST OF CUVIER ISLAND)**

PREPARED BY

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- Attachment 3:** Engagement Log Summary
- Attachment 4:** Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site prepared by Golder Associates (NZ) Limited

MARINE DUMPING CONSENT APPLICATION

**APPLICATION FOR A MARINE DUMPING CONSENT TO UNDERTAKE A
NON-NOTIFIED ACTIVITY
UNDER SECTION 38 OF THE EXCLUSIVE ECONOMIC ZONE AND
CONTINENTAL SHELF (ENVIRONMENTAL EFFECTS) ACT 2012**

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I understand that the EPA will recover all its actual and reasonable costs associated with processing this application.

Signed by its authorised agents Bentley & Co. Limited



.....
Mark Arbuthnot

Date: 23rd November 2018

Types of activities covered in this application:

Non-notified activities:

- Dredged material (in an authorised location)

Table 1: EEZ Act summary

EEZ Act	Section Addressed in this Application
Prescribed form (s.38(2)(a))	Paragraph 1.7 Attachment 1
Fully describe the proposal (s.38(2)(b))	Paragraphs 1.8 to 1.43
Describe the activity for which consent is sought (s.39(1)(a))	Paragraph 2.2
Describe the current state of the area where it is proposed that the activity will be undertaken and the environment surrounding the area (s.39(1)(b))	Paragraphs 2.3 to 2.12
Identify persons whose existing interests are likely to be adversely affected by the activity (s.39(1)(c))	Paragraphs 2.13 to 2.16
Identify the effects of the activity on the environment and existing interests (including cumulative effects that may occur in New Zealand or in the sea above or beyond the continental shelf beyond the outer limits of the exclusive economic zone) (s.39(1)(d))	Paragraphs 2.17 to 2.32
Identify the effects of the activity on the biological diversity and integrity of marine species, ecosystems, and processes (s.39(1)(e))	Paragraphs 2.33 to 2.35
Identify the effects on rare and vulnerable ecosystems and habitats of threatened species (s.39(1)(f))	Paragraphs 2.36 to 2.38
Describe any consultation undertaken with persons whose interests are likely to be adversely affected and specify those persons who have given written approval to the activity (s.39(1)(g))	Paragraphs 2.39 to 2.40
Include copies of any written approvals to the activity (s.39(1)(h))	Paragraph 2.41
Specify any possible alternative locations for, or methods for undertaking, the activity that may avoid, remedy or mitigate any adverse effects (s.39(1)(i))	Paragraphs 2.42 to 2.44
Specify the measures that could be taken to avoid, remedy, or mitigate the adverse effects identified (including measures that the applicant intends to take) (s.39(1)(j))	Paragraphs 2.45 to 2.48
Describe the effects on human health of the activity (s.39(2)(b)(i))	Paragraphs 2.49 to 2.52
Specify any practical opportunities to reuse, recycle, or treat the waste (s.39(2)(b)(ii))	Paragraphs 2.53 to 2.54
Any effects on the environment or existing interests of allowing the activity (s.59(2)(a)), including – Cumulative effects (s.59(2)(a)(i)) Effects that may occur in New Zealand or in the waters above or beyond the continental shelf beyond the outer limits of the exclusive economic zone (s.59(2)(a)(ii))	Paragraphs 3.4 to 3.24 Paragraphs 3.6 to 3.7 Paragraphs 3.8 to 3.13
The effects on the environment or existing interests of other activities undertaken in the area covered by the application or in its vicinity (s.59(2)(b))	Paragraphs 3.25 to 3.27
The importance of protecting the biological diversity and integrity of marine species, ecosystems, and processes (s.59(2)(d))	Paragraphs 3.28 to 3.29
The importance of protecting rare and vulnerable ecosystems and the habitats of threatened species (s.59(2)(e))	Paragraphs 3.30 to 3.33
The nature and effect of other marine management regimes (s.59(2)(h))	Paragraphs 3.34 to 3.60
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Relevant regulations (other than EEZ policy statements) (s.59(2)(k))	Paragraphs 3.62 to 3.67
Any other applicable law (other than EEZ policy statements) (s.59(2)(l))	Paragraphs 3.68 to 3.71
Any other matter the marine consent authority considers relevant and reasonably necessary to determine the application (s.59(2)(m))	Paragraph 3.72
The effects on human health of the dumping of waste or other matter, if consent is granted (s.59(2B)(b))	Paragraphs 3.73 to 3.77

EEZ Act	Section Addressed in this Application
Any alternative methods of disposal of the waste that could be used (s.59(2B)(c))	Paragraphs 3.78 to 3.95
Whether there are practical opportunities to reuse, recycle, or treat the waste (s.59(2B)(d))	Paragraphs 3.96 to 3.98
EEZ policy statements (s.59(3)(aa))	Paragraph 3.99
The area that the activity would have in common with the existing interests (s.60(a))	Paragraphs 3.14 to 3.21
The degree to which both the activity and the existing interest must be carried out to the exclusion of other activities (s.60(b))	Paragraph 3.22
Whether the existing interest can be exercised only in the area to which the application relates (s.60(c))	Paragraph 3.23
Any other relevant matter (s.60(d))	Paragraph 3.24
D&D Regulations	Section Addressed in this Application
Describe the effects on human health of the activity (s.36(a))	Paragraphs 2.49 to 2.52
Describe any alternative method of disposal that could be used (s.36(b))	Paragraphs 3.78 to 3.95
Specify any practical opportunities to reuse, recycle, or treat the waste (s.36(c))	Paragraphs 3.96 to 3.98

1 INFORMATION THAT ADDRESSES SECTION 38 OF THE EEZ ACT

- 1.1 POAL is applying to the Environmental Protection Agency ('EPA') for a marine dumping consent under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 ('EEZ Act') to dump its dredged material at the 'authorised location' 27 nautical miles east of Cuvier Island (known as the Cuvier Disposal Site ('CDS') and historically as the Auckland Explosives Dumping Site).
- 1.2 Under section 38 of the EEZ Act, any person may apply to the EPA for a marine dumping consent to undertake a discretionary activity. The application for a marine dumping consent must:
 - (a) be made in the prescribed form; and
 - (b) fully describe the proposal; and
 - (c) include an impact assessment prepared in accordance with section 39 and any requirements prescribed in regulations.
- 1.3 Regulation 36 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015 ('D&D Regulations') requires that in addition to the matters required under section 39 of the EEZ Act, the impact assessment for a marine dumping consent must:
 - (a) describe the effects on human health of the activity; and
 - (b) describe any alternative method of disposal that could be used; and
 - (c) specify any practical opportunities to reuse, recycle, or treat the waste.
- 1.4 With reference to section 20 of the EEZ Act, no activities other than the dumping of dredged material are proposed by POAL at the CDS.
- 1.5 With reference to section 20G of the EEZ Act, a person may dump waste if regulations allow the dumping to be authorised by a marine consent. In this instance, section 32 of the D&D Regulations provides for the dumping of dredged material in an 'authorised location' as a non-notified activity.
- 1.6 The following information is provided in respect of section 38 of the EEZ Act.

Prescribed form (s.38(2)(a))

- 1.7 The prescribed form for the marine dumping consent application is appended as **Attachment 1**.

Fully describe the proposal (s.38(2)(b))

Background

- 1.8 As with all Ports around the world, Ports of Auckland Limited ('POAL') needs to undertake regular maintenance dredging at the Waitemata seaport and the Auckland waterfront to maintain the necessary notified safe navigation depths for shipping. From time to time POAL also undertakes one-off capital dredging projects to deepen specific berths or the channel to be able to cater to the larger ships which are increasingly being used by international shipping lines servicing New Zealand. *Figure 1* and *Figure 2* below identifies the areas where POAL undertakes its capital and maintenance dredging activities.

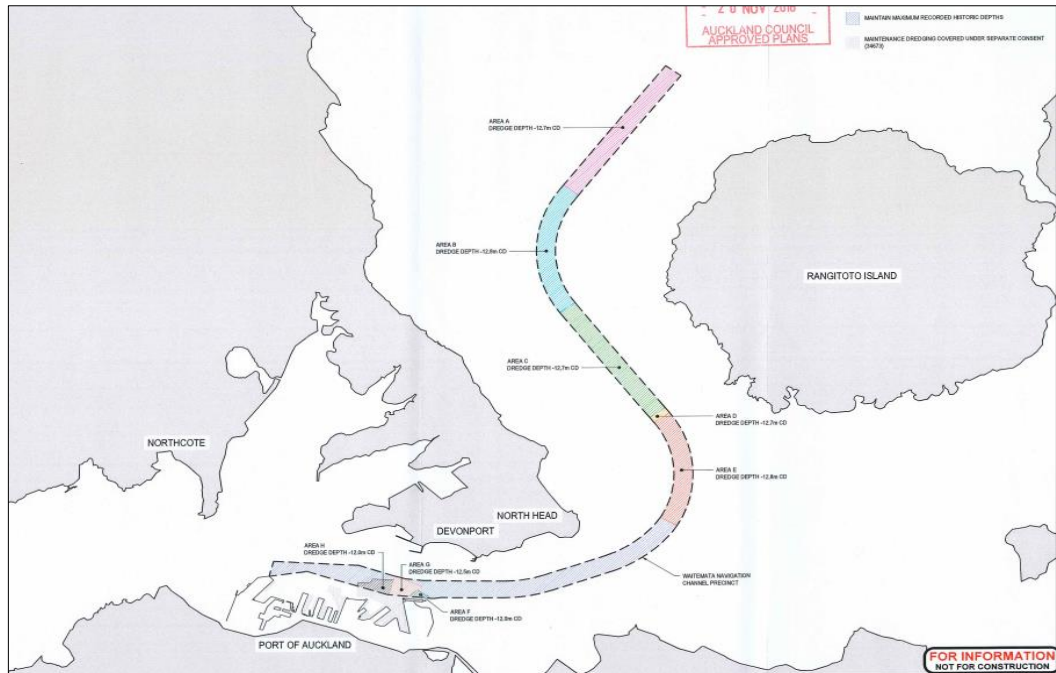


Figure 1: Rangitoto Channel dredging area

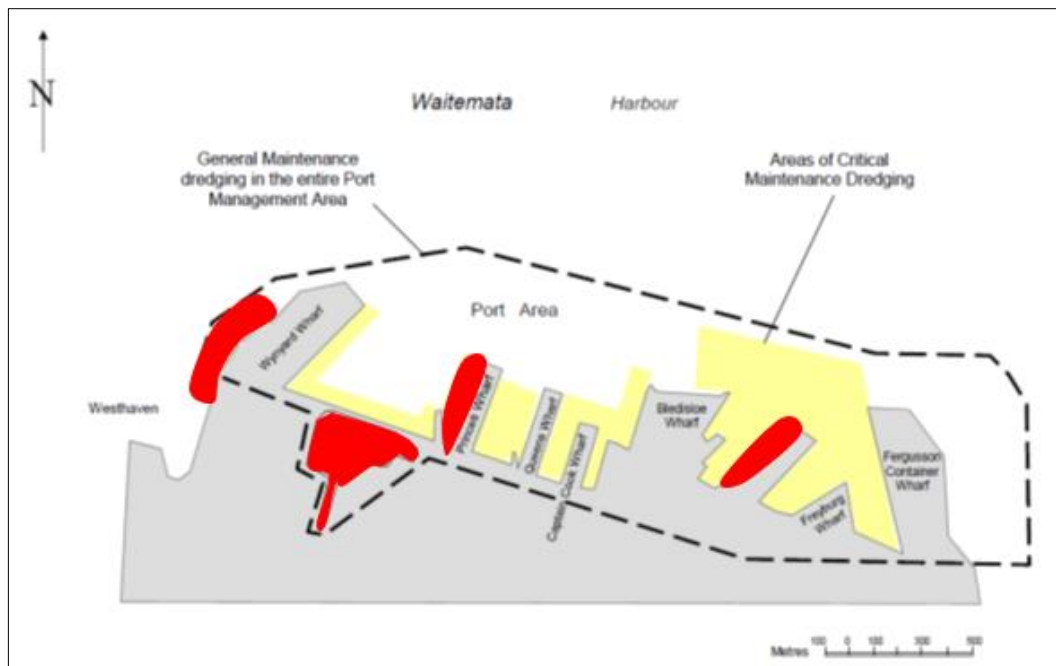


Figure 2: Waitemata seaport and Auckland waterfront dredging area (yellow areas have been tested and authorised for dredging. Red areas have not been sampled and tested for dredging within the last five years)

- 1.9 The trend at the Port of Auckland is that longer and larger ships are being required to be accommodated. Multi-cargo ships such as vehicle ships, container ships and bulk carriers are getting bigger – longer, wider and deeper. Cruise ships are also increasing in length and width. The larger ships are often higher and have greater windage, requiring wider basins to safely manoeuvre in.
- 1.10 While ship drafts are increasing at a slower rate, there is a trend for new larger ships to displace other sizable ships (with deeper drafts) from the northern hemisphere to

markets such as New Zealand and Australia. As a consequence, deepening of the Port of Auckland's berths, approaches and navigation channel is necessary to accommodate the classes of vessels that are likely to visit the Port in the future. These ships are deployed on trade routes which call at many ports around the world and in New Zealand. Shipping lines need all ports on their 'rotation' to be able to accommodate the ships. Therefore, as with many other ports around New Zealand, POAL continues to need to undertake dredging activities to maintain sufficient and safe water depth for vessels. The 'do nothing' option is not available to POAL.

- 1.11 As discussed within the Ports of Auckland 30-year Master Plan (that was endorsed by Auckland Council in May 2018), no further large-scale reclamations are proposed at the Port of Auckland. There are no other consented reclamation projects within the Auckland region that can currently accommodate POAL's dredgings.
- 1.12 Maintenance dredging is undertaken to remove natural siltation of berths and the channel. It is undertaken regularly, and again the 'do nothing' option is not available to POAL as this would reduce POAL's capability over time to handle ships as berths silt up.
- 1.13 POAL are the holders of a maintenance dredging permit (ref. 34673) that enables an average of 35,000m³ of sediment to be dredged from the seabed annually (up to 175,000m³ over five years) within the berths and approaches that are located within the former downtown Port Management Areas. This consent expires on 31st August 2027.
- 1.14 POAL also holds a resource consent (R/REG/2016/3946) to dredge 15,000m³ of sediment per year (or the equivalent accumulated amount for a period of no more than five years up to 75,000m³) from the navigation channel as part of its maintenance dredging programme. This consent expires on 4th November 2036.
- 1.15 POAL anticipates that it will apply for a renewal of these consents within the duration of the marine dumping consent.
- 1.16 Capital dredging operations occur infrequently. POAL has plans to remove approximately 2.0 million cubic metres of material from the navigation channel and specific berths over a period of ten years (at a maximum rate of up to 400,000m³ per year). While POAL has yet to obtain the necessary resource consents for these capital dredging activities, the marine dumping consent application makes an allowance for the proposed quantities. After the seven-year period, a revised capital dredging programme will be submitted to the EPA for approval.
- 1.17 The proposal is not a 'cross border activity' as defined by section 88 of the EEZ Act. This is because the activity that is applied for relates to the dumping of dredged material within an 'authorised location' and will not be carried out in a location that is partly in the exclusive economic zone and partly in New Zealand. POAL will apply for any necessary resource consents under the Resource Management Act 1991 for capital dredging activities (the dredgings from which would then be disposed of at the CDS), as and when required.
- 1.18 Section 93 of the EEZ Act therefore does not apply to the proposal and it is not necessary for POAL to obtain the necessary resource consents for its capital dredging activities as part of the marine dumping consent application.
- 1.19 POAL currently disposes all its dredged material within the Fergusson Terminal reclamation. This 10ha reclamation commenced in 2004 and will be completed by

2019. By the time the reclamation is complete, some 1.2 million cubic metres of dredged materials will have been disposed of to the reclamation, the majority of which came from a channel deepening exercise that was undertaken between 2003 and 2009, and ongoing maintenance dredging within the port (from 2003 onwards).

- 1.20 POAL has stated publicly that it does not intend to seek consent for further large-scale reclamations at the Port of Auckland and has identified the existing ‘authorised location’ 27 nautical miles east of Cuvier Island (known as the Cuvier Disposal Site (‘CDS’) and historically as the Auckland Explosives Dumping Site) as being suitable to accommodate dredgings from its ongoing operations.

Application details

- 1.21 The applicant for the marine dumping consent is Ports of Auckland Limited.
- 1.22 The purpose of the application is to authorise the dumping of:
- (a) 1.75 million cubic metres of maintenance dredgings (at a rate of 50,000m³ per annum); and
 - (b) 2.0 million cubic metres of capital dredging material from the navigation channel and specific berths over a period of ten years, at a maximum annual rate of up to 400,000m³.
- 1.23 The Consent will commence on a date to be set at the time of granting of the consent.
- 1.24 The dumping activities will be undertaken within the CDS on position 36°28’S 176°17’E. A corresponding map, including New Zealand map grid reference coordinates of the dumping location, is appended to this application as **Attachment 2**.

Source and characteristics of dredged material

- 1.25 The dredged material will be sourced from the consented maintenance dredging locations within the Auckland waterfront and Waitemata Navigation Channel, as well as from future capital dredging activities from these areas.
- 1.26 The area of the Auckland waterfront where dredgings will be sourced from accommodates a wide range of activities including:
- (a) The Port Precinct, which includes the primary vessel loading and unloading areas located at the Bledisloe Terminal, Bledisloe Wharf, Jellicoe Wharf, Freyberg Wharf, and Fergusson Wharf and Fergusson Terminal and provides for the ongoing use, development and expansion of marine and port activities at the Port of Auckland.
 - (b) The Central Wharves Precinct, which incorporates the finger wharves between Viaduct Harbour precinct and the Port Precinct, including Princes Wharf, Queens Wharf and Captain Cook Wharf and the adjacent coastal marine area, and provides for ongoing use for maritime passenger operations and other marine and port activities together with public access to the coastal environment.
 - (c) The Viaduct Harbour Precinct, which includes the Viaduct Harbour and the land fronting the harbour (including Hobson Wharf), and the adjacent coastal marine area, and provides for a range of uses including marina berths, maritime passenger operations, commercial business, and residential activities.

- (d) The Wynyard Precinct, which includes the coastal marine area to the north and west of the land and provides for marine-related activities, including marine services, ship repairs, fish processing, berthage and marine-related events.
 - (e) The Waitemata Navigation Channel, which incorporates the shipping channel, turning basins, and ship manoeuvring areas located within the Waitemata Harbour and inner Haruaki Gulf, and provides for the navigational requirements of marine and port activities and other vessels.
- 1.27 Sediment quality in the basins of the Port of Auckland is dictated by deposition from sources other than Port-related activities and derived from the wider Harbour area. A significant proportion of many of the contaminants deposited are derived from local discharges from the City's stormwater outfalls. As set out within the Dredging Management Plan ('DMP') (appended to Golder (2018) as Appendix A), material from the following areas will not be dumped at the CDS without testing and the prior approval of the EPA under the conditions of the consent:
- (a) The east berth of Jellicoe wharf.
 - (b) The western side of the Wynyard reclamation.
 - (c) The Inner Viaduct Basin.
 - (d) All areas within 20m of the discharge from the City's stormwater discharge points
- 1.28 The list of excluded areas will be updated within the DMP as required over the duration of the marine dumping consent.
- 1.29 The sediment quality of the subject area has been assessed by POAL on a regular basis since 1988. Section 5 of Golder 2018 has undertaken a review of the information that is held by POAL to obtain detailed knowledge of the characteristics of the material that is proposed to be dumped at the CDS.
- 1.30 During this period, POAL has undertaken a range of 'level 1', 'level 2', and 'level 3' assessments. 'Level 1' assessments are undertaken every 5 years and confirm that there are some exceedances in guideline values for certain compounds. 'Level 2' elutriate testing has been completed twice and has identified some exceedances of guideline values. POAL has in turn undertaken 'level 3' toxicity testing of the elutriate samples (twice) to identify the ecological effects associated with the dumping of the material; the outcome of which confirmed that they would be no more than minor. As a result, POAL has a high degree of confidence in respect of the quality of the material that is to be dumped and its likely environmental effects.
- 1.31 Section 5.2 of Golder (2018) describes the assessment framework that will apply to the field sampling and sediment quality verification. Figure 6 of Golder (2018) summarises the process as follows and is reproduced below:

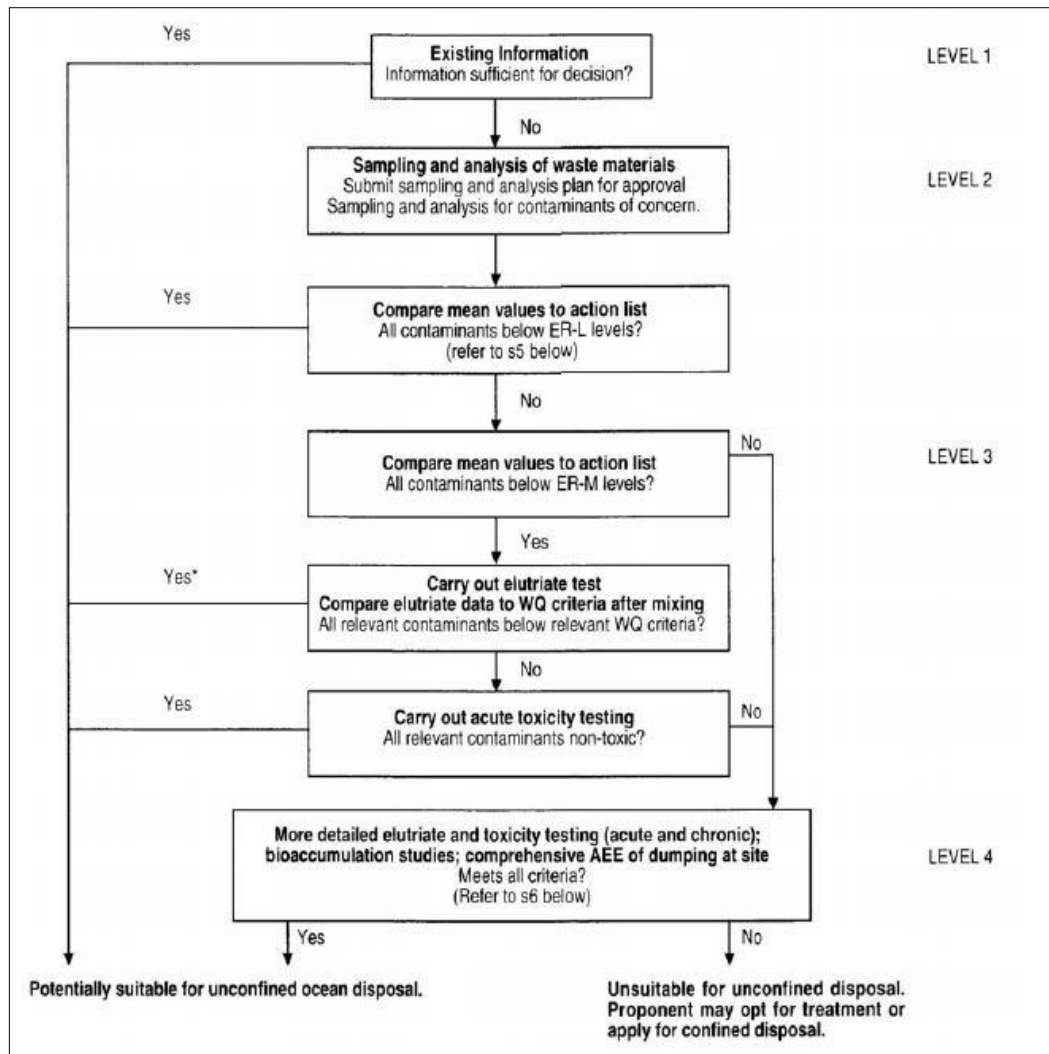


Figure 3: Figure 6 of Golder (2018): Assessment process from the New Zealand Guidelines for the Sea Disposal of Waste (source: MSA 1999).

- 1.32 The DMP sets out the sampling and assessment protocol that will be used to design the ongoing field sampling and sediment quality verification assessments during the life of the consent. In summary, further assessments will be undertaken by POAL to confirm that the range of contaminants has not changed, and that they remain suitable for sea disposal, as follows:
- For maintenance dredging within the Waterfront precincts, every five years in areas that have been sampled within the preceding five years.
 - For maintenance dredging within the Waterfront precincts, prior to the commencement of maintenance dredging activities in areas that have not be sampled within the preceding five years.
 - For maintenance dredging within the Waitemata Navigation Channel, prior to the commencement of maintenance dredging activities.
 - For capital works dredging in all areas, prior to the commencement of capital works dredging activities.
- 1.33 The first 5 yearly maintenance dredging verification assessment will be undertaken in 2019 in conjunction with the capital verification assessment for the proposed capital works.

Dredging management

- 1.34 A DMP is already utilised by POAL for all of its dredging activities and will be implemented as part of this marine dumping consent. A copy of the draft DMP is appended to Golder (2018) as Appendix J, and includes information on the following:
- (a) Conditions of consent for maintenance dredging in the Waterfront precincts and the Waitemata Navigation Channel.
 - (b) Capital dredging requirements.
 - (c) Dredging methodology, including:
 - a. Scope of maintenance dredging;
 - b. Disposal of dredged material;
 - c. Notification of dredging works;
 - d. Equipment and methodology; and
 - e. Management of potential hydrocarbon spills.
 - (d) Water quality monitoring (as a requirement of the conditions of the resource consent).
 - (e) Sediment quality monitoring, including five-yearly surveys (as a requirement of the conditions of the resource consent).
 - (f) Dredging records to be provided to Auckland Council.
 - (g) Biosecurity awareness.
 - (h) Updates to the DMP.
- 1.35 The implementation of the DMP will ensure that a consistent dredging methodology is implemented by POAL, and that ongoing dredging sediment quality reports are undertaken.

Dumping management

- 1.36 In general terms, dredged material will be transported to the CDS by a split hopper barge with a typical capacity of either 700m³ or 1200m³. The barge will be towed to the centre of the CDS and the hopper doors will be opened. The opening and emptying takes less than 60 seconds, and when the dumping is complete, the hopper barge doors are opened and closed to provide a rapid washing of the inside of the barge. This cleaning activity is undertaken within the boundaries of the CDS.
- 1.37 The dumping activity will be carried out in accordance with the Dumping Management Plan ('DuMP'), a draft copy of which is appended to Golder (2018) as Appendix K. The key elements of the DuMP are:
- (a) Pre-disposal assessment requirements, including:
 - a. Sediment contamination study;
 - b. Biosecurity assessment;
 - c. Hydrocarbon and chemical spill plan;
 - d. Non-transit and loss of load protocols.
 - (b) Pre-Campaign Notification.
 - (c) Pre-transit preparation requirements.
 - (d) Vessel requirements.

- (e) Towing and voyage requirements.
- (f) Vessel tracking requirements.
- (g) Dumping methodology.
- (h) Marine mammal observations.
- (i) Health and safety requirements.
- (j) Reporting of dumping records and incident records.

Marine mammal observations

- 1.38 Section 3.8 of the DuMP sets out the marine mammal observation protocols that are to be implemented. Specifically:
- (a) The barge transit and disposal operations will follow the Hauraki Gulf Transit Protocol for Commercial Shipping at all times. Transit speeds within the Hauraki Gulf will be restricted to less than 10 knots at all times.
 - (b) Routine visual observations will be carried out by the crew during transit and actions will be taken to avoid any observed marine mammals as appropriate. Routine reporting of marine mammal sightings during transit and disposal operations will also be made to the Auckland Harbour Control in line with the protocol.
 - (c) During the course of disposal operations during day time, the Permit Holder (or delegated person) must undertake observation for marine mammals for at least 30 minutes immediately prior to any dumping activity. Dumping activity may only occur provided there is no evidence of marine mammals detected.
 - (d) If evidence of marine mammals is present, this will be retained to enable identification of the species and numbers involved. Marine mammal data will be summarised in the annual biota report.

Anticipated timeline for the proposal

- 1.39 POAL needs to undertake dredging activities to maintain sufficient and safe water depths within the channel, approaches and berths at the Port of Auckland. Historically, POAL has been able to dispose of its dredgings within the Fergusson reclamation, however this will be complete in 2019, and in the absence of a current suitable alternative disposal location or method, it is necessary to seek a marine dumping consent at the CDS.
- 1.40 POAL requires certainty that it can dispose of its dredgings. This certainty can only be achieved through POAL holding its own consent, as opposed to being reliant on a third-party consent. As the application for the marine dumping consent is to enable POAL's ongoing port operations, a 35-year duration is necessary to provide the long-term certainty that is required by POAL.
- 1.41 For the reasons that are discussed within Section 3 of this application, a 35-year duration will comply with the sections 59 and 61 of the EEZ Act. Specifically:
- (a) There are no marine dumping consents for any other activities described in section 20 of the EEZ Act currently in operation at the CDS and no cumulative effects are expected from dumping activity (s.59(2)(a)(i)).

- (b) Beyond the boundary of the CDS, sedimentation rates over seasonal disposal campaigns are not expected to have adverse effects of benthic ecology, as the sedimentation rates are very low (0.001mm per campaign), and no change to the ‘status’ of the sediment quality is expected (s.59(2)(a)(ii)).
- (c) There are no dumping consents issued for the CDS, and no other activities that are not regulated under the EEZ Act have been identified at the CDS (s.59(2)(b)).
- (d) No significant effects on the biological diversity and integrity of marine species, ecosystems, and processes are anticipated beyond the boundary of the CDS (s.59(2)(d)).
- (e) At the increased TSS range and sedimentation rates predicted by far-field modelling, sensitive and vulnerable ecological resources have been assessed to be unaffected by the proposal (s.59(2)(e)).
- (f) The proposal does not conflict with other marine management regimes (s.59(2)(h)).
- (g) Conditions of consent have been proposed to avoid remedy or mitigate the adverse effects of the activity (s.59(2)(j)).
- (h) The proposal does not conflict with any other relevant regulations (s.59(2)(k)).
- (i) The proposal does not conflict with any other applicable law (other than EEZ policy statements) (s.59(2)(l)).
- (j) No other matters have been identified that are considered to be relevant and reasonably necessary to determine the application (s.59(2)(m)).
- (k) No health risks have been identified to human populations from either change in water quality resulting from the disposal activity or from the disposal of sediment containing ‘accepted’ levels of contaminants (s.59(2B)(b)).
- (l) The alternative disposal options to dumping at the CDS are not currently available to POAL, and the extent to which they could become available to POAL at sufficient quantities to accommodate the volume of dredged material over the next 35 years is unknown (s.59(2B)(c)).
- (m) Apart from the coastal fringe, no practical opportunities for the re-use of the marine sediment have been identified, and the dredged material is not suitable for beach re-nourishment or fill material (in an unmodified state) (s.59(2B)(d)).
- (n) There are no specific EEZ policy statements requiring consideration (s.59(3)(aa)).
- (o) The information presented within the application represents the best available information and is adequate to enable the marine consent authority to make a decision under the EEZ Act (s.61).

Location of the proposed activity

- 1.42 The CDS is located within a circle of 4 nautical miles radius centred on position 36°28’S 176°20’E, 27 nautical miles east of Cuvier Island. **Figure 4** below illustrates the location of the CDS (in red).
- 1.43 A range of dumping sites were considered within the CDS. POAL’s technical work found that the shallower depths released less suspended material into the water column during initial descent of the dredge plume. Furthermore, the area impacted by the dredged material within the designated site reduces in the shallower depths.

Therefore, it has been decided to dump at approximately 700m depth, on the western side of the CDS at 36°28'S, 176°17'E, some 4km from the centre.

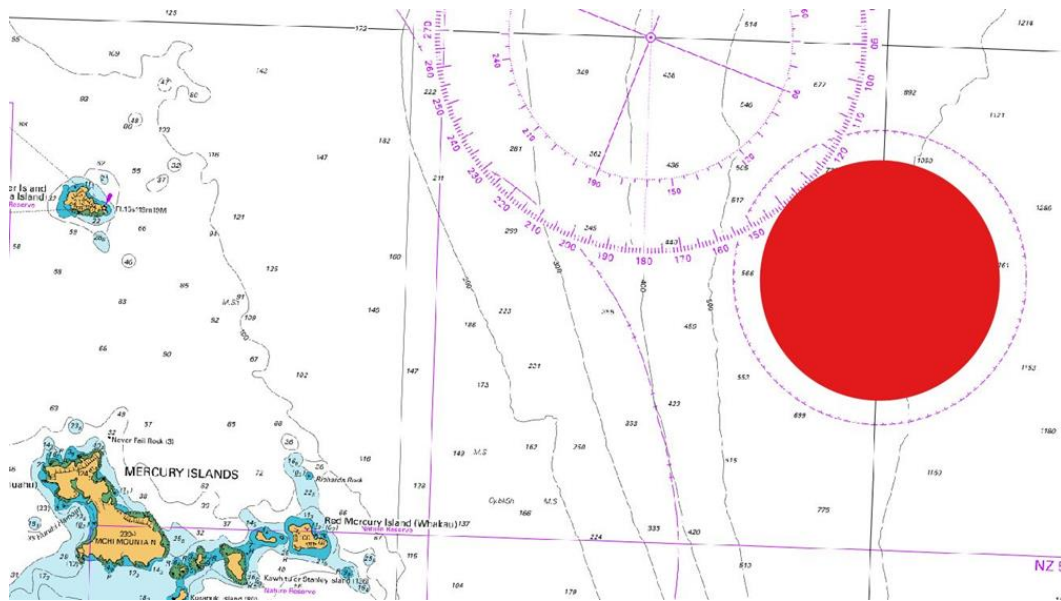


Figure 4: Location of proposed activity (red)

2 IMPACT ASSESSMENT (SECTION 39 OF THE EEZ ACT)

2.1 In accordance with the requirements of section 39 of the EEZ Act and regulation 36 of the D&D Regulations, the following impact assessment is provided in:

- such detail as corresponds to the scale and significance of the effects that the activity may have on the environment and existing interests; and
- sufficient detail to enable the EPA and persons whose existing interests are or may be affected, to understand the nature of the activity and its effects on the environment and existing interests.

Describe the activity for which consent is sought (s.39(1)(a))

2.2 The activity for which consent is sought is described in paragraphs 1.21 to 1.37 above.

Describe the current state of the area where it is proposed that the activity will be undertaken and the environment surrounding the area (s.39(1)(b))

2.3 Section 7 of Golder (2018) describes in detail the current state of the CDS where the dredged material is proposed to be dumped.

Site Physical Environments

2.4 The bathymetry, seabed topography, sediments, and sediment geology and mineralogy have been reviewed by Golder (2018). In summary, the analysis confirms that:¹

- (a) the centre of the CDS has an average depth of about 1,000m;
- (b) there do not appear to be any key topographical features within the site;

¹ 7.2.4; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

- (c) the seabed slopes steadily in a westerly direction; and
 - (d) sediments within the CDS are expected to be sandy mud with an important carbonate content.
- 2.5 Beyond the boundary of the CDS, the analysis in Golder (2018) confirms² that significant areas of the Bay of Plenty region offshore is volcanic gravel, with only minor mud and sand. Sediments elsewhere were assessed as being:
- (a) ‘muddier’ where they occur inshore of the CDS;
 - (b) ‘sandy’ where they occur closer to the shore from Cuvier Island to beyond Whakatane; and
 - (c) ‘sandier’ where they occur to the west of the CDS.

Site Oceanography

- 2.6 The analysis in Golder (2018) concludes that the CDS is likely to have an average significant wave height of 1-1.5m and a 100-year return period significant wave height of 8.4m.³
- 2.7 Modelled currents based on information derived from a mooring located in relative proximity to the CDS indicate that currents in the upper 200 and 400m of water are mostly <0.175 metres per second (m/s). At 1,000 m near seabed current speeds were all <0.1m/s and from the northwest. At the 1,800m contour in 1,000 m depth currents were also orientated mainly in a northwest and southeast direction but with more current from the west quadrant. Velocities were mostly <0.1m/s (with over 50 % <0.075 m/s).⁴ Overall, the short-term actual site data to date appears to reflect the data used in the modelling very well.

Water Quality Characteristics

- 2.8 Information on the average water temperatures at the CDS has been provided by NIWA, and estimates that average temperatures at 400 m depth would be ~10°C and at 1,000 m ~6°C. Water density is expected to vary between 1,025 kg/m³ at the surface and 1,027 kg/m³ at the seafloor, with a salinity between 35 PSU and 35.5 PSU, respectively (i.e. a slight decrease with depth).⁵
- 2.9 The analysis in Golder (2018) confirms that overall, surface water total suspended solids (‘TSS’) and turbidity are seasonally variable within the vicinity of the CDS, with TSS concentrations <5 mg/L and turbidity <1 Nephelometric Turbidity Unit (‘NTU’). In deep waters on the continental shelf there have been few TSS or turbidity measurements. Particle concentrations are dependent upon a number of factors but are low with TSS concentrations of the order of 0.5 mg/L and lower and turbidity of less than 0.5 NTU.⁶
- 2.10 In terms of trace elements within the coastal waters, Golder (2018) confirms that trace element concentrations in waters at and beyond the EEZ boundary are remote

² 7.2.2; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

³ 7.3.1; Ibid.

⁴ Pg.48; Ibid.

⁵ Pg.51; Ibid.

⁶ Pg.54; Ibid.

from terrestrial sources and atmospheric sources of contaminants.⁷ The likely trace element concentrations in the waters in the vicinity of the CDS have been summarised by Golder (2018) at Table 14.

Site and Wider Environment Sediment Quality

2.11 Having regard to the information that is available, Golder (2018) considers that:⁸

Overall, areas adjacent to the CDS, where mud dominates over carbonate, are expected to have a Hauraki Gulf sediment type composition with the probable exception of lower cadmium concentrations compared to those reported in POAL (1990). Over the wider area, variation in concentration is expected as geological provenance changes especially in areas where biogenic carbonates become important and where volcanic sediment becomes important. The former is expected to result in changes in concentrations of elements, such as arsenic, and decreases in many elements, whereas increasing influence by volcanogenic sediment should result in increases in the concentration of chromium, nickel, mercury and zinc.

2.12 Golder (2018) goes on to advise that apart from rare natural perturbations in hydrocarbon concentrations, low concentrations of anthropogenic compounds would be expected outside the CDS. These would most likely be at lower concentrations than measured in mid-Hauraki Gulf sediments.⁹

Identify persons whose existing interests are likely to be adversely affected by the activity (s.39(1)(c))

2.13 The following persons have been identified as having interests that have the potential to be adversely affected by the activity:

- (a) New Zealand Defence Force.
- (b) Commercial and recreation fishing activities.
- (c) Tourism and recreational sailing activities.

2.14 The CDS is located outside of any rohe moana boundaries identified by the Ministry for Primary Industries.

2.15 POAL has also consulted widely with iwi for the area and the Hauraki Maori Trust Board, some of which have expressed an interest and have provided feedback in respect of the proposal. A summary of the consultation undertaken, and the feedback received, is appended as **Attachment 3**.

2.16 Having regard to the consultation undertaken by POAL, a reasonable effort has been made to identify existing interests likely to be adversely affected by the activity.

Identify the effects of the activity on the environment and existing interests (including cumulative effects and effects that may occur in New Zealand or in

⁷ Pg.55; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

⁸ Pg.57; Ibid.

⁹ Pg.58; Ibid.

the sea above or beyond the continental shelf beyond the outer limits of the exclusive economic zone) (s.39(1)(d))

- 2.17 Section 8 of Golder (2018) assesses the effects of the activity on the environment and existing interests, a summary of which is provided below.
- 2.18 Overall, while the activity will generate adverse effects within the boundaries of the CDS, such effects need to be considered in the context of the existing modified receiving environment and are reasonably anticipated outcomes under the EEZ Act and D&D Regulations. Beyond the boundary of the CDS, the analysis undertaken by Golder (2018) confirms that the effects on the environment will be very low and that existing interests will not be adversely affected.

Effects on water quality

- 2.19 During dumping, monitoring (including light transmission and TSS) at the Northern Disposal Area shows that the visible plume is limited to close to the point of dumping.¹⁰
- 2.20 Overall, the modelling undertaken indicates that the concentrations of additional TSS at the CDS (relative to that which is occurring naturally) are not expected to have effects of phytoplankton in the surface layers, fish eggs and larvae in the water column, or at the seabed or on benthic filter feeding organism at the seabed. No effects on ecosystem processes or on commercial fisheries are predicted.¹¹
- 2.21 No adverse effects on water column biota are predicted from the release of water or release of contaminants from sediment through physico-chemical processes.¹²

Effects on sedimentation

- 2.22 Based on the potential sensitivities of a wide range of benthic species to sedimentation, the analysis in Golder (2018) concludes that within the boundary of the CDS, dumping campaigns are likely to have adverse effects on a component of the benthic fauna, potentially limiting the fauna to resilient species in the long term.¹³
- 2.23 Beyond the boundary of the CDS, the sedimentation rates over dumping campaigns are not expected to generate adverse effects on benthic ecology and have been assessed to be very low (0.001mm per campaign).¹⁴

Effects on sediment quality

- 2.24 Outside of the CDS, far-field modelling of sedimentation indicates that annual rates of 0.01 to 0.001mm are expected for a seasonal maintenance or annual capital works dumping campaign. This sediment, if incorporated into the surface layer of sediment (e.g. 10mm) through bioturbation, would result in a relative change in sediment of 0.01 to 0.1%. The relative change in the concentration of contaminants

¹⁰ Pg.117; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

¹¹ Ibid.

¹² Ibid.

¹³ Pg.118; Ibid.

¹⁴ Ibid.

would be 0.01 to 0.1 units (e.g. mg/kg or µg/kg), which has been assessed by Golder (2018) not to change the ‘status’ of the sediment quality outside the CDS.¹⁵

Biosecurity risk

- 2.25 Benthic monitoring at the NDA, located to the north of the CDS, has not identified the presence of any unwanted species in seabed sediment at the site.¹⁶
- 2.26 A baseline assessment of biosecurity concerns has been undertaken by Golder (2018). The DMP requires that the six-monthly information provided by MPI for Waitemata Harbour biosecurity monitoring is used to inform the risk profile of the dumping operation to the CDS. POAL will also respond to alerts provided by MPI should new biosecurity threats be identified in the Harbour.¹⁷
- 2.27 There are no records of dumping activity at the CDS being responsible for the transport and establishment of an unwanted species in any marine environment in its proximity.¹⁸

Effects on recreational interests and activities

- 2.28 Golder (2018) confirms that available information indicates that there is little activity within the EEZ west of Cuvier Island (compared to the level of recreational activities (sailing, fishing, marine tourism etc.) east of Cuvier within the Hauraki Gulf).¹⁹

Effects on commercial fishing interests

- 2.29 The trawl and catch location information obtained by Golder (2018) indicates that this occurs through a range of depths from shallow of the CDS to the east boundary of the site and at depths equivalent to the CDS both north of the site and extending south following the bathymetric contours into the Bay of Plenty.²⁰
- 2.30 The tug and barge operation will not interfere with commercial fishing activity, and water column TSS concentrations arising from the dumping will be non-detectable by routine measurement to the extent that no effects on commercial fishing stocks or their food source is predicted by Golder (2018).²¹
- 2.31 For benthic fish species and scampi, no effects from sedimentation outside the CDS are predicted by Golder (2018). Similarly, no changes in sediment quality outside of the CDS are predicted by Golder (2018) and the presence of elevated levels of some contaminants in sediment within the CDS is predicted to have no more than a minor change in the contaminant levels taken up by fish within the CDS.²²

¹⁵ Pg.118; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

¹⁶ Pg.119; Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

Effects on existing interests

- 2.32 In terms of the effects on existing interests, having regard to the preceding analysis it is considered that material to be dumped at the CDS is likely to have a negligible effect on existing interests.

Identify the effects of the activity on the biological diversity and integrity of marine species, ecosystems, and processes (s.39(1)(e))

Effects on seabirds

- 2.33 No effects on seabirds that utilise the sea-surface within the offshore environment adjacent to the CDS are predicted by Golder (2018). The dumping operation will not put seabirds at risk during dumping.²³

Effects on marine mammals

- 2.34 No effects on marine mammals that migrate through or use the offshore environment from surface to seabed adjacent to the CDS are predicted by Golder (2018). The tug and barge will operate at low speeds compared to commercial shipping which will reduce large marine mammal collision risk.²⁴
- 2.35 A marine mammal observation programme will be implemented and will provide the necessary controls for dumping activities when large marine mammals are within visible distance of the barge.²⁵

Identify the effects on rare and vulnerable ecosystems and habitats of threatened species (s.39(1)(f))

- 2.36 The analysis in Golder (2018) confirms that a variety of vulnerable ecological resources have been identified within the EEZ that are sensitive to seabed disturbance and sedimentation. Existing knowledge of the north east continental shelf off the Hauraki Gulf confirms that there are sensitive conservation resources and potential vulnerable habitats.²⁶
- 2.37 Vulnerable habitats (containing corals) are potentially scattered through the areas north and south and within the depth range of the CDS. Having regard to the increased TSS range and sedimentation rates that have been predicted by the far-field modelling, the analysis in Golder (2018) confirms that these resources will be unaffected by the discharge of dredged sediment within the CDS.²⁷
- 2.38 The sensitive resources associated with Island reserves are not influenced by changes in water quality.²⁸

²³ Pg.118; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site; Golders Associates (NZ) Limited; November 2018.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

Describe any consultation undertaken with persons whose interests are likely to be adversely affected and specify those persons who have given written approval to the activity (s.39(1)(g))

- 2.39 Appended to this application as **Attachment 3** is a summary of the consultation that has been undertaken to date by POAL in respect of the activity, and the feedback that was received.
- 2.40 No persons have given their written approval to the activity.

Include copies of any written approvals to the activity (s.39(1)(h))

- 2.41 No written approvals have been obtained in respect of the activity.

Specify any possible alternative locations for, or methods for undertaking, the activity that may avoid, remedy or mitigate any adverse effects (s.39(1)(i))

- 2.42 This section includes the assessment that is required to be undertaken under section 36(b) of the D&D Regulations.
- 2.43 For the reasons that are discussed at paragraphs 3.78 to 3.95, there is currently no practical alternative method of disposal for the sediments.
- 2.44 Methods to avoid, remedy or mitigate the adverse effects of the activity at the CDS are addressed within the DuMP and the conditions of consent that are contained within section 7 of this Impact Assessment.

Specify the measures that could be taken to avoid, remedy, or mitigate the adverse effects identified (including measures that the applicant intends to take) (s.39(1)(j))

- 2.45 The conditions of consent contained within section 4 of this application set out the measures that are proposed to avoid, remedy or mitigate the adverse effects that have been identified. Specifically:
- (a) A report summarising the results of all sediment characterisation and assessment of suitability for disposal is required to be submitted to the EPA before the disposal of the sediment from a Source Site can occur under this consent, and will include commentary regarding any changed biosecurity threats within the geographic area that dredging is being undertaken.
 - (b) The activity is required to be undertaken in accordance with a Dumping Management Plan (required to be submitted to the EPA) which will set out the measures that are proposed to manage the dumping procedures (set out in detail at paragraphs 1.36 to 1.37 above).
 - (c) Contingency measures are included should a change in the characteristics of the sediments collected for disposal are identified, or an event occurs, that could increase levels of contamination or biosecurity risk.
 - (d) Only material that can be moved by mechanical means will be sourced.
 - (e) Visual observation for marine mammals will occur for at least 30 minutes immediately prior to any dumping activity, which can only occur provided that there is no evidence of marine mammals.
 - (f) Communication protocols with Auckland Harbour Control are also set out within the conditions of consent.

- (g) Documentation of the dredged material sourced for disposal must be maintained by the Consent Holder.
 - (h) Protocols are included should for any reason (emergency or otherwise) material is disposed outside the authorised Disposal Area to notify the EPA, Auckland Council and MNZ.
- 2.46 The conditions are considered appropriate to avoid, remedy or mitigate the effects of the activity on the environment.
- 2.47 No specific monitoring is proposed to be undertaken. The dumping will occur at an ‘authorised location’ that is already modified by historic dumping activities and the Minister has already confirmed that dumping activities within an ‘authorised location’ have a low probability of significant adverse effects on the environment or existing interests.²⁹
- 2.48 Given the water depths that are to be encountered, accurate monitoring will be difficult to achieve and will require a specialised technique. Notwithstanding, the fate modelling that has been undertaken demonstrates that at the proposed depth of 720m, 10.8% to 13.1% of the dumped material will be dispersed into the passive environment, beyond the boundary of the CDS.³⁰ The majority of the dumped material will therefore fall within the CDS.

Describe the effects on human health of the activity (s.39(2)(b)(i))

- 2.49 This section includes the assessment that is required to be undertaken under section 36(a) of the D&D Regulations.
- 2.50 As discussed within the following analysis, no human health risks have been identified by Golder (2018) from either changes to the water quality resulting from the dumping activity, or from the dumping of sediment containing ‘accepted’ levels of contaminants.

Effects on water quality

- 2.51 Any potential effects potentially arising from water quality changes on human health would most probably be restricted to the surface water at the CDS. Human recreational activity at the CDS is anticipated to be extremely unlikely to occur due to location and the presence of the tug and barge. As disposal occurs from the bottom of a split hopper barge, material moves downward very quickly, reducing immediate surface water quality changes.³¹

Bio-uptake

- 2.52 Section 8.14.3 of Golder (2018) assesses the potential bio-uptake effects of the proposed dumping activity. The assessment concludes that:

Outside of the CDS, far-field modelling of sedimentation indicates that rates of 0.001 to 0.001 mm are expected for a seasonal disposal campaign. This sediment, if incorporated into a 10 mm layer of sediment through bioturbation, would result in a relative change in sediment quantity of 0.01 to 0.1 %. For a contaminant present in deposited sediment having a concentration for example

²⁹ Section 29D(2); EEZ Act.

³⁰ Table 19; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

³¹ 8.14.2; Ibid.

of 100 compared to 1 (mg/kg or µg/kg) in the local sediment, the relative change in concentration, sediment quality, would be 0.01 to 0.1 units (e.g., mg/kg or µg/kg). This level of change is not expected to change the 'status' of the sediment quality outside the CDS.

Specify any practical opportunities to reuse, recycle, or treat the waste (s.39(2)(b)(ii))

- 2.53 This section includes the assessment that is required to be undertaken under section 36(c) of the D&D Regulations.
- 2.54 While there are currently no practical opportunities for the re-use of the marine sediment, the assessment of alternatives to marine dumping that has been undertaken by Golder (2018) confirms that:
- (a) Where harbour edge reclamation is available and permitted, that it is the preferred option for disposal of maintenance dredging. The material may be suitable for reclamation (e.g., with mudcrete).
 - (b) Should opportunities arise for coastal reuse of 'clean' dredged material (e.g., from the Navigation Channel) that this be explored. This is likely to take the form of land recovery rather than coastal habitat development due to the nature of the material.
 - (c) Land disposal to approved landfill will be used for all sediment that contains contaminant concentrations that make the sediment unsuitable for marine, coastal reuse or non-landfill land disposal.
 - (d) POAL is exploring the potential for reuse through soil creation with suitable organic matter.

3 INFORMATION THAT ADDRESSES THE DECISION-MAKING MATTERS SET OUT IN SECTIONS 59(2B) AND 60 OF THE EEZ ACT

- 3.1 The EEZ Act came into effect on 28 June 2013 and provides a legislative framework for environmental management for New Zealand's Exclusive Economic Zone and Continental Shelf. The purpose of the EEZ Act is:
- (a) to promote the sustainable management of the natural resources of the exclusive economic zone and the continental shelf; and
 - (b) in relation to the exclusive economic zone, the continental shelf, and the waters above the continental shelf beyond the outer limits of the exclusive economic zone, to protect the environment from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter.
- 3.2 The EEZ Act continues or enables the implementation of New Zealand's obligations under various international conventions relating to the marine environment, including the International Convention for the Prevention of Pollution from Ships 1973 ('MARPOL').
- 3.3 In accordance with the requirements of sections 59(2B) and 60 of the EEZ Act, the following information is provided.

Any effects on the environment or existing interests of allowing the activity (s.59(2)(a))

- 3.4 The 'Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site' prepared by Golder (2018) sets out in detail the effects on the environment and existing interests of allowing the activity. A copy of this Assessment is appended to this application as **Attachment 4**.
- 3.5 The Golder (2018) assessment contains a number of appendices that address the effects on the environment, including:
- (a) Bio-security Assessment (Appendix B);
 - (b) Sediment Quality in the Port of Auckland (Appendix C);
 - (c) Near-field Sediment Modelling Using STFATE (Appendix G);
 - (d) Far-field sediment modelling using Regional Ocean Modelling System (Appendix H); and
 - (e) Toxicity Testing (Appendix I).

Cumulative effects (s.59(2)(a)(i))

- 3.6 There are no marine consents for any other activities described in section 20 of the EEZ Act currently in operation at the CDS and therefore the cumulative effects of dumping activities within the CDS boundaries have not been considered further.
- 3.7 The cumulative effects of the activity in relation to the consented dumping activities at the NDA are addressed within sections 8.6.4 and 8.8.4 of Golder (2018). In summary, the analysis confirms that:³²

No cumulative effects are expected from dumping activity occurring at the NDA and CDS. Potential overlap in particle concentrations in the water column. These concentrations are modelled concentrations and are very low and below measurable concentrations. No effects on sedimentation rates as predicted from ROMS modelling for the CDS are expected. No cumulative effects on water column of seabed biota is expected.

Effects that may occur in New Zealand or in the waters above or beyond the continental shelf beyond the outer limits of the exclusive economic zone (s.59(2)(a)(ii))

- 3.8 The 'Numerical Modelling' prepared by NIWA sets out the detail of the dispersal of sediments and suspended sediments associated with the dumping of dredgings at the CDS. This study elected to use 0.1mm and 0.01mm as indicators to graphically demonstrate the spatial extent of the deposition plume both within and outside the CDS. Similarly, this study also used 0.1mg/L and 0.01m/L as indicators to demonstrate the spatial extent of the dumping activity on the water column. As discussed in Golder (2018) the concentration contours are modelled outputs and not measurable.
- 3.9 Golder (2018) describes the spatial, and where appropriate, the temporal extent of these indicators, as well as characterising the likely ecological impacts from a

³² Pg.118; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

simulated maintenance dumping campaign and a simulated capital dumping campaign. In summary:

- (a) Seafloor sediments mostly settle along the slope between the 250 and 1000m bathymetry contours in both directions away from the CDS for the dumping of maintenance dredgings,³³ and between the 250 and 1500m bathymetry contours in both directions away from the CDS for capital dredgings.³⁴
- (b) The majority of the sediment layer stays close to the depths of the CDS³⁵ while outside of the CDS, the thickness of the sedimentation is much less.
- (c) The 0.1mg/L concentration contour is typically identified at the boundary or close to the dumping location. As the dumping point is offset, the contour is displaced to the west by an equivalent amount.³⁶

3.10 Section 8 of Golder 2018 concludes that the effects of TSS concentrations are as follows:³⁷

The highest TSS concentration present in the water column at the start of the ROMS model (i.e. following a prior dumping event) was only just above 0.1 mg/L. This concentration is already within the range expected to be present in the natural environment (refer Section 7.4.3). The ROMS model shows:

- At the surface concentrations up to 0.01 mg/L are found within the CDS boundary.
- At about 200 m depth, concentrations of up to 0.01 mg/L are found broadly outside the CDS boundary.
- Near the seabed concentrations up to 0.01 mg/L are also found just outside the CDS boundary but aligned with the seabed contours.
- Beyond the CDS boundary concentrations decrease further to 0.001 mg/L and lower with the additional TSS present in the water column aligned with the seabed contours.

The results set out above are for a 700m³ dumping operation. For a 1,200m³ operation, the concentrations are likely to increase by 1,200/700 or 1.71 for the results reported.

No cumulative effects are expected from overlap of particles transported from dumping at the CDS and the NDA.

3.11 In terms of the effects of the TSS concentrations on ecological resources, the analysis in Golder (2018) concludes that:

- (a) Changes in the photic zone are predicted to be minor following dumping and localised in nature, occurring for only for a few hours a day close to the immediate point of dumping from the hopper barge. Although some light reduction will occur, the scale of effect has been assessed to be no-more than

³³ Pg.40; Preliminary Numerical Modelling of Sediment Barge Discharge Scenarios over the Cuvier Disposal Site; NIWA; November 2018.

³⁴ Pg.52; Ibid.

³⁵ Pg.40 and Pg.54; Ibid.

³⁶ Pg.44 and Pg.60; Ibid.

³⁷ Pg. 88; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

minor. No ecological (food chain) flow on effects is anticipated to occur as no significant change in phytoplankton biomass is expected.³⁸

- (b) At the sea surface elevated concentrations of TSS are expected to have effects (e.g. avoidance) on fish immediately at the dumping point for a short period of time. At the seabed, avoidance behaviour effects will only occur within the dumping site boundary. Outside the CDS, no adverse effects of TSS on adult fish are expected.³⁹
- (c) Within the CDS boundary, some effects on fish eggs and larva are expected (avoidance type behaviour is expected for periods of up to an hour close to the surface and within close proximity to the dumping point). Outside of the CDS no adverse effects of TSS on fish eggs or larvae are expected in the water column or at the seabed.⁴⁰
- (d) It is unlikely that dumping activity will have any adverse effects on crayfish larvae being transported by currents in this region of the continental shelf.⁴¹
- (e) For filter feeding organisms, information for New Zealand species indicates that effects are identifiable down to TSS concentrations of 18 mg/L. Outside the CDS, concentrations of TSS arising from dumping are not expected to increase to concentrations that are associated with adverse effects on New Zealand marine biota.⁴²

3.12 The effects of sedimentation on ecological resources, the analysis in Golder (2018) confirms that:⁴³

Based on the potential sensitivities of a wide range of benthic species to sedimentation, it is likely that within the CDS, seasonal disposal campaigns would have adverse effects on a component of the benthic fauna, potentially limiting the fauna long-term to resilient species.

Beyond the boundary of the CDS, the sedimentation rates over seasonal disposal campaigns are not expected to have adverse effects on benthic ecology as the sedimentation rates are very low (0.001 mm per campaign).

3.13 With reference to sediment quality, the sedimentation rates outside of the CDS are low and are not expected to change the 'status' of the sediment quality outside the CDS over the 35-year period of the consent. Within the CDS, the analysis in Golder (2018) confirms that:⁴⁴

Inside the CDS, the modelled amount of dredged sediment that will be deposited on the seabed is such that the overall quality of sediment inside the CDS is expected to reflect the quality of the annual average dredged material. This is due to the fact that the modelled sedimentation rate is greater than the natural sedimentation rate. Essentially, the deposited sediment becomes the surface sediment and it is assumed that the quality will be that of the deposited dredged material.

³⁸ Pg. 89; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

³⁹ Ibid.

⁴⁰ Pg. 90; Ibid.

⁴¹ Ibid.

⁴² Ibid.

⁴³ Pg.99; Ibid.

⁴⁴ Pg.100; Ibid.

The sediment quality inside the CDS following disposal, is dependent upon the ratio of the volumes of maintenance dredging within the Port to maintenance and capital dredging in the Navigation Precinct. The ratio of sediment from port precinct maintenance dredging to other dredging differs as set out below:

- During years when only maintenance dredging is dumped, up 70 % (35,000 of 50,000 m³) of the dredged sediment comes from the Port Precinct.
- During years when capital works dredging from the Navigation Precinct occurs, the Port Precinct maintenance dredging makes up only 12 % of the total volume dumped.

The sediment quality post disposal was estimated for mercury, DDT and TBT, as these were the contaminants of most concern due to these having the highest proportion of measured samples whose concentrations were between the ANZECC (2018) DGV and the GV-high.

Two scenarios were assessed as summarised in Table 23. One during the years when only maintenance dredging occurred and a second during the years when capital dredging was occurring within the navigation channel. Years when capital dredging may occur at berths were not included.

Within the CDS, concentrations of the key contaminants are expected to be above their respective DGV (Table 23). During the periods when capital dredging disposal occurs, the concentrations are expected to be below their DGV.

...

Due to the complexity of sediment dispersal predicted within the CDS, the dredged sediments and the existing CDS sediments would become well mixed, resulting in any high and low concentrations of the dredged contaminants being averaged out.

Benthic toxicity testing that was carried out in 1990 for earlier disposal assessments showed that the degree of toxicity associated with sediment being disposed was considered acceptable. Toxicity testing information was provided in Appendix D (Golder 2018b).

The area that the activity would have in common with the existing interests (s.60(a))

New Zealand Defence Force

- 3.14 The CDS has been utilised by the Royal New Zealand Navy as an ammunition dumping area since the Second World War and has also been utilised to dump a steel pontoon used in military exercises. Firing and bombing practices also take place intermittently within the CDS.
- 3.15 Information obtained from the EPA indicates that there are no current marine dumping consents (or deemed consents) for the New Zealand Defence Force at the CDS.
- 3.16 For the information of ships at sea, warnings of any military exercises are notified by:
 - (a) The broadcast of VHF and R/T (Radio-Telephony) messages which will be promulgated during evening and morning transmission times before any practice takes place. For times and frequencies of these transmissions, see New Zealand Annual Notice to Mariners 9;

- (b) New Zealand Notices to Mariners (NTMs), if practices are to be of long duration, i.e. seven days or more;
- (c) Additional warnings of Army live-shell practices only will be notified by advertisement in a newspaper or newspapers within the port concerned not less than twenty-four hours before a practice begins and by the regional YA broadcast station for the port concerned not less than twelve hours before any practice;
- (d) In addition to (a) for all firings in the New Zealand area, whether in prescribed areas or not, firing warnings are to be passed on R/T 2182 kHz and VHF Channel 16, 5 minutes prior to the commencement of live firing, every 30 minutes thereafter, and immediately on completion of firings. The nature of the broadcast will be "...I am about to commence gunnery practice....." or "...I have completed gunnery practice...".

3.17 Health and safety matters pertaining to the dumping of dredged material at the CDS will be addressed through the Dumping Management Plan.

Commercial and recreational fishing activities

- 3.18 Section 7.6.5 of Golder 2018 identifies the extent of commercial fishing activities within the vicinity of the CDS.
- 3.19 Limited information is available in respect of recreational fishing within the area. The CDS is located outside of any rohe moana boundaries identified by the Ministry for Primary Industries.
- 3.20 Discussions with recreational fishing groups (e.g., Mercury Bay Fishing Club) indicate while there are many areas to fish, some recreational fishing activity occurs within the waters above the CDS. Fishers identified a foul area measuring approximately 4km² centred on 36⁰30'S 176⁰17'E which is regarded as a locally important area for recreational fishing. The area is partly within the CDS on the 700 m seabed contour.

Tourism and recreational sailing activities

- 3.21 Available information indicates that there is little in the way of tourism and recreational sailing activity within the EEZ east of Cuvier Island. There are a range of tourism related activities within the Hauraki Gulf. These are related to marine mammal viewing and interaction.

The degree to which both the activity and the existing interest must be carried out to the exclusion of other activities (s.60(b))

- 3.22 By its very nature, the proposed dumping activity must be carried out to the exclusion of other activities in the immediate vicinity of the dumping location. Beyond that, with the exception of intermittent military exercises (which have their own management regime in place) no existing interests have been identified which must be carried out at the CDS to the exclusion of other activities.

Whether the existing interest can be exercised only in the area to which the application relates (s.60(c))

- 3.23 None of the existing interests identified above can only be exercised within the area to which the application relates.

Any other relevant matter (s.60(d))

- 3.24 There are no other matters that are considered to be directly relevant to the application.

The effects on the environment or existing interests of other activities undertaken in the area covered by the application or in its vicinity (s.59(2)(b))

- 3.25 Currently there are no dumping consents issued for the CDS. Golder (2018) summarises information on recent dumping activity at the CDS.
- 3.26 As discussed within Golder (2018):⁴⁵

In this assessment it has not been possible to assess the effects of past dumping activity on the CDS environment or areas adjacent to the CDS. As described in Section 2.5, the CDS has been used historically for the dumping of munitions (refer Section 2.5 in this report). The effects of munitions disposal activity are undocumented. The majority of other historical dumping activity appears to have been predominantly port and marina dredged materials similar to that described in the following sections.

- 3.27 No documented information for dumping activity prior to 2000 including information on munitions dumping at the CDS has been located by Golder (2018).⁴⁶ No other activities that are not regulated under the EEZ Act have been identified at the CDS, and no further discussion is made in respect of the effects on the environment in this regard.

The importance of protecting the biological diversity and integrity of marine species, ecosystems, and processes (s.59(2)(d))

- 3.28 Section 7 of Golder (2018) provides an overview of the physical and biological nature of the CDS and the surrounding environment, noting the modified nature of the environment due to historic dumping activities.
- 3.29 Details pertaining to benthic ecology of the environment are set out within section 7.6.4 of Golder (2018). Section 7.6.5 of Golder (2018) also provides information of the diversity of fish communities within the EEZ. Section 7.6.10 of Golder (2018) provides the following summary:
- (a) The wide shelf environment north and south of the CDS appears relatively diverse in terms of seabed characteristics and therefore habitat. Diverse habitat (rocky reefs, seamounts, biogenic habitat) is known in areas some distance from the CDS. It is likely that seabed within and close to the CDS on the gentler sloping shelf will be soft sediment (sandy-mud) with varying amounts of shell material. The finer sediments are likely to support a benthic community that is common at this depth on the continental shelf, where physical conditions and food supply is similar. It is expected the seabed community is dominated by brittle stars.
 - (b) Fish species occupy the photic zone and the waters to the seabed and utilise the habitat at the seabed. A wide range of species presence and distribution information has been collected through fisheries and information. Kendrick & Francis (2002) described fish assemblages out to the 250 m contour that

⁴⁵ Pg.74; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

⁴⁶ Pg.9; Ibid.

included trawls inshore of the CDS. The abundance of many fish species varied with seabed type. One assemblage was abundant in shallow mud sites and had low abundance in deep mud sites. A second assemblage was abundant in sand and deep mud sites (school shark and terakihi were key species) and another with deep mud (scaly gurnard, skate etc.).

- (c) Fish species making up the fish community differ within the photic zone to those at the seabed. Studies on seabed fish communities have been carried out close to the CDS down 1,200m.
- (d) The continental shelf around the CDS is significant habitat for a wide range of seabirds (some 70 species utilise the marine environment of the Hauraki Gulf and the adjacent shelf area) with a number of these species of conservation significance. These include birds breeding on islands within 50 km of the CDS, along with species that breed elsewhere in New Zealand waters but use the wider New Zealand shelf environment during the non-breeding season.
- (e) Fifteen whale and four dolphin species have been identified from the wider environment around the CDS. Of these, at least five species of marine mammals known to be of conservation significance can be found on the continental shelf in the vicinity of the CDS.
- (f) The continental shelf is utilised for a variety of commercial fishing activity. The four key species are hoki, ling, gemfish and scampi which are caught in a generally similar band of fishing activity aligned between the 250 m and 500 m depth contours.

The importance of protecting rare and vulnerable ecosystems and the habitats of threatened species (s.59(2)(e))

- 3.30 Section 7.6.2 of Golder (2018) identifies that a wide range of vulnerable ecosystems and species are found within the EEZ and on the continental shelf within the depth range of the CDS. The benthic sampling records for sites relatively close to the subject site indicate the probability that representatives of various vulnerable taxa are likely to be present. The habitat suitability modelling undertaken for a wide range of taxa indicates that there is a moderate probability that some of these taxa will be present across the north-east continental shelf. The areas of potential vulnerable habitat are identified within Figure 20 of Golder (2018).
- 3.31 Section 7.6.7 of Golder (2018) identifies that the seas of the continental shelf are a diverse habitat for seabirds, including a wide range of seabirds of conservation significance. This includes birds breeding on islands within 50 km of the CDS along with species that breed elsewhere in New Zealand waters but use the wider New Zealand shelf environment during the non-breeding season.
- 3.32 Section 7.6.8 of Golder (2018) identifies that there are marine mammals present in the wider area from Great Barrier south to the Coromandel and inshore into the Hauraki Gulf that utilise different niches within the continental shelf environment adjacent to the CDS. Some of these mammals are ‘Threatened – Nationally Critical’ or ‘At Risk’. The diversity of habitat utilisation occurs due to feeding habit and depth of water the mammals are able to forage and move within.
- 3.33 Section 7.6.9 of Golder (2018) identifies three marine reserves within the wider area of interest, together with three significant Island nature reserves which support a range of marine bird species.

The nature and effect of other marine management regimes (s.59(2)(h))

- 3.34 The marine management regimes referred to in Section 7 of the EEZ Act include those established under the following Acts.

Biosecurity Act 1993

- 3.35 The Biosecurity Act restates and reforms the law relating to the exclusion, eradication, and effective management of pests and unwanted organisms and provides the legal framework for the surveillance and prevention of unwanted organisms from entering the country, and pest management once they have become established.
- 3.36 The extent to which the dumping of dredged material has the potential to spread unwanted organisms has been assessed within Golder (2018), and is addressed through the Dredging Management Plan that forms part of the marine dumping consent application.

Continental Shelf Act 1964

- 3.37 This Act is not relevant to this application as it does not involve exploration or exploitation activities.

Crown Minerals Act 1991

- 3.38 The application does not involve any activities that are governed by this legislation.

Defence Act 1990

- 3.39 The Defence Act (amongst other things) makes provision generally in respect of the establishment, control, and activities of the New Zealand Defence Force, and related matters.
- 3.40 As discussed, the CDS that is subject to this application is utilised by the Royal New Zealand Navy as an ammunition dumping area since the Second World War and has also been utilised to dump a steel pontoon used in military exercises. Firing and bombing practices also take place intermittently within the CDS.
- 3.41 The DuMP requires communication procedures to be implemented in relation to the New Zealand Defence Force to ensure both POAL and the Defence Force can undertake their respective activities within the CDS in a safe manner and without any conflicts.
- 3.42 Health and safety matters pertaining to the dumping of dredged material at the CDS will be addressed through the Dumping Management Plan.

Fiordland (Te Moana o Atawhenua) Marine Management Act 2005

- 3.43 Not applicable to this application.

Fisheries Act 1996

- 3.44 The Fisheries Act reforms and restates the law relating to fisheries resources, and recognises New Zealand's international obligations relating to fishing, and provides for related matters; providing commercial, recreational, and customary fishers access to resources while ensuring fish stocks are managed sustainably.

- 3.45 As discussed, limited information is available in respect of recreational fishing within the area. The CDS is located outside of any rohe moana boundaries identified by the Ministry for Primary Industries.
- 3.46 Discussions with recreational fishing groups (e.g., Mercury Bay Fishing Club) indicate some recreational fishing activity occurs within the waters above the CDS. Fishers identified a foul area measuring approximately 4km² centred on 36⁰30'S 176⁰17'E. The area is on the 700 m seabed contour to the south of the proposed dumping location.

Hauraki Gulf Marine Park Act 2000

- 3.47 Section 33 of the Hauraki Gulf Marine Park Act ('**HGMPA**') has established the Hauraki Gulf Marine Park ('**Park**'). As illustrated in *Figure 5* below, the CDS is located to the east of the Park and the HGMPA is therefore not directly relevant to the consideration of the application.
- 3.48 That said, the HGMPA (and other legislation identified below) effectively prohibits the establishment of a disposal site within the Park, which is one of the reasons why POAL have identified the CDS as an appropriate location for the disposal of their dredgings.

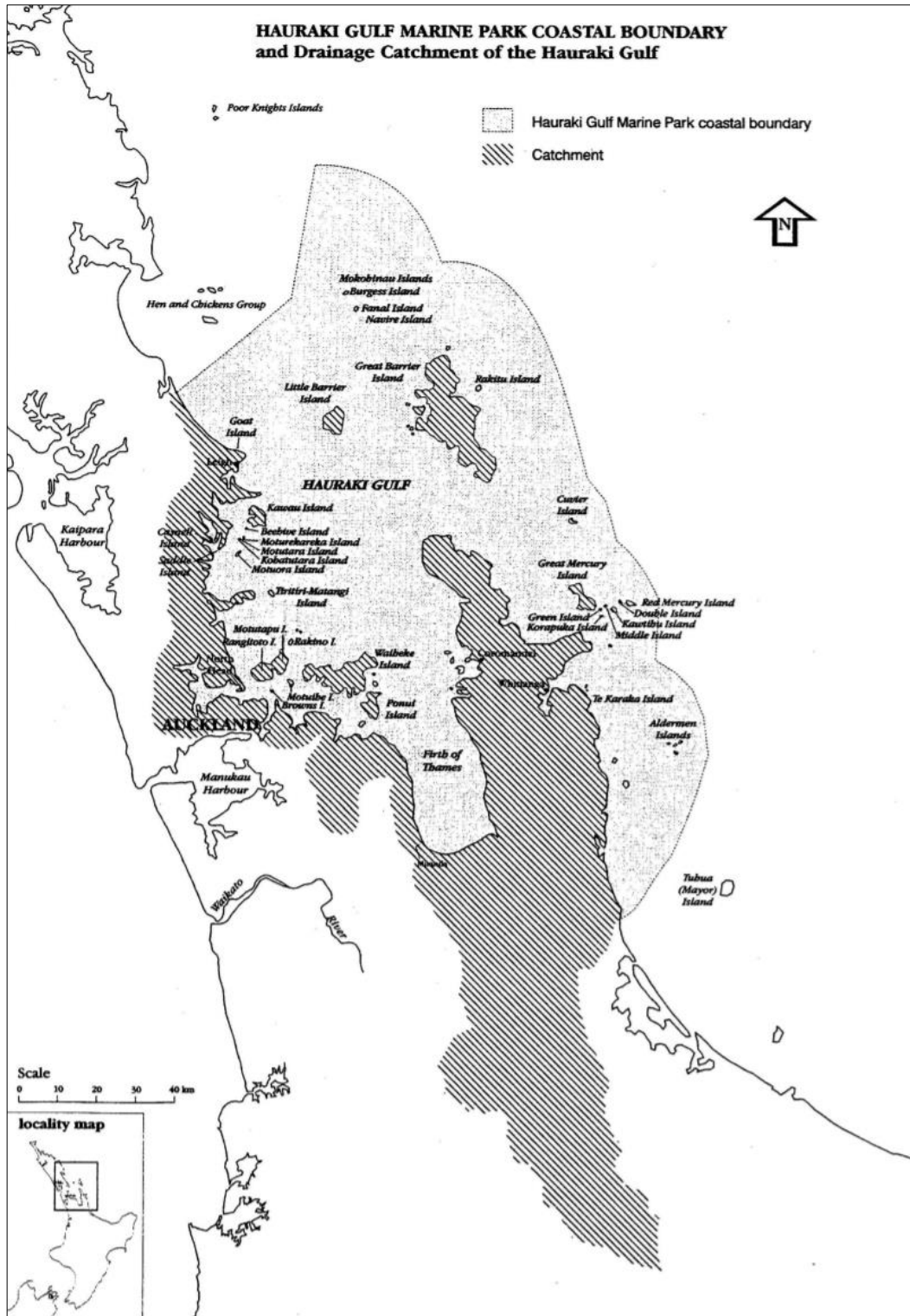


Figure 5: Hauraki Gulf Marine Park Coastal Boundary

Kaikoura (Te Tai o Marokura) Marine Management Act 2014

3.49 Not applicable to this application.

Marine and Coastal Area (Takutai Moana) Act 2011

3.50 Not applicable to this application as the CDS is located beyond the 12-mile limit.

Marine Mammals Protection Act 1978

- 3.51 The Marine Mammals Protection Act provides for the conservation, protection and management of marine mammals.
- 3.52 Section 7.6.9 of Golder (2018) identifies the marine mammals that are known to be present within the wider vicinity of the CDS (no observations of marine mammals were recorded within the CDS). No effects on marine mammals that migrate through or use the offshore environment from surface to seabed adjacent to the CDS are predicted.⁴⁷
- 3.53 A marine mammal observation programme is proposed to provide information on marine mammals sighted in the area and provide controls on sediment disposal when large marine mammals are within visible distance of the barge. Furthermore, vessel transit speeds are low compared to commercial shipping which will reduce marine mammal collision risk.

Marine Reserves Act 1971

- 3.54 Not applicable to this application.

Maritime Transport Act 1994

- 3.55 The Maritime Transport Act sets out the legal framework for maritime safety and the protection of the marine environment. In addition to licensing ships and crews and investigating maritime accidents, etc. it also provides for setting of 'marine protection rules' to protect the marine environment (which currently relate to matters including oil pollution prevention and response, noxious liquid substances pollution, and other harmful substances pollution).
- 3.56 All vessels undertaking activities associated with this marine dumping consent will be required to comply with the regulations and rules set under the Maritime Transport Act.

Resource Management Act 1991

- 3.57 As the CDS is beyond the 12-mile limit, the dumping of dredged material at this location is not subject to the provisions of the Resource Management Act.
- 3.58 The effect of the Resource Management Act, when combined with the HGMPA, the New Zealand Coastal Policy Statement, and the Auckland Unitary Plan (Operative in part) is to effectively prohibit disposal activities of the type that are proposed by POAL within the 12-mile limit, which is one of the reasons why POAL have identified the CDS as an appropriate location for the disposal of their dredgings.

Submarine Cables and Pipelines Protection Act 1996

- 3.59 Not applicable to this application.

⁴⁷ Pg.118; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

Wildlife Act 1953

- 3.60 The Wildlife Act is concerned with the protection and control of wild animals and birds, the management of game. Golder (2018) sets out in detail the wildlife that is located within the vicinity of the ‘authorised area’ and concludes that:
- (a) No effects on seabirds that utilise the sea-surface adjacent to the CDS are predicted, and that dumping operations do not put seabirds at risk.
 - (b) No effects on marine mammals that migrate through or use the offshore environment adjacent to the CDS are predicted, and that dumping operations can be managed to reduce large marine mammal collision risk.
 - (c) No sedimentation effects on commercial fishing stocks or their food sources, or benthic fish species and scampi is predicted outside of the CDS. The presence of elevated contaminant levels within the ‘authorise location’ is not projected to have more than a minor change in the contaminant levels taken up by fish.

The extent to which imposing conditions under section 63 might avoid, remedy or mitigate the adverse effects of the activity (s.59(2)(j))

- 3.61 The conditions of consent that are proposed to avoid, remedy or mitigate the adverse effects of the activity are set out within section 7 of the Impact Assessment.

Relevant regulations (other than EEZ policy statements) (s.59(2)(k))

- 3.62 The following regulations under the EEZ Act are currently in effect.

Exclusive Economic Zone and Continental Shelf (Environmental Effects – Permitted Activities) Regulations 2013

- 3.63 These regulations are not relevant to the proposed activity, which requires consent as a discretionary (non-notified) activity pursuant to regulation 32 of the D&D Regulations.

Exclusive Economic Zone and Continental Shelf (Environmental Effects – Non-notified Activities) Regulations 2014

- 3.64 As no exploration drilling for petroleum is proposed to be undertaken, these regulations are not relevant to the consideration of the application.

Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015

- 3.65 Section 36 of the D&D Regulations sets out the following matters that must be included in an impact assessment for marine dumping consent:

36 Matters that must be included in impact assessment for marine dumping consent

In addition to the matters required under section 39 of the Act, an impact assessment included in an application for a marine dumping consent must –

- (a) describe the effects on human health of the activity; and
- (b) describe any alternative method of disposal that could be used; and
- (c) specify any practical opportunities to reuse, recycle, or treat the waste.

3.66 These matters are addressed within the impact assessment that follows.

Exclusive Economic Zone and Continental Shelf (Environmental Effects – Burial at Sea) Regulations 2015

3.67 Not relevant to the activity.

Any other applicable law (other than EEZ policy statements) (s.59(2)(l))

Health and Safety at Work Act 2015

3.68 Compliance with the Health and Safety at Work Act 2015 will be the responsibility of the appointed contractor for the dumping activities.

Port Companies Act 1988

3.69 Ports of Auckland Limited as created under the Port Companies Act 1988, and replaced the former Auckland Harbour Board. The principle objective of every port company under the Port Companies Act is to operate as a successful business.⁴⁸

3.70 Part of operating a successful business is to ensure that the Port of Auckland provides for an efficient, safe port that can service national and international shipping. This requires regular maintenance dredging of the channel, approaches and berths at the Port of Auckland, together with occasional capital works dredging activities. Historically, POAL has been able to dispose of its dredgings within the Fergusson reclamation, however this will be complete in 2019, and in the absence of a suitable alternative disposal location or method, it is necessary to seek a marine consent to dump the dredgings at the CDS.

3.71 In undertaking their duties under the Port Companies Act 1988, POAL requires certainty that it can dispose of its dredgings. This certainty can only be achieved through POAL holding its own consent, as opposed to being reliant on a third-party consent.

Any other matter the marine consent authority considers relevant and reasonably necessary to determine the application (s.59(2)(m))

3.72 No other matters have been identified that are considered to be relevant and reasonably necessary to determine the application.

The effects on human health of the dumping of waste or other matter, if consent is granted (s.59(2B)(b))

3.73 The effects of the proposed dumping activities on human health are addressed within section 8.14 of Golder (2018).

3.74 In summary, any potential effects potentially arising from water quality changes on human health would arise in the surface water at the dump site. Human recreational activity at the CDS is extremely unlikely to occur due to its location and the presence of the tug and barge. As dumping occurs from the bottom of a split hopper

⁴⁸ Section 5; Port Companies Act 1988.

barge, material moves downward very quickly reducing immediate surface water quality changes.⁴⁹

3.75 The analysis in Golder (2018) goes on to confirm that:⁵⁰

However, based on the quality of elutriate extracts, no adverse changes in water quality would be expected that could affect human health through direct contact. Water quality changes and factors that might affect primary contact recreation (e.g., swimming) include aesthetics, clarity, colour, pH, temperature, oil and debris and toxicants (ANZECC 2000). None of the aesthetic factors, temperature or pH are considered to have potential effects on human health through the dumping process. A range of 'toxicants' are present in the sediment and released in a dissolved state. The key human health issues, in terms of direct contact, are adverse effects on skin or sensitive tissues such as eyes and nasal passage or absorption through skin. Purposeful ingestion of seawater is unlikely.

3.76 Elutriation testing undertaken by Golder (2018) confirms that concentrations in sediment elutriate prior to dilution following dispersal are lower than ANZECC (2000) guidance values for human water contact.⁵¹

3.77 Golder (2018) has also undertaken a review of the uptake of persistent organic compounds on fish and shellfish within the Waitemata Harbour and Hauraki Gulf from historic disposal activities by POAL at the North Rangitoto Disposal Site and activities undertaken at the Port of Auckland.⁵² The review concludes that the relative changes in contaminant concentrations will not change the 'status' of the sediment quality beyond the boundary of the CDS.

Any alternative methods of disposal of the waste that could be used (s.59(2B)(c))

3.78 The most comprehensive investigation of disposal options for the Auckland region remains the 1994 study by the Disposal Options Advisory Group (DOAG). In relation to disposal methods for dredged material from the Port of Auckland, DOAG recommended the following prioritised disposal options:

(a) For highly contaminated dredged material:

- (i) Port reclamation.
- (ii) Approved sanitary landfill.

(b) For maintenance dredgings that meet regulatory guidelines:

- (i) Port reclamation.
- (ii) Marine disposal in water deeper than 100m.

(c) For capital works dredgings:

- (i) Port reclamation.
- (ii) Marine disposal in water deeper than 100m.

3.79 The DOAG recommendations for marine disposal in water deeper than 100m were further reinforced by the Hauraki Gulf Marine Park Act, which when combined

⁴⁹ Pg.106; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

⁵⁰ Ibid.

⁵¹ Table 25; Ibid.

⁵² 8.14.3.4; Ibid.

with the policies and rules of the Unitary Plan, prohibits disposal activities of the type proposed from occurring within the Hauraki Gulf Marine Park.

- 3.80 In addition to reviewing marine disposal options, DOAG identified the following harbour edge and land disposal options:
- (a) Reclamation;
 - (b) Beach nourishment;
 - (c) Habitat enhancement or creation;
 - (d) Solid landfill (or monofill);
 - (e) Disposal to sanitary landfill;
 - (f) Commercial and industrial applications;
 - (g) Solid landfill;
 - (h) Disposal to Lake Pupuke; and
 - (i) Forestry applications.
- 3.81 The recommendations of DOAG are discussed within section 6 of Golder (2018). It concludes that:
- (a) Where harbour edge reclamation is available and permitted, this is the preferred option for disposal of maintenance dredging. The material may be suitable for reclamation (e.g. with mudcrete).
 - (b) Should opportunities arise for coastal re-use of ‘clean’ dredged material (e.g. from the Navigation Channel) that this be explored. This is likely to take the form of land recovery rather than coastal habitat development due to the nature of the material.
 - (c) POAL is exploring the potential for re-use through soil creation with suitable organic matter.
 - (d) Where dredged material is of suitable quality (i.e. meets EPA requirements) to be disposed at sea, it is dumped at the approved CDS.
- 3.82 The alternative disposal options to dumping at the CDS are not currently available to POAL, and the extent to which they could become available to POAL at sufficient quantities to accommodate the volume of dredged material over the next 35 years is unknown. This does not provide POAL with sufficient certainty that they will be able to maintain safe and efficient navigation depths within the channel, approaches and berths at the Port of Auckland.

Coastal Resources Limited consent

- 3.83 The consent held by Coastal Resources Limited consent is not sufficient to accommodate the volume of maintenance and capital dredgings that will be generated by POAL. Even if this existing consent is able to be varied to enable such dredgings to be accommodated, POAL would not be the holder of the consent, and would therefore not have certainty that their dredgings will be accepted over the full term of the consent (until 2032).
- 3.84 POAL are aware that Coastal Resources Limited has made an application to the EPA for a 35-year marine dumping consent to annually dump up to 250,000m³ of dredged material from source sites within Auckland and Waikato at the Northern Disposal Area (25km east of Great Barrier Island). A hearing of the application is scheduled to commence at 9.30am on Wednesday 28th November 2018.

- 3.85 Even if the application was to be granted (and enabled dredgings from the Waitemata Navigation Channel and the Waterfront precincts to be accepted), POAL would not be the holder of the consent, and would therefore not have certainty that their dredgings will be accepted over the full term of the consent.
- 3.86 The Coastal Resources Limited application has listed the CDS as an alternative that is not viable.⁵³

The NDA site has replaced the Auckland Explosives Dumping Ground (AEDG) site for the disposal of dredged marine sediments (spoil) from the Auckland Region. It was considered at the time of the original application by MNZ that the continued use of the AEDG site did not meet the requirements of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) (which New Zealand is a signatory to). No change in circumstances have been identified which may now result in marine dumping of spoil at the AEDG being no longer contrary to the London Convention.

- 3.87 In support of this statement, the Coastal Resources Limited application has appended a letter from Maritime New Zealand ('MNZ'), dated 30th April 2010, a copy of which is attached to the Coastal Resources Limited application as Appendix 10.
- 3.88 Since the preparation of the MNZ letter in 2010, the EEZ Act and D&D Regulations have come into legal effect, and the responsibility for managing dumping activities was transferred from MNZ to the EPA in 2013. The CDS is located within one of five 'authorised locations' that have been established under the D&D Regulations, which were prepared in alignment with the 1996 London Protocol (and only enables the dumping of wastes stated in Annex 1 of the London Protocol).⁵⁴
- 3.89 Authorised locations are the preferred locations for the dumping of waste offshore under the D&D Regulations.⁵⁵ The authorised locations were used historically for dumping explosives and are already modified. In addition, trawling and anchoring cannot take place at these locations, meaning that the dumping of dredged material and vessels will not have adverse effects on existing interests.⁵⁶
- 3.90 Pursuant to regulation 32 of the D&D Regulations, the dumping of dredged material within an CDS is classified as a 'non-notified activity', which under the EEZ Act is defined as meaning:

non-notified activity means a discretionary activity that-

- (a) is described in regulations as non-notified; or
- (b) is an activity for which regulations provide that an application for a marine consent is not to be publicly notified

⁵³ Pg.1; Marine Consent to Dump Application and Supporting Impact Assessment; Osborne Resource Management Practice; May 2018.

⁵⁴ Pg.14; Supporting information for the exposure draft of proposed regulations for discharge and dumping activities under the EEZ Act; Ministry for the Environment; 2014.

⁵⁵ <https://www.epa.govt.nz/industry-areas/eez-marine-activities/undertake-an-activity-in-the-eez/dumping-material-offshore/>

⁵⁶ Pg.57; Supporting information for the exposure draft of proposed regulations for discharge and dumping activities under the EEZ Act; Ministry for the Environment; 2014.

- 3.91 Under the EEZ Act, activities can only be classified as a ‘non-notified activity’ where, in the Minister’s opinion, the activity has a low probability of significant adverse effects on the environment or existing interests, and (amongst other things) the activity is a dumping activity.⁵⁷ The ‘non-notified’ activity classification was derived having regard to New Zealand’s obligations under the London Protocol, and according to the expected degree of environmental effects.⁵⁸
- 3.92 As the proposal seeks to dump of the dredgings within the CDS 27 nautical miles to the east of Cuvier Island, a non-notified consent process is provided for. The non-notified process therefore recognises the appropriateness of dumping activities within the CDS. This means that the impact assessment can focus on the effects on human health and the environment (including the nature of material, and method by which it is to be dumped), as opposed to having to undertake a wider justification of the site selection.
- 3.93 Notwithstanding, the analysis contained within Golder (2018) demonstrates that at the proposed depth of 720m, 10.8% to 13.1% of the dumped material will be dispersed into the passive environment, during the initial descent of the sediment plume.⁵⁹ The majority of the dumped material will therefore fall within the CDS and the far field modelling confirms the majority of the stripped material also falls within, or very close to, the CDS, illustrating its appropriateness to accept the material that is proposed to be disposed of.

Reclamations

- 3.94 POAL has made a commitment not to undertake further reclamation activities at the Port of Auckland for the foreseeable future. POAL will continue to undertake maintenance dredging activities and will also need to undertake further capital dredging activities if it is to accommodate the larger ships that are forecast to visit Auckland within its existing berths. This dredged material will have to be disposed of, and in the absence of an alternative disposal method, or a practical opportunity to reuse or recycle the dredgings, their dumping at the CDS is necessary.
- 3.95 Overall, there is currently no practical alternative method of disposal for the sediments.

Whether there are practical opportunities to reuse, recycle, or treat the waste (s.59(2B)(d))

- 3.96 Apart from the coastal fringe, no practical opportunities for the re-use of the marine sediment have been identified.
- 3.97 The dredged material is not suitable for beach re-nourishment projects in Auckland.
- 3.98 The dredged material is not suitable (in an unmodified state) for site development fill material in Auckland.

EEZ policy statements (s.59(3)(aa))

- 3.99 There are no specific EEZ policy statements requiring consideration.

⁵⁷ Section 29D(2); EEZ Act.

⁵⁸ Pg.56-57; Supporting information for the exposure draft of proposed regulations for discharge and dumping activities under the EEZ Act; Ministry for the Environment; 2014.

⁵⁹ Table 19; Assessment of Sediment Quality and Biosecurity of Dredged Sediment from the Port of Auckland at the Cuvier Dump Site ; Golders Associates (NZ) Limited; November 2018.

4 PROPOSED CONDITIONS OF CONSENT

4.1 In order to manage the effects of the activity on the environment, the following conditions of consent are proposed:

1. Prior to the collection of material from a Source Site⁶⁰ for dumping under this Permit, the Permit Holder must submit to the EPA, for written approval:
 - a) A Sampling Plan that details the areas where maintenance dredging will occur within the Waterfront precincts.
 - b) A Sampling Plan that details the areas where maintenance dredging will occur within the Waitemata Navigation Channel.
 - c) A Sampling Plan that details the areas where capital works dredging will occur.

The frequency of the sampling shall be undertaken in general accordance with the following:

- a) For maintenance dredging within the Waterfront precincts, every five years in areas that have been sampled within the preceding five years.
- b) For maintenance dredging within the Waterfront precincts, prior to the commencement of maintenance dredging activities in areas that have not been sampled within the preceding five years.
- c) For maintenance dredging within the Waitemata Navigation Channel, prior to the commencement of maintenance dredging activities.
- d) For capital works dredging in all areas, prior to the commencement of capital works dredging activities.

The sampling procedure shall be undertaken in general accordance with the *New Zealand Guidelines for Sea Disposal of Waste*, Maritime Safety Authority of New Zealand, 30 June 1999. The contamination levels in the sediments shall be compared to those contained in the New Zealand Action List (as set out in ANZECC (2018)).

2. The Permit Holder must submit to the EPA for approval, a report summarising the results of all sediment characterisation and assessment of suitability for disposal in accordance with the requirements of Condition 1 before the disposal of the sediment from a Source Site can occur under this Permit.
3. The sampling results must include comment regarding any changed biosecurity threats within the geographic area dredging is being undertaken.
4. This permit is conditional upon all vessels being used for disposal operations under this Permit being:
 - a) Fit for Purpose,
 - b) Operated in compliance with the Maritime Rules and Marine Protection Rules, and
 - c) Crewed by persons who are properly qualified to undertake the functions required of them during the operations.

⁶⁰ For the purposes of the conditions of consent, a “Source Site” is defined as that area generally located within the Auckland waterfront precincts and the Waitemata Navigation Channel unless other areas within the Auckland Region follow the same source testing procedures outlined in Condition 1, and approval is obtained from the EPA.

5. Prior to the first occasion on which the Permit Holder proposes to exercise the privileges of this dumping permit, the Permit Holder shall provide a completed Dumping Management Plan ('DuMP') to the EPA, which shall include:
 - a) Vessels used for towing and transport of dredged material being operated in compliance with Maritime Rules and Marine Protection Rules.
 - b) Vessels being crewed by appropriately qualified persons.
 - c) Updating process for the DuMP.
 - d) Contact details for all persons (POAL, contractor) involved in transport and dumping at the CDS for POAL.
 - e) Dumping communications procedures in relation to New Zealand Defence Force, Auckland Council, Etc.
 - f) The towing and passage plan (and submission procedure to Harbourmaster).
 - g) Use of vessel active Automatic Identification System.
 - h) Method of verifying and documenting dumping location.
 - i) Method of 'washing' barge hopper within CDS.
 - j) Documentation of dumping activity including:
 - (i) Location of source material dredging
 - (ii) Volume of material dumped
 - (iii) GPS location, date, time and duration of dumping.
 - (iv) Any weather, marine mammal or unusual site observations made at the site
 - k) Vessel biosecurity awareness management (new unwanted organism biosecurity risk management) in relation to the vessels.
 - l) Towing vessel marine mammal observation methodology.
6. No activity may be undertaken under this Permit without the EPA's prior written approval of the DuMP. The EPA's written approval must not be unreasonably withheld.
7. All operations under this Dumping Permit must comply with the provisions of the DuMP. If the Permit Holder proposes to operate other than in accordance with the DuMP, the Permit Holder is required to provide the details of the proposed changes to the EPA and obtain the EPA's prior approval to the proposed changes.
8. Upon the EPA's request, the Permit Holder shall allow the EPA (or his representative or delegate) to attend in an observer status during the Permit Holder's monitoring surveys. The Permit Holder shall bear the reasonable costs of the EPA's attendance.
9. If the Permit Holder becomes aware of any event which would indicate a likely change in the characteristics of the sediments collected for disposal from a Source Site (such as, without limitation, a pollution event, operational activities, or arrival of a vessel compromised with an exotic organism) that could increase levels of contamination or biosecurity risk, the Permit Holder must:
 - a) Suspend loading operations from that Source Site immediately upon the Permit Holder becoming aware of such an event.
 - b) Notify the EPA of the event by the close of the business day following the Permit Holder becoming aware of such an event.

- c) For that Source Site, undertake the process set out in Condition 1(a), in order to determine the detailed description and characterisation of the waste to be collected for disposal.
 - d) Not resume loading operations from that Source Site, until the EPA provides prior written approval of the Sampling Results, as per Condition 1(a)(iii) above.
10. The dumping activity shall not result in any of the following circumstances or events:
 - a) The sediment plume (visually observed) drifts beyond the boundary of the Disposal Area, or
 - b) A risk of spread of an Exotic Organism is identified at the Source Site.
 11. The Permit Holder shall not source material from a Source Site any material which cannot be moved by mechanical means, or any material "pumped", or mixed with water to produce a slurry.
 12. The Permit Holder shall only dump material in the Disposal Area by 'bottom dump' barge.
 13. For the entire duration of operations, the Permit Holder must ensure that the barge operator releases all loads of sediment within 100 metres of the authorised location, being 36°28'S 176°17'E.
 14. During the course of Dumping Operations, the Permit Holder must undertake visual observation for marine mammals for at least 30 minutes immediately prior to any dumping activity. The observation must be in accordance with the equipment, specifications and processes described in the DuMP and approved by the EPA. Dumping activity may only occur provided there is no evidence of marine mammals detected using those approved equipment, specifications and processes.
 15. The Permit Holder must ensure any disposal vessel has an active Automatic Identification System fitted and operational throughout the duration of each voyage.
 16. The Permit Holder must lodge a passage plan with Auckland Harbour Control at least 12 hours in advance of planned departure if the proposed passage to be used has not previously been subject to a passage plan submitted to Auckland Harbour Control.
 17. The Permit Holder must notify, via email, telephone or radio (VHF Channel 12 or 16), Auckland Harbour Control for every disposal voyage:
 - a) The disposal vessel's time of departure before such departure, and
 - b) The disposal vessel's time of arrival at the Disposal Area, and
 - c) The disposal vessel's time of return.
 18. The Permit Holder must maintain written records of the following matters, and provide them to the EPA each calendar year in a Form of Acknowledgement, for each individual load of dredged material:
 - a) The Source Site,
 - b) The time and date of all notifications to Auckland Harbour Control,
 - c) The actual amount disposed,
 - d) The exact location of disposal determined by GPS,
 - e) The date, time and duration of any disposal,

- f) Any observations of marine mammals' presence in the Disposal Area, and
 - g) The vessel's daily log book covering the voyages to and from the Disposal Area.
19. At the time of providing the EPA with a Form of Acknowledgment, the Permit Holder must also provide the EPA with GPS evidence supporting the information required in Condition 20(d) and (e), obtained by a means that is acceptable to the EPA.
 20. If no collection from a Source Site, or disposal at the Disposal Area, occurred during a calendar year, the Permit Holder must provide to the EPA a Form of Acknowledgement stating the same.
 21. The Form of Acknowledgement, referred to in conditions within this permit, must be provided to the EPA on the 15th day of the month following the calendar year in which the event that triggered the need for the Form of Acknowledgement (e.g. a load of dredged material was dumped or a calendar month passed without any dumping) occurred.
 22. In the event that, for any reason, emergency or otherwise, material is disposed outside of the authorised Disposal Area, the Permit Holder must notify the EPA, Auckland Council, and Maritime New Zealand within 24 hours. Such notification must include the quantity dumped, the exact location and the date and time the dumping occurred. Such notification must also include an explanation of the reasons for the dumping.

5 CONCLUSION

- 5.1 The preceding analysis has taken section 10 of the EEZ Act into consideration, and it is concluded that the proposal represents the sustainable management of the natural resources of the exclusive economic zone and the continental shelf that will appropriately protect the environment from pollution. The purpose of the EEZ Act is therefore achieved.
- 5.2 The proposal will provide for the economic well-being of the Auckland region by providing a suitable disposal location for POAL's maintenance and capital works dredgings that are necessary to ensure safe navigation channels, berths, and depths for shipping and cater for the large ships that are increasingly being used by international shipping lines servicing New Zealand.
- 5.3 The Port of Auckland is significant infrastructure that benefits both the economy of the Auckland region and New Zealand, and the need to provide for an efficient, safe port that can service national and international shipping is of fundamental importance to POAL's responsibilities under the Port Companies Act 1988.
- 5.4 There is currently no practicable alternative method of disposal or reuse of the sediments and having regard to the analysis in Golder (2018), it is considered that the proposal will safeguard the life-supporting capacity of the environment in a manner that appropriate avoids, remedies or mitigates the adverse effects on the environment.
- 5.5 Overall, subject to the conditions of consent that are proposed at section 5, it is appropriate to grant a marine dumping consent for the activity.

Mark Arbuthnot
Bentley & Co Limited
23rd November 2018