

Following the Hawke’s Bay Regional Council peer review meeting held on 5 June 2018, a number of minor matters raised by the peer reviewers were recorded. These are noted and clarified below where necessary.

Key points of discussion and aspects of proposal requiring further information: Proposed ‘offshore’ disposal site:	Question(s) to applicant & request for further information:	Clarification provided by Napier Port
<p>The proposed offshore disposal site shows potential for an effect on Pania Reef (Significant Conservation Area). A number of submitters have raised the issue of potential effects on Pania Reef. See Advisian Report (Figure 29, Page 48 Appendix E). The proposed offshore disposal site is at a depth of 20 metres.</p>	<p>a) Why was the offshore disposal site selected when there is a potential for the reef to be affected by additional sedimentation as a result of the activity?</p> <p>b) Has re-suspension of the dredged material been considered? If the material will move and be re-suspended, what effects could this have on Pania Reef?</p> <p>c) The deposition of the material at the offshore site increases the height of the sea floor by approximately 1 metre. If this is not expected to be re-suspended, is there sufficient room within the offshore site for maintenance dredging material to be placed in</p>	<p>a) As noted in the AEE (page 63, para 5); <i>‘the site 5 locality has been identified as the preferred option on the basis of past and more recent investigations’</i>. The recent investigations are included in Appendices D, E and F within Volume 3 of the supporting information for the applications.</p> <p>As noted in Section 9 of the AEE, any potential sedimentation is considered to be less than minor. More detail is provided in Appendix E. Potential effects are limited to the extreme eastern end of the Pania Reef SCA, and appear not to extend into the reef area. It is important to note that the diagrams provided are based on conservative modelling and show worst-case potential percentile exceedances over a 1-month period for Campaigns 1 (by far the largest in volume and longest in duration) and 5, silt and clay fractions. Replacement figures 29 and 35 in Appendix E which may give a clearer picture are provided. This indicates the risk of sedimentation reaching the reef is very low and very small in volume and depth.</p> <p>This potential has been thoroughly examined in Appendix H in terms of its ecological implications.</p> <p>The RMA is not a “no effects” statute, and it is not necessary to demonstrate a nil effect when applying for a resource consent.</p>

	<p>the area? This could eventually lead to an overall increase in the height of the sea floor of more than 1 metre if the material is not re-suspended.</p>	<p>b) Appendix F provides a comprehensive analysis of potential for re-suspension of sediment, including at the off-shore disposal area. Note that the modelling is described as an “extremely conservative analysis” being based on a strong period, and with a mound 2m in height above a 20m sea bed level. Any long-term effects would be <i>de minimis</i>. The effects on reef ecology have been addressed in detail on p113 to 127 of Appendix H.</p> <p>c) The proposed disposal area has sufficient capacity for capital dredging, including allowance for settlement between campaigns. It is possible that the small component of maintenance dredging will increase the height of some areas above the 1m described. It should be noted that the modelling was assumed a depth of 20m over the whole site. Whereas 20m is assumed to be the minimum depth for modelling purposes, parts are at up to 23m. Further the modelling for resuspension has assumed that the disposal involves a 2m high pile of deposited material over the whole area at all times.</p>
	<p>Appendix E and F provide information on re-suspension. However, material finer than coarse silt has not been modelled. Why has this material not been modelled? What are the effects associated with the re-suspension of this material?</p>	<p>Clay and silt fractions are included in the deposition modelling shown in Figs 29 and 35 of Appendix E (see Sections 5.3 to 5.5). This addresses initial deposition. The explanation of why clay and fine silt are not included in the resuspension analysis is given in Section 4.2.2 of Appendix F. The assumptions relating to resuspension at the offshore disposal grounds are set out in Section 6 of Appendix F.</p>
	<p>Please provide modelling of the potential effects on Pania Reef and the subsequent effects on other reef systems if the dredged material is disposed of at a greater depth. Please model a disposal site in 25m of water and 30m of water. This work should be done in response to the concerns raised by submitters and to ensure that alternative</p>	<p>The discussion and nature of investigations of alternative disposal areas is set out under Section 5.4.1 of the AEE. As the effects are considered to be less than minor, and avoid all effects of the types set out in NZCPS Policy 11(a), they must be evaluated primarily in terms of NZCPS Policy (b)(iv). Conditions to address these aspects have been proposed. A full policy analysis will be provided in evidence for the hearing.</p>

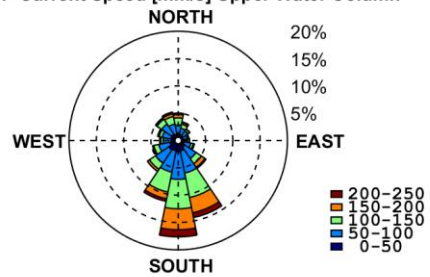
	disposal sites have been addressed adequately.	
Maintenance dredging records:	<p>Request for further information: Please provide information and records regarding previous maintenance dredging campaigns. When has this maintenance dredging been carried out, what quantities were dredged, where was the material deposited, what material was dredged (grain/sediment size)? The application provides some of this information but not all required information.</p>	<p>The information held by the Port is provided in table form in an attachment to this. It was analysed and summarised in Section 2.9 of Appendix G and Table 2.2.</p> <p>The Particle Size Distribution (PSD) Laboratory results from the last 2 campaigns are attached.</p>
	<p>Submitters raise concerns about sedimentation of Pania Reef.</p> <p>Has grain/sediment size sampling been undertaken across Pania Reef to understand the source of the sedimentation issue and the particle size of material that gets deposited there?</p>	<p>This matter will be addressed in evidence at the hearing.</p> <p>No sediment sampling has been undertaken on Pania Reef. However multi-beam and ecological surveys have, as described in Appendix H.</p> <p>It has been observed during the dive surveys and supported by feedback from stakeholders that the sediment at Pania Reef is typically very fine in nature and is easily re-suspended when disturbed.</p> <p>Cawthron provide further clarification and notes that the concerns relate mainly to a perceived increase in fine sediment covering shellfish beds and adversely affecting Pania Reef. These concerns were an explicit consideration in siting the proposed disposal site. Data collection of currents and modelling of sediment dispersal from proposed disposal sites was carried out to identify potential adverse effects of sediment deposition and movement of fine sediment from the site. Advisian have presented the findings of this work in detail, and Cawthron has also provided the findings of research on Pania Reef and the benthic ecology.</p> <p>Cawthron notes that the modelling by Advisian is appropriate, and the findings have been used to provide a suitable location for the disposal of the dredged sediment. The identification of the background turbidity and potential effects of</p>

		fine sediment settling on Pania Reef by Cawthron is consistent with the results from the models. The effects on ecological values have been assessed in the Cawthron Report, Appendix H.
	Provide opinion on the potential for material deposited at Pania Reef to be resuspended given the shallowness of location and the roughness of the reef/seabed surface at Pania.	See earlier answers. This matter will be further addressed in evidence at the Hearing.
Maps showing fishing activity: Figure 11-1 shows the commercial fishing restrictions in place for central and southern Hawke's Bay.	Request for further information: Please provide a map detailing the location of the proposed and existing disposal sites and the common fish trawling paths within Hawke Bay.	Information on the common fish trawling paths is not available from any official source.
Ongoing commitment to re-nourishment/disposal of dredged material at existing 'in-shore' locations: Submitters note that 'reverse flow conditions' apply for less than 24 hours each year (Denis Pilkington & others). HBRC experts agree with this statement. The use of the dredged material for re-nourishment is consistent with the NZCPS, RCEP and HB Coastal Strategy.	Question/Request for further information: In response to submissions received, what is the position of the Napier Port in relation to disposal of dredged material that is suitable for beach re-nourishment and disposal at the existing 'in-shore' sites? HBRC experts believe that all suitable material should be deposited at the existing 'in-shore' sites unless there is evidence to show that this would be detrimental to the environment. What will be the effect on beach processes at Westshore of NOT continuing to dump dredging's at R (question from	As a result of written submissions, the Port is willing to provide dredged material to renourish Westshore Beach should it be suitable and that any deposition consent for this activity is held by others (i.e. Napier City Council and/or Regional Council, or others). A draft Memorandum of Understanding (MoU) has been discussed at a high level with Napier City Council and the Regional Council, and a similar statement is expected to be presented by Napier Port at the hearing. It is however, the Port's view based on its recent investigations that the adverse effects on the environment of the proposed capital dredging (and associated maintenance dredging over the period of capital dredging) are best addressed by the use of an offshore disposal site. It was noted in the AEE that the existing deposition coastal permit (CL970159D) <u>may</u> be surrendered should consent be granted for this proposal. The monitoring and reporting regime under CL970159D is set out in that consent and will continue while the consent is 'in effect'. The records are made available and held by the Regional Council.

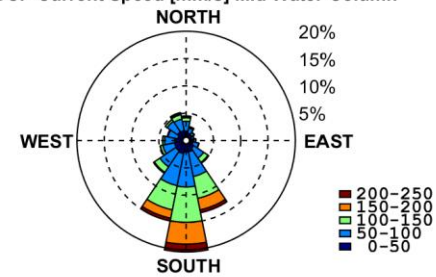
	<p>#32 NCC). If dumping is stopped or continued at R, then how will the effects on the beach be monitored.</p>	<p>This does not include beach monitoring, which we understand is a responsibility of HBRC. (Note that the draft conditions put forward in 26.3, items 12 and 13, do include limited coastal monitoring in conjunction with HBRC. This relates primarily to possible surfing implications, rather than to overall beach nourishment)</p> <p>There is no RMA requirement to continue such monitoring if a consent has been surrendered or expired (unless explicitly included in a consent condition).</p>
<p>Statement regarding the historic ecological data used: This matter was raised in the s.92 request sent to Napier Port prior to notification of the application. HBRC experts would like to re-iterate that the use of historic ecological data is not considered best practice. We believe that more recent ecological data would better represent the current ecological values and condition of the dredging and disposal areas:</p>		<p>The point raised by HBRC experts that they “<i>would like to re-iterate that the use of historic ecological data is not considered best practice</i>” is noted.</p> <p>Cawthron provided a robust reply to this matter in the section 92 letter response lodged on 19 March 2018. It concludes that:</p> <p><i>“Together with the benthic surveys carried out for the inshore Westshore spoil grounds over the last 20 years, the compiled data gives us a robust insight into the soft sediment benthos of the Port vicinity and its variability. This in turn leads to a sound level of confidence in the assessment conclusions as a whole.”</i></p>
<p>General Question: Based on submissions received, are there any proposed conditions that the Napier Port would amend?</p>		<p>At this stage the applicant is not proposing any additional conditions.</p> <p>Any amendments to the draft conditions lodged with the application or additional conditions based on submissions received will be provided in writing and/or presented evidence at the Hearing.</p>

<p>Furthermore, are any additional conditions proposed by Napier Port?</p>		<p>Napier Port is not averse to an extension of conditions 10 and 11 in 26.3 requiring bathymetric surveys of the disposal location and nearby areas to an extent and at a frequency to be agreed with HBRC.</p>
		<p>Ongoing ADCP current data at the proposed offshore disposal ground is being collected and has been aggregated in Error! Reference source not found. figure below across the following contiguous deployments:</p> <ul style="list-style-type: none"> • 8th Dec 2016 – 3rd Feb 2017 • 1st March 2017 – 1st June 2017 • 29th July 2017 – 18th Sept 2017 <p>It can be seen from the figure below that the currents are predominantly toward the south, indicating that the fine sediments would be carried away from Pania Reef.</p>

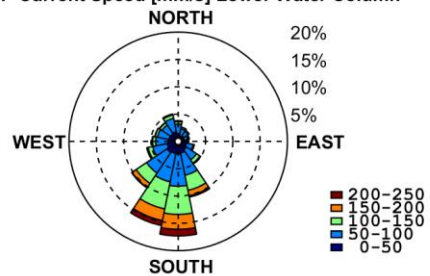
ADCP Current Speed [mm/s] Upper Water Column



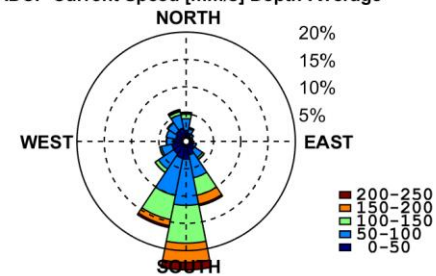
ADCP Current Speed [mm/s] Mid Water Column



ADCP Current Speed [mm/s] Lower Water Column



ADCP Current Speed [mm/s] Depth-Average



Fairway Seabed Sample Sites – Port of Napier – 1 August 2017

Reference	Date	Site Name	Easting	Northing
Napier Port	1/08/17	West 1	420635	819845
Napier Port	1/08/17	West 2	420500	819965
Napier Port	1/08/17	West 3	420392	820145
Napier Port	1/08/17	West 4	420342	820460
Napier Port	1/08/17	West 5	420280	820815
Napier Port	1/08/17	West 6	420280	821305
Napier Port	1/08/17	East 7	420690	820000
Napier Port	1/08/17	East 8	420680	820058
Napier Port	1/08/17	East 9	420596	820135
Napier Port	1/08/17	East 10	420560	820315
Napier Port	1/08/17	East 11	420600	820410

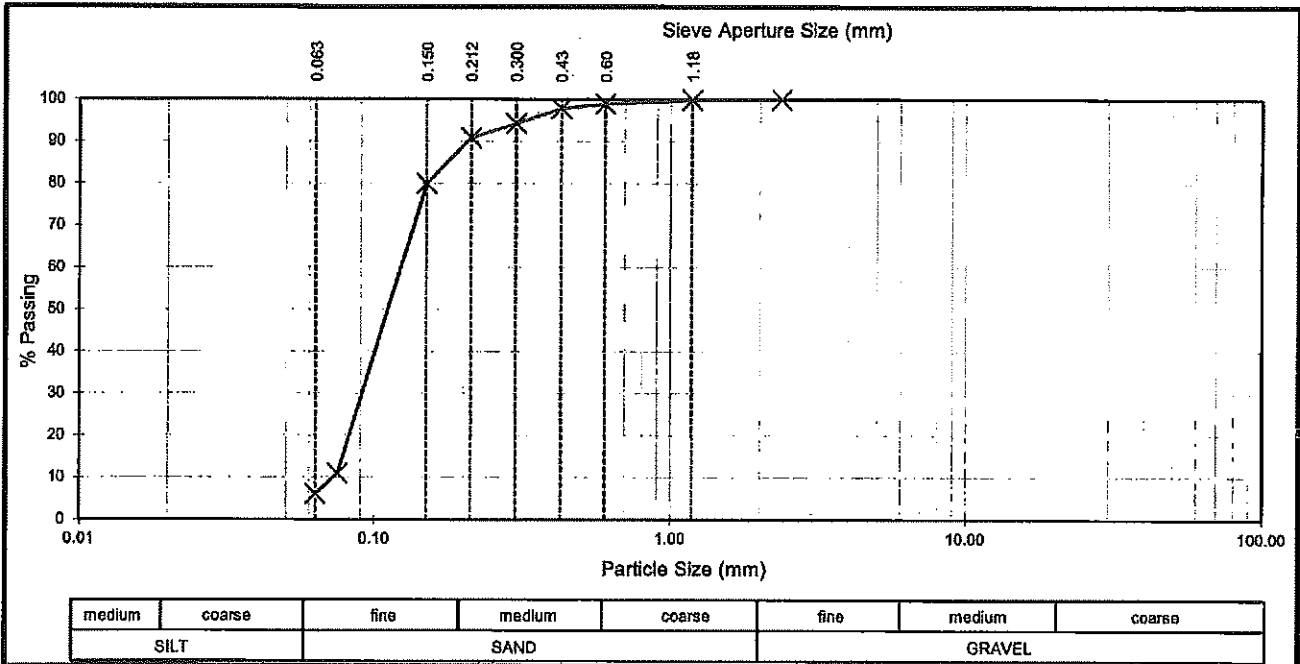
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : SAND with minor Silt
 Sample condition : Wet
 West 6
 Northing 821305
 Easting 420280

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 6
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	91
63.00	-	13.20	-	0.60	99	0.150	80
37.50	-	4.75	-	0.425	98	0.075	11
26.50	-	2.36	100.0	0.300	94	0.063	6



Test Method NZS 4407 : 1991 Test 3.8.2	Notes History: Fraction tested: Whole sample Dispersant Used: Nil
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Date tested : 10/08/17
 Date reported : 10/08/17
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Approved : *A. Ching*
 Designation : Laboratory Manager
 Date : 11/08/17

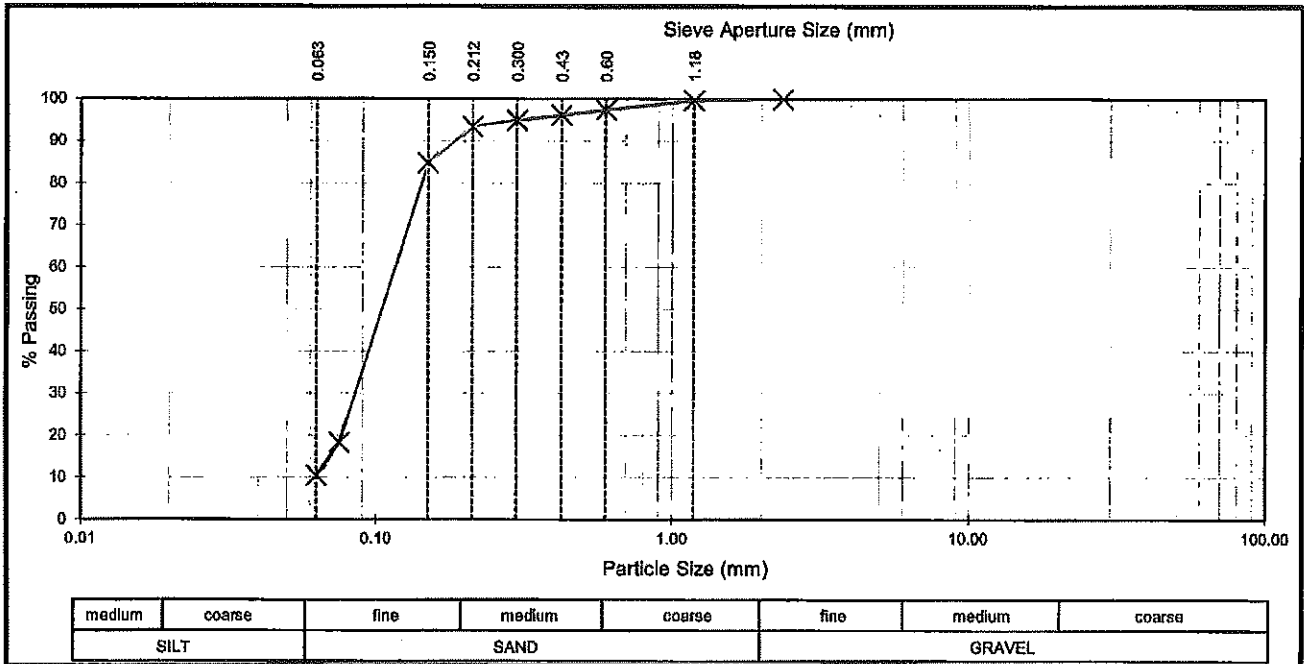
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : SAND with minor Silt
 Sample condition : Wet
 West 5
 Northing 820815
 Easting 420280

Project No : 2-L0406.17
 Lab Ref No : NA 566 / 5
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	93
63.00	-	13.20	-	0.60	97	0.150	85
37.50	-	4.75	-	0.425	96	0.075	18
26.50	-	2.36	100.0	0.300	95	0.063	10



Test Method	Notes
NZS 4407 : 1991 Test 3.8.2	History: Fraction tested: Whole sample Dispersant Used: Nil

Date tested : 10/08/17
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A.Ching

Designation : Laboratory Manager

Date : 11/08/17

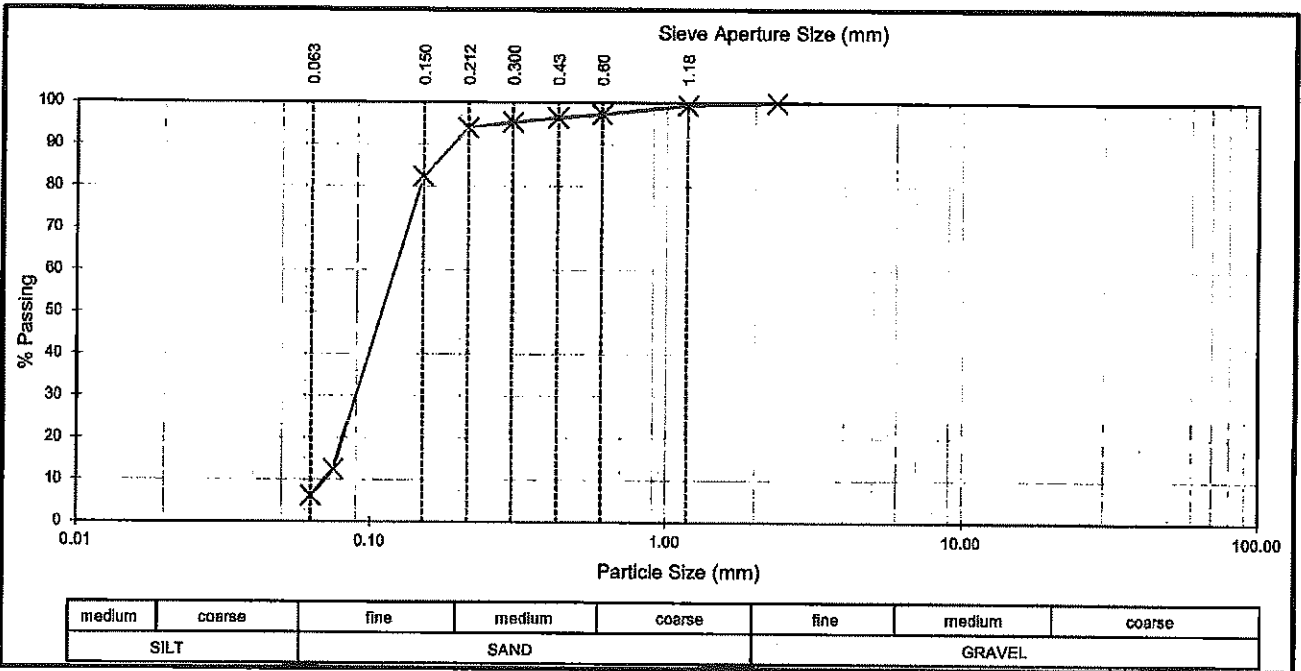
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TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Fine Sand with minor Silt
 Sample condition : Wet
 West 4
 Northing 820460
 Easting 420342

Project No : 2-L0406.17
 Lab Ref No : NA 566 / 4
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	99	0.212	94
63.00	-	13.20	-	0.60	97	0.150	82
37.50	-	4.75	-	0.425	96	0.075	13
26.50	-	2.36	100.0	0.300	95	0.063	6.2



Test Method	Notes
NZS 4407 : 1991 Test 3.8.2	History: Fraction tested: Whole sample Dispersant Used: Nil

Date tested : 08/08/17
 Date reported : 09/08/17

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A.Ching
 Designation : Laboratory Manager
 Date : 09/08/17

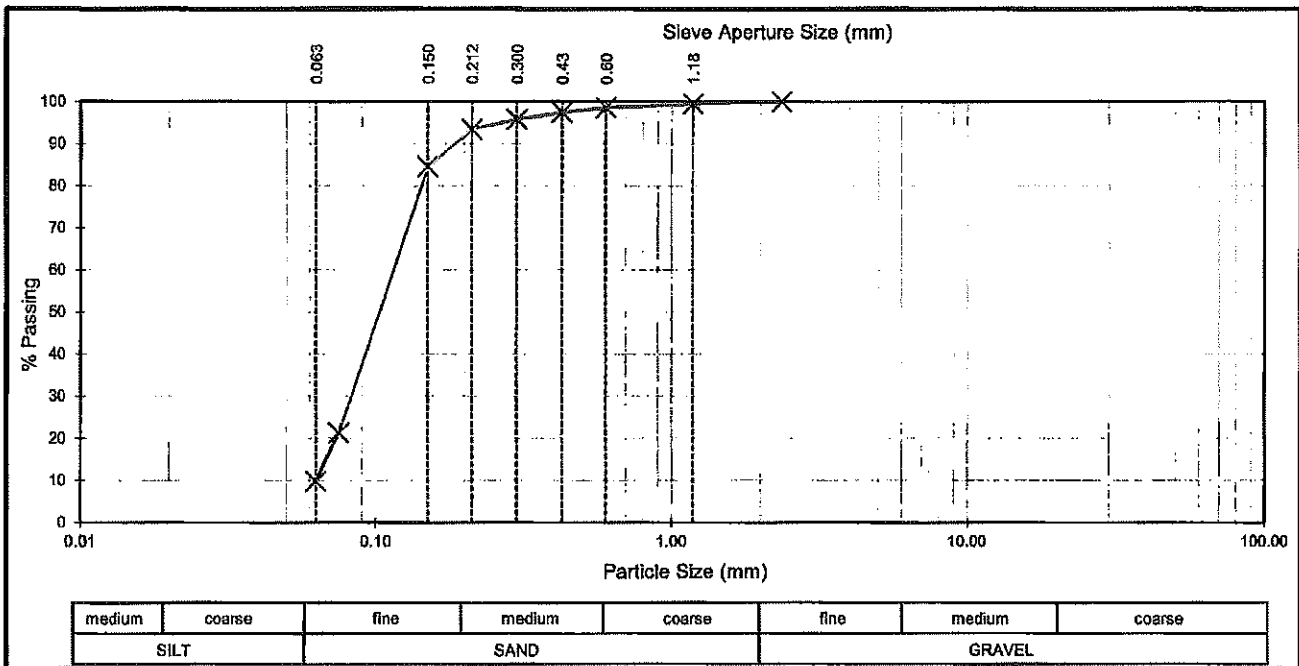
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : SAND with minor Silt
 Sample condition : Wet
 West 3
 Northing 820145
 Easting 420392

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 3
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	93
63.00	-	13.20	-	0.60	99	0.150	85
37.50	-	4.75	-	0.425	97	0.075	21
26.50	-	2.36	100.0	0.300	96	0.063	10



Test Method NZS 4407 : 1991 Test 3.8.2	Notes History: Fraction tested: Whole sample Dispersant Used: Nil
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Date tested : 10/08/17
 Date reported : 10/08/17

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A.Ching

Designation : Laboratory Manager

Date : 11/08/17

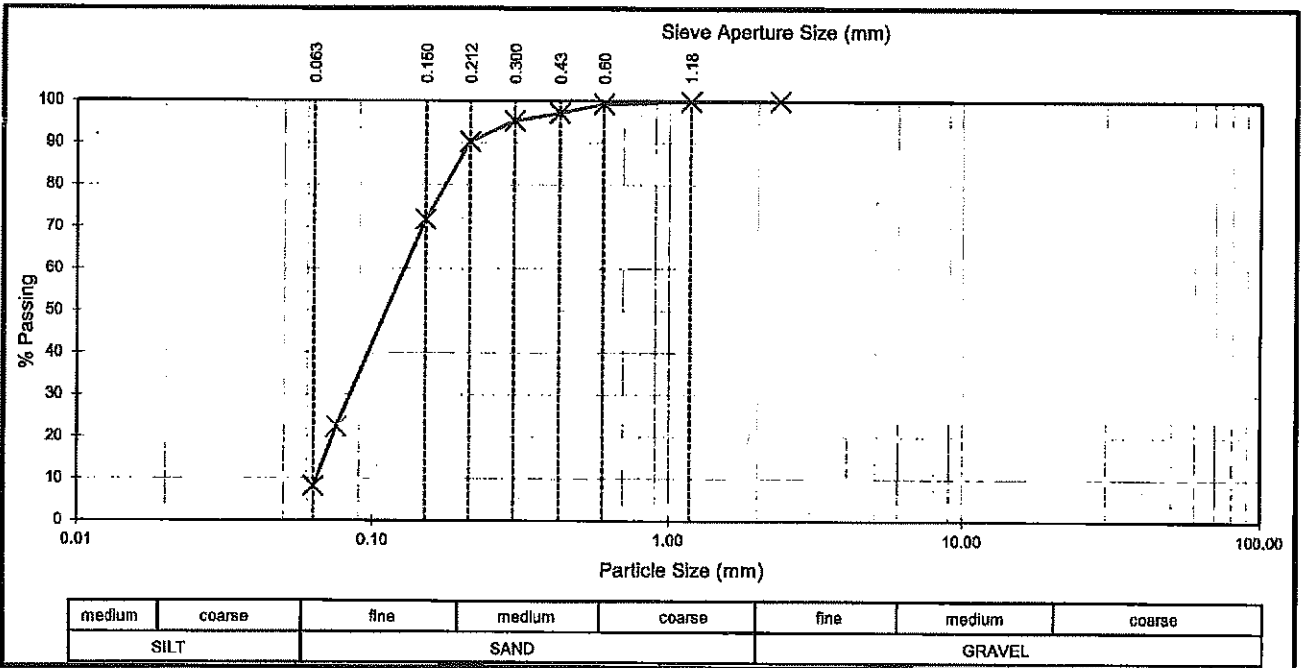
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Sand with minor Silt
 Sample condition : Wet
 West 2
 Northing 819965
 Easting 420500

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 2
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	90
63.00	-	13.20	-	0.60	99	0.150	72
37.50	-	4.75	-	0.425	97	0.075	22
26.50	-	2.36	100.0	0.300	95	0.063	8



Test Method NZS 4407 : 1991 Test 3.8.2	Notes History: Fraction tested: Whole sample Dispersant Used: Nil
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Approved : *A. Ching*
 Designation : Laboratory Manager
 Date : 11/08/17

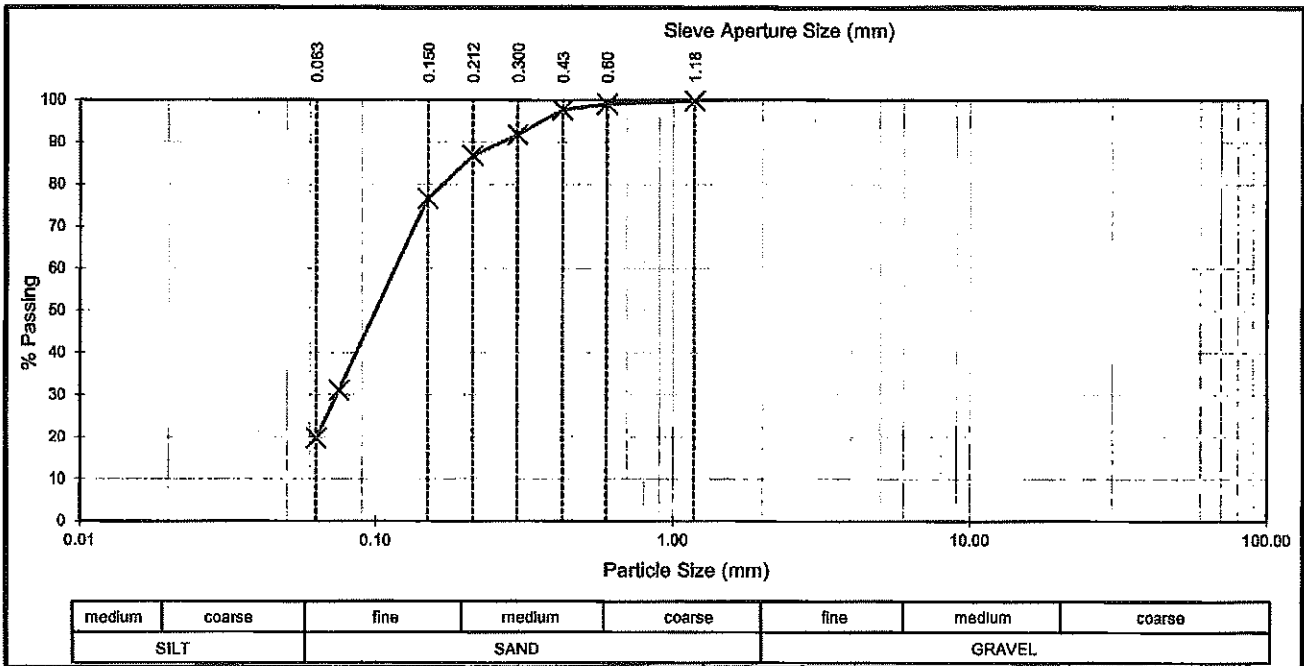
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TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Silty Sand
 Sample condition : Wet
 West 1
 Northing 819845
 Easting 420635

Project No : 2-L0406.17
 Lab Ref No : NA 566 / 1
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	87
63.00	-	13.20	-	0.60	99	0.150	77
37.50	-	4.75	-	0.425	98	0.075	31
26.50	-	2.36	-	0.300	92	0.063	20



Test Method NZS 4407 : 1991 Test 3.8.2	Notes History: Fraction tested: Whole sample Dispersant Used: Nil
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Approved

A.Ching

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 Date : 10/08/17

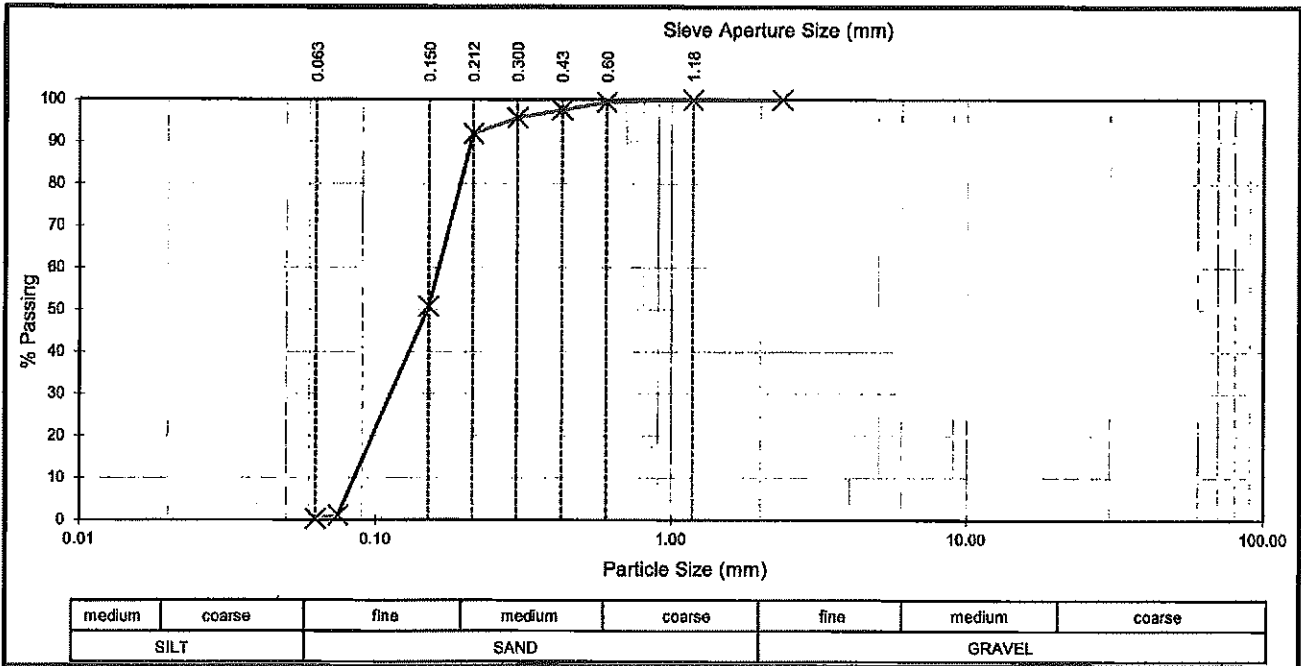
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TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : SAND
 Sample condition : Wet
 East 7
 Northing 820000
 Easting 420690

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 7
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	92
63.00	-	13.20	-	0.60	99	0.150	51
37.50	-	4.75	-	0.425	97	0.075	1
26.50	-	2.36	100.0	0.300	96	0.063	0



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 Date reported : 10/08/17
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Approved : *A. Ching*
 A. Ching
 Designation : Laboratory Manager
 Date : 11/08/17

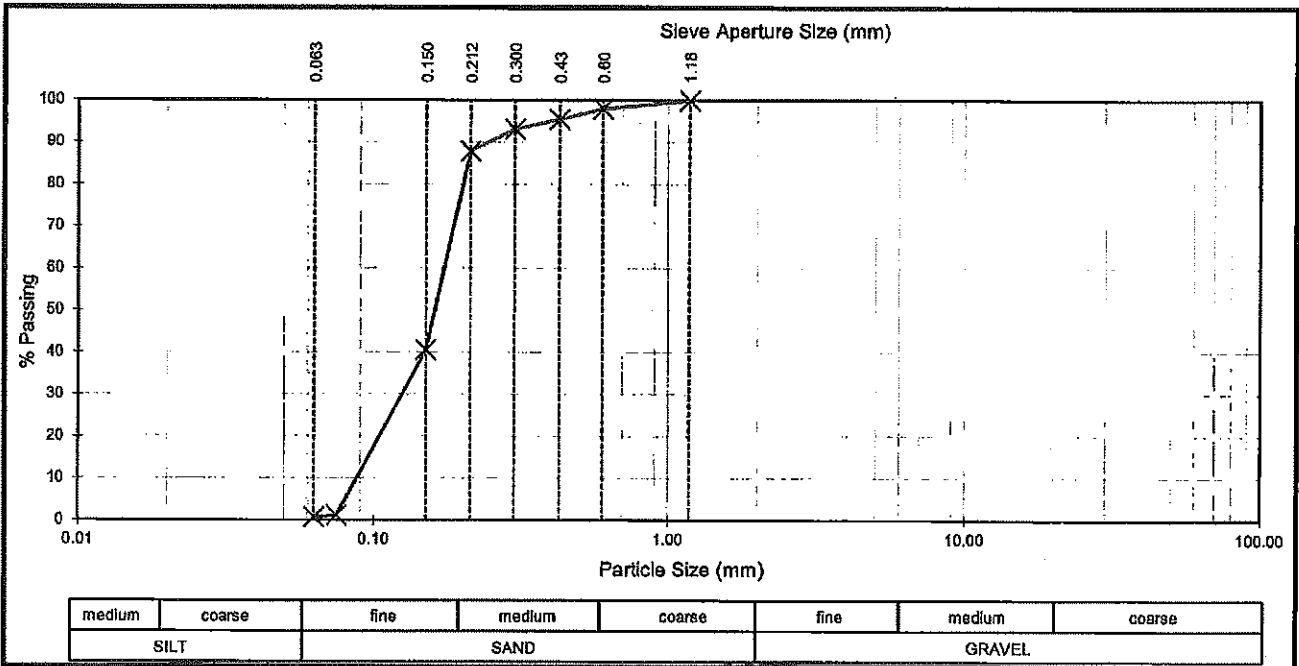
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : **Fairway Seabed - Reference Test**
 Location : **Napier**
 Client : **Port of Napier**
 Contractor : **Opus Laboratory Napier**
 Sampled by : **Paul Rose / Peter Frizzell**
 Date sampled : **1/08/2017**
 Sampling method : **Client sampled**
 Sample description : **Medium-Fine Sand**
 Sample condition : **Wet**
East 8
Northing 820058
Easting 420680

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 8
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	88
63.00	-	13.20	-	0.60	98	0.150	41
37.50	-	4.75	-	0.425	96	0.075	1.2
26.50	-	2.36	-	0.300	93	0.063	0.7



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 Date reported : 04/08/17 This report may only be reproduced in full

Approved : *A. Ching*
 Designation : *Laboratory Manager*
 Date : 04/08/17

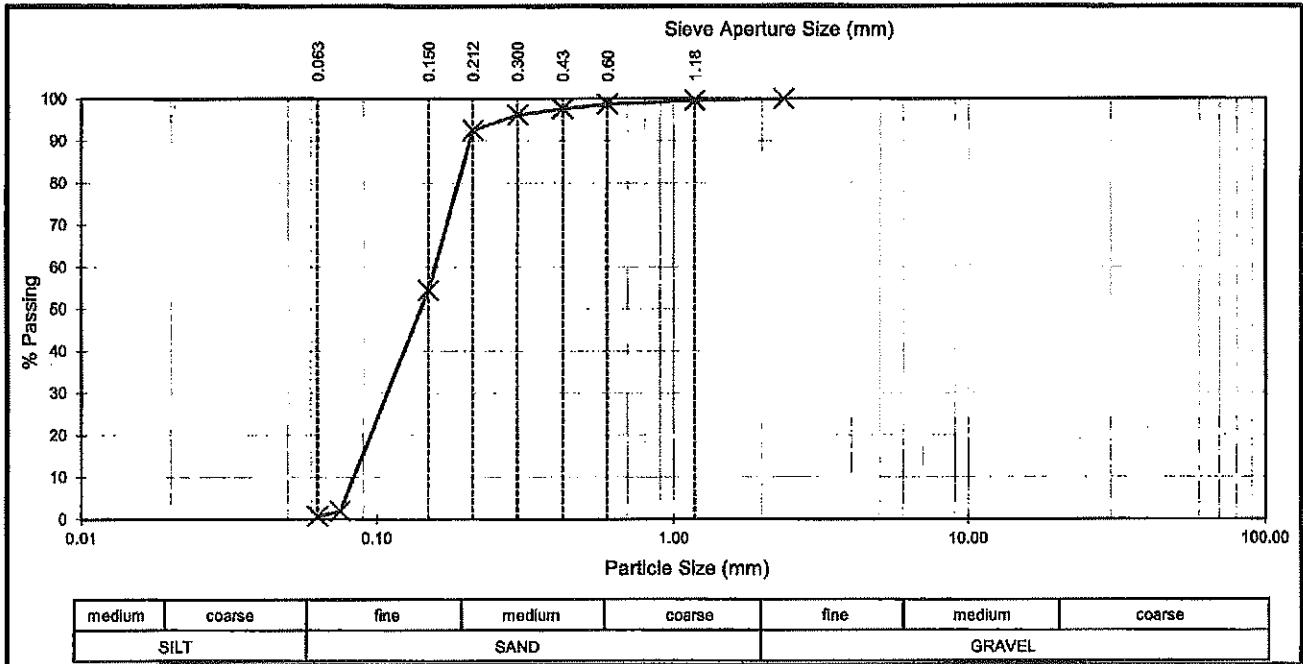
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Fine Sand
 Sample condition : Wet
 East 9
 Northing 820135
 Easting 420596

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 9
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	93
63.00	-	13.20	-	0.60	99	0.150	54
37.50	-	4.75	-	0.425	98	0.075	2
26.50	-	2.36	100.0	0.300	96	0.063	0.8



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 Date : 09/08/17

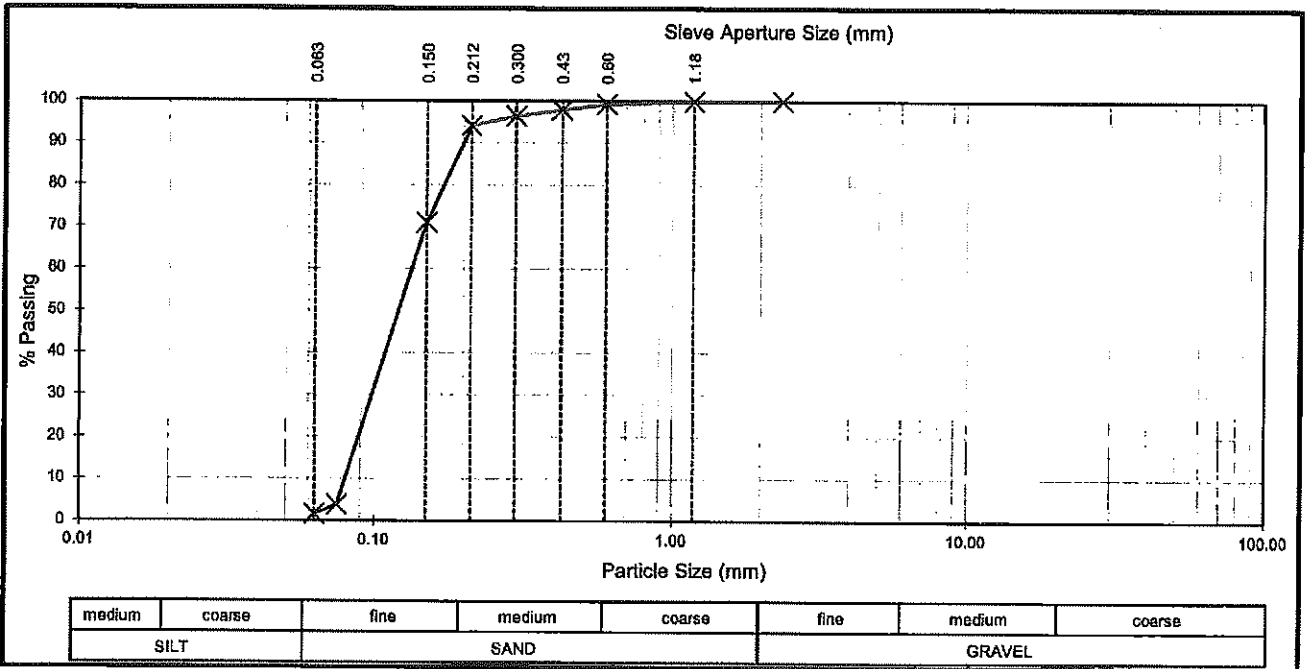
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Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Fine Sand
 Sample condition : Wet
 East 10
 Northing 820315
 Easting 420560

Project No :	2-L0406.17
Lab Ref No :	NA 566 / 10
Client Ref No :	

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	94
63.00	-	13.20	-	0.60	99	0.150	71
37.50	-	4.75	-	0.425	98	0.075	4
26.50	-	2.36	100.0	0.300	96	0.063	1.6



Test Method NZS 4407 : 1991 Test 3.8.2	Notes History: Fraction tested: Whole sample Dispersant Used: Nil
--	---

Date tested : 08/08/17
 Date reported : 09/08/17
 This report may only be reproduced in full

Approved : *A.Ching*
 Designation : Laboratory Manager
 Date : 09/08/17

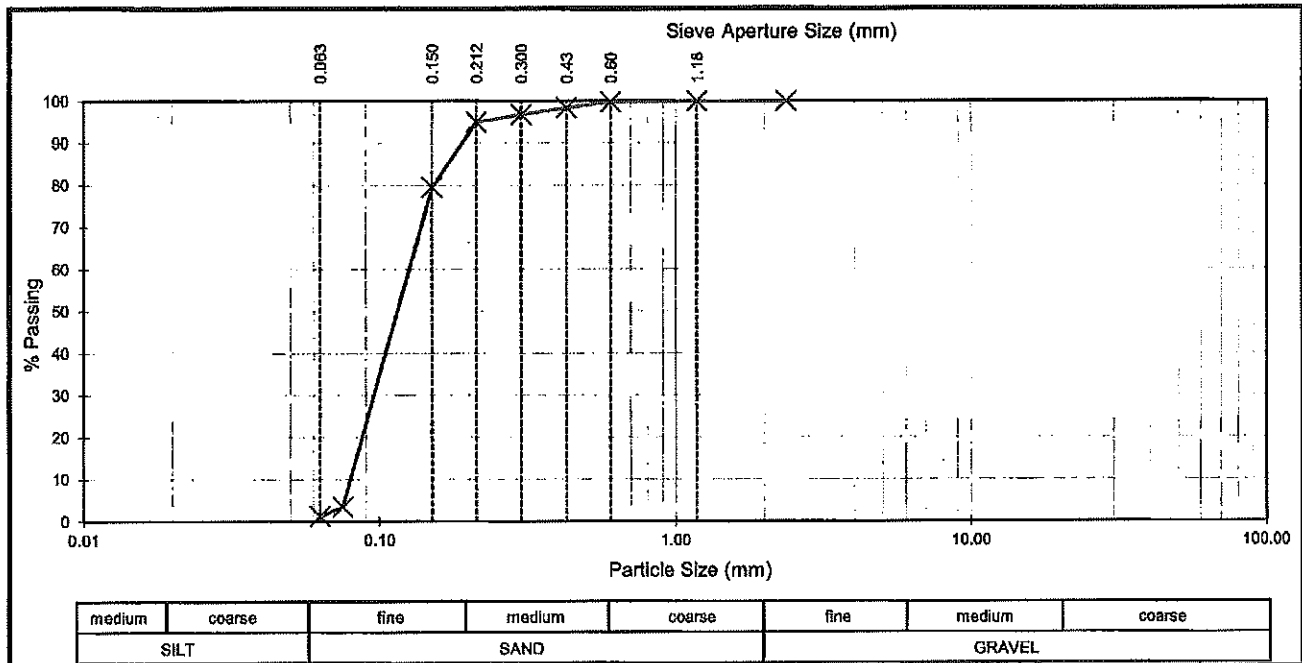
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : Fairway Seabed - Reference Test
 Location : Napier
 Client : Port of Napier
 Contractor : Opus Laboratory Napier
 Sampled by : Paul Rose / Peter Frizzell
 Date sampled : 1/08/2017
 Sampling method : Client sampled
 Sample description : Fine Sand
 Sample condition : Wet
 East 11
 Northing 820410
 Easting 420600

Project No : 2-L0406.17
 Lab Ref No : NA 566 / 11
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	1.18	100	0.212	95
63.00	-	13.20	-	0.60	100	0.150	80
37.50	-	4.75	-	0.425	98	0.075	3
26.50	-	2.36	100.0	0.300	97	0.063	1.3



Test Method	Notes
NZS 4407 : 1991 Test 3.8.2	History: Fraction tested: Whole sample Dispersant Used: Nil

Date tested : 08/08/17
 Date reported : 09/08/17
 This report may only be reproduced in full

Approved : *A. Ching*
 Designation : Laboratory Manager
 Date : 09/08/17



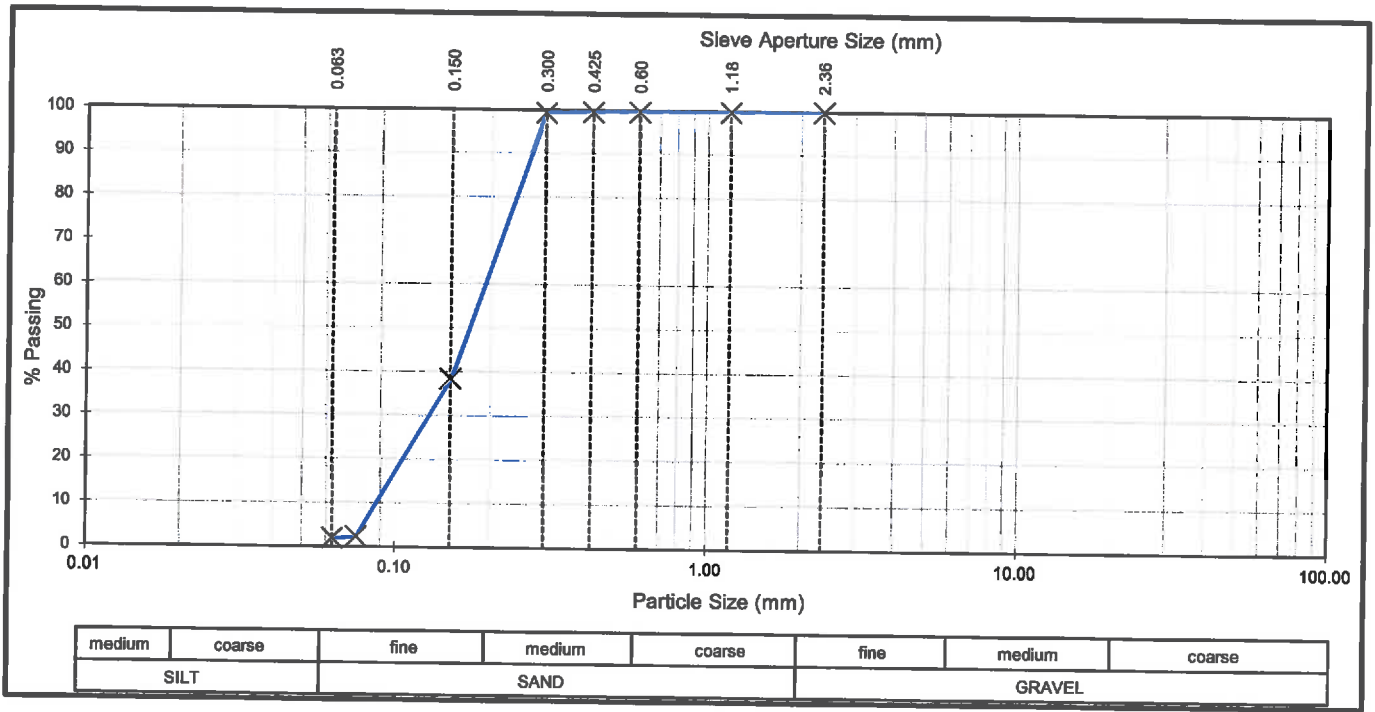
**WET SIEVE ANALYSIS
TEST REPORT**



Project : Harbour Seabed Dredging
 Location : Port of Napier
 Client : P. Frizzell, P.O Box 947, Napier
 Contractor : Not stated
 Sampled by : Peter Frizzell
 Date sampled : 1/05/2015
 Sampling method : Client sampled
 Sample description : Grey - Medium to Fine Sand
 Sample condition : Wet
 Sample Site : East Side
 Co-ordinates : 420654 / 820103

Project No : 2-S166G.1L
 Lab Ref No : N15.278 / A
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	2.36	100.0	0.300	99.4
63.00	-	13.20	-	1.18	99.8	0.150	38.4
37.50	-	9.50	-	0.60	99.7	0.075	2.4
26.50	-	6.70	-	0.425	99.6	0.063	2.0



Test Method	Notes
NZS 4407 : 1991 Test 3.8.1	History: Fraction tested: Whole soil Dispersant Used: Nil <i>Fraction passing finest sieve is by difference.</i>

Date tested : 05/05/15
 Date reported : 05/05/15
 This report may only be reproduced in full

Approved : *A.Ching*
 Designation : Laboratory Manager
 Date : 05/05/15

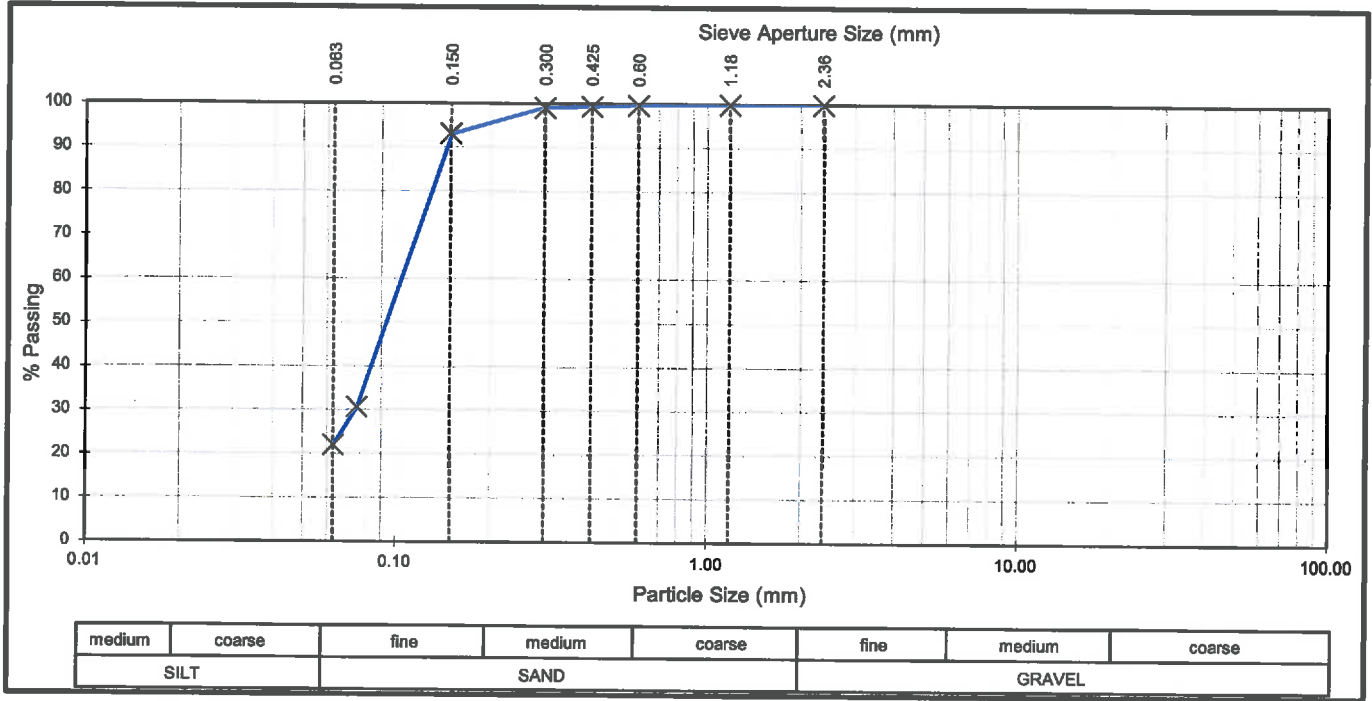
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : **Harbour Seabed Dredging**
 Location : **Port of Napier**
 Client : **P. Frizzell, P.O Box 947, Napier**
 Contractor : **Not stated**
 Sampled by : **Peter Frizzell**
 Date sampled : **1/05/2015**
 Sampling method : **Client sampled**
 Sample description : **Grey - Silty Fine Sand**
 Sample condition : **Wet**
 Sample Site : **West Side**
 Co-ordinates : **420336 / 820642**

Project No : **2-S166G.1L**
 Lab Ref No : **N15. 278 / B**
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	2.36	100.0	0.300	99.1
63.00	-	13.20	-	1.18	99.9	0.150	93.1
37.50	-	9.50	-	0.60	99.6	0.075	30.7
26.50	-	6.70	-	0.425	99.4	0.063	22.0



Test Method	Notes
NZS 4407 : 1991 Test 3.8.2	History: Fraction tested: Whole soil Dispersant Used: Nil

Date tested : 05/05/15
 Date reported : 05/05/15
 This report may only be reproduced in full

Approved : *A. Ching*
 Designation : *Laboratory Manager*
 Date : 05/05/15

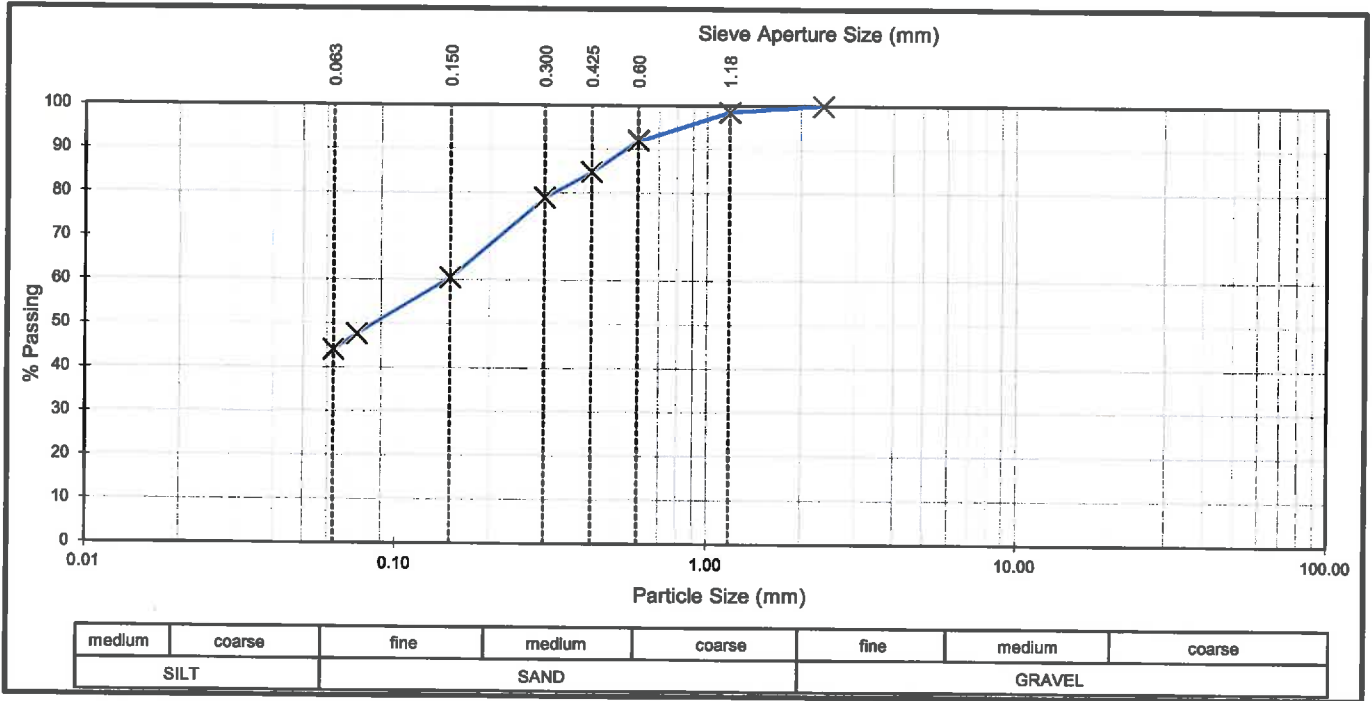
**DRY SIEVE ANALYSIS
TEST REPORT**



Project : **Harbour Seabed Dredging**
 Location : **Port of Napier**
 Client : **P. Frizzell, P.O Box 947, Napier**
 Contractor : **Not stated**
 Sampled by : **Peter Frizzell**
 Date sampled : **1/05/2015**
 Sampling method : **Client sampled**
 Sample description : **Grey - Silty Sand**
 Sample condition : **Wet**
 Sample Site : **No. 2 Berth**
 Co-ordinates:

Project No : **2-S166G.1L**
 Lab Ref No : **N15. 278 / C**
 Client Ref No :

Sieve Analysis							
Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing	Size (mm)	% Passing
75.00	-	19.00	-	2.36	100	0.300	78.8
63.00	-	13.20	-	1.18	98.5	0.150	60.5
37.50	-	9.50	-	0.60	91.9	0.075	47.6
26.50	-	6.70	-	0.425	84.7	0.063	44.0



Test Method	Notes
NZS 4407 : 1991 Test 3.8.2	History: Fraction tested: Whole soil Dispersant Used: Nil

Date tested : 05/05/15
 Date reported : 05/05/15
 This report may only be reproduced in full

Approved : *A.Ching*
 Designation : *Laboratory Manager*
 Date : 05/05/15

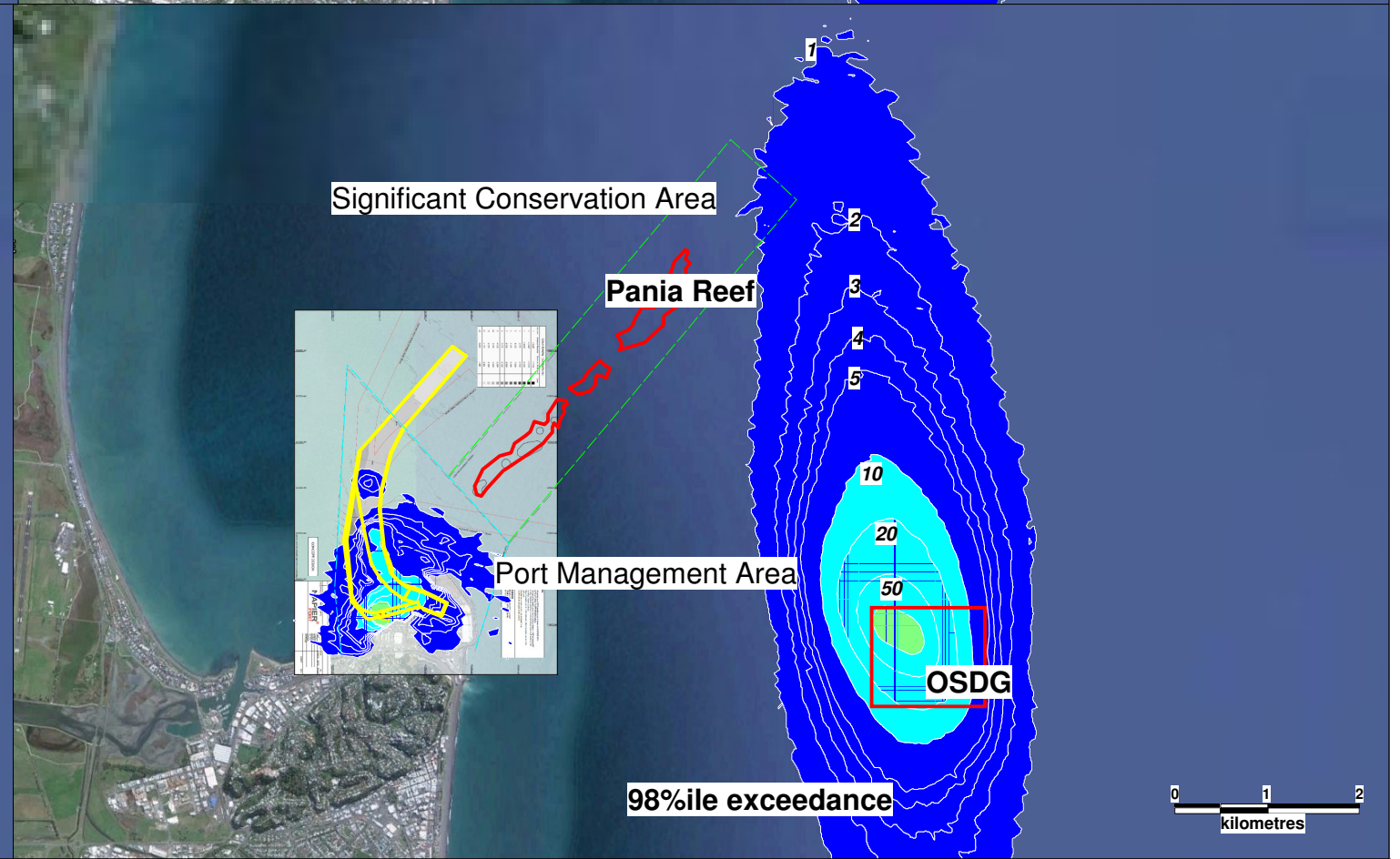
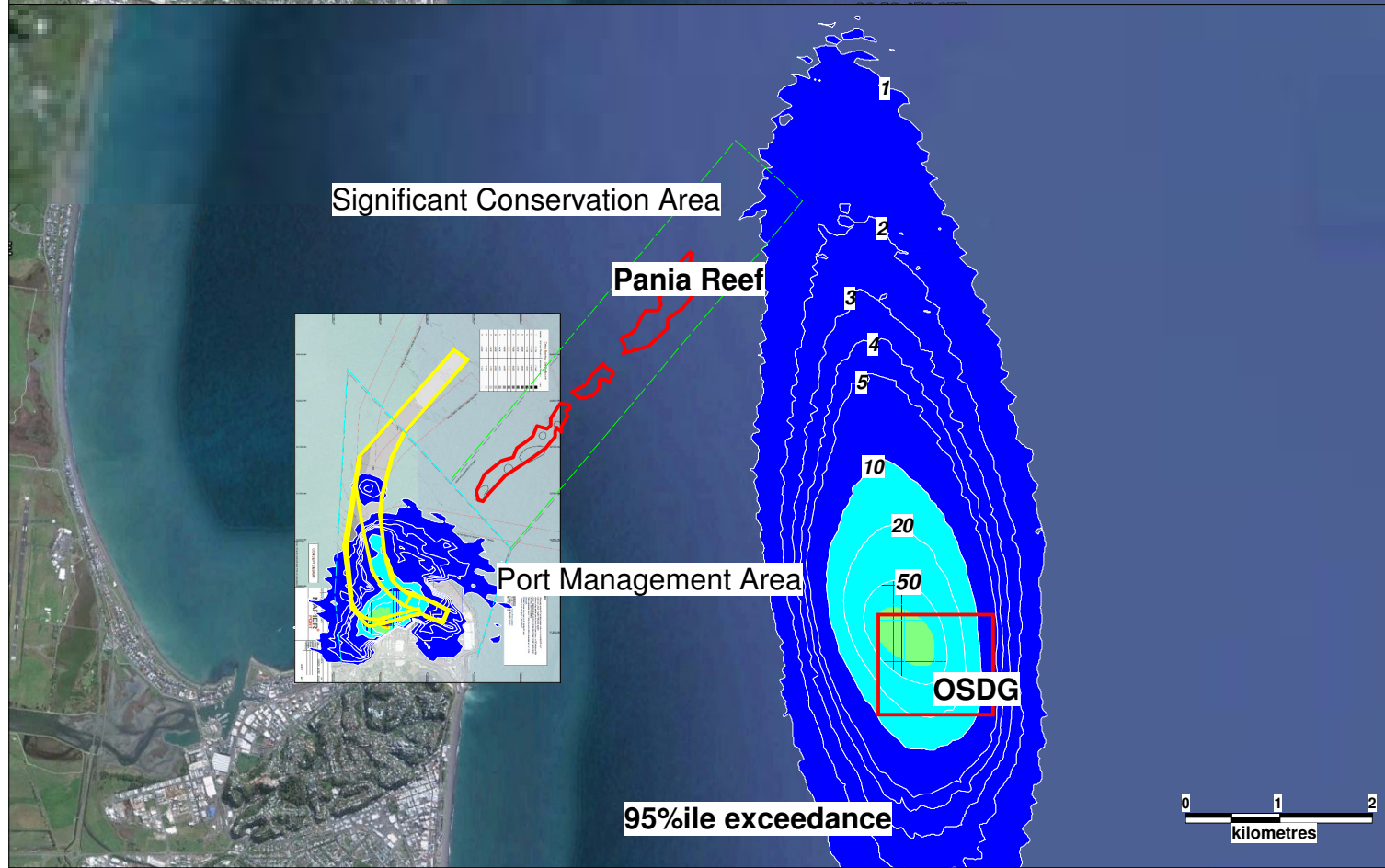
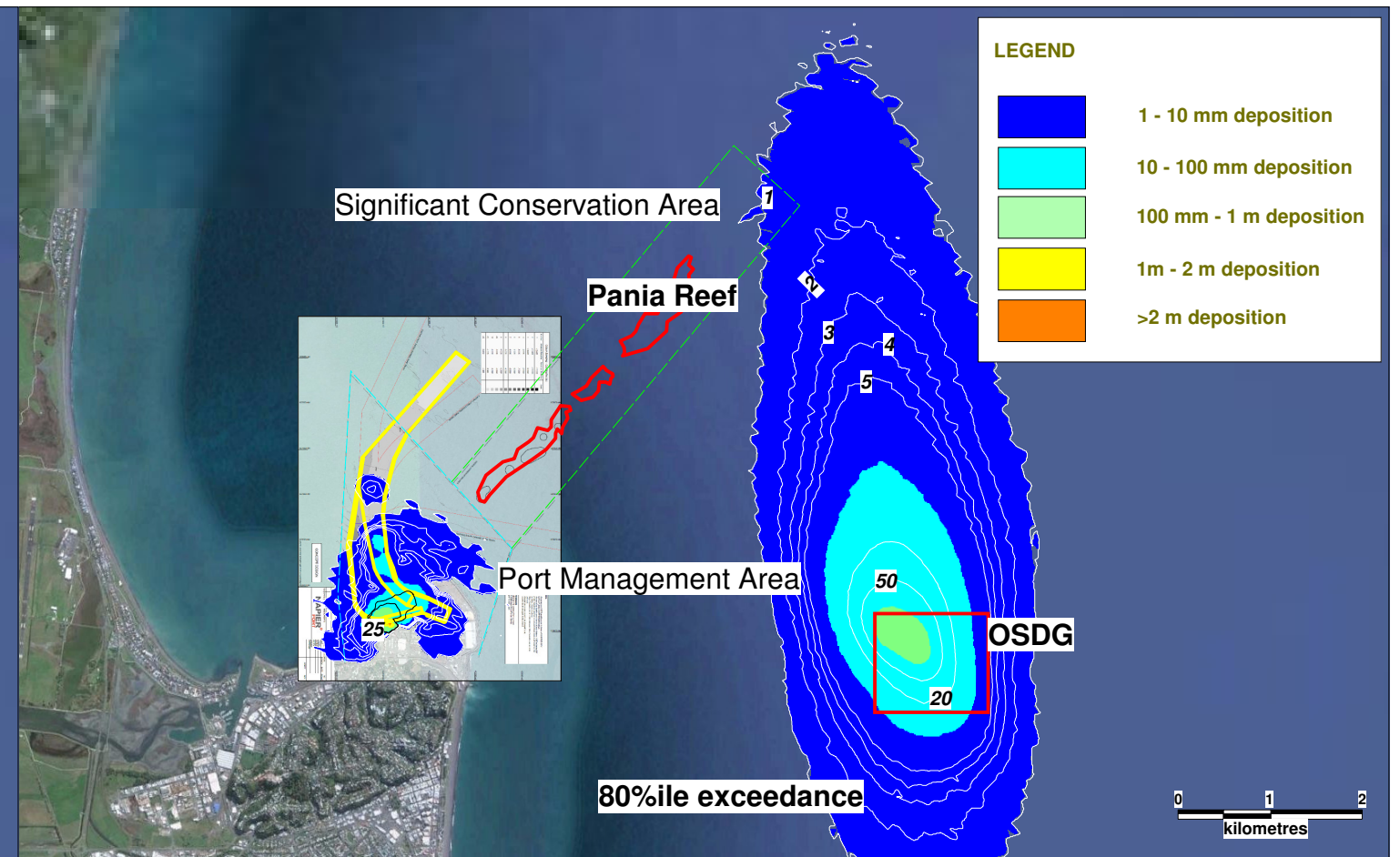
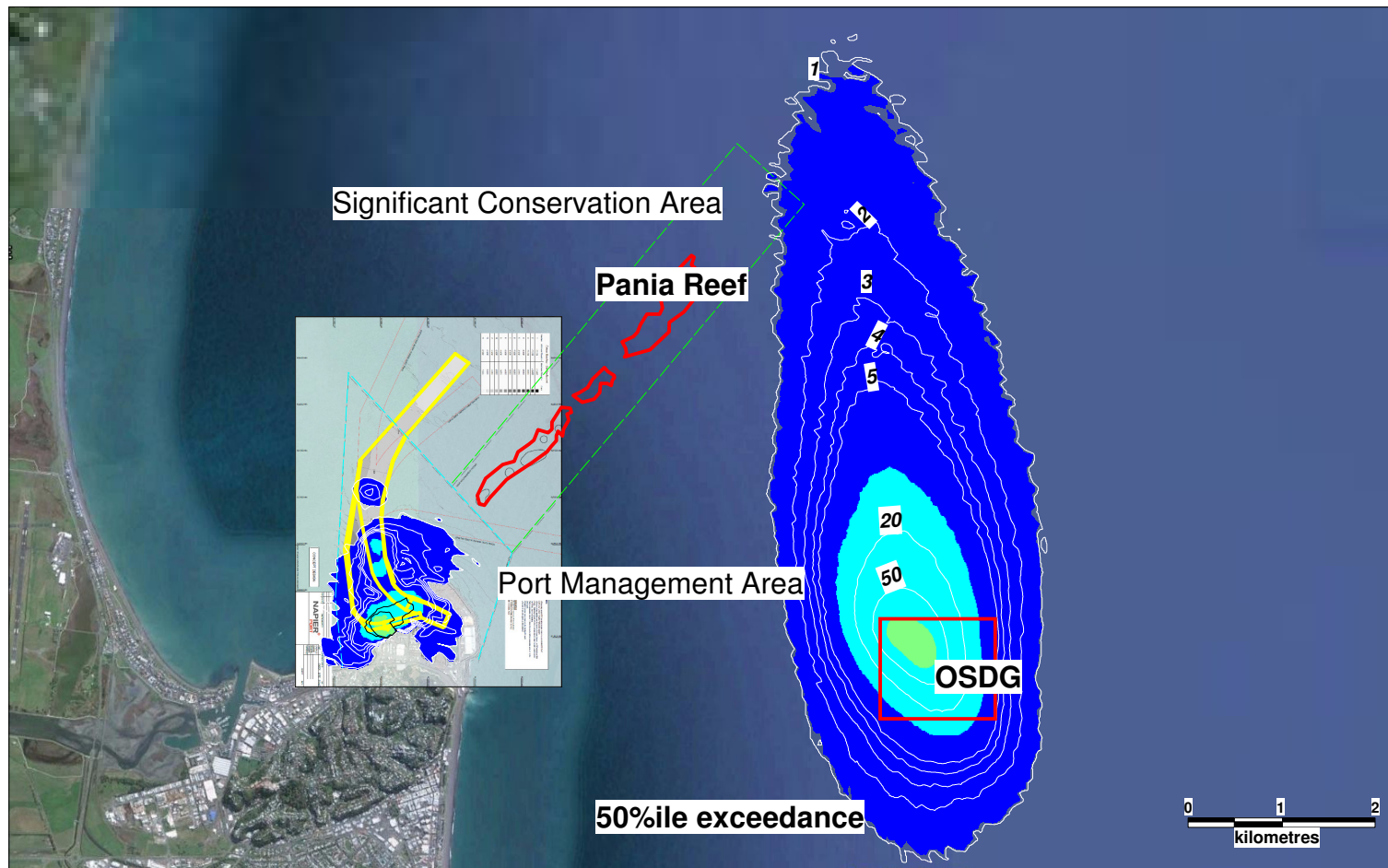
DREDGE SPOIL DISPOSAL VOLUMES HISTORICAL

c = Capital dredging
m = Maintenance dredging

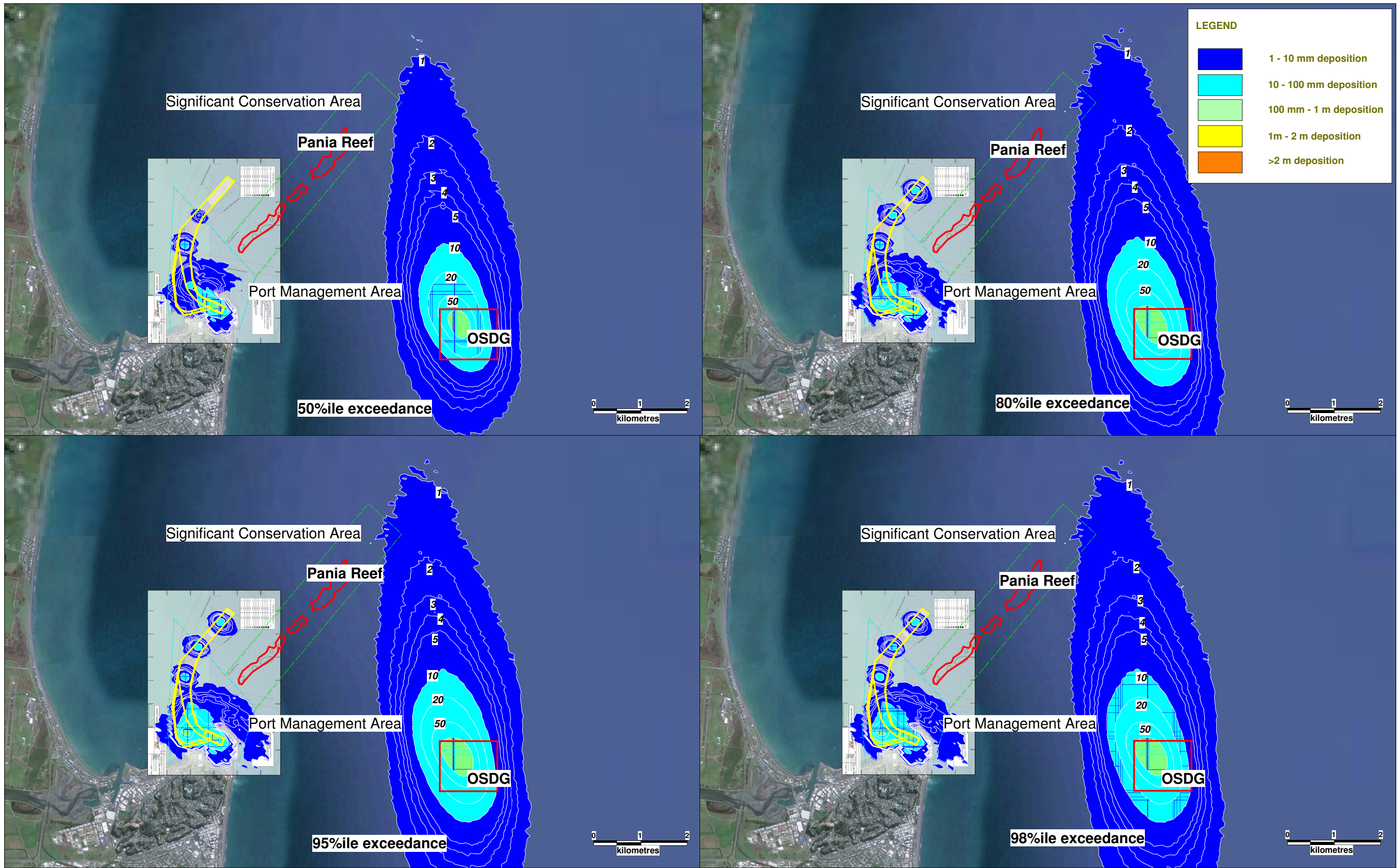
										COMMENTS
YEAR	I	H	R	G	Q	K	L	M	P	
1973		c728000						start/finish	Dredge	New fairway: fine sand, clay.
1978		mc260000						June 78 June79	Geopotes	Widen new fairway: fine sand, clay.
1979		c400000								Widen new fairway: fine sand, clay.
1982						m1700				Inner harbour; silt, mud, fine sand.
1983				m2100						Berths, swinging basin; silt, mud, sand.
1984				m12911			m9 920			Berths, swinging basin; silt, mud, fine sand. Inner harbour; gravel, sand, silt, mud.
1985	m122000			m23185				14April 85 28 May 85 M 2559	Orbell M 4556	Fairway; fine sand. Swinging basin, fairway; mud, fine sand. Inner harbour; gravel, sand, mud. Inner harbour; gravel, sand, mud.
1986				m1985						Inner harbour; silt, mud, fine sand.
1987				m1480						Berths, swinging basin; silt, mud fine sand.
1988/9	m106000		m96000	m4270				11 Jan 89 1 March89	Pelican M 5165	Fairway; fine sand, silt. Berths, swinging basin; silt, mud, fine sand. Fairway; clean fine sand. Inner harbour; sand, mud.
1990				m12015						Berths & swinging basin.
1991	m2535			m11825	m8000					Berths, swinging basin; silt, mud, fine sand. Berths, swinging basin; silt, mud, fine sand. Inner harbour; sand, mud.
1992	m1320			m19765						Berths; silt, mud. Berths, swinging basin; silt, mud, fine sand.
1993	m198636		m56131	m3580	m12530			28 May 93 16 Nov 93	Ngamotu	Fairway; fine sand, silt. Fairway; clean fine sand. Berths, swinging basin; silt, mud, fine sand. Inner harbour; mud, fine sand.
1994	c50686 m19961							10 Oct 94 18 Aug 96	Kotuku & Kimihia	No. 1 berth. Berths & swinging basin; mud, silt.
1995	c120942		m44305			m2800		6 Mar 95 1 April 95	Kotuku & Kimihia Ngamotu	No. 1 berth; mud, papa limestone, sand. Fairway; clean fine sand. Inner harbour; mud, gravel, sand.
1996	c39100 m30000								Kotuku & Kimihia	No. 1; hard 23200 soft 15900. Berths, swinging basin; mud pap, limestone, sand.
1997	m20485		M30341					5 Dec 97 18 Dec 97	Pelican	No 2 berth 1010m ³ mud & silt Fairway east and west 49816m ³ fine sand and silt

Year	Area la	Area R.ext	Landfill Site	Start Finish	Dredge	Description
1998	m9020			May 6-31	Tas. Bay	No 2 berth mud and silt
1999	M 7450 C 10450			May18 June10	Kimihia	Between 2-3, 4-5, off end No4 Mud ,silt , mudstone
2000	M 24703 C 3047			July 11 Sept 19	Kimahia	No 2 ,5 & 3 Berths, Swing Bas. Between 3/4 Fairway off spur
2003	M&C 62048			June 11 Sept 2	Kimahia	Swing Basin and Berths 1,2, 5 (Includes New Era Volumes for SB and Berths)
2003	M 36950	M 95370		Feb 4 March 19	New Era	Fairway & Swing Basin
2006	M 32237	M 62838 C17020		Feb 17 May 14	New Era	Fairway, Swing basin and Berths
2006			M3200	Sept 6 Sept 21	Shore Crane Preistman grab	Berths 2s,2N, 1E, 5S, 5N out to about 5m from Concrete edge.
2008	M30166			June 6 Sept	Heron Long reach Backhoe	Between 3-4 Wharves and under 4 Wharf – Associated with 3-4 Wharf Construction Project
2009	M&C 49400			Start 22 nd Sept 2009	Kimahia	Swing basin - 4 berth – between 4 and 5 berths
2010	M&C 18700			22 nd Jan 2010	Kimahia	Swing basin - 4 berth – between 4 and 5 berths
2012	M\$C Adjusted Hopper volume 211,355 (Hopper * 0.87 Bulking Factor)	M&C Adjusted Hopper Volume 130,965 (Hopper * 0.87 Bulking factor)		5 th Jan 2012 to 7 th March 2012	BRAGE	Fairway maintenance & capital and deepen Josco Channel
2013 2015	M52,600 C88,400			17 th Oct 2013 to 13 th March 2015	Kimahia	Inner Swinging Basin and Berths - Outer Turning Basin – Swinging basin entrance Nth and Sth side

2015	M 4,446		M 77,677					26 th June 2015 to 18 th July 2015	Pelican	Fairway, Josco, Sth Pania Channel
2017	M 45,106		M 102,905					3 rd October 2017 till 7 th November 2017	Albatross	Inner Swinging Basin and Berths, Fairway and Josco



DATE 12/12/16	COORDINATE SYSTEM Hawkes Bay Circuit 2000	FIGURE TITLE Bed deposition, silt fraction (full wave stirring) 50%, 80%, 95% and 98%ile exceedance 1 month continuous Dredging Campaign 1	 Advisian WorleyParsons Group
PROJECT NO. 301015-03651	PROJECT TITLE Napier Dredge Plume Modelling	LOCATION E:\PROJECTS\301015-03651 Napier\ EIS Studies\1. InitialDredgePlume_Analysis\GIS\Workspace	
		CREATED BY C. Adamantidis	



DATE 12/12/16

COORDINATE SYSTEM Hawkes Bay Circuit 2000

FIGURE TITLE

Bed deposition, silt fraction (full wave stirring)
50%, 80%, 95% and 98%ile exceedance
1 month continuous Dredging Campaign 5

PROJECT NO. 301015-03651

PROJECT TITLE
Napier
Dredge Plume Modelling

CREATED BY C. Adamantidis

LOCATION E:\PROJECTS\301015-03651 Napier\
EIS Studies\1. InitialDredgePlume_Analysis\GIS\Workspace

