BEFORE THE HEARING COMMISSIONERS
NAPIER

IN THE MATTER	of the Resource Management Act 1991 (the Act)
AND	
IN THE MATTER	of applications by Port of Napier Limited to undertake wharf expansion, associated capital and maintenance dredging, disposal of dredged material within the coastal marine area, and occupation of the coastal marine area for existing port activities and the proposed new wharf

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STATEMENT OF EVIDENCE OF MICHEL DE VOS

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INTRODUCTION

Qualifications and experience

1. My full name is Michel de Vos. I am currently employed by Port of Napier Ltd (the Port) as the Infrastructure Services Manager and have been in this role at the Port since 2014. This role includes asset management, port planning, environmental and project management.

2. I have a B.Eng (Naval Architecture) with Honours and a Post Graduate Diploma in Maritime and Logistics Management both from the Australian Maritime College, now the University of Tasmania. I am a Board Member for PIANC (Australia) representing New Zealand. PIANC is an international organisation founded in 1885 which is responsible for addressing topics and advising on standards in the field of navigable waterway traffic on canals, rivers and in ports.

3. I have 25 years of experience in the marine industry, including 20 years in the dredging and maritime construction field both in technical and operational roles and both client and contractor sides. My experience includes both capital and maintenance dredging projects in Australia, Asia and The Indian Sub-Continent and includes large projects with sensitive environments such as the Gladstone Ports Western Basin Dredging Project 2011-2014, which involved the dredging and disposal of 22 million m^3 material.

4. In 1995 I won the Australian Maritime College 'Work Boat World Prize' for the best final year design project - a 500m^3 Trailing Suction Hopper Dredge.

5. I have undergone training in Soil and Rock Logging by the Australian Geomechanics Society, and have experience in the in-field classification of soil and rocks.

6. I have consulted in the field of dredging methodology for projects within Australia.

Involvement in project

7. I have been involved in the project from the outset as Project Manager and am continuing in that capacity. I am supported by a team including a Project Engineer, Environmental Advisor and Hydrographic Surveyor who have been instrumental in the project design and gathering of in-situ data to support the technical investigations.

8. I have been involved in most of the consultation for the project, supported by a dedicated Communications Advisor.

9. Although not directly related to the project, I was the Napier Port representative on the Clifton to Tangoio Coastal Hazards Strategy 2017 community panels.

Expert Witness Code of Conduct

10. I have been provided with a copy of the Code of Conduct for Expert Witnesses contained in the Environment Court's Practice Note dated 1 December 2014. I have read and agree to comply with that Code. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Purpose and scope of evidence

11. The purpose of my evidence is to:

- Outline the reasoning behind the project.
- Provide background on the design evolution of the project, including the proposed disposal location.
- Respond to the joint conferencing of coastal experts.
- Respond to matters raised in submissions which are within my areas of expertise or responsibilities.
- Respond to matters raised in the s.42a Report which are within my areas of expertise or responsibilities.

12. A map showing key locations is included as Attachment 1.

Summary of conclusions

13. The proposed Wharf Development and dredging proposal is significant investment for the Port, and with increasing port restrictions and growing ship sizes, will be key to enabling imports and exports for the region into the future.

14. The evidence supports the move to an offshore disposal location, including for material classified as 'sand'.

15. There is a robust adaptive management process proposed to ensure no significant adverse impacts from the dredging and dredge disposal component of the project.

16. There is no practical method to sort 'suitable' material from the available material.

REASONS FOR THE PROJECT

17. New Zealand has an almost total reliance on sea transport, moving more than 99% of exports and imports by volume. This includes the Hawke's Bay region with bulk imports including petroleum products, cement, bitumen and fertiliser. Exports include horticultural products, timber products, meat and pulp.

18. There has been a global trend of increasing containership sizes, with ships over 20,000 TEU[1] now common, but restricted to the main Asia – Europe – North American routes. Due to an oversupply of vessels and driven by efficiencies achieved through economies of scale, container vessels expected to call at New Zealand ports are expected to increase in size. For example, the 'Aotea Maersk' which is 347m in length and has a capacity of 9640 TEU now calls at the Port of Tauranga.

19. Due to manoeuvring constraints within the Inner Swinging Basin the Port can effectively only manage container vessel sizes up to 295m, and up to 280m without requiring vessels at wharves 1 and 2 to be temporarily moved outside the port. This causes great inefficiency, and impacts both the Port's operations and its customers.

20. With the opening of the new Panama Canal, ships using the canal can now have a maximum beam (width) of 49m, up from 32m. This has had, and will continue to result in, an increase in beam of container ships that visit New Zealand. Recently the Port has had requests to accommodate wider and heavier vessels, which it is not able to accommodate at present.

21. An increase in ships' beam result in a larger reach for the port's cranes to load and unload containers at the furthest row, and also result in heavier ships lids and a further reach to be removed by the port cranes. The increased load result in an increase in vertical load on the wharf, which in the case of the existing Wharf 5 will require significant strengthening works. These works cannot be practically undertaken whilst the wharf is being utilised and hence would greatly impact the ability of the Port to service its

[1] Twenty Foot Equivalent Units

customers during these works if no other container wharf was available.

22. The existing Wharf 5 was built in the 1960's and is reaching the end of its useful life. Although life extension maintenance is undertaken, its high loading compared to what it was originally designed for, means it cannot provide the long term solution to the growing needs of the Port and the region. It is not practical to re-build the wharf without severely impacting the Port and its customers for a period of up to three years.

23. Based on estimated growth in container trade, the Port is expected to reach its single container berth capacity by 2020.

24. The Port can generally accommodate only one cruise ship at a time due to berth availability. This has resulted in recent years of up to six rejected visits a year. This provides a significant loss of potential economic benefit to the Hawke's Bay.

25. The cruise ship 'Ovation of the Seas' at 348m is the largest vessel that has been accommodated at the Port. This is at the limits of safe operation, with strict limitations on weather conditions. There are indications that the next generation of larger cruise vessels that are likely to seek to visit in the short to medium term, cannot be accommodated by Napier Port.

"PROOF" OF CONCEPT

26. The location of the proposed new wharf posed many challenges. It was initially thought that a new wharf at the Port's current container terminal would require the construction of breakwaters and/or reclamations to ensure sufficient sheltering from the prevailing swells to maintain effective operations. The Port recognised that an extension of the main breakwater would not only be extremely costly, but it would have the potential to result in substantial adverse effects[2]. An option that did not require breakwaters or a reclamation was preferred.

27. The Port suffers from the impacts of long period waves. These waves are of relatively low height, typically up to 10-15cm, and have periods of 80 seconds or more. These 'surge'

[2] Such as affecting the popular Port Beach or affecting surf breaks.

conditions affect moored ships and result in significant vessel movement which affect productivity and have the potential to cause mooring lines to break.

28. Initial investigations indicated that, despite significant wave refraction, the main breakwater would provide a significant sheltering effect at the proposed location of the new Wharf.

29. A detailed study was commissioned to determine the extent of long waves at the proposed location and to determine likely impacts on moored vessels. The results indicated that long period waves would impact moored vessel operations for a certain percentage of the year, as they do for other wharves at the Port, but through the use of alternative mooring devices acceptable productivity would be realised.

30. Being exposed to swell, and with limited manoeuvring room, Napier Port is a challenging environment for pilotage of both inbound and outbound vessels. This extended to the proposed new Wharf where larger vessels are required to be handled in challenging conditions.

31. To ensure that the proposed wharf was feasible from a marine operations point of view, extensive ship simulation was undertaken at Smartship in Brisbane, Australia. These simulations were undertaken by the Port's pilots and included extreme weather and other critical events. The results not only confirmed the "proof" of concept but provided significant input into the detailed channel and swing basin design. Some examples of these investigations were included in section 19 of the AEE, relating to navigation and safety.

DETAILED DESIGN

32. From the outset, the Port committed to undertaking a thorough geotechnical investigation to obtain a very comprehensive understanding of the underlying geology and to provide a sound basis for any decision making. The investigations included vibracoring[3] and drilling offshore to determine the in-situ properties of the new material to be dredged (capital dredging) and land based drilling to inform the engineering design of the wharf structure (see Volume 3, Appendix B, of the application documentation). These were

[3] An aluminium tube is vibrated into the seabed and then retrieved with the core sample. This technique can be used on soft and unconsolidated sediments.

integrated with the existing available geotechnical information to develop the 3D Geotechnical Model (see Volume 3, Appendix C, of the application documentation). Together this forms the most comprehensive geotechnical information ever available to the Port.

33. The new Wharf has been designed to meet the demands of the expected increase in ship sizes. Compared to the existing facilities at the Port, this includes increase in fender (buffer) capacity to handle the increased loads imparted by heavier ships, an increase in bollard capacity to handle the increased mooring loads, and an increase in overall durability. The wharf is designed to handle both the current and anticipated future Mobile Harbour Cranes (MHC) and forklift plant which is the Port's current mode of operation. It has also been designed to enable a switch to alternative modes of operation if that is needed at some stage in the future

34. Although originally not designed with mooring dolphins, these were subsequently added to provide greater flexibility. In particular, these will allow the berthing of the next generation of larger cruise ships expected to call at Napier which is currently at the limit with the 'Ovation of the Seas'.

35. The wharf has been designed to the latest standards of seismic design and will provide improved resilience to seismic events compared to the existing wharf infrastructure, thereby providing increased availability as a regional Lifeline and to the exporters of Hawke's Bay.

36. From the outset, the Port recognised the potential of the wave refraction from the channel and swing basin changing the wave climate and potentially causing negative effects, including impacts on surfing amenity. Working with Advisian, the design was refined through many iterations, with the aim of modifying the existing wave climate as little as possible. This was achieved by changing the swing basin design from circular to one that has defined edges which would correct any changes in wave direction resulting from the channel. A similar approach was taken for the western boundary of the channel.

37. The ship simulations conducted at Smartship resulted in some further changes to the preliminary design, in particular widening of the channel at the 'dogleg' to improve safety margins.

38. This has been an iterative process which has resulted in a fit-for-purpose design which has very limited effects in the immediate environment.

DREDGING

39. Two methods of dredging are proposed for the project, both of which are standard in New Zealand and around the world.

40. The first being the use of a Back Hoe Dredger (BHD), which is essentially an excavator mounted on a pontoon. The pontoon is stationary and made rigid by means of spuds. The BHD loads barges which are then towed to the disposal area by tugs. The barges are typically of split type, splitting open to dispose of the material through the bottom once the disposal grounds are reached. The barges are fitted with precise positioning equipment so loads can be placed accurately in order to ensure the material is spread out as much as possible. The dredging of Areas B, C and D of the channel design are planned to be executed by BHD due to the nature of the material. See Attachment 2 to this evidence for a description of this dredging method from the International Association of Dredging Companies (IADC).

41. Areas A and A1 are expected to be dredged with a Trailing Suction Hopper Dredger (TSHD). This method is commonly used for ongoing maintenance dredging and involves a self-propelled vessel which sucks material from the seabed via a suction pipe and drag head. High pressure water (jet water) can be applied at the drag head to aid in loosening harder or compacted material. Once loaded, the TSHD sails to the disposal area and discharges its load via bottom doors. TSHDs use an overflow system to maximise their load. As the slurry mixture enters the hopper, excess water is discharged overboard while the material settles in the hopper. The overflow will contain fine material and constitute the majority of the resulting dredge plume. The work of Advisian (see Volume 3, Appendix D, of the application documentation) relates to the modelling of the resulting dredge plume. See Attachment 3 to this evidence for a description of this dredging method from the International Association of Dredging Companies (IADC).

DISPOSAL AREA

42. Recently, with suitable equipment available, the Port deposited sand from its maintenance dredging campaign as close to shore as physically possible with the plant available, and in compliance with the existing consent for disposal of maintenance dredging material (CL9701S9D).

43. As described in the Application, the original intent for the proposed Project was to utilise both existing disposal areas (IA and Rext) for disposal of dredged material, and to expand the areas to accommodate the anticipated volumes. The aim was to continue the existing disposal processes and potentially provide material to assist with management of erosion at Westshore.

44. The extensive geotechnical investigation described earlier in this evidence was conducted to ascertain with a high degree of confidence the properties and distribution characteristics of the material to be dredged. The results included in Appendix B and C of the application documentation provide the most comprehensive information about the underlying geology in and around the Port to date, along with information about the nature of the material which will be dredged and which will require disposal as part of the project.

45. A total of approximately 3.2million m^3 of material is expected to be dredged as part of the proposed development (Application - Appendix C, Table 5.1). The majority of this material is classified as 'Recent Marine Sediment' and includes what is classified as 'sand'. This amount of material is significantly greater than any previous capital or maintenance dredging campaigns by the Port, and hence an understanding of the impacts of these previous campaigns could not be relied on for the proposed larger project.

46. In late 2016 the Port received advice from Advisian that initial modelling indicated that under certain conditions, material of smaller grain sizes would, on average, travel in a counter clockwise manner in the Westshore area and ultimately travel east towards the Port channel, and potentially towards Pania Reef. Sand of greater grain size would still be likely to travel north towards Bayview under an established longshore transport regime.

47. On reflection, there were some indications of this process, including the nature of the small beaches to the west of the Port, the composition of the material depositing in the shipping channels and the previous work of ASR[4] which concluded:

> "The important implications of the model results and data analysis are discernible as follows. The flow oscillates at hourly, daily and weekly periods in Westshore Bay and the currents are often directed offshore, along the headland and across the Port's dredged channel. Consequently, sediment can be carried from the Westshore sand fillet into the channel and this material is being lost due to dredging. The Dredging records show that about 11,000 m^3/yr (Hume et al., 1989) is dredged from the western side of the channel, and this has presumable come from the Westshore sand fillet."

48. The Port chose to investigate the findings in further detail and commissioned further work by Advisian, including conducting additional in-situ measurement of waves and currents to support additional modelling. The results of these investigations are described in the application documentation (Appendix D and F) and confirm the initial findings.

49. These findings were supported by some stakeholder feedback, where there were indications that disposal at the existing consented sites IA and Rext may have contributed to an increase in sedimentation and lowering of visibility at Pania Reef. This feedback is described in the Application's Consultation Report (Appendix P). Although some submissions (such as that of Dorothy Pilkington in submission 22) claim that the observed effects are anecdotal, in my opinion, the findings of the Advisian reports justify the Port's decision to seek consent for an alternative disposal location for its dredged material.

50. Many submissions and stakeholder feedback discuss 'sand' without further clarification. According to most classification systems, material of grain size 63µ to 2.0mm is described as sand. Sand in this range can be described as Very fine, Fine, Medium, Coarse or Very Coarse Sand. There is a significant

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[4] Mead et al (2001), Westshore Coastal Process Investigation, ASR Ltd

difference in grain size between sand at each end of the scale. There is a variety of sediment behaviours, that only rigorous modelling can replicate.

51. Only Areas A and A1 of the proposed dredge areas have a significant amount of material classified as Sand. Significantly, other than a few discrete layers, this material is classified as Very fine or Fine Sand, and is of grain size that modelling has shown is not suitable for disposal at the existing disposal site Rext. I refer to the evidence of Benjamin Williams and Dr Martin Single in relation to the issue of "suitability".

52. The small component of the Sand which has grain sizes that may be suitable for disposal at Rext cannot be effectively sorted as part of the dredging process.

53. It has been widely acknowledged[5] that material deposited at Rext is not likely to remain in place in the long term, and that continued deposition would be required to provide a meaningful contribution to combating erosion at Westshore. The modelling undertaken by Advisian now provides the knowledge of where that material will move to, depending on the grain size.

54. An alternative disposal location was chosen based on previous investigations of 5 locations. The location east of the port (site 5) in 20m of water was identified as the most likely to have minimal effects on Pania reef. This is on the basis of water depth to minimise resuspension, generally like for like sediment characteristics, no unique ecological value and prevailing southerly current. The work of Advisian and Cawthron in the Application provide the results of detailed investigations and confirm that the proposed activities will result in less than minor impact.

CONSULTATION

55. The Port made a commitment to open and transparent consultation for the project, this is summarised in the application documentation, Volume 3, Appendix P. The engagement was extremely valuable, and resulted in a significant amount of feedback including information which was not generally known to the Port. The information

[5] Joint Statement Coastal Experts, Pers Comm Richard Karn and Larry Dallimore.

contributed significantly to the Port's decision to propose an offshore disposal area.

56. The Port is also very appreciative of its ongoing relationship with Mana Whenua. The ongoing 'cultural journey' has increased the Port's appreciation of cultural values, in particular relating to Pania Reef. The Port is committed to continued engagement with Mana Whenua through the proposed Marine Cultural Health Programme (MCHP)[6].

RESPONSE TO MATTERS RAISED IN SECTION 42A REPORT

57. **Dr Martin Single** will respond in his evidence on the statements regarding the effects of the channel on Westshore erosion.

58. The report refers to the results of the Clifton to Tangoio Coastal Hazards Study and the resulting preferred pathways. As a panel member I support the findings of the preferred pathways. It should be noted that the resulting recommendations of the report do include a proviso that material for re-nourishment may be required to be sourced for alternative locations than the Port.

59. I have concerns that there remains a lack of understanding on the classicisation of 'sand'. It is not clear when 'fine' sand is being discussed in the report, if this is colloquial or referencing a specific standard of classification of rocks and soils. This view is reinforced by any lack of discussion in the report or the HBRC's expert witness expert evidence of the varying nature of the 'available' sand, be that for the capital dredging or maintenance dredging.

60. We know from previous maintenance dredging campaigns that the characteristics of the maintenance dredged material varies by location. For instance we know the western side of the channel has in the past consisted of significantly more 'very fine' sand than the eastern side of the channel.

61. The Consenting Officer proposes a condition that "suitable" material be required to be disposed of in the existing consented disposal area Rext. Although acknowledged that what constitutes suitable material is not yet defined, I have concerns that if this draft condition prevails, it will be

[6] See proposed condition 7 in section 26.1 of the AEE.

impossible to put into effect due to the varying opinions on what is considered "suitable".

62. Any condition that requires the Port to dispose of its dredged material a Rext **must** be clear on the material characteristics that deem it 'suitable'. The criteria must not be subjective and based on analysis to established standards.

63. I offer the following comments on the draft recommended conditions of consent:

(a) Re: Consent 180008C, Draft Condition 12a: It should be clear that it applies to land based machinery only, and not marine plant.

(b) Re: Consent CL180009E, Draft Condition 12 and CL180010E Condition 12: I note that completion of the works should be considered when the final bathymetric survey has been completed and certified by the Port.

(c) Re: Consent CL180009E, Draft Condition 20, CL180010E Condition 19 and CL180011E Condition 19: I note that the existing consent Cl970159D has an expiry date earlier than the term of the consents being sought. Due to the importance of the development for the long term, the ability to deposit any dredged material cannot be reliant on the Port having to obtain another consent. If this draft condition remains, then there should be a provision that the proposed offshore disposal area can be utilised on expiry of the consent CL970159D.

(d) Re: Consent CL180010E, Draft Condition 17: The consent Cl970159D has an annual limit of 350,000m^3. If this draft condition remains the annual limit may be reached, and hence there should be a provision that the proposed offshore disposal area be utilised if that occurs.

(e) Consent CL180009E, Draft Condition 20, CL180010E Condition 19 and CL180011E Condition 19: I note that bathymetric surveys are limited to waters of sufficient depth and cannot monitor beach profiles.

(f) Re: Consent CL180012O, Draft Condition 2: The port has sought to utilise the proposed offshore disposal for all of its maintenance dredging activities. This

includes the existing inner swinging basin and berth pockets within the port. This material would currently be deposited at site IA (CL970159D), and is will not be of any use for replenishment. The consent should not be limited to areas of Stage 1 to 5 and should include all the Port's future maintenance dredging needs.

(g) Re: Consent CL18008C, Draft Condition 21e: I find this proposed condition vague and open ended Draft Conditions 21c and 21d already require the port to mitigate the effects on bird populations.

RESPONSE TO MATTERS RAISED IN SUBMISSIONS

Disposal location for dredged material

64. There are numerous submissions[7] calling for a portion of the material from dredging to be utilised to address ongoing erosion issues at Westshore.

65. I note that the Port was represented on the community panels for the Clifton to Tangoio Coastal Hazards Strategy 2017 which developed the long term strategy to address the effects of climate change. For the Westshore area, the Port fully supports the strategy of re-nourishment in the short term and re-nourishment with control structures in the medium and long terms.

66. The Port's reasoning behind the location of the proposed disposal area is described in the main body of this evidence, and the Port's commitment to provide sand for future potential strategies at Westshore is described in the evidence of **Todd Dawson.**

Potential Effects on Pania Reef

67. **Chris Morris** (submission 4) and others[8] claim that the proposed offshore disposal area will affect Pania Reef. The application and evidence of Benjamin Williams and Ross Sneddon address the modelling and ecological effects.

68. From the inception of the project the Port has recognised the importance of Pania Reef, both environmentally and

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[7] Submissions 2, 3, 6, 7, 13, 20, 22, 24 and 37.

[8] Submissions 7, 25, 27 and 29

culturally. Even though the studies show that the potential effects of both dredging and disposal of dredged material at the proposed disposal site will be less than minor, drawing on experience from other projects, in particular in Australia, the Port has committed to an evidence-based adaptive management approach during the dredging campaigns.

69. The Port has installed two monitoring sites at Pania Reef which have been collecting water quality data for some time, the key parameter being turbidity (measured in NTU). The resulting data has and will continue to allow the Port and other stakeholders to obtain a much better understanding of the water quality at Pania Reef, in particular how water quality changes in response to weather, waves and other natural events. For instance, as described in Appendix H of the application, there is a strong correlation between turbidity and severe rainfall events, as well as large swell events.

70. The real time water quality monitoring will be supplemented with an additional water quality buoy at a location between the proposed disposal site and Pania Reef to provide further information for the adaptive management approach.

71. The Port has a Triaxys Wave Buoy with downward facing ADCP[9] to measure current throughout the water column (surface to seabed). This will be relocated at the proposed disposal area to provide real-time wave data for safety, and real time current data to support the adaptive management approach.

72. These sites provide live data and, as described in the Draft Water Quality Management Plan (Appendix R) of the application and the proposed conditions of consent, will be used to monitor the effects of dredging on water quality at the reef in real time.

73. A staged trigger system based on measurements at the two water quality buoys deployed at Pania Reef will provide warning levels and ultimately action levels within the adaptive management framework. The proposed trigger levels have been set based on ecological assessment by Cawthron, including analysis of background turbidity data collected to date. The action levels can include changes in

[9] An acoustic Doppler current profiler

dredge methodology, modifying disposal location within the proposed disposal area, or to cease dredging if required. This system is based on current best practice in Australia and other parts of the world for the protection of sensitive receptors such as seagrass or coral, and has also been applied to recent projects within New Zealand.[10]

Disposal further offshore

74. **Alex Jones** (submission 5) and others[11] request the disposal ground be situated further out (beyond the "drop off") where impact will be reduced through greater dispersal of material. The evidence of Ross Sneddon shows that utilising a site in such water depth does not necessarily reduce impacts, and confirms his opinion that the proposed site has less than minor effects.

75. A disposal site at the "drop off" would be in the vicinity of 45 nautical miles from the Port and would result in a 7-12 hour round trip for the dredge or barge carrying the material. This would require extra plant or an extended project program, and would substantially increase the costs of the project. Similarly, associated with the extra sailing distance is an increase in fuel consumption, and resulting emissions.

76. As the Port has been advised that the proposed disposal area has effects that are less than minor, in my opinion such additional costs are not warranted.

77. **Aaron Duncan** (submission 7) and others[12] claim that other ports dump in deep water a long way from ecological or recreationally important areas. Although there are instances where disposal is conducted in very deep water (>100m), in my experience this is not generally the case. All dredging projects that I have been involved in that utilise an offshore disposal area, have been in water generally less than 20m deep. These include Port of Bunbury (Australia), Port Hedland (Australia), Gladstone Ports Corporation (Australia), Hong Kong, Port Qasim (Pakistan), Port of Hazira (India) and Karwar Naval Base (India). It is my understanding that both Port of Tauranga and Port Otago's disposal sites are in similar

[10] Port Otago, Lyttleton Port Corporation (LPC)

[11] Submissions 14-19, 21, 25, 27, 29 and 43

[12] Submissions 21 and 34

depths of water as proposed for this project. Similarly Lyttleton Port Corporation's recently granted consent is in 19-21m depth of water.

Additional lighting

78. **Karl Warr** (submission 10) raised concerns regarding light pollution. Although it was not clear what his concerns were, it was clarified at the second pre-hearing meeting that it related to potential light pollution from lighting associated with the proposed wharf and potential subsequent ecological impacts. The Port understands the potential for light pollution and recognises that for some species it can be a major issue. For instance, in Australia light pollution has the potential to impact the feeding and breeding habits of turtles.

79. The Port is not aware of any evidence of this type of adverse effect from its operations.

80. Moreover, the Port will shortly commence a program to replace the existing traditional flood lighting with LED-based technology. This technology provides some benefits, namely the ability to easily and quickly dim lighting, highly defined boundaries and a reduction in electricity consumption. Any additional lighting for the proposed wharf will utilise LED technology to minimise any potential effects.

Dredging methodology

81. **Denis Pilkington** (submission 12) and others[13] claim that a significant portion of the dredged material with grain size less than 100µ will be discharged through the overflow process and hence the loaded dredge would be filled with predominately larger grain sized materials. This technique has in other circumstances been used to obtain dredge loads suitable for land reclamation[14], i.e. where the material properties are of engineering importance.

82. In the current situation, the majority of material classified as sand contains material of grain size less than 150µ and excessive overflow will simply result in a large amount of material being released into the water column and

[13] Submissions 32 and 34

[14] For instance, Brisbane Airport second runway,

ultimately settling back into the dredge area or surrounds. In capital dredging this is counterproductive and is something that this project will seek to minimise, in order to maximise efficiency and to limit turbidity. It will be a condition of contract (monitored by the Port) that the contractor adjust the overflow regime to maximise the quantity of material loaded.

Monitoring submissions

83. **Legasea** (submission 25) advocate the development of a detailed monitoring and action plan, including for the Hardinge Road frontage and the Town Reef. The proposed conditions of consent in the AEE include a both a detailed adaptive management framework and ongoing assurance monitoring. Based on the modelling of Advisian and the advice of Cawthron no monitoring or action plan for the Hardinge Road frontage and the Town Reef has been proposed as part of the adaptive management framework or ongoing assurance monitoring.

84. **Ngaio Tiuka** (submission 30) and others[15] request cultural monitoring, including tangata whenua. The Port recognises the cultural significance of the area, in particular Pania Reef and this has influenced decision-making in the project. These requests are met by the proposed conditions on Cultural Monitoring and Information Sharing in the AEE of the Application.

Accuracy of dredging

85. **Glenn Abel** (submission 31) questions the accuracy of back-hoe dredging and the ability to achieve the channel design, and hence claims that there will be potential effects on surf amenity.

86. For many years Back Hoe Dredges (BHD) have been fitted with accurate positioning systems to enable accurate dredging. These systems include RTK[16] positioning systems to provide high-accuracy positioning of the dredge coupled with sensors on the excavator. The operator utilises one or more screens to control the dredge, providing high accuracy results. This is supported by regular hydrographic

[15] Submissions 36 and 42.

[16] Real Time Kinematic (RTK) is a satellite positioning technique providing high accuracy.

surveys to confirm progress and results. Some examples of these systems include Seatools (www. Seatools.com) and IHC Monitoring and Automation System (Attachment 4 to this evidence).

Effects on surfbreaks

87. **The Surfbreak Protection Society** (submission 38) supports the project but requests monitoring of the effects on nearby surf breaks. It is my opinion from experience that unlike other surf breaks in New Zealand where such technology has been or is planned to be fitted, the local breaks in the vicinity of the port have an insufficient number of rideable days per year to provide any meaningful data to support any potential assessment of effects. Additionally it is noted that there are existing plans (consented) for a seawall at Whakariri Avenue (City Break) which has the potential to impact the quality of the surf break, and which is outside the control of the Port.

Fisheries and biosecurity aspects

88. **Fisheries Inshore NZ (FINZ)** (submission 41) seeks involvement in developing conditions for monitoring and response, plus ongoing collaboration, reporting, information sharing with commercial fishers.

89. The Port is committed to ongoing collaboration with all stakeholders, and will develop a stakeholder engagement plan. In particular the Port is committed to provide timely and accurate information sharing, and will establish a project portal where project related information will be made readily available, including all reporting associated with the consent conditions.

90. The same submission also requests the Port retain a biosecurity expert and a marine environment scientist. The Port will be retaining the services of a suitably qualified consultant that provides a wide range of environmental services, including marine science and biosecurity. These services have been utilised for many years as part of required monitoring for existing dredging and disposal consents.

91. Marine biosecurity is important to the Port, which recognises and supports the proposed HBRC Regional Pest Management Plan. In particular, the Port has developed an education and inspection programme to help identify any intrusion of the Mediterranean Fanworm (Sabella spallanzanii) and Clubbed Tunicate (Styela clava) which are

known significant threats to the Hawke Bay marine environment. This includes specific inspections of the Port's navigation and water quality buoys when they are removed for maintenance, and hull inspections of the Port's tugs and pilot boats when dry docked or slipped for maintenance.

92. The proposed Dredge Management Plan will incorporate biosecurity provisions in accordance with the proposed HBRC Regional Pest Management and MPI biosecurity requirements, in particular the 'Guidance Document for the Craft Risk Management Standard for Biofouling (2018), which is applicable to vessels arriving into New Zealand.

RESPONSE TO CONFERENCING OF COASTAL EXPERTS

93. I have read the joint witness statement prepared by the coastal experts. The statement records that a southerly extension of the existing disposal area Rext was discussed. There was apparently no agreement on the longevity (and therefore potential benefit) of any nourishment placed at Westshore.

94. It should be noted that the existing consent for Rext specifically has a southern boundary that is 750m from Rangatira Reef. I understand this was put in place in response to concern of potential impacts on the reef from the disposal activities at the time the consent was granted.

95. This option of disposal south of the existing disposal area Rext is one to which the Draft Statement of Intent (SOI) might apply, i.e. if another party is able to obtain a resource consent for the proposed activity, the Port will make any material deemed suitable for that activity available to the consent holder, subject to the cost and timing provisions of the SOI.

CONCLUSIONS AND RECOMMENDATIONS

96. The design of the development has been based on rigorous modelling and assessment of effects, and the final design represents the accumulation of design iterations to minimise those effects.

97. Although there is significant call for 'suitable' sand to be utilised for erosion control at Westshore, the Port's position remains that the evidence presented indicates that available material (including that classified as sand) is not suitable for disposal at the existing disposal area Rext.

98. The Port has through the Statement of Intent (SOI) presented by Todd Dawson made a commitment to make the sand resource available should an alternative resource consent be obtained by another party.

99. The Port has committed through its proposed conditions and draft Water Quality Management Plan (WQMP) to an extensive adaptive management framework. This includes real time water quality monitoring and assurance monitoring which, based on the advice of the Port's technical advisors, will provide assurance on the effects of the proposed activities.

Michel de Vos

6 August 2018