

**BEFORE THE HEARING COMMISSIONER**

**IN THE MATTER**

of the Resource Management Act 1991

**AND**

**IN THE MATTER OF**

of resource consent applications by **FAR NORTH HOLDINGS LIMITED** to the **FAR NORTH DISTRICT COUNCIL** and the **NORTHLAND REGIONAL COUNCIL** for the development of a maritime servicing area at Part Lot 1 DP 183896 and Lot 1 DP 199153, Opuā.

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**STATEMENT OF EVIDENCE OF JOHN FRANCIS PAPESCH**

**22 November 2020**

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**INTRODUCTION**

1. My full name is John Francis Papesch. I am a Director and Senior Civil Engineer at Haigh Workman Ltd in Kerikeri. I am a Chartered Member of Engineering New Zealand, a Chartered Professional Engineer and an International Professional Engineer. I have a Bachelor of Engineering (Civil) from the University of Auckland and a New Zealand Certificate of Engineering (Civil) from the Unitec Institute of Technology.
2. I have more than 20 years of experience in civil and geotechnical engineering, with the past 17 years of that in the Northland region. I have been actively involved in engineering matters of resource consent applications in the Far North District through my whole period with Haigh Workman.
3. In this matter I appear on behalf of the applicant, Far North Holdings Ltd (*FNHL*) in relation to its proposed development of a maritime servicing area comprising a 1700 m<sup>2</sup> barge dock reclamation, a 700 m<sup>2</sup> boat ramp, a 57 m long timber jetty and pontoon and associated earthworks and retaining walls to form vehicle access, parking and manoeuvring areas (*the Project*).

4. I am familiar with the area that the Project covers which is described as Part Lot 1 DP 183896 and Lot 1 DP 199153 (the reclamation area was described as Part Lot 1 DP 183896 prior to being divested) (*the Site*). I prepared the Engineering report (detailed at paragraph 18 of this evidence) for the civil and geotechnical engineering elements for the Project.
5. I previously assisted FNHL and Bay of Islands Vintage Railway Civil in 2017 for the joint application of the new railway terminus at Colenso Triangle and reclamation for marine contractors. I have assisted FNHL with a range of development projects in Opuia and surrounds over the past 17 years including reclamations, boat ramps, jetties and the cycle trail.
6. I have read the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2014 and agree to be bound by its requirements. Any opinions expressed in this evidence are my own and are not influenced by the client or their agents. This evidence is within my area of expertise, except where I state that I am relying on the evidence of another. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

#### **SCOPE OF EVIDENCE**

7. My evidence primarily relates to bulk earthworks, access and stormwater management but where it is appropriate, I have also commented on other key matters raised.
8. I have also read and am familiar with the aspects of the following statements of evidence as they relate to engineering matters: Mr Galbraith (from FNHL), Mrs Kane-Sanderson (concerning ecology), Mr Cocker (concerning landscaping, visual and site design), Mr Ibbotson (concerning acoustics) and Mr Kemp (concerning planning matters).
9. My evidence will deal with the following matters:
  - An overview of the Haigh Workman engineering assessment and report as it relates to bulk earthworks, access and stormwater management;
  - Detailed description of the Project's proposed approach to earthworks including the management of the access and road safety;

- Comments on engineering issues raised by submitters;
- Recommended conditions of consent.

## **EXECUTIVE SUMMARY**

10. While my evidence addresses the Project's engineering approach to earthworks and site services, the key issues from a civil engineering perspective are the Project's management of and effects related to earthworks, access and road safety. That is because, whilst the s42A reports recommends the granting of all consents, some specific issues have been raised as requiring consideration at the Hearing.
11. Earthworks design and road safety measures have been developed for the Project and are described in my evidence, the Site Suitability Report and the s92 emails to Northland Regional Council dated 15 April 2020 and 1 October 2020. My evidence overviews the Project, with a particular focus on earthworks, access and road safety, and responds to the issues raised in the s42A report and by submitters.
12. The Site is zoned Industrial under the Far North District Plan (*District Plan*). The Project complies with the District Plan's traffic intensity rules and parking.<sup>1</sup> The access formation was proposed to be gravel, whereas the District Plan permitted activity rule requires all private accessways in Urban zones which serve two or more activities to be sealed or concreted<sup>2</sup>
13. The Site is accessed by an existing gravel access, and the cycle trail is gravel. Having considered the comments from Mr Hedger, FNDC's resource consents engineer, and comments from submitters, FNHL is willing to seal the access road into the Site, as a condition of consent. Sealing of the existing car parks is not proposed, and I do not consider it is required as an effect of this Project.
14. Notwithstanding compliance with the traffic intensity rule in the District Plan, Haigh Workman has also assessed the Project's effects on the cycle trail given the restricted width available and recommended a 6.5 m wide shared use access. I have reflected on the comments made by Mr Hedger, FNDC's resource consent engineer and submitters, in relation to the traffic safety

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<sup>1</sup> Chapter 15 – Transportation, District Plan.

<sup>2</sup> District Plan Rule 15.1.6c.1.2(c)

matters<sup>3</sup>. I have considered the options of separating cyclists from the traffic associated with the maritime services facility and I have assessed the effects on the cycle trail. I acknowledge that there is merit in providing separation with a 2.5 m wide cycle trail and a 4 m wide access road with a 700 mm high wire rope safety barrier in between and recommend that this solution is adopted for the Project.

15. I have considered the comments made by Mr Hartstone, NRC and FNDC's consultant planner, in relation to the coastal processes.<sup>4</sup> I agree with Mr Hartstone's observations; the site is relatively sheltered from tidal flows and waves actions, that the main channel is well east of the area subject to the application, and the proposed reclamation will extend an area of historically claimed land that is the site of the current boat yard. Extensive investigation of the hydraulic effects was carried out for the Opuā Marina by *Uniservices* in 1996 and by *MetOcean Solutions Ltd* in 2013 for Opuā Marina Stage II, which also covered the present Project area. Opuā Marina was built in 1999, no siltation problem has developed and no maintenance dredging has been required. These results are still valid, and some relevant facts are presented herein.

16. As the Project's earthworks will include excavation of the existing rock face to form the 6.5 m wide access, the Project also provides for construction of an engineered 2.5 m high retaining wall to support the toe. The existing rock face was formed as a box cut in the 1880's to provide access to the Port of Opuā and exhibits no obvious signs of instability. Consequently, construction of a retaining wall at the toe of rock face is not anticipated to have any adverse effects on surrounding properties or the cycle trail. I do however recommend that the wattle on the rock face above the cycle trail is removed. Appropriate conditions relating to geotechnical engineering for earthworks and retaining walls form part of the recommended conditions of consent.

17. The effects of stormwater discharge from the Project will also be mitigated by a treatment device designed and selected using the Auckland Council GD01 approach. I consider NRC has provided appropriate conditions of consent for monitoring the discharge.

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<sup>3</sup> Engineers Hearings Report, Attachment C to the s42A report, pages 78-79

<sup>4</sup> s42A report, para 65-69

18. Finally, I note the comments made by Mr Hartstone and submitters in relation to potential inconvenience caused to the cycle trail during the construction phase<sup>5</sup>. I expect the bank excavation and retaining wall can be timed in with other planned disruption to the cycle trail. I consider the bulk of the work can be carried out with minimal disruption to the cycle trail. The evidence of Mr Galbraith confirms that the applicant will work with the Pou Herenga ai Twin Coast Cycle Trail Trust to ensure disruption is minimised. Mr Galbraith advises that the applicant's intention is that the Cycleway remain open at all times other than when closure is necessary for construction/health and safety reasons.

19. Overall, I consider that by these measures the effects on the receiving environment have been appropriately minimised.

### **HAIGH WORKMAN ENGINEERING REPORTS**

20. Haigh Workman has completed an engineering report for the present application that is relevant to my evidence;

- 'Engineering Report for Opuia Hard Stands – Opuia Reclamation - Maritime Services', revision B, dated 20 September 2019 (*Engineering Report*). This report addresses geology, hydrology and flooding, natural hazards, geotechnical recommendations and earthworks quantities, stormwater management and access. Where I reference drawings in my evidence, they can be found in Appendix A to the Engineering Report.

21. In response to comments and requests for further information, Haigh Workman also provided the following further information contained in the s92 response dated 1 October 2020:

- Position of cross section drawings 04, 05, 06 and 07 plotted on drawing 01
- Co-ordinates of the moorings overlaid on to drawing 01
- Comments on the shared use access and surfacing.

22. In this section of my evidence I will describe the key points of the reports and drawings as they relate to civil and geotechnical engineering. My evidence will subsequently address the access, road safety and stormwater effects of the

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<sup>5</sup> S42A report, paragraph 92-95

Project together with my comments on coastal processes, construction, submissions and the s42A report.

### **Bulk Earthworks**

23. The quantities of earthworks involved in the Project comprise approximately 600 m<sup>3</sup> dredging, 1,050 m<sup>3</sup> of land-side excavation and 8,900 m<sup>3</sup> of filling (of which approximately 7,250 m<sup>3</sup> will be imported clean fill) over an area of approximately 6,600 m<sup>2</sup>. The maximum cut face is 2.5 m, following the existing rock face. The maximum fill face is 4.6 m, being the height of the reclamation sea wall above the seabed. The overall height of the sea wall is 5.6 m, to provide for 1 m depth of dredging against the vertical wall face. All cut and fill faces are to be retained with Engineered structures.
24. The earthworks will be carried out in stages to enable formation of access into the site ahead of the reclamation works. The works will commence with excavation of the rock face and construction of the retaining wall and associated access formation. Staging of the access formation does not necessarily align with the timing for the construction of reclamation because the cycle trail will need to be closed during this stage of works. As already noted above these closures will be minimised. It is anticipated that this work will be completed whilst other sections of the cycle trail are subject to disruption. Providing flexibility in this initial staging will provide opportunity to align closure with other works on the Pou Herenga Tai Twin Coast Cycle Trail.
25. To manage the effects of earthworks operations, it is proposed to follow Auckland Council GD05 recommendations for land-disturbance activities, and to adopt silt curtains around dredge areas. The silt curtain solution is a practical earthworks control whilst reducing the quantum of risk associated with dredging operations. The location, timing and extent of earthworks will be detailed in an Erosion and Sediment Control Plan (*ESCP*) which will be submitted to the NRC for approval prior to earthworks commencing. A copy of the *ESCP* can be sent to FNDC for information purposes.
26. Earthworks over the bulk of the vehicle manoeuvring and parking area is relatively shallow (<0.5 m) and primarily comprises the stripping of vegetation and minor re-contouring.

27. Earthworks and retaining wall designs will be carried out under the supervision of a suitably experienced Chartered Professional Engineer (Geotechnical practice area) as laid out in the FNDC recommended conditions of consent. Similar retaining wall construction is envisaged for the reclamation as was constructed for Opuia Marina Stage II reclamation comprising a tied back pile and panel wall. Settlement will occur within the reclamation fill for which the earthworks volumes provision 900 m<sup>3</sup> of additional filling which equates to just over 500 mm over the 1700 m<sup>3</sup> area. Based upon historic site investigation data similar ground conditions can be expected at this site as was encountered at Opuia Marina Stage II.<sup>6</sup>

### **Bank Excavation**

28. The existing cut slope or rock face to be excavated and retained was excavated as a box cut in the early 1880's to provide access to the Port of Opuia. The 1953 photographs show what is now the boat yard to be the toe regions of moderately sloping ground with the adjacent railway line in a box cut. The Opuia basin was filled in the 1960's and 1970's and the 1981 aerial photographs show the Opuia basin reclamation to be complete and the development of the boatyard. At the boatyard, the spur on the harbour side of the railway box cut has been excavated with adjacent filling taking place in the foreshore area. The subsurface profile of this reclamation fill was confirmed with machine CPT probe holes in 1996.

29. I have visited the site with an associate Senior Geotechnical Engineer and Engineering Geologist from my office to visually map the rock face that is proposed to be trimmed back. No obvious defects in the geology were identified or notable signs of slippage above the proposed retaining wall were observed. The cut face is considered stable in its current form. I do however recommend that the wattle on the rock face above the cycle trail is removed. Mr Galbraith has advised me that the Wattle has been removed 2-3 times during his 14 years in Opuia. Subject to ongoing vegetation control of the batter and supporting the excavated toe with an engineered retaining wall, no adverse effects are anticipated.

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<sup>6</sup> Earthtec Consulting Ltd, Site Investigation and Geotechnical Report, July 1996

30. For completeness, I note that there is an area of bank instability outside of the boat yard entrance which was raised in several submissions. This area is outside of the Site and not affected by the Project.

### **Reclamation Fill**

31. Construction of the railway embankment in the 1880's is reported to have been undertaken by end tipping scoria boulders directly onto the foreshore. The scoria boulders range in size from cobbles up to 1 m across and would have settled to their natural angle of repose (45 to 55 degrees). Where the foreshore consists of soft marine muds, settlement and possibly bearing capacity failures are likely to have occurred.
32. The existing reclamation height is RL 2.5 m at the boat yard to which the finished level of the Project reclamation is to match. The most straight forward construction option would be to construct a rock rubble wall by end tipping. This would form a new revetment wall very similar to the boat yard wall or the existing railway embankment. However, a vertical wall is desired to enable docking of barges.
33. Reclamation fill will primarily comprise imported clean fill, however it is also proposed to utilise 600 m<sup>3</sup> of dredged material as reclamation fill. Should this material prove problematic to utilise as reclamation fill, it may be stabilised with cement to form mudcrete, or alternatively disposed of at a facility which is consented to take this material. The volume at 600 m<sup>3</sup> is fairly minor and would equate to approximately two days' work to excavate from barge.
34. Significant settlements are expected within the marine muds underlying the Site hence the allowance of 900 m<sup>3</sup> of additional filling. The presence of the now stable railway embankment and rock wall adjoining the boat yard will cause sharp differential settlements at the contact areas. A capping layer of imported clean fill which is able to be compacted will provide a reasonable subgrade material for parking areas. Finishing the earthworks with granular hard fill will provide an appropriate wearing surface. Kerb and channel, sealing or installation of services should not be undertaken until the bulk of settlement has occurred which could take several years.
35. If timeframe were an issue, the consolidation process could be shorted to ca. 12 months with a combination of vertical wick drains and preloading. However,



based on my Project understanding, the reclamation is to be finished with gravel which can be re-levelled with relative ease, and no services are proposed hence these techniques are not necessary.

### **Access and Road Safety**

36. In this section of my evidence I will describe the key points of the proposed access road as they relate to road safety effects of the Project. The design of access road is based on standards and approaches as detailed in the Site Suitability report which adopts the following principles for design:

- a. The vehicles accessing the boat ramp and reclamation area will utilise the existing entrance through the boat yard. Cycle trail traffic will continue to use the existing entrance which is adjacent to the boat yard entrance.
- b. There is a restricted access width for a length of 67 m, between the boat yard and the rock face. This access will be made near-straight to create unrestricted visibility along the full length by relocating the existing boat yard fence further back into the boat yard, and excavating the toe of the rock face which is to be supported by the retaining wall. Given the constraints of working around existing buildings, boat yard operations and the rock face, the practical maximum carriageway width achievable through this section is 6.5 m wide. Shared use of this space is discussed further in paragraph 37.
- c. The remainder of the cycle trail affected by the Project is diverted from the railway embankment to hug the toe of the existing hillside. This can be built with a near-flat gradient and the design shall comply with the New Zealand Cycle Trail (NZCT) Design Guide (August 2019 5<sup>th</sup> Edition). Public (pedestrian) access will remain via the relocated cycle trail including access to the jetty and relocated dinghy rack and ramp.

37. Provision for a shared use access could have the benefit of providing adequate width for a 'double trail' as well as provision for over-width loads for heavy vehicles. FNDC Engineering standards are based upon NZS4404:2004 *Land Development and Subdivision Infrastructure*. Shared access is an acceptable solution in NZS4404:2010, as presented in figure number E4 of table 3.2.<sup>7</sup>

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<sup>7</sup> Figure E4 presents a design basis for shop and trade land use for a side or rear service access. It is intended for an access up to 100 m length with a target operating speed of 10 km/h with a minimum

38. Whilst the District Plan provides for, as a permitted activity, private access in the commercial zone of not less than 3 m carriageway width for a one-way operation<sup>8</sup>, marine contractors are expected from time to time to have over-width loads. Given the low speed environment, open visibility, limited length of the restricted width and relatively low traffic volumes, the compliant solution from NZS4404 for the shared use access formed my recommended solution in order to provide for over-width loads and a 'double trail' for cyclists.
39. The NZCT Design Guide for a grade 1 trail specifies the 'double trail' preferred width equals 2.5 m to 4 m<sup>9</sup>. The single trail width is 1.5 m, with 1.2 m minimum. Horizontal clearances from fences and walls on both sides should be the path width plus 1 m, but this may be reduced to a minimum clearance of 0.5 m if there is a fence on one side<sup>10</sup>. The majority (74%) of the cycle trail affected by the Project will comply with the NZCT with a double trail width of 3.0 m as a 'double trail' with a fence on one side.
40. The NZCT Design guide also provides for 'on-road' trail types. At low combinations of traffic volume and speed, no special provision for cycling, other than NZCT signage and branding, are required.<sup>11</sup> Further, gravel roads can be considered appropriate if their characteristics fit the 'mixed traffic' areas of the figure 45 in NZCT Design guide. Figure 45 provides that it is acceptable for cyclists to share the roads for traffic volumes of up to 2000 vehicles per day (vpd) for motor vehicle speeds up to 40 km/h. The shared use access in this application has projected traffic volumes in the order of 32 vpd with peak hour traffic of 4 vehicles per hour. The shared use access can have a posted speed limit of 10 km/h. Whilst it is desirable to keep cycle trail traffic 'off-road', this is an acceptable solution in the NZCT Design guide.
41. The alternative solution to a shared use access is to place a barrier on the access road to separate cyclists from motor vehicles. The alternative solution could be a 2.5 m wide cycle trail and a 4 m wide road carriageway. At 2.5 m wide, the cycle trail would comply with the 'single trail' width of 1.5 m, plus the 1 m horizontal clearance requirement. It is not always practicable to provide the required width for the full length of a cycle trail and bluffs, steep cross slopes

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road width of 6 m. Pedestrian and cyclists' movements are shared within the lane width. The classification is intended for typical max volumes of 200 vpd.

<sup>8</sup> District Plan rule 15.1.6C.1.2(b)(i)

<sup>9</sup> NZCT Design Guide, Table 2: Design specifications for off-road trails

<sup>10</sup> NZCT Design Guide, Table 7: Off-road trail horizontal clearance requirements

<sup>11</sup> NZCT Design Guide, section 4.5

and other geographic features produce 'pinch points' on the path. These features can be tolerated as long as there is adequate visibility leading to them or advance signage and safe opportunities for path users to stop before the pinch point and give way to oncoming users.

42. The 4 m wide road carriageway may limit the ability for over width loads to access the site. Loads in excess of 3 m width are not common and could be managed with alternative solutions. If the barrier between the road carriageway and the cycle trail was limited to 700 mm height however, this would allow for an over width load on a flat deck truck or trailer to pass over top.<sup>12</sup> Further, the barrier would be below handlebar height and provide increased comfort for cyclists to pass.
43. Whilst I considered the shared use access approach to be a compliant solution, I acknowledge that there is merit in providing a safety barrier between cyclists and vehicles, subject to the safety barrier being limited to 700 mm in height. This may be achieved with a wire rope safety barrier or similar approved, which is normally set at 700 mm height. I consider this to be a suitable alternative to adopt to alleviate the potential safety concerns or the need to undertake further traffic safety assessments.
44. For completeness, I should also note that peak traffic from oyster farming occurs during harvesting from June to November whilst Bay of Islands tourism as normally at its busiest from Labour Weekend through to Easter. Most of the peaks therefore do not coincide. Further, an intention of the proposed new vintage railway terminus at Colenso Triangle is to encourage cyclists to start their journey at Colenso Triangle. When the Colenso Triangle project is completed, the quantum of cyclists passing through this part of the trail is likely to reduce.

### **Road surfacing**

45. The Site is accessed by an existing gravel access from the end of Baffin Street. Baffin Street is formed generally as a 6.5 m wide sealed road to a 'Type B Rural'<sup>13</sup> specification with a variety of shoulder treatments, drainage solutions and parking arrangements. The road construction provides for two 3 m wide lanes with edge line and centreline marking.

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<sup>12</sup> Active traffic management would be expected where over width loads were being transported.

<sup>13</sup> District Plan Appendix 3B-2: Standard for roads to vest

46. The end of the legal road corridor of Baffin Street into the Site is demarcated by the end of seal and a speed hump. The land on which the gravel access road is formed is leased from the Crown. The gravel access is 67 m long from the end of the seal up the gated entrance to the boat yard. The width provides for a 6 m wide unmarked carriageway with parking alternating from one side to the other, and parking on both sides at its widest point.
47. The gravel access formation up to the gates is generally in good condition, with some minor potholes observed which have been repaired.
48. Having considered the comments from Mr Hedger, FNDC's resource consents engineer, and comments from submitters, FNHL is willing to seal the access road into the Site, as a condition of consent. The existing pavement will have a high clay content, so I recommend this is cement or lime stabilised prior to sealing. Given that the heavy vehicles are not manoeuvring on this surface, I consider a 2-coat grade 3 and 5 chip seal will be fit for purpose. The seal coat should be 6.5 m wide and lap 10 m onto the existing seal of Baffin Street, ie a total seal length of 77 m from the entrance to the boat yard. I recommend edge lines are marked up to the entrance of the boat yard to provide a 6 m carriageway<sup>14</sup> to match into Baffin Street.
49. Sealing of the existing car parks outside of the boatyard gate is not proposed and I do not consider it is required for this Project. Designated parks have been provided for within the Site and the application does not require the formation of additional car parks in this area. As such, I do not consider sealing of the car parks is required to mitigate an adverse effect resulting from this Project.
50. Within the boat yard, heavy vehicles will be turning in the existing yard and then travelling along the 67 m long x 4 m wide one lane access. A harder wearing surface will be required to seal this area which will be best achieved in reinforced concrete to match the existing hard standing areas. Concreting of the access within and parallel to the boat yard can be completed as a condition of consent.
51. Concreting or sealing of the access beyond the boat yard, including the vehicle parking and manoeuvring areas in my view is not required, and I note that Mr Hedger does not disagree. Similarly, I do not consider that sealing or

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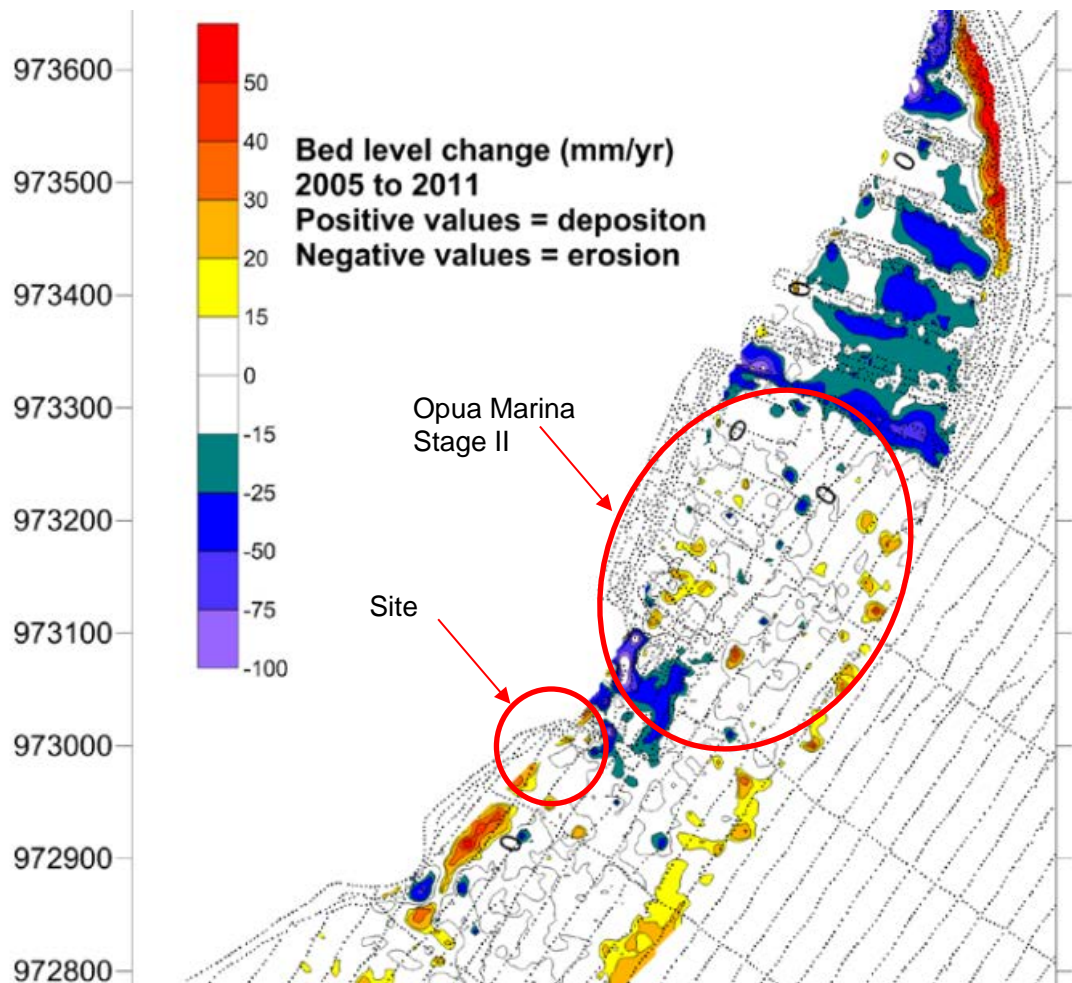
<sup>14</sup> District Plan Appendix 3B-1: Standards for private access require a 6.0 m wide sealed carriageway width in the commercial and industrial zone.

concreting of the cycle trail is required; this should be formed with compacted basecourse, under a top course aggregate of maximum AP20 mm<sup>15</sup>. The reclamation area should also be gravel for reasons as outlined in paragraph 34 of my evidence.

### Coastal processes

52. Extensive investigation of hydraulic effects was carried out for the Opuia Marina by *Uniservices* in 1996 and by *MetOcean Solutions Ltd* in 2013 for Opuia Marina Stage II, which also covered the present Project area. These results are still valid, and some relevant facts are presented herein.

53. Opuia Marina was completed in 1999 and has been subject to further review by *MetOcean Solutions* as part of their 2013 modelling work (*2013 model*). The report identifies that there is no history of dredging and that seabed levels have only minimally increased in parts due to changes in tidal flows.<sup>16</sup>



<sup>15</sup> NZCT Design Guide Table 2: Design specifications for off-road trails

<sup>16</sup> MetOcean Solutions Ltd, Opuia Marina Stage II, figure 2.3.

54. Detailed modelling by MetOcean was carried out which includes coverage of the subject site. Whilst the formation of reclamation at the subject Site did not form part of the 2013 model, it does provide modelling of the sediment transport regime at the Site and surrounds. The values indicate that peak velocity and changes in bed shear stress is not of concern. The MetOcean report is included as **[Attachment 4]** to my evidence.
55. I agree with Mr Hartstone's observations; the site is relatively sheltered from tidal flows and wave action, that the main channel is well east of the area subject to the application, and the proposed reclamation will extend an area of historically claimed land that is the site of the current boat yard. In my view, the 2013 model supports these observations. I note that NRC's hydrologist Mr Khan has not raised any concerns to Mr Hartstone in relation to catchment hydrology or flooding.<sup>17</sup>
56. A more serious aspect of floods is that they carry driftwood and debris, which can damage marine structures if not designed appropriately. The scheme plan shows the orientation of the berthing face of the reclamation to be parallel with the current. Furthermore, the floating pontoon and berth for the Minerva are orientated northeast to also be parallel with the current. Debris could be trapped at the southern end of the reclamation adjoining the boat ramp and would have to be removed manually, however based upon my observations from when I was based in a waterfront office in Opuia from 2003 to 2008 I expect that would occur infrequently.

### **Stormwater Treatment**

57. The stormwater treatment system is designed for water quality purposes and not to attenuate peak flows. Given that the Site discharges directly to the sea, stormwater quantity associated with increased impermeable surfaces is not considered to be an issue.
58. The intended use of the maritime services facility is to provide access to the coastal marine area for marine contractors. The reclamation is intended to be used as a barge dock and will not be used as a 'working area'. The parking and manoeuvring area is similarly not to be used as a 'working area'.

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<sup>17</sup> S42A report, paragraph 66.

59. Whilst there are no industrial activities proposed, heavy machinery such as fork lifts and cranes are expected for vessel loading and unloading, together with temporary lay down areas. For this application, a proprietary stormwater treatment device such as Stormwater360 (as laid out in Appendix B of the Engineering Report) will achieve the stormwater treatment requirements required by NRC consent conditions. Stormwater360 has proven stormwater treatment systems, such systems have been used within the boatyard, and similar systems have been approved for use in the hardstand to the north and Stage 2 reclamation.

### **Construction**

60. The work will be tendered to suitably qualified and experienced contractors. Whilst I would rely on the expertise of the selected tenderer to devise their own work methodology and programme, I generally expect the sequence and method of construction to be as follows:

- i. Bank excavation and retaining wall - as per paragraph 23-24 of my evidence, the bank excavation and retaining wall can be timed in with other planned disruption to the cycle trail, although this is not necessary. This portion of work will need to occur first to enable access to the site and can be completed by a competent civil works contractor experienced in building retaining walls. I expect the construction period to be around 1 month. I expect it will be in the interest of FNHL to tender out this portion of work separately to allow for an agile start date.
- ii. Formation of the remainder of the relocated cycle trail and the gravel car park and manoeuvring area should follow the retaining wall construction as part of the enabling works. This will require clearing, re-levelling, minor filling and drainage. This enabling works would also ideally be completed with other planned disruption of the cycle trail, but it would be possible to complete this construction with careful traffic management without closing the trail. Allow say 2 months.
- iii. Reclamation sea wall - I expect the seawall will be constructed using floating pile driving plant. Consideration will be required for how to best load materials on to the barge. I expect construction of a pile and panel wall will take around 2-3 months.

- iv. Dredging will commence following completion of the sea wall using a long reach excavator on a hopper barge. Dredging is likely to take two days or less.
- v. Reclamation fill will be placed following completion of the sea wall and/or the dredging. There will be approximately 725 truck and trailer units of fill to be transported to the site. If the fill was placed at a rate of 10 truck and trailer units per day, the fill would take two months to place.
- vi. The timber jetty and pontoon will be constructed by floating pile driving plant. I expect the construction sequence will be to build the timber jetty immediately following the reclamation sea wall, whilst the reclamation and then the finishing works are all completed in parallel.
- vii. Finishing works will involve boat ramp construction, pavement construction, drainage and fine levelling. The overall programme is expected to be in the order of 8-9 months.

#### **COMMENTS ON SUBMISSIONS**

61. A total of 34 submissions were received in respect of the Application to FNDC and 41 submissions in relation to the Application to NRC. I have read each of these submissions and have identified the following topics which fall within the scope of my evidence, namely:

- a) Safety issues; incompatibility with cycle trail / vintage railway
- b) Traffic, access and parking
- c) Land stability, earthworks and dredging
- d) No consideration of alternatives

62. I have addressed the matters raised by submitters with regard to safety issues, traffic, access, land stability, earthworks and dredging within my body of evidence. I have further discussed the potential for vehicular access to the relocated dinghy ramp with Mr Galbraith which I comment on below. Alternatives sites have also been considered by FNHL which I comment on below.



### ***Vehicle access to the relocated dinghy ramp***

63. A number of submitters have raised the potential for vehicle access to the relocated dinghy ramp<sup>18</sup>. I understand that FNHL is open to providing subscribed vehicular access through the Site to mooring owners on the basis of short term (30 minute) parking. FNHL is able to control vehicular access into the Site with a card-based system from the boat yard entrance. No additional car parks are to be provided; however, I am confident that FNHL will be able to develop a booking system so as to avoid conflicts with marine contractors as part of a management plan.
64. The quantum of traffic movements associated with providing subscribed vehicular access through the Site is expected to be low. Given the short term (30 minute) parking arrangement proposed, this opportunity for mooring owners will be utilised for dropping of parts and supplies to ease the burden of carrying heavy items to the dinghy dock.

### ***Alternative sites***

65. The subject Site was selected by FNHL following a mediation for the Colenso Triangle resource consent in January 2018. The location of the subject Site in relation to the Colenso Triangle site is shown on the Haigh Workman Drawings '*Marine Contractors Alternative Site – Site Location Plan 01 and 07*' included as [**Attachment 1**] to my evidence.
66. The scale of the operational area requirements was developed by FNHL based upon the existing use of the boat ramp facility and barge dock in Opuā prior to the development of Opuā Marina Stage II, in consultation with Marine Contractors. Haigh Workman Drawing '*Marine Contractors Alternative Site – Opuā Facilities Plan (pre Marina Extension)*' included as [**Attachment 2**] provides an aerial overlay of the former barge dock and existing boat ramp and parking and manoeuvring areas.
67. Total Marine Services (TMS) completed an assessment of 10 alternative sites at Opuā and surrounds. The assessment identifies 10 alternative sites to this Proposal including Smiths motor camp, Hyland's property, Derricks Landing, Frenchman's Swamp, South of Kennedy Street, Opposite Carter's, Veronica Point, Bay to the North of Colenso Triangle, Opuā wharf and Colenso Triangle.

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<sup>18</sup> S42A report, paragraph 91.

The assessment is dated 28 April 2017 and formed part of the Colenso Triangle application. The TMS assessment is included as [**Attachment 3**] to my evidence.

68. Each site was assessed on the base of sea access, road access, public access, operating area and potential environmental effects. Opuia wharf and Colenso Triangle were assessed in greater detail as preferred options. The Colenso Triangle site was the preferred option, but that application was declined. Opuia wharf is now no longer a suitable option as both sides of the wharf have been lined with floating docks to provide for large boat berths.

69. I have read the assessment of the remaining eight sites assessed by TMS and viewed their location on aerial imagery. Each site has a complex range of engineering matters in relation to access and potential environmental effects. On the same assessment criteria, I consider this application Site is the preferred site compared to remaining alternatives assessed by TMS;

- a. Sea access – it is a short transit.
- b. Road access – this can be readily formed.
- c. Public access – the cycle trail can be altered and continue to operate safely.
- d. Operating area – the area is limited (as with all other sites assessed).
- e. Environmental – extension of an existing reclamation adjacent to an existing commercial activity. Minimal dredging required.

70. The evidence of Mr Kemp at paragraph 40 refers to the conflict between landing of oysters and recreational boating use. I attach photographs of unloading activities at the ramp which I took on 16 November 2020 [**Attachment 4**]. The photos show unloading of barges into trucks. The bulk of the ramp is coned off for health and safety reasons while I was observing and taking photos recreational users also sought to launch and retrieve boats – as is evident from the photos there is very little space for that to occur during unloading activities.

### **Proposed NRC Conditions of Consent**

71. I have reviewed the draft NRC consent conditions included in the s42A report. They are suitable consent conditions, and in my opinion appropriate for managing the effects of the Project.

### **Proposed FNDC Conditions of Consent**

72. I have also reviewed the draft FNDC consent conditions included in the s42A report and consider in the main that they are suitable consent conditions. My recommendations in respect of necessary civil engineering amendments, and the reasons for them, are set out below:

#### Condition 2(c)

73. I recommend reference to sealing in condition 2(c) is altered to '*...the internal commercial access road to be sealed from the end of the existing Baffin Street seal to **the reclamation** ~~proposed gates, inclusive of the parking and turning area around the proposed portion of the shared path~~*', As I have laid out in my evidence, I do not consider sealing to be necessary of the parking and turning area outside of the boat yard, or sealing of the cycle trail is necessary to mitigate an adverse effect resulting from the Project.

#### Condition 2(e)

74. The requirement for a pre-construction roading condition assessment is considered reasonable for a Project which results in a quantum of heavy vehicle traffic on a Council road which has not been designed for that purpose. The intention is to move risk from Council on to the applicant should pavement damage occur as a direct result of a Project.
75. Traditionally this consent condition has been written as '*The consent holder must reinstate any damage caused by construction works to Council's street footpath, stormwater kerb and channel, road carriageway formation, street berm and urban services at the expense of the consent holder to the satisfaction of the Council's Engineering Officer.*<sup>19</sup> Introducing a condition

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<sup>19</sup> Consent condition 10(g) contained in the RC2180514 being the Opuia Hilltop Subdivision is a recent and local example of this condition. This consent provides for 17,835 m<sup>3</sup> of cut to waste which will be removed from Site via Franklin Street.

assessment into consent conditions assists with defining the difference between pre-existing damage and damage as a direct result of the Project.

76. The consent condition as currently written does not clearly define the extent of local roads that the consent holder will be taking responsibility for as a result of the Project. Heavy vehicles will bring fill into the Site from State Highway 11 down Franklin Street, where they will turn right at the bottom of the hill into Baffin Street. Franklin Street is 900 m long and Baffin Street is 700 m long, providing a total of 1.6 km of local road leading into the Site from the State Highway.

77. I consider that the main pavement area at risk of damage from the Project is the final 100 m of Baffin Street from Kellet Street to Lyon Street where the seal coat is flushing. Adjacent parking areas, kerbs, drainage and street furniture will not be affected by the Project so they do not need to form part of a condition assessment. I recommend condition 2(e) be altered to:

A pre-construction roading ~~infrastructure~~ **pavement** condition assessment report for **Baffin Street, from Kellet Street to Lyon Street** ~~adjacent access roads to the development namely public access, parking areas and Baffin St entry,~~ prepared by a suitably qualified and experienced person. The report shall include as a minimum the following information:

- (i) Current condition of road **pavement** ~~infrastructure and parking areas.~~
- (ii) Any recommended repairs or maintenance requirements to avoid or mitigate adverse effects from imported fill material.
- ~~(iii) Positive improvement measures from development.~~
- ~~(iv) Kerb and channel, vehicle crossing points, catch pits and manholes, footpaths, signs, street lighting, reserve areas and road-side berms condition.~~
- ~~(v) Road drainage infrastructure.~~

The costs of preparing the report shall be to the Consent Holders expense.

## **CONCLUSION**

78. I agree with the s42A recommendation to grant the application and the effects assessment by Mr Hartstone. Mr Hartstone has raised queries in relation to safety concerns with the cycle trail, construction and the coastal processes to be considered at the Hearing which I have addressed in my evidence.

79. I have considered the comments made by Mr Hedger and submitters in relation to the safety issues with the cycle trail and the requested condition to seal the access road and parking area from the end of Baffin Street into the Site. I consider there is merit in including a 700 mm high safety barrier to satisfy the safety concerns raised, and I consider there is merit in sealing the access road, but I do not consider it is a requirement of this Project to seal the parking areas.

John Francis Papesch

Dated this 22nd day of November 2020