

Before Hearing Commissioners
at Christchurch

under: the Resource Management Act 1991

in the matter of: applications CRC172455, CRC172522, CRC172456, and
CRC172523 to undertake channel deepening dredging
and maintenance dredging in Lyttelton Harbour

and

in the matter of: **Lyttelton Port Company Limited**
Applicant

Memorandum of counsel in response to the 5th and 6th Minutes
of the Commissioners

Dated: 29 May 2017

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MEMORANDUM OF COUNSEL IN RESPONSE TO 5TH AND 6TH MINUTES OF THE COMMISSIONERS

May it please the Commissioners:

- 1 This memorandum is filed on behalf of Lyttelton Port Company Limited (*LPC*) in response to:
 - 1.1 the 5th Minute of the Commissioners dated 19 May 2017 (*5th Minute*); and
 - 1.2 the 6th Minute of the Commissioners dated 24 May 2017 (*6th Minute*).
- 2 In terms of the 5th minute, this memorandum:
 - 2.1 Refers to each of the definitions and conditions that were the subject of a question or comment, and:
 - (a) Indicates whether or not the amendment has been adopted; and
 - (b) Where the amendment has not been adopted, explains why not; and
 - 2.2 Attaches revised versions of both the channel deepening consent conditions and maintenance consent conditions (tracked changes and clean).
- 3 This memorandum also answers the questions posed in the 6th Minute.

CHANNEL DEEPENING CONSENT CONDIITONS

Definitions (excluding those relating to condition 9)

Certification

- 4 The definition has been amended to remove unnecessary words.

Hydrodynamic modelling

- 5 A definition of hydrodynamic modelling has not been included due to changes to the structure of condition 9. A definition of "Predicted Dredging Turbidity" has, however, been included.

TSS

- 6 TSS has been defined as "Total Suspended Solids".

Conditions (excluding condition 9)

1.5

- 7 The condition has been amended to remove the superfluous words.

- 1.6
- 8 The purpose of the condition is to prevent LPC from deepening the shipping channel in one stage to allow ships with a draught of 14.5 metres to enter the Port in all tides. The condition was proposed as LPC's application was made on the basis there would be at least two stages if the full channel deepening is undertaken, and the assessments of effects relied on by LPC were completed assuming two dredging stages.
- 9 The wording of the condition is difficult, as:
- 9.1 It is not yet possible to determine a cubic metre limit for the first stage of the dredging project (meaning any numerical limit imposed would have to be so large as to render it meaningless); and
- 9.2 The condition cannot be worded so as to *require* LPC to dredge the shipping channel to the full depth sought in the applications, i.e. to allow a vessel with a draught of 14.5 metres to access the Port in all tides. This is because a resource consent is an authorisation and not an obligation; the wording of the condition needs to reflect that.
- 10 LPC has amended the condition in an attempt to make the above more clear.
- 4.3 (*and others*)
- 11 The words "To achieve the purposes of the DMP" have been removed. The words have also been removed from condition 5.3 in respect of the Marine Mammal Management Plan, condition 6.3 in respect of the Biosecurity Management Plan, and 7.4 in respect of the Environmental Monitoring and Management Plan.
- 4.3.7
- 12 The words "in Lyttelton Harbour" have been added as suggested.
- 5.3.4
- 13 The condition has been amended as suggested.
- 7.6.4
- 14 The condition has been amended as suggested.
- 7.8 and 7.9
- 15 The Commissioners raised issues with the use of the terms "exceedance" and "other environmental factors". Exceedance is now defined, and the words "other environmental factors" have been removed as they did not add anything to the condition.

- 16 Condition 7.8.2 has also been amended for consistency with the new condition 9. It now refers to the updated methodology for determining the turbidity triggers. Condition 7.8.3 has also been amended to make use of the new definition "Predicted Dredging Turbidity".

7.10.1

- 17 The condition has been amended as suggested.

7.10.4

- 18 The condition has been amended as suggested.

8.19

- 19 The condition requires the Consent Holder Project Team to consider whether further baseline monitoring is required in the event of a seven year gap between the completion of the final quarterly monitoring report and the recommencement of dredging.

- 20 The seven year figure was chosen because the monitoring proposed in Appendix 1 to the conditions includes monitoring of physical parameters for five years following the completion of a dredging stage. It will then take LPC some time to review the information collected as part of that monitoring, determine whether any changes are necessary for the next stage of dredging operations, and undertake up to 12 months additional baseline monitoring.

- 21 Seven years is sufficient to allow that occur.

8.20

- 22 This condition was included prior to the inclusion of condition 8.21, which provides the Consent Authority with the opportunity to require a different period of further baseline monitoring. The condition is no longer required, and LPC proposes that it is deleted.

10.2.3

- 23 The condition has been amended as suggested.

10.2.4

- 24 The condition has been amended as suggested.

11.4.1-11.4.3

- 25 The condition has been amended as suggested.

11.6.6

- 26 The condition should refer to the consent holder having up to seven members on the Technical Advisory Group, rather than six. This is to allow a dredge operator and an environmental manager (or similar) to be part of the group. LPC has proposed an amendment

accordingly, and has also amended 11.3 to reflect the increased number.

11.7.1-11.7.2

- 27 The Commissioners have questioned the narrowly defined role of the Technical Advisory Group (TAG). The conditions proposed state that the TAG shall:
- 27.1 Review the monthly, quarterly and Dredging Stage monitoring reports prepared by the CHPT and where necessary provide advice to the CHPT in writing on whether the monitoring programme detailed in the EMMP requires amendment (including the location of monitoring stations and the parameters monitored for); and
 - 27.2 Review any exceedances of the turbidity triggers contained in the EMMP and where necessary provide written advice to the CHPT on whether the monitoring programme detailed in the EMMP needs to be amended to better understand whether exceedances are attributed to Dredging or other environmental parameters.
- 28 As recognised in the evidence of Andrea Rickard for Ngāi Tahu and Andrew Purves for LPC,¹ these conditions provide for the TAG to function as a communication tool which enables information, (including the monitoring information fundamental to the operation of the consent), to be shared between LPC, manawhenua, and marine farmers.
- 29 LPC recognises that in practice, however, there may be other technical matters that the TAG could also provide advice to the consent holder on as dredging progresses. This is now reflected in the conditions through the addition of 11.7.3, which provides that the TAG shall *"Provide advice on any other technical matters as sought by the consent holder"*.
- 30 Consent conditions are unable to take the involvement of the TAG any further than this, however. The law is clear that:
- 30.1 Only the consent authority (or in limited situations, another person with suitable skill or experience) is able to certify management plans or other details of a condition imposed;²

¹ Evidence of Andrea Rickard dated 4 April 2017, paragraph 43; Summary and response evidence of Andrew Purves dated 4 May 2017, paragraph 53

² See for example *Mount Field Ltd v Queenstown District Lakes DC* [2012] NZEnvC 262 at [76]-[83]

- 30.2 Certification is limited (as per the definition included) to certifying that the relevant plan meets all the requirements set out in the conditions of consent. There can be no other decision making or resolving of disputes;³
- 30.3 Enforcement duties cannot be delegated; they be dealt with in accordance with the provisions of the RMA;⁴ and
- 30.4 Conditions cannot impose obligations on third parties (i.e. not the consent holder) without their consent. Doing so could frustrate the grant of consent.⁵
- 31 In relation to the above, LPC also submits:
- 31.1 Ngāi Tahu provided evidence on the burden imposed by the pre-consent TAG on people's time and expertise;⁶ and
- 31.2 TAG requested that a requirement for an independent peer review group (PRG) be included within the channel deepening conditions.⁷ That request has been carried through, and the PRG has the functions outlined in condition 13.
- 32 Nevertheless, LPC is confident that the conditions as amended provide for the TAG to play a valuable role in the implementation of the consent.
- 13.6.4
- 33 The condition has been amended as suggested.
- 13.7
- 34 The condition has been amended as suggested.
- 14.2.5
- 35 The condition has been amended as suggested.
- Condition 9**
- 36 Condition 9 has been completely redrafted to address the concerns raised in the 5th Minute. The amended conditions have:

³ See for example *Turner v Allison* [1971] NZLR 833

⁴ *Bird v Timaru DC* C027/94 (PT)

⁵ See the general principle in *Residential Management Ltd v Papatoetoe City* A062/86 (PT), and *Mackay v North Shore CC* W146/95 (PT) on requiring compliance by third parties.

⁶ Summary and response evidence of Jared Pettersson dated 2 May, paragraphs 81-82, noting that there is some recompense through the payment of meeting fees

⁷ Summary and response evidence of Andrew Purves dated 4 May 2017, paragraph 54

- 36.1 Included reference to the modified-Intensity-Frequency-Duration approach;
 - 36.2 Defined key terms in the definitions section, i.e. "Allowable Duration", "Exceedance", "Intensity" and "Predicted Dredging Turbidity";
 - 36.3 Re-ordered the condition as a whole so that it now comprises two parts: 9A, relating to the establishment of turbidity triggers, and 9B relating to compliance;
 - 36.4 The term "relevant" has been removed, and further detail provided in terms of "location"; and
 - 36.5 The conditions now rely on a step-by-step summary of Dr Fox's report, and the summary will replace the long report originally attached as Appendix B.
- 37 Four further issues require explanation. Those are:
- 37.1 The focus on Tier 3 turbidity triggers (as opposed to Tiers 1, 2 and 3 more generally);
 - 37.2 How condition 9.6 (which still relies on the use of the term "location") will work in practice;
 - 37.3 The use and content of the step-by-step summary of Dr Fox's report; and
 - 37.4 The use of an advice note in amended condition 9.8.2 (old condition 9.12) relating to extraordinary natural events.
- Compliance*
- 38 As outlined above, amended condition 9 is now split into two sections:
- 38.1 Section 9A (conditions 9.1 to 9.4) relates to the establishment of turbidity triggers for Tiers 1, 2 and 3, and makes clear that exceedances will require adaptive management actions as per the EMMP. It also outlines that only Tier 3 turbidity triggers are relevant for compliance purposes; and
 - 38.2 Section 9B (conditions 9.5 to 9.9) is then focussed on compliance, i.e. Tier 3 exceedances.
- 39 This has been done to make clear that while the establishment of each of the Tier 1, 2 and 3 turbidity triggers is important for the

purposes of the EMMP, only Tier 3 is relevant to compliance. The conditions of consent should make this clear so as to:

- 39.1 Avoid confusion for lay people referring to the consent conditions; and
- 39.2 Avoid causing difficulty for the consent authority's enforcement officers.

Condition 9.6 and 'location'

- 40 The 5th Minute questioned the use of the term "location" in condition 9.6, and asked whether a definition was required.
- 41 Condition 9.6, 9.7 and 9.8 have now been amended to refer to dredging ceasing, not occurring, and recommencing "in the vicinity of a telemetered turbidity monitoring location where there has been a Tier 3 Exceedance".
- 42 While these amendments do not provide absolute certainty in terms of where management actions must be applied, it is more specific than simply referring to a "location" (which, as outlined below, will vary day-to-day depending on the tide state, wave conditions and other factors), and reflects that:
 - 42.1 9.6 needs to provide for dredging to cease regardless of whether turbidity is natural or dredge related:
 - (a) The amended wording will prevent LPC from dredging in the vicinity of a telemetered turbidity monitoring location when natural turbidity results in an exceedance;
 - (b) The amended wording will also require management actions where an exceedance is dredge related;
 - 42.2 The use of the word "vicinity" as opposed to anything more specific recognises that the area of effect will change depending on whether, for example, the tide is incoming or outgoing or due to other sea state conditions.
- 43 In practical terms, however, the wording of the condition as it relates to 'location' is not important. Any continued exceedance of a Tier 3 turbidity trigger over and above the allowable duration will result in enforcement action.
- Summary of Dr Fox's report*
- 44 Appendix B has been replaced with a step-by-step summary of Dr Fox's report. The summary has been completed at a basic level and contains the key steps required in the calculation of trigger levels. It

will be able to be used to provide certainty that conditions have been complied with.

- 45 It is not possible, however, to contain every detail of the work that must be undertaken in a summary of this nature. The summary therefore still refers to the full report originally attached as Appendix B. This is necessary so that other people will be able to complete the analysis required should Dr Fox become unavailable.

Advice note in 9.8.2 (old condition 9.12)

- 46 Case law recognises that advice notes can serve a useful purpose when used sparingly and for information purposes only, despite their being no statutory authority for their use.⁸

- 47 LPC's submits that the use of an advice note is appropriate in this instance; it is not necessary or desirable to describe "extraordinary natural events" in a condition or definition. This is because:

47.1 The examples are provided for information purposes only. It does not require the consent holder to undertake work (in which case a condition would be more appropriate); and

47.2 An advice note provides some flexibility, particularly given that the list of scenarios provided is by way of example only and not complete.

Other conditions

- 48 The conditions attached to this memorandum also amend an error in Appendix 1 to the proposed channel deepening consent conditions. The table referred to sediment size analysis being undertaken 6-monthly for the first 2 years and then annually for the following 5 years. The reference to 5 years should be to 3 years, as the intention is to monitor for a total of 5 years.

- 49 Other changes made have:

49.1 Updates references to "telemetered turbidity monitoring stations" to "telemetered turbidity monitoring locations";

49.2 Changed the term "trigger values" to "turbidity triggers"; and

49.3 Capitalised defined terms where required.

⁸ See *Hapu Kotare Ltd v Manukau CC* EnvC A133/05 and *Te Maru o Ngati Rangiwewehi v Bay of Plenty RC* EnvC A017/09

MAINTENANCE CONSENT CONDITIONS

- 50 The maintenance consent conditions have been amended in accordance with the amendments made to the channel deepening conditions, where relevant.
- 51 In addition:
 - 51.1 Condition 1.4 has been amended to refer to a maximum of 167,000 tons of spoil being disposed of at the Godley Head disposal ground. That addresses the issue presented by relying on an in-situ volume;
 - 51.2 Condition 7.15 has been amended to remove the term "cumulative duration". It now uses "exceedance", noting that a definition of "exceedance" has also been included; and
 - 51.3 Condition 7.20 has been amended so as to require the consent holder to notify the Consent Authority.

Condition 8

- 52 Condition 8 in respect of turbidity triggers for maintenance dredging has been amended in accordance with the condition applying to channel deepening. Minor changes have been made, however, to reflect that the compliance conditions relate only to disposal (rather than dredging and disposal in respect of channel deepening).

THE COMMISSIONERS' 6TH MINUTE

- 53 The Commissioners have asked questions relating to:
 - 53.1 The quantitative distribution of spoil over the total length of the project, including the attempts made to limit the 18 million m³ spoil volume by adopting alternative design methods. In particular, the Commissioners have asked whether the depth of the wave affected zone of the entrance channel could have been lessened at the expense of channel operability;
 - 53.2 The modelling of overflow; and
 - 53.3 The overflow period.
- 54 Through Jared Pettersson, LPC has sought advice internally and from Johan Pronk and Brett Beamsley. They have provided the following responses.

Spoil volume

- 55 While the application did not detail the distribution of dredging volumes, section 4 of the Assessment of Environment Effects did set out the rationale for the depth and width of the channel, as well as the approximate target depths for the inner, mid and outer sections of the deepened channel.
- 56 LPC is developing a spatial breakdown of the 18 million cubic metres as part of developing a detailed design. This relies, however, on establishing the batter slope design, which has only recently commenced following completion of geotech drilling. Optimising the channel design to reduce dredge volumes will also be undertaken as part of this process.
- 57 An un-optimised channel volume was therefore used in the application as a conservative case any refined channel designs will 'fit' within that volume.
- 58 As the Commissioners have noted, there are a number of choices LPC can make to reduce the dredging volumes, e.g. reducing operability due to waves, wind and tidal conditions. As an example of how operability decisions have already influenced the concept design, the current channel width is designed with a maximum operable wind speed of 35 knots. If LPC desired operability at a higher wind speed, a wider channel would have been needed.
- 59 Considerations in this detailed design phase include the use of a dynamic under keel clearance system, restrictions based on tidal windows and swell conditions among others. Given the very high cost of dredging LPC is strongly motivated to reduce the dredging volumes as much as possible while still providing appropriate levels of service to the shipping lines.

Overflow modelling

- 60 The release rate selected (1,600kg/s) was established following discussions with Jeremy Spearman of HR Wallingford (UK). HR Wallingford has significant experience in modelling of dredging sediment plumes and is a recognised international expert in this area. The actual release rate depends on a number of factors, such as type of sediment being dredged, stiffness of those sediments, layout of the dredge/overflow, production rates pumping rates etc. Given that these aspects cannot be predicted accurately prior to dredging commencing, a release rate based upon past experience in similar material with similar dredgers was considered the best practical option.
- 61 The overflow times selected for modelling were also based on discussions with Jeremy Spearman and considering the nature of materials to be dredged. Again, the actual time of overflow is

dependent on a number of factors related to the dredge operation itself, the nature of materials and the balance between dredge productivity (how much spoil is in the hopper each cycle) and overall cycle productivity (how much material can be disposed over a period of time). As a general rule, the softer the materials the less likely it is that long overflow time will benefit overall production rates, i.e. it may be more productive to limit overflow and steam to the disposal ground with less spoil in the hopper. The net result of this is that while each individual load may be lower, the cycle time is shorter and overall a higher productivity may be achieved. This point was discussed, via questions, with Mr Pronk following presentation of his evidence.

- 62 Notwithstanding this, the MetOcean model used three scenarios (10, 20 and 30 minutes) as a representative of likely average overflow times. Mr Pronk's evidence used, for the purposes of calculating weekly production rates, overflow times of approximately 52 minutes. While these times are different, they need to be considered in terms of the assumed dredge cycle times and the operation of the real time monitoring and adaptive management measures.
- 63 Firstly, Mr Pronk assumed a 3 hour cycle time (inner part of channel) resulting in about 48 cycles per week and a total overflow of around 41.5 hours. The MetOcean model assumes a 2 hour cycle time, with up to 30 minutes overflow, resulting in approximately 36 hours per week overflow. Based on discussions with Mr Pronk (25 May 2017) the assumed overflow rates in the model are an appropriate assumption for the average, particularly given the likely variability in actual overflow times from possibly zero (in soft surface layers) through to his conservative estimate of 52 minutes in deeper firm sediments.
- 64 Secondly, irrespective of the duration of overflow, compliance must be maintained at the telemetered turbidity monitoring locations. If it is found that long overflows (or any overflow) cause exceedances at a monitoring location, then the dredge operator would have to limit overflows in those areas to enable dredging to occur.

Overflow period

- 65 The primary factors that influence the length of overflow time are the type of material (sand vs clay etc.), stiffness of the material and distance to disposal ground. Lesser factors include the specifics of the dredger and details of the methodology. Based on discussions with Mr Pronk, the stiffness of the material and the distance to the disposal ground are likely to be the most important factors in Lyttelton Harbour (given that the material is consistently a silt). In soft material close to the disposal ground, it is less likely that long overflow periods (or any at all) will benefit overall productivity. As the material gets firmer (i.e. deeper in the profile) or the distance to

the disposal ground gets greater (i.e. at the western end of the channel) it may benefit productivity to undertake overflow to increase the hopper load.

- 66 Best practise methods to minimise the amount of overflow is linked to the adaptive management framework proposed and the monitoring network. Essentially the monitoring network and the management response are there to ensure dredge related turbidity, which is primarily from overflow, is not greater than anticipated in the modelling. The implementation of a green (or environmental) valve is considered best practise, however this is focussed on reducing effects of the overflow, not the overflow amount.
- 67 The contract is currently being worked on, so LPC is unable to provide specific clauses relating to overflow requirements to the Commissioners. However, any conditions of consent and the EMMP will form an integral part of the contract and the Dredge Contractor will be obliged to comply with those conditions and EMMP. The contract terms will motivate the contractor to limit dredge related exceedance of turbidity triggers.
- 68 Like the contract, any conditions of consent and the (draft) EMMP will form part of the tender documents which will ensure the contractor prices in the environmental management obligations. It is standard LPC practise that environmental matters are part of the tender evaluation criteria. This will be particularly important for the CDP tender as the environmental outcomes are inherently linked to commercial outcomes (limiting dredge shut down due to non-compliance) and stakeholder relationships.

Dated: 29 May 2017



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