MARSDEN POINT TERMINAL PROPOSAL
TECHNICAL REVIEW PANEL REPORT

Office of the
PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT
Te Kaitiaki Taiao a Whare Pāremata

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Preface

Port developments, particularly when they involve significant additional dredging and reclamation works, invariably raise contentious issues regarding the use of the coastal environment. In the context of public policy on the environment in the 1990s, development in and along the coast is particularly sensitive.

As a general principle the concept of *precaution* is one that I find increasingly justifiable in terms of environmental and community preferences for proposals involving the private use of erstwhile public space. Developers whose proposals necessitate the exclusive occupation of public space should be very clear about their reasons for and the environmental consequences of requiring that action. Fortunately, existing New Zealand law is protective in this regard. The environmental risk of being wrong and getting it wrong are particularly high in this land/sea interface.

New Zealand has not seen the development of a substantial new port for some time - and the current proposal must be seen as substantially a new port when one reflects on the probable future use of any facility developed at Marsden Point. Consequently, the integration of an operational port with modern requirements and expectations regarding the environment is not something with which we have much practical experience. The management of this transition is all important and the public has a right to expect all involved to be accountable for the future environmental sustainability of any approved development.

The question as to how far one can reasonably inquire into the economics of a proposal has been raised both directly and indirectly with the Review Panel. No one would argue against the proposition that the ultimate decision to invest (with all the attendant commercial risks) is properly that of the developer (ie, the Northland Port Corporation) at the end of the day. However, when determining the potential transfer of sensitive public space into exclusive and essentially private occupation, the justification for the project necessarily traverses issues of both commerce and economics in weighing up the environmental sustainability of the transaction.

There is certainly debate within the forestry sector regarding the future likely processing, transportation and destination of the anticipated Northland log yields. The figures produced by the Northland Port Corporation will undoubtedly be disputed by other parties. That is a debate that only the passage of time will resolve.

Of more immediate concern is the interrelationship of the proposed development and the existing port at Whangarei. This is the fundamental question that must be resolved : Is a new port required in the medium term anyway in view of channel problems, increasing tonnages and new tanker fleet design (essentially shallower draught but broader in the beam, making turning circles quite critical)? The Environmental Impact Assessment (EIA) hints at this prospect without concluding that a new, exclusive, multi-purpose port is required. As such, neither

the wider strategic advantages or disadvantages are canvassed in any particular depth, nor are the associated infrastructural issues that some members of the public have sought to have debated. The frustration evident is likely, therefore, to spill over into the statutory process. The Northland Port Corporation would be well advised to clarify its strategic intentions with respect to its port operations in terms of any medium-term horizon. If the intention is to develop a general port at Marsden Point, then it is more appropriate to deal with the issue now rather than expand a "forestry" terminal later.

The Technical Review Panel has effectively signalled that the proposal as it currently stands is suitable for notification, with some additional, revised and released information. It is my recommendation that all the information should be collected into a suitable form and released to the public at the time the application is notified. While the general proposal has been in the public arena for some time, the specifics of what is proposed and the latest assessment of effects has not been.

Helen R. Hughes

Helen R Hughes
Parliamentary Commissioner for the Environment

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CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been reached by the Technical Review Panel. These are presented in no particular order of importance.

In general the Panel has concluded that the project is reaching a stage where the information held by the Northland Port Corporation (NPC) about the proposed development is sufficient in scope and detail for the consent authorities to formally notify the application for resource consents and call for submissions.

There are still some matters for which the Panel believes further information is required. Whether this is necessary at this stage, or can be developed and provided either prior to the hearing or is the "stuff" of evidence and therefore should be provided at the hearing, is a matter of opinion. There is always a balance to be struck on the matter of information sufficiency. It is, however, suggested that these matters be addressed prior to the application being notified for public submission - unless the Northland Regional Council (NRC) agrees to an extended submission period and the Northland Port Corporation is able to confirm that the material will be available to the public within that period with sufficient time for submissions to be made on the revised material.

The Panel is strongly of the view that either an updated Assessment of Environmental Effects or Addendum is appropriate, and should be provided to the interested public in light of the considerable additional work that has been undertaken in the past 12 months.

1. The rationale for the project should be restated more directly. The log export volume targets which underpin the current rationale are based upon projections that have been disputed. In themselves these projections are not considered sufficiently reliable to justify the precise scale of the project in terms of the Resource Management Act 1991 requirements and the New Zealand Coastal Policy Statement. While the financial feasibility and justification for the project is a matter for NPC alone, the economics of the proposal, insofar as that affects the need for exclusive occupancy of the coastal marine area, is a matter of legitimate wider concern.

2. The size of the turning basin is dictated by the minimum for safe ship handling. The quantity of material dredged from the turning basin is the same as that required to fill a reclamation of 32 hectares.

3. There is currently insufficient detail relating to silt decant water, stormwater runoff, wastewater treatment, bark handling, windblown sand and noise management. These matters are being examined more fully by NPC's consultants and must be more carefully developed and presented prior to the hearing.

4. The effect(s) of the development on adjacent groundwater, especially at the New Zealand Refining Company (NZRC), is inadequately discussed and requires further detailed investigation to ensure that the current programme of drawdown, collection and treatment by NZRC is not adversely affected.

5. The impact of increased volumes and residency time for shipping in the Marsden Point area and the possible effects from antifouling paints on adjacent shellfish communities require further discussion.

6. The effects on the existing benthic communities have been presumed rather than investigated. Of particular concern is an understanding of these communities' respective roles in stabilising the harbour entrance and the consequential effects, therefore, of losing these communities. Further work is considered advisable.

7. Discussion of the probable ecological effects of dredging summarises previous reference material but is not sufficient to allow the testing of the conclusions drawn. It is recommended that this material be expanded and, where appropriate, updated.

8. Determination of the extent and probable effects of any sediment dispersion plume from decant water has not been discussed. This is an important characteristic in terms of possible adverse effects which should be made available prior to the hearing.

9. It is recommended that a condition be placed on the Coastal Permit to Deposit Dredge Tailings:

   "That prior to starting works under this permit the grantee shall supply to the regional council detailed management plans, including work programmes for the construction dredging and for the maintenance dredging. The plans shall be accompanied by certificates signed by a registered civil engineer that certify the plans will meet the conditions of this permit."

10. It is recommended that a bond be negotiated over the reclamation.

11. As agreed between NPC and NZRC, a six-monthly bathymetric survey, current velocities, and seabed monitoring are to be established. These should be incorporated as conditions of consent.

12. In view of concerns about possible effects on the adjacent Coastal Marine Area shoreline, a near shore bathymetric and ecological monitoring programme should be established.

13. Birdlife data is currently being updated and comment regarding the sufficiency or adequacy of the avoidance/mitigation measures proposed is, therefore, not possible.

14. Given the incomplete status of some critical investigations, it has not been possible for the Panel to recommend specific monitoring conditions. Monitoring programmes (in general) will need to be developed when the additional information is available.

15. The development of a new port terminal facility for log export is likely to increase traffic densities and loadings on Whangarei's urban street network and State Highway 1. While this effect may have developed regardless of the proposed new terminal, it is a probable effect of the development and some consideration of traffic effects and pavement loadings should be further considered and reported to the relevant authorities.

16. The various traffic/transportation implications of barge terminal use are not well documented. In view of the potential for reducing land transport effects in and around the Whangarei District, further detailed consideration should be given to this matter.

17. Modifications to road alignments and pavement structure within the Marsden Point area (including, in particular, the transport corridor) should be specifically defined so that their effectiveness can be evaluated.

18. The provision of photomontages and other graphical devices to demonstrate the anticipated landscape effects to the general public more clearly is required. These should be published in advance of the hearings.

19. Positive landscape options around the yet-to-be-determined stormwater treatment system could significantly mitigate some of the adverse landscape effects of the proposal. It is recommended that additional consideration be given to this element when the options are developed further.

20. As a consequence of the adverse landscape effects of reclamation, it is recommended that every effort be made to minimise and appropriately develop and shape the final design so as to soften the hard edge - including, where possible, the re-establishment of shoreline habitat. This should be done in consultation with residents and locally interested parties.

21. The relationship between meteorological events and L_{max} requires further investigation to ensure that design noise parameters take into account the peculiarities of the Whangarei Heads area, particularly with respect to nocturnal intrusive noise excursions assisted by prevailing winds and/or temperature inversions.

22. In conjunction with recommendation 21, the effectiveness of any proposed noise screening requires close examination to ensure the integrity of any noise management programme.

Section 1: INTRODUCTION

The Parliamentary Commissioner for the Environment received a request in February 1994 from the Northland Regional Council to assist in the process of considering the application by the Northland Port Corporation to develop a port terminal at Marsden Point.

The Commissioner undertook, as provided for in s.92 (2)(c) of the Resource Management Act 1991, to review the Environmental Impact Assessment (EIA) provided in the application. The Commissioner established a Technical Review Panel to undertake the assessment of the EIA documentation. The Northland Port Corporation agreed not to request notification of their application until the results of the Commissioner's review were received.

Issues of major concern were identified by members of the public and the consent agencies during the Commissioner's visit to Whangarei in February 1994. These issues were to be addressed by the members of the technical review panel. The issues were:

- Scale and construction of the terminal and its operations;
- Hydrodynamic effects and accuracy of modelling;
- Impact on water quality and ecology;
- Noise;
- Impact on iwi and consultation undertaken;
- Monitoring methods;
- Sea and land traffic-generated impacts;
- Effects on existing commercial and recreational users of the harbour;
- Visual impacts of the development; and
- Risk assessment of effects.

The criteria for the selection of members of a Technical Review Panel were agreed among staff of the Northland Regional Council, the Whangarei District Council, the Department of Conservation and the Commissioner. The criteria were:

- Proven independence from the applicant (the Northland Port Corporation) and its predecessors;
- Proven independence from the Northland Regional Council, the Whangarei District Council and their predecessors;
- No previous involvement with current or earlier proposals related to the development;
- Proven expertise and skill to report on particular key issues and to assess the adequacy and reliability of the data;
- Proven experience to report to Hearings Committees and to Planning Tribunals;
- Ability to consult (eg, with iwi etc) and to evaluate consultation undertaken;
- Ability to mediate in pre-hearing meetings;
- Proven ability to work in multi-disciplinary team;
- Proven ability to meet set deadlines and timeframes;
- Proven expertise and skills in auditing and reviewing technical reports; and
- Proven ability to carry out the work in a cost-effective manner.

The terms of reference for the Panel were also agreed with the consent agencies and are included as appendix 1. The Review Panel was asked to report in terms of s.17 of the Environment Act 1986. This section of the Environment Act 1986 is included as appendix 2. Consequently, it is important to note that while the application has been made pursuant to the Resource Management Act 1991, this review has a slightly different, albeit complementary, objective.

The Panel was appointed in two stages as a distinction was made between any irreversible environmental effects and those effects that can be avoided, remedied or mitigated. Irreversible effects may be associated with the hydrodynamic effects predicted from modelling studies and the scale and construction of the proposed terminal.

Dr Alex Sutherland of the University of Canterbury was appointed to review this part of the assessment documentation and advise the Commissioner whether further information was required. The advice received from Dr Sutherland in March 1994 (appendix 5) was that further information should be assembled before the application for resource consents proceeded.

The Commissioner consulted with the consent agencies on the appointment of the full Technical Review Panel in June 1994. A separate process involving tangata whenua and the consent agencies was undertaken to recommend to the Commissioner a person to review Maori consultation and tikanga issues.

The members of the Review Panel and their particular areas of responsibility are as follows:

Mr David Hill (Convenor)	Resource Management Planning
Mr Nigel Lloyd	Noise effects
Dr Margaret Mutu	Maori consultation and tikanga Issues
Mr Peter North	Scale and construction of the terminal
Ms Helen Preston-Jones	Landscape and visual amenity
Dr David Roper	Water quality and ecology
Dr Alex Sutherland	Hydrodynamic effects
Mr Graham Tuohey	Traffic effects

Dr Mutu is reporting her findings in a separate report to the Commissioner.

The Review Panel visited Whangarei and the general site on 25 and 26 July 1994 and met with representatives from the Northland Port Corporation, consent authorities and third party interests. Some subsequent correspondence has been both initiated and received by individual members of the Panel. This correspondence has also been used in completing the report. Information on the effects of the proposed development on existing users of the harbour has been addressed in the response of the NPC (refer appendix 4).

The review is based upon the three-volume report by Den Ouden Associates entitled *Marsden Point Terminal Proposal - Environmental Impact Assessment* (June 1993), supplemented by additional information provided to the Review Panel (12 September 1994) in response to a set of written questions relayed to Northland Port Corporation on 16 August 1994. The questions are included in this report as appendix 3 and the Corporation's response as appendix 4. This information has not been seen by the public at large and is included here for that reason.

Section 2:
CIVIL ENGINEERING ISSUES

2.1 General

It is apparent from the EIA that the project has evolved over a long period of time and a consequence of this has been that the rationale for some of the decisions taken is probably recorded in earlier reports and has been taken as "given" in the EIA. The effect of this has been to make the document disjointed, unbalanced and lacking in a logical flow with respect to the development of the design concept.

The design and construction of the proposed facilities are described in the EIA in general terms, and reasons for the selection of the site and the form of construction chosen are addressed to some extent. However, there is very little explanation for the scale of the proposed facility and its economic relevance is not well established.

2.2 Location

Given that an expanded log loading terminal is required at Whangarei, the choice of Marsden Point in preference to other sites in the harbour is logical from an engineering point of view. It provides deep water with a minimum of maintenance dredging, it has plenty of land available behind, and land access is reasonable if a little remote. The Point already has an "industrial" character with the refinery and the power station.

The consideration of alternative locations is given only cursory attention in the EIA but probably it would be difficult to find viable alternatives. Thus, the lack of rigorous discussion on this topic is not seen as necessarily being a civil engineering weakness.

2.3 Design Concept

The design concept chosen has the following features:

- A reclamation, formed from dredged sand retained behind bunds or sea walls, that forms an extensive hardstanding area behind the berths;
- A piled wharf structure on the outside edge of the reclamation providing berthage for large vessels; and
- A dredged turning basin outside the wharf.

The material dredged from the turning basin will be used to fill the reclamation. It is argued in the EIA that the required area of the reclamation is dictated by operational requirements and that the area of the turning basin is a minimum for safe ship handling. It so happens that the sizes selected conveniently provide a balanced cut to fill which is a sound "engineering" solution.

The effects of the rather extensive reclamation and dredge basin on the tidal flow patterns in the harbour were a design consideration.

The effect of the reclamation would be to cause a restriction on the south side and deflection of the flow towards the north side of the harbour. The effect of the deepened turning basin would be the reverse. The design chosen is intended to balance these effects as much as possible so that they cancel each other out. The objective of this is to minimise changes to the dynamic balance of sediment transport within the harbour. The predicted effects on sediment transport are discussed elsewhere in this report (section 4). The berthing face is set more or less parallel to the tidal currents, which is good practice.

The exact line of it and its distance from the shore were chosen to be consistent with the flow balancing objective described above. It would appear to be a fortunate coincidence that this line and position also gave the required reclamation area and turning basin size as dictated by operational requirements.

Although all of the above information can be found in the three volumes of the report, a concise developed rationale for the chosen design concept is not given in Volume 1. As a result readers of the report who fail to connect the dispersed arguments could be expected to ask such questions as:

- Why is a reclamation needed at all?
- Could not the wharf be placed closer to the shore and built on piles all the way out?
- Why is such a large facility required?

2.4 Wharf Structure

The details that are given of the wharf structure proposed are adequate for the purposes of describing it and assessing its impact. Such a structure on driven piles is entirely logical for the site conditions.

2.5 Reclamation

The nature of the materials that will form the reclamation and its underlying foundations are ideal in an engineering sense for such a form of construction. Their high permeability will lead to rapid consolidation and will minimise long-term settlements.

The surrounding bunds will be substantial engineering structures. They can be designed and constructed in accordance with well established principles and practices and need not become an issue.

Other than the effect on the hydraulics and sediment transport patterns in the harbour, the reclamation is not expected to have any long-term engineering impacts. However, during construction, and particularly during the backfilling with hydraulic sand fill, there are potential impacts from silt in the decant water and wind blown sand. These potential impacts should be made subject to suitable conditions placed on any consent granted.

2.6 Stormwater Runoff

The EIA identifies stormwater runoff and the handling of bark as an issue but it does not adequately describe a solution to the problem that gives complete comfort. This has been recognised by Northland Port Corporation and it is our understanding that a scheme is being developed by their consultants. In the meantime, we do not comment on the information given to date other than to agree that further work is required. It is likely that conditions would need to be attached to any consent granted.

2.7 Groundwater

Because of the high permeability of the general area (being of sand dune origins) the groundwater table has a relatively "flat" gradient. Thus flow directions could be substantially altered by the introduction of barriers, such as the reclamation, and recharge sources, such as the ponds.

This is potentially of concern to the oil refinery because they are currently controlling contamination by drawing down the groundwater table within their perimeter and treating the water before discharging it. Groundwater from the port site could conceivably flow to the depressed water table under the refinery, bringing contaminants requiring further and different treatment. This is not addressed at all in the EIA.

2.8 Construction Cost Estimates

In order to prepare an economic justification for the project, it is necessary to prepare cost estimates for the work. Bulk estimates are given in the EIA but there are some elements of these that appear to be inconsistent with the works proposed. However, this cannot be established on the given data and so further breakdowns were requested of Northland Port Corporation. An adequate response has not been given.

On the given information, it would not be possible for interested parties to establish the economic justification for the project from the information given in the EIA.

2.9 Summary of Findings

The size of the turning basin is dictated by the minimum for safe ship handling. The quantity of material dredged from the turning basin is the same as that required to fill a reclamation of 32 hectares.

There is currently insufficient detail relating to silt decant water, stormwater runoff, wastewater treatment, bark handling, windblown sand and noise management. These matters are being examined more fully by NPC's consultants and must be more carefully developed and presented prior to the hearing.

The effect(s) of the development on adjacent groundwater (especially at the New Zealand Refining Company) is inadequately discussed and requires further detailed investigation to ensure that the current programme of drawdown, collection and treatment by the NZRC is not adversely affected.

Section 3: WATER QUALITY AND ECOLOGY

3.1 Introduction

This section of the report is a technical review of the Environmental Impact Assessment concerned with:

- Water quality;
- Ecology; and
- Ecological and water quality monitoring.

For each of the above topics, the adequacy of presented and supplementary information was evaluated, following the terms of reference set for the Review Panel by the Parliamentary Commissioner for the Environment. Many of these topics have been well covered in the material presented by the NPC and, as such, the information presented is considered to be both adequate and accurate. Specific topics that are considered to need further coverage are discussed below. In most cases, the NPC have already recognised the need for additional information and are presently gathering it. This assessment, however, has been based on the 1993 EIA and supplementary material which was supplied to the Review Panel (appendix 4) in response to questions (appendix 3) that they addressed to the port company.

3.2 Water Quality

3.2.1 Seawater Decant from Reclamation

It is intended that sediments dredged from the proposed turning basin will be pumped into the area to be reclaimed and allowed to settle. An important aspect of this which is not adequately addressed is the likely fate of the 0.13 million cubic metres of sediment which will be released with this decant water and dispersed into the harbour. Some simple modelling of sediment dispersion seems to be in order to predict the likely distance that such sediment will be dispersed, the depositional rates over the construction period, and the sensitivity of the habitats which might be affected. This added information will allow the prediction that this discharge "is not likely to cause any biological problems" to be substantiated. Such modelling would not be difficult given the detailed hydrodynamic information available for the area.

3.2.2 Stormwater and Wastewater

The important issue of stormwater and wastewater treatment and disposal has not yet been adequately covered. We understand that this fact has been recognised by the NPC and further technical information is being gathered. Until this additional work is completed, it is not possible to assess whether or not development and operation of the proposal would be capable of avoiding, remedying or mitigating any adverse environmental effects, or if all requirements of Part II and the Fourth Schedule of the Resource Management Act 1991 are met.

3.2.3 Antifouling Paint

It is acknowledged in the EIA that antifouling paint, in particular the active ingredient tributyl tin (TBT), leaching from ships visiting the terminal may affect local shellfish. In view of the importance of this part of Whangarei Harbour for commercial and recreational shellfish harvesting, this assessment has not been taken far enough. We understand that this issue is still being considered.

3.3 Ecology

3.3.1 Subtidal Benthos

Information describing the benthic communities which will be directly affected by the proposal, and those in the near vicinity, has not been adequate. The EIA makes reference to descriptive studies carried out in the 1980s. While it is argued that the predominant habitat types are unlikely to have changed, this is an assumption which needs to be supported in view of the extensive area which potentially will be affected. More detailed descriptions of these habitats need to be presented for a full appreciation of the development impacts. The species composition of the various habitats needs to be given with an indication of the relative representation of different habitats. It would also be helpful to characterise the relative roles played by different habitat types in stabilising the harbour entrance (particularly the sands near Marsden Point itself). What will be the effect on sediment stability of destroying the shell lagging that exists over some of this area? This needs to be considered, along with an assessment of the possible consequences of any changes in benthic habitats or species occurrences. It is possible that descriptive information exists in earlier environmental reports commissioned by the NPC, and that better use could be made of this in the present EIA. Nevertheless, even if greater use can be made of this earlier material there needs to be some verification that it is still applicable, that the same types of habitats are present, and that their relative proportions have remained the same.

The possible impacts of dredging are also not adequately presented. Assessment of dredging impacts draws on earlier reports, and selected summary excerpts are presented to make the case that impact will be minimal. This may be so, but it is impossible to judge the validity of this conclusion based only on the short extracts presented and without the benefit of the supporting information which presumably was contained in the earlier work.

3.3.2 Birdlife

The EIA recognises that the Marsden Point area is an important area of Whangarei Harbour for birdlife. However, it is noted that birdlife in the vicinity of the development has not been assessed since 1980. The EIA refers to a study (in progress) to reassess the local bird fauna. This will, hopefully, redress the present lack of information. It needs to be established:

- What the present usage of the area is;
- How important this is relative to the harbour ecosystem;
- What impacts the development might have; and
- What steps could be taken to mitigate any adverse effects.

3.4.1 Ecology

3.4 Ecological and Water Quality Monitoring

Studies of birdlife in the vicinity of Marsden Point are not yet completed and, therefore, monitoring programme details have not yet been developed. Other aspects of the ecological monitoring are not yet finalised, but the NPC has made progress towards addressing this and is discussing monitoring programme details with the Northland Regional Council.

3.4.2 Water Quality

In the absence of final details of the stormwater and wastewater treatment and disposal systems, it has not been possible to identify specific contaminants or their loadings to the harbour. Water quality monitoring details are, therefore, not yet available.

3.5 Summary of Findings

Determination of the extent and probable effects of any sediment dispersion plume from decant water has not been discussed. This is an important characteristic in terms of possible adverse effects which should be made available prior to the hearing.

The impact of increased volumes and residency time for shipping in the Marsden Point area and the possible effects from antifouling paints on adjacent shellfish communities require further discussion.

The effects on the existing benthic communities have been presumed rather than investigated. Of particular concern is an understanding of these communities' respective roles in stabilising the harbour entrance and the consequential effects, therefore, of losing these communities. Further work is considered advisable.

Discussion of the probable ecological effects of dredging summarises previous reference material but is not sufficient to allow the testing of the conclusions drawn. It is recommended that this material be expanded and, where appropriate, updated.

Birdlife data is currently being updated and comment regarding the sufficiency or adequacy of the avoidance/mitigation measures proposed is, therefore, not possible.

Section 4: HYDRODYNAMIC ASPECTS

4.1 Preamble

Northland Port Corporation provided the following reports:

(1) *Marsden Point Terminal Proposal Environmental Impact Assessment, Volume 1.* Northland Port Corporation, 1993.

(2) *Marsden Point Terminal Proposal Environmental Impact Assessment, Volume 2.* Northland Port Corporation, 1993.

(3) *Marsden Point Port Development Hydrodynamic Study.* Barnett Consultants, 1993.

(4) *Marsden Point Port Development Hydrodynamic Study. Addenda to Original Report.* Barnett Consultants, 1994.

(5) Notes of Meeting between Northland Port Corporation and New Zealand Refining Company held July 20, 1994.

Mr David Hill as Convener of the Review Panel has provided:

(6) Copy of questions posed by Review Panel to Northland Port Corporation (appendix 3) and the replies received to those questions (appendix 4).

4.2 Initial Concerns

Consideration of documents (1), (2) and (3) above led to an earlier report to the Parliamentary Commissioner for the Environment (reproduced as appendix 5).

(7) *Marsden Point Terminal Proposal Hydrodynamic Aspects.* A J Sutherland, 1994.

This report recommended that further actions be taken by the Northland Port Corporation before an application was made for resource consents. In response, report (4) was commissioned. The outcome is that the concerns as expressed in report (7) have been, or are being, met. Some comments are, however, appropriate.

1. Sediment Transport Rates and Erosion Rates:

Of concern was the presentation of results which was not in a form allowing easy interpretation. The information is now presented satisfactorily in report (4). An expanded discussion of the potential impacts of the dredging and reclamation has been given as requested.

2. Details of Dredging and Reclamation Work:

The NPC has indicated that it will produce management plans for the construction dredging and for the maintenance dredging. To ensure that this occurs, a suggested condition on the Coastal Permit and on the Permit to Deposit Dredge Tailings is:

> *"That prior to starting works under this permit the grantee shall supply to the regional council detailed management plans, including work programmes for the construction dredging and for the maintenance dredging. The plans shall be accompanied by certificates signed by a registered civil engineer that certify the plans will meet the conditions of this permit."*

The Hearing Commissioners may wish to consider placing a bond to cover the contingency of the reclamation being abandoned at any stage during its construction.

3. Changes on Mair Bank:

The information requested has been supplied by including in report (4) relevant material from a 1982 Danish Hydraulic Institute investigation and by presenting measured bathymetrics from 1939, 1961 and 1981.

4. Harbour Bathymetry:

Barnett Consultants (see report 4) have drawn together and commented on the available records of harbour bathymetry and thus met the request made in report (7).

5. Monitoring Programme:

Plans for a bathymetric survey of the area Snake Bank to Mair Bank and for repeated surveys at six-monthly intervals have been agreed between the port corporation and the refinery. These meet the request made in report (7).

6. Solutions to Possible Problems at the Refinery:

Considerable progress towards resolving these issues was made at a meeting between the NPC and the refinery held in July 1994 (see report 5). It was agreed to measure present current velocities and sea bed levels and to continue monitoring these during and after construction. The basis upon which costs of necessary remedial work will be apportioned was agreed. Only the mooring forces problem remained unsolved and the trigger levels at which remedial work will be initiated were not agreed.

7. Near Shore Data:

A satisfactory monitoring programme has been agreed.

4.3 Concerns Raised Following Site Visit

Of the list of questions posed by the Review Panel following the above visit, nine lie within this section's domain. Looking at each in turn using the numbering adopted in the Panel's list (refer appendix 3):

1. Hydraulic Modelling:

The reasoning given by the NPC for not including the groyne in the hydraulic model study of the 1992 conditions is accepted. The successful calibration of the model and the large area of the reclamation (which subsumes the groyne) are the key points.

2. Alternative Schemes on the Same Site:

The hydrodynamic study was a design study which determined a report layout offering minimal hydraulic effects compatible with operational requirements of the expected vessels. The proposed location and size of the reclamation have been decided on appropriate data and after consideration of a number of alternatives.

4. Reclamation:

The answer given relies, correctly, on hydrodynamic arguments and also refers briefly to structural and construction aspects. The NPC would be wise to expand on the latter when giving evidence to the Commissioners by referring to their commissioned reports by the Danish Hydraulic Institute (1982) and Westmar Consultants (1992).

6. Barge Terminal:

Changes to the plan geometry of the reclamation area will affect current velocities. In this case the question is one of degree. The Panel is not familiar with the proposed changes to the barge terminal layout but infer from the comment "they are so small as to be below the 50 m resolution of the hydrodynamic model" that the answer to 6(b) must be "no". The NPC will need to argue this point, with the support of their hydrodynamic consultant, before the Commissioners. It is the Panel's view that this appears to be a reasonable argument but it is for the NPC to decide whether to take this risk.

17. Impacts of Dredging and Reclamation Work:

The answers and explanations given are, with one exception, satisfactory. The management plans to be submitted can be expected to cover all the points raised and to reflect the statements by the NPC in their response.

The unresolved issue is the disposal of 130,000 m^3 of fine material. Definite proposals for this will need to be provided prior to the hearing to enable affected persons to make submissions and the details will need to be in the management plan.

19. Solutions to Possible Problems at the Refinery:

There are outstanding issues between the refinery and the NPC. Ideally, these should be resolved prior to the hearing and the solutions reported to the Commissioners so they can form part of the decision. Should this not occur it will be up to the Commissioners to decide the issue either by refusing the consents or by imposing an appropriate bond. The NPC will need to suggest in their evidence a suitable quantum for the bond and conditions under which the bond should be managed. The Panel would also expect the refining company to present its views on these issues by way of a submission.

20. General

The response to 21(a) is satisfactory.

There are major difficulties associated with the bond system referred to in 21(b), not the least of which is establishing cause and effect. The NPC's case is that adverse effects are extremely unlikely to occur. It will be up to the Commissioners to decide if this assurance is acceptable.

The problem of potential discharges from the port is still being addressed. The statement "hopefully this will show ... no significant potential for ecological or water quality effects" is not sufficient. Should there be some effects then potential submitters must be given the chance to comment on them.

22. Impact on Sandflats:

One cannot be definitive about the impacts that may or may not occur on the sandflats. The NPC has done all that can reasonably be expected of it in this regard. The answers given here are satisfactory.

23. Impact on Blacksmith's Creek:

The NPC's answers with respect to hydrodynamic impacts at Blacksmith's Creek are accepted. Clearly changes are occurring there now (and no doubt have always occurred). The modelling has shown expected changes in current velocity to be minimal in an area of low velocity. Sediment effects due to the reclamation will also be small.

4.4 Summary of Findings

Based on the above, the following findings can be drawn with reference to the Panel's terms of reference (NB: this refers only to the hydrodynamic effects and associated activities within the harbour).

The information provided is adequate with the exception of:

- details of the proposal to dispose of the fine dredged material;
- details of discharges from the port area and their treatment.

Reports have been commissioned on these matters and will need to be available to the public prior to consent applications being lodged.

Public consultation has been adequate. There are some unresolved issues with the refinery which should not delay a hearing.

The development and operation of the proposal is capable of avoiding, remedying or mitigating any adverse environmental effects.

The requirements of Part 2 of the Resource Management Act 1991 appear to have been met.

The requirements of the Fourth Schedule of the Resource Management Act 1991 are met except in respect of the fine dredged material and the discharges from the port area. The reports commissioned on these issues are likely to satisfy the requirements of the Fourth Schedule.

Section 5:
REPORT ON TRAFFIC AND TRANSPORTATION ISSUES

5.1 Introduction

This section reviews traffic and transportation related issues as covered by the EIA, and also includes consideration of the answers that were provided by the Northland Port Corporation (appendix 4) in response to questions (appendix 3) raised on particular aspects of the project and the EIA.

In reviewing the traffic and transportation features of the development and operation of the proposal, the following tasks were undertaken:

- Review of the draft Environmental Impact Assessment;
- Inspection of the site and the transportation network servicing the site;
- Meetings with representatives of the Whangarei and Marsden Point areas;
- Requests for clarification and additional information on a number of issues relating to the project;
- Collection of additional information; and
- Review of the responses of the Northland Port Corporation.

5.2 Adequacy and Accuracy of Information

The traffic effects assessment report, including the additional information contained in the Northland Port Corporation's reply of 14 September 1994, provides a reasonably accurate and adequate statement on the traffic effects of the development.

However, there are a number of issues which still require clarification. These are:

1. The evaluation of the effects of the development has concentrated on the Marsden Point area only, using the argument that the use of the roading network beyond Marsden Point will eventuate irrespective of the location of the point of export or processing for the logs. This argument is accepted in its broadest sense but the Panel believes that the impacts should be considered within the Whangarei District as a whole, rather than just in the Marsden Point area.

Two examples of impacts arising specifically from the planned port development, which will occur outside the Marsden Point area but have not been specifically addressed are:

- The combined impact of a 24 hour operation and the need to transport logs, previously carried to the Port of Whangarei on rail, by road transport on the Whangarei Urban Street network. The effect of this increased traffic on the road network and the residential areas through which the network passes needs to be addressed.

- The impact of the significant additional pavement loadings on State Highway 1 which has been identified but not evaluated.

2. While barging is proposed for part of the log transport, and the evaluation of the effect of the proposal on the road network allowed for this, the timing and certainty of barging is not assured because of the need to obtain resource consent approval for barging terminals in the Far North.

The effects of the additional truck trips which would occur until the time when barging was operational, or in the case that it did not eventuate, need to be addressed.

3. Possible modifications to existing road alignments and pavement structures in the Marsden Point area are discussed in the EIA, but no details of these have been provided. Similarly, no commitment is given to their construction or their timing. The same comment can be made about the transportation corridor which has been proposed as part of the development. Without knowledge of what works are likely to be undertaken, their effectiveness cannot be evaluated.

Without a commitment to specific works and the timing of these works, it is not possible to evaluate the effectiveness of the works in mitigating the adverse effects that have been identified. Commitments to specific works are required to allow this evaluation to be undertaken.

5.3 Adequacy of Public Consultation

The Panel considers that, in general, there has been satisfactory public consultation on the traffic aspects of the proposal except for those issues identified above, which would need to be addressed in terms of the additional data suggested.

5.4 Adverse Environmental Effects

The Marsden Point Terminal proposal can be developed and operated in a way that avoids, remedies or mitigates adverse environmental effects relating to traffic and transport. The manner in which the Northland Port Company intends to do this is still uncertain in a number of areas, but there are solutions available which can be implemented to ensure that any adverse traffic and transportation effects are only minor.

5.5 Summary of Findings

The development of a new port terminal facility for log export is likely to increase traffic densities and loadings on Whangarei's urban street network and State Highway 1. While this effect may have developed regardless of the proposed new terminal, it is a probable effect of the development and some consideration of traffic effects and pavement loadings should be further considered and reported to the relevant authorities.

The various traffic/transportation implications of barge terminal use are not well documented. In view of the potential for reducing land transport effects in and around the Whangarei District, further detailed consideration should be given to this matter.

Modifications to road alignments and pavement structure within the Marsden Point area (including in particular the transport corridor) should be specifically defined so that their effectiveness can be evaluated.

Section 6: LANDSCAPE

6.1 Introduction

The EIA report submitted by the Northland Port Corporation has been reviewed, in addition to the statutory planning acts and documents which relate to the location of the development and the proposal.

This information has been reviewed from the point of view of the impact which the proposal is likely to make on the landscape, most particularly the visual impact of the proposal.

The site was visited to inspect the character and quality of the landscape, and an assessment made of the adequacy of the information, its compatibility with relevant policies, and the extent of mitigation proposed. A series of opinions have been canvassed with local interest groups, generally represented by individuals at meetings and by telephone.

6.2 Information Provided on Visual Impacts

6.2.1 Accuracy

In terms of the landscape, the information provided in the EIA concentrates on the visual impact of the proposal.

The method chosen for assessment of impact emphasised the visual catchment of the proposal and viewpoint analysis. This concentrated the issues clearly onto the visual appearance of the proposal as it would be seen by the viewing public. The limited numbers of the viewing audience and the restricted area from which the proposal would be seen limits the impact caused.

The impact varies from high to low but is not perceived by the assessment to be great overall as the form of development is, in most instances, compatible with and is being placed adjacent to an existing industrial complex which already contrasts with that landscape. The communities of Reotahi opposite the site and Marsden Bay adjacent to the site are most adversely affected.

Within the terms of the landscape consultants' brief (stated in their report as "to assess the implications for local amenity presented by the proposed development"), the methodology used and findings are valid.

6.2.2 Adequacy

In view of the importance of the landscape features in this area, perhaps not enough consideration has been given to the integrity of the coastal landscape in the regional/ national context. The council may wish to consider this further, against their regional and coastal polices and plans.

Photomontages which formed the basis for the assessment were not included in the main body of the report, nor as part of the technical appendices (see below).

Within the EIA and the supplementary material supplied by the NPC there is insufficient information available on:

- **Stormwater management.**
  In visual terms the design of this could be used to aid mitigation of visual impact by enabling plantings that would help integrate the development with the surrounding landscape.

- **Landscape impact.**
  The impact on the integrity of the nationally and regionally significant landscape elements of Bream Head, Mt Manaia, Whangarei Harbour and Bream Bay needs further study.

- **Alternative methods of construction.**
  The application is predicated on reclamation. It is this reclamation and extension of landfill into the coastal waters that limits mitigation of the visual impact. A smaller reclamation could have a lesser visual impact. However, the lessening of the impact may not be in proportion to the decrease in size of a reclamation.

6.3 Public Consultation

With any development which will result in significant visual change, it is important to present the change clearly so that people can react and assess for themselves the extent of impact.

Photomontages produced in the original report clearly show the location and extent of the development. The report itself states that these are a starting point in the assessment of visual impact. The change, which is difficult to see in some of the examples, only indicates the limited observable effect for viewers.

The original visual assessment (report and photomontages), in colour, was made available by the landscape consultant. This information is necessary to gain a reasonable appreciation of the impact of the proposal on one's local landscape.

In reviewing the content of the EIA and in considering the extent of public consultation carried out, adequate material has not been presented to the public in an accessible form.

Early public meetings and hui were held prior to the development of the visual assessment. The EIA, at present being circulated, does not include these photographs and, in reproducing the colour plan in black and white, the area of impact does not show up. The reader is left relying on the written word for what are specifically visual matters.

It is understood that copies of the photomontages were available at the various authorities' offices and were displayed at field days around Whangarei. In discussion with interested local parties, none of those spoken to, apart from local authority employees, had seen the visual material. It must be assumed that, either those seeing the material at field days were not sufficiently concerned with the port development to involve themselves in the process further, that concern is very localised or that local interest perceived the visual impact to be of less importance to them than noise, traffic, harbour use, etc. (The latter view was borne out by those who attended meetings with the panel.)

In terms of the visual landscape, local comment made was to the effect that:

- The visual detriment was insignificant in comparison with the advantages of employment;
- The visual detriment was insignificant in comparison with the physical impacts, such as traffic or noise, created by the proposal;
- The mitigation measures proposed, which are a buffer screen around the landward boundary, were adequate in that the proposal would not be seen;
- The visual impact from the settlement of Reotahi was significant in that it changes familiar views;
- The visual impact was perceived as loss of coastal waters rather than the industrial form of the proposed development, and this was highly detrimental.

While public submission on visual aspects of the development has been limited, it appears that the applicant has made attempts to contact those who would be most affected by the proposal at an early stage. Public displays and meetings were held when the draft EIA became available.

The dissemination of information was increased with the distribution of the Parliamentary Commissioner for the Environment's newsletter.

6.4 Mitigation

The extent of visual impact is governed by the limited areas, limited audience and distance from which the development can be seen.

The degree of mitigation of visual impact proposed for the development is minimal because it is the activity of reclamation that is causing the visual impact. Landscaped areas are consistent with the relevant statutory plans, resulting in a 3 4 m wide band of screen planting around the south and west of the site.

The possibility of alternative methods (or extent) of construction to the proposed reclamation have been stated by the NPC to be impractical on economic and hydraulic terms. Such alternatives would be the only way in which the visual effects could be mitigated to any significant extent.

The proposed amelioration scheme for the boundary and for Blacksmith's Creek shown in the EIA has been reduced, as a result of objection by local parties. This diminishes the amelioration measures which were earlier proposed. Further consultation with local input is needed to achieve the maximum extent and density of planting possible. The revised scope of planting should be included in the EIA.

Possible options, such as colour schemes, revised building form and mass planting as an integral part, rather than a perimeter screen, have also been stated to be unachievable by the developer.

Major planting as part of the stormwater management layout, integrated with the building and carpark layout, linked to the planting of yards would, however, help to build up extensive areas of planting in the general area of Marsden Point.

This has been suggested in the Whangarei Harbour Board landscape study as a method of integrating large scale development into the northern end of Bream Bay.

The EIA has assessed the impacts only as being those *within* the site. No consideration appears to have been given to the amelioration of any transport route to the port which may be developed. As this activity will be a direct consequence of the development, information on the effects and mitigation should be provided in conjunction with the application, as part of assessment of the proposal's impact.

6.5 Requirements of the Resource Management Act 1991

6.5.1 Part II

Section 6 of the Act directs attention to the protection of the natural character of the coastal environment from inappropriate use or development. Port related activity cannot be considered inappropriate, *per se*, in the coastal environment though the type, extent and location of the development may be inappropriate.

The requirement of section 5(c) is to mitigate adverse effects and of section 7 is to have regard to (c) maintenance and enhancement of amenity values and (g) any finite characteristics of natural of physical resources.

In that the removal of unmodified coastal edge is an irreversible loss, and that amenity will be reduced by the proposal with limited potential for mitigation, the proposal will only meet the requirement of the Resource Management Act (RMA) if the development is not considered "inappropriate".

6.5.2 Fourth Schedule

The EIA has covered those matters of the Fourth Schedule with the exception of some inadequacy on the possible alternatives and landscape impact on a wider than subregional basis.

6.5.3 Alternatives

One of the requirements under the RMA is that of assessing alternatives. While the EIA considers alternative harbours and considers different configurations of the scheme at Marsden Point, the proposal concludes in favour of reclamation. The applicant's response to queries on this matter was that other options had been considered but that costs of a land-based port with jetties would make the development uneconomic, operations difficult, and would affect the main channel. The chosen option compromises any prospects for mitigating the landscape impact of the present form of the proposal.

The amenity of the area and the integrity of the generally unmodified coastal edge, in its present form, is considerably diminished by the presence of reclamation. Apart from the development at Whangarei port, both sides of the harbour have natural edges (Whangarei Harbour Study Technical Report No.11). Indeed, the continuity of the coastal edge around the refinery does much to help accommodate the refinery within the hinterland.

Similarly, continuance of the foreshore would help to retain the naturalness of the harbour, despite the increasing and incremental industrialisation which will take place on the coastal plain. Jetties and piers are maritime structures which are an acceptable element of a coastal edge. Reclamation is an alien element, particularly when a rectilinear form is imposed on a serpentine edge.

6.6 District and Regional Plans

It appears that the application is consistent in activity with the present Transitional District Plan zonings for harbour works and industrial areas. There may be some conflict with the Regional Policy Statement whose objectives (s.22) are intended to protect the coastal area, minimise adverse effects of development on the ecological and scenic values of the coastal environment, and enhance the public use and enjoyment of the coast. The proposal conflicts with policies related to ensuring subdivision and structures are designed to fit in and not dominate the natural landscape. Unless it is assumed that an operational need exists for this activity, requiring it to be located in the coastal marine area, it also conflicts with policies on reclamation. Whether use of the reclamation for storage can be considered an operational need is moot. The Proposed Regional Policy Statement is currently out for comment but it is important to note that a proposed policy statement is one of the matters that must be taken into consideration by consent authorities when determining applications.

The District Plan identifies the Northland coast as its most distinctive physical feature. The Transitional District Plan has identified the north side of the harbour as a high scenic value in its rural scenic protection, scenic reserve and outstanding wildlife value zonings. The south side has not been recognised by any scenic designation. This may in part be due to the industrial development of Marsden Point, which has compromised the cultivated "natural" landscape.

Scheme Change 64 has protected the coastal foreshore, recognising its physical importance but no safeguard is given to the harbour edge which is designated for harbour works.

The Whangarei Heads are, to quote the EIA, "a naturally significant backdrop" to the development and it is stated that their "value is greatly enhanced by the counterpoint of lowlands and harbour immediately in front of and below this dramatic profile". The EIA also noted that, while Marsden Point's imposition on the general landscape had gained a degree of acceptance, the visual relationship with the Heads was "less than symbiotic".

To date no regional assessment has been made of landscape features of significance, under the RMA (s.6(c)), and no landscape policy statement has yet been developed by the region.

It is possible that the harbour and coastal levels which are foreground to this naturally significant feature could be considered of importance. The significant landscape feature on a regional basis may in fact be the whole of Bream Bay, from Head to Tail, including the Bream Bay lowlands.

In the Whangarei Harbour Study (which has no formal status) the recommendation for the area of Marsden Point was for the production of landscape site and design guidelines for large scale projects, and the establishment of forestry zones in the area. The application complies with requirements in the District Plan, but landscape site guidelines have not yet been developed.

6.7 Discussion

6.7.1 Adequacy and Availability of Information

For the public to be able to comment meaningfully on the visual impact of the proposal, more illustrative material should be included in the main body of the EIA. It appears that where material was available for viewing separately, little use was made by the public of this. The applicant should consider ways in which that material can be made more accessible.

The Council may also wish to consider whether, in view of the value of Whangarei Heads as a significant scenic feature(s), the hinterland (ie, the southern shore) is visually such an important component of that feature that identification of this in the District Plan is required. A regional assessment of landscape values and features would be required to establish this.

The Council may wish to receive further information on alternative options for the development, in view of both the minimal mitigation measures possible with the current proposal, and in that it could be seen as inconsistent with coastal policies. The question of access to the site and its impacts could also form part of the application.

6.7.2 Monitoring Programme

Supplementary information supplied by the applicant states programmes for stormwater management and construction management are being developed. No comment on the landscape adequacy of these can yet be made. The interrelationship and benefits of vegetation, in both design and management of stormwater, dredging spoil, settlement and dust have the potential to be ameliorating factors in the development.

6.7.3 Conditions

The consent granting agencies may wish to consider conditions relating to:

- Management of the plantings as part of the long-term plan;
- Development of the stormwater systems to incorporate visual relief within the extent of land area by mass plantings;
- Mass plantings in association with buildings and car parks;
- Perimeter plantings of pohutukawa trees along the western side of the reclamation; and
- Colour schemes for buildings and structures.

The objective of these conditions is to:

- Reduce the visual mass of land surfaced area, which will also reduce dust, glare and reflection;
- Ensure remedial/mitigation works are a permanent feature within the landscape;
- Have planting of a size compatible with the scale of the development and its surroundings, being the foreground of a landscape of high scenic quality;
- Improve views from the north and from the air.

6.8 Summary of Findings

The visual assessment contained in the EIA is an acceptable methodology and adequately shows the extent of visual impact from viewpoints within the visual catchment.

The public consultation carried out has elicited limited reaction to the visual impact of the proposal. Concern on visual issues appeared to be secondary to others such as noise, dust and traffic. While response was limited, the degree of attempted consultation was adequate. The exception to this was the difficulty of accessing the visual material available. Wider distribution might have elicited greater response.

The development proposed, by its nature, is not capable of avoiding or mitigating impact on the visual landscape. Its impact is lessened only by the limited area and distance from which it can be seen and the limited audience in those areas.

Mitigation measures comply with yard requirements only. The opportunities for improved integration through a plant framework within the site have not been taken. No details have yet been supplied on stormwater management, which has potential for mitigation.

The alternative options of layout and construction which would enable a greater degree of mitigation have been rejected by the applicant as uneconomic and inoperable.

The proposal is generally consistent with existing local plans and policy statements and with the requirements of the Resource Management Act 1991, provided the development is not considered inappropriate in this coastal environment.

However, notwithstanding the above, the proposal is sited in a harbour with an almost unmodified coastal edge of considerable scenic quality. The Whangarei Heads are considered a regional and nationally significant feature. Perceived in this context as the foreground or part of a national feature, the impact on that landscape feature should be given greater consideration.

Section 7: NOISE

7.1 Discussions with Interested Parties

Discussions were held with interested parties during the Parliamentary Commissioner's Review Panel visit to Whangarei. The matters that were raised by one or more persons included:

- Existing noise problems from the refinery and how these are influenced by the meteorological conditions;
- The combined effect of proposed port and existing refinery operations;
- How the wind might affect noise propagation;
- Whether night-time noise emissions could be adequately mitigated;
- Specific concerns regarding log screens;
- Existing noise complaints about port operation;
- Concerns about truck noise to and from the site;
- Concerns about vessel loading operations;
- Concerns about pile driving noise;
- Concerns about dredging operation noise; and
- Difficulty in understanding the assessment.

7.2 Questions to the Port Corporation

Requests to the Northland Port Corporation were made at two separate occasions. The "Request for Additional Information Regarding Noise" dated 3 August 1994 contains the full list of questions. This document contains all questions asked in section 27 of the original series of questions (appendix 3) posed by the Review Panel under the covering letter dated 16 August 1994, and some additional points.

7.3 Summary of Responses

The following should be read in conjunction with section 27 of both the Review Panel's questions (appendix 3) and the NPC's response (appendix 4). It should be read with the "Request for Information" dated 3 August 1994 and the response to this document by NPC's consultants dated 18 November 1994.

The following is a summary of the questions posed and the responses:

1. Meteorological Effects

The NPC has no information available on recent meteorological data. The responses suggest that the effect of wind or inversion on operational noise can be calculated using the data provided for construction noise. NPC's report states that *"As a guide these levels would increase approximately 6-8 dBA when there was a temperature inversion and light assisting wind"*. This implies that, in such conditions, operational noise levels of both log and sawn timber handling, and also from woodchip handling will exceed 50 dBA at the nearest dwellings. The potential

exists for noise emissions to significantly exceed District Plan requirements (45 dBA at night, on Saturday afternoons, Sundays and public holidays).

The NPC says that it has no up-to-date meteorological data. There is no way of knowing the incidence of these "adverse" weather conditions. It is, therefore, not possible to gauge the actual or potential effect of operation noise on the environment from the information included in the Environmental Impact Assessment.

2. Cumulative Effects

It is asserted that there will be very little additive effect between refinery and port noise and that combined effects have been reported. While the assessment states this, it proceeds to report on emissions of noise from different activities on an individual basis, thus confusing this aspect of the prediction. The NPC does not intend to better illustrate the information.

3. L_{max}

The response asserts that none of the operations occurring during the construction phase will cause the L_{max}[1] to exceed L_{10}[2] by more than 15 dBA and that, therefore, construction noise will not exceed the construction noise standards.

Furthermore, in the consultant's response, it is purported that L_{max} levels will be typically 3-5 dBA above L_{10} levels and that there will not be any L_{max} effects in terms of NZS 6802. This is taken to refer to the port operational noise emissions.

The modern trend is to use L_{max} to provide against sleep disturbance (see NZS 6802:1991 *Assessment of Environmental Sound*). The Environmental Impact Assessment makes no assessment of the adverse effects of noise based on the L_{max} descriptor and, therefore, fails to address any potential for high level, short-term noise emissions being generated at night. During the Review Panel's visit the noise of timber striking a vessel during loading was highlighted (among others) as having high level, short-term characteristics. It is not clear from the NPC response of whether the stated typical incremental increase of L_{max} over L_{10} for port noise emissions (3-5 dBA) can be applied to specific night-time loading and operational emissions that may have the potential to occur. If such an incremental increase can be applied to night-time operations, then a reasonable L_{max} criterion should not be exceeded.

The noise assessment of off site night-time truck movements may also be undertaken using L_{max} although alternative descriptors are also available to describe and control this category of noise. This aspect of noise generation is not covered in the responses.

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[1] The maximum sound level at any time.

[2] The noise level equalled or exceeded for 10% of the measurement period.

4. Proposed Mitigation Measures

During the Review Panel discussions in Whangarei those who were consulted displayed a general scepticism about how effective the proposed mitigation measures would be in ensuring that performance standards would be met. The NPC has identified the fact that night-time operations will exceed specified noise limits without mitigation measures in place. Concerns were raised that using stockpiled logs as barriers left it to the operators to design these critical mitigation measures on an ongoing basis. It was also perceived that the ships themselves would need to provide an integral part of this barrier mechanism. It was requested that questions 4(a) to 4(f) inclusive be specifically answered:

(a) The response still leaves doubts about whether these screens can be wholly effective, particularly for the likes of the woodchip bulldozer working on a woodchip pile.

(b) No specific response to this question.

(c) An operational management plan would be used to restrict mobile machinery at night. No specifics are given on policing, safeguards or contingency plans.

(d) No specific response to this question.

(e) The practicability of purpose-built screens is not addressed.

(f) No specifics are given on how different meteorological conditions might influence the effectiveness of the screens.

NPC's consultants state that specifics sought in relation to mitigation measures are to be covered by a management plan and are not considered appropriate for an assessment of effects report. These questions were asked because the parties spoken to in Whangarei were unconvinced as to the practicality of the proposed mitigation measures. Those people found it difficult to envisage how surrounding residential areas can always be screened from night-time port operations. Neither the Environmental Impact Assessment nor the response to questions about this aspect of the mitigation explains satisfactorily how this mitigation is to be properly achieved. Safeguards and continency plans are not described.

5. Operational Noise

NPC's consultants have no knowledge of existing port noise problems.

6. Traffic Noise

NPC's brief to its acoustical consultants only required consideration of the effects of traffic between the Port and State Highway 1. Thus, the wider regional traffic noise implications are not addressed.

The reference to "Maori concerns" in this question simply recognises that, with a Marae near to the traffic route to the site, Maori do have some concerns about noise.

7. Construction Noise

The requirements of the Construction Noise Standard are to be fully adopted and it is taken from the response that the more stringent of the various optional elements provided for are to be considered as mandatory.

8. Industrial Zoned Boundary Limits

NPC's consultants interpret the District Plan requirements to mean that for an industrial zoned boundary to exist there must be two contiguous sites zoned industrial.

9. Vessel Noise

NPC's consultant states that because the dredge operation is maintenance work, it clearly comes within the requirements of NZS 68903P:1984 *The Assessment of Noise from Construction, Maintenance, and Demolition Work.*

10. Monitoring

NPC's response is that monitoring is a fine detail and not originally intended to be covered at this stage. There is a clear duty under the Fourth Schedule of the Resource Management Act 1991 to describe how effects will be monitored and by whom. NPC's consultants suggest that the Resource Management Act makes monitoring requirements clear and that a complaint report is only relevant once the project has approval.

7.4 Summary of Findings

This summary should be read together with the actual questions posed and the relevant responses (appendices 3 and 4).

There are several instances where the responses show that the Northland Port Corporation makes a different interpretation to practices, Standards and District Plan requirements than the Review Panel. It is judged that the process will help parties in assessing what the noise impact of the proposed port development is likely to be.

There is no doubt that some contentious issues will remain. This process is unlikely to satisfy all parties that adequate safeguards and contingency plans are available to ensure that the actual or potential noise effects can be appropriately mitigated on a 24-hour year round basis.

Appendix 1
TERMS OF REFERENCE

The Terms of Reference for the Panel, agreed by the Parliamentary Commissioner for the Environment in concert with the relevant consent authorities, were:

To study documentation for the environmental impact assessment on the proposed Marsden Point port development to determine whether:

- Information provided in the assessment is adequate and accurate;
- Public consultation has been adequate;
- The development and operation of the proposal is capable of avoiding, remedying or mitigating any adverse environmental effects, including those identified in public submissions;
- The proposal meets all requirements of Part II and Schedule IV of the Resource Management Act 1991.

The Panel is expected to evaluate:

1. Whether all aspects of the proposal have been clearly and appropriately described and all required consents and statutory approvals identified;
2. Whether all actual and potential effects of the proposal on the environment have been identified; and, where there are likely to be significant adverse effects on the environment, whether alternatives have been identified;
3. Whether the assessment of the actual or potential effects of the proposed activity on the environment, including assessment of the risks likely to arise from the use of any hazardous substances and installation, is adequate.

In assessing the adequacy of the information in their field of expertise, Panel members should have particular regard to:

- Whether the proposal is consistent with any relevant policies and plans of the Minister of Conservation, the Northland Regional Council and the Whangarei District Council; with any relevant heritage orders or designations, or requirements for them; or with any other matters which the consent authorities have identified as being relevant to the proposal;

- Whether appropriate criteria were established for identifying the significance of any adverse effects and appropriate management;

- Whether appropriate management, including mitigation measures, safeguards, contingency plans and, where relevant, a monitoring programme, has been identified for any adverse effects and discussed with affected parties;

- What measures have been taken to identify the persons interested in or affected by the proposal; what formal opportunities for public input have been provided and whether the information available at those times was sufficient to enable informed and appropriate public involvement;

- The adequacy of the response by the applicant to public concerns relating to the environmental effects of the proposal, including effects on the wider community, social, economic and cultural effects, and factors relating to the health and safety of the community.

Appendix 2
ENVIRONMENT ACT 1986

17. Matters to which regard to be given

In the performance of the Commissioner's functions the Commissioner, where the Commissioner considers it appropriate, shall have regard, in particular but not exclusively, to:

(a) The maintenance and restoration of ecosystems of importance, especially those supporting habitats or rare, threatened, or endangered species of flora or fauna;

(b) Areas, landscapes, and structures of aesthetic, archaeological, cultural, historical, recreational, scenic and scientific value;

(c) Any land, water, sites, fishing grounds, or physical or cultural resources, or interests associated with such areas, which are part of the heritage of the tangata whenua and which contribute to their wellbeing;

(d) The effects on communities of people of:
  (i) Actual or proposed changes to natural and physical resources;
  (ii) The establishment or proposed establishment of new communities;

(e) Whether any proposals, policies, or other matters, the consideration of which is within the Commissioner's functions, are likely to:
  (i) Result in or increase pollution; or
  (ii) Result in the occurrence of natural hazards or hazardous substances; or
  (iii) Result in the introduction of species or genotypes not previously present within New Zealand (including the territorial sea); or
  (iv) Have features, the environmental effects of which are not certain, and the potential impact of which is such as to warrant further investigation in order to determine the environmental impact of the proposal, policy, or other matter; or
  (v) Result in the allocation or depletion of any natural and physical resources in a way or at a rate that will prevent the renewal by natural processes of the resources or will not enable an orderly transition to other materials;

(f) All reasonably foreseeable effects of any such proposal, policy, or other matter on the environment, whether adverse or beneficial, short term or long term, direct or indirect, or cumulative;

(g) Alternative means or methods of implementing or providing for any such proposal, policy, or matter in all or any of its aspects, including the consideration, where appropriate, of alternative sites.

Appendix 3
QUESTIONS SUBMITTED TO NORTHLAND PORT CORPORATION BY THE TECHNICAL REVIEW PANEL

The following questions were submitted to Northland Port Corporation on 16 August 1994 by the Technical Review Panel as addenda to the Environmental Impact Assessment. The questions are in no particular order of importance.

1. Hydraulic Modelling

(a) Was the existing groin, which extends out to sea some 250 m in the location of the proposed reclamation, taken into account in the model?

(b) If it was allowed for, then is it reasonable to assume that the effect of the proposed works predicted by the model is the incremental increase from the existing groin to the new reclamation? (The EIA states that the new reclamation will cause "no new increase in silting" of Blacksmith's Creek and the blind channel. However, it is reported by local residents that the existing groin is already having a significant effect as demonstrated by the extension of a spit across the mouth of Blacksmith's Creek. Thus the status quo is likely to be a continuation at least of the current rate of modification of the zone of local foreshore west of the reclamation.)

(c) If the groin was not allowed for in the modelling of the existing condition, what effect does that have on the model calibration?

2. Alternative Schemes on the Same Site

(a) Is the extent of the reclamation (or at least the extent to which it extends out from the shore) controlled by a requirement to balance the tendency for the dredged turning basin to increase water velocities at the refinery with the tendency for the reclamation to reduce them?

(b) If this is not the case, is it a fair assumption that a smaller reclamation with a berthing face closer to the shore would have satisfied operational requirements?

3. Turning Basin

(a) The turning basin proposed is much larger than that now being used at Whangarei. What is the minimum practical turning basin dimension at Marsden Point? Please justify any increase over and above that at Whangarei.

(b) If the turning basin were smaller would it be possible to have a smaller reclamation and still achieve the hydraulic balance described above?

4. Reclamation

(a) Page 13 of Volume 1 of the EIA lists the design parameters for the proposal. In view of the extensive land holdings at Marsden Point of the Port Authority please justify the operational requirement for a 32-35 hectare reclamation.

(b) Why is a reclamation necessary and why does it extend so far into the harbour? NPC should briefly outline the reasons for the location and size of the reclamation.

5. Wharf Structure

In Section 1.2.2 of Volume 1 of the EIA, it is stated that the wharf will be founded on piles driven to RL-15. This is only 2 m below the initial dredged depth. Is that sufficient on the front face?

6. Barge Terminal

(a) Please provide information on:

- The proposed revised position of the barge dock at the Marsden Point terminal;
- The current position as to selection and commitment to barge terminal sites which may be used to collect logs;
- The suitability of the current zoning of potential barge terminal sites;
- The likely timing and programme of events before such terminals could be operational.

(b) If changes are made to the plan geometry of the reclamation area by changes to the barge terminal layout does this require further hydrodynamic studies or a new application?

(c) Is it anticipated that this revision will in any way change the anticipated effects outlined in the EIA?

7. Stormwater Treatment and Disposal

(a) What is the nature and quantity of wastes and contaminants expected in the wastewater deriving from the port?

(b) Allowing for the fact that additional consideration has recently been given to this matter, what are the proposed stormwater treatment and disposal methods?

(c) What are the design criteria for the treatment system?

(d) What is it intended that the treatment system will deal with and what will be the treatment efficiency?

(e) Given the type and efficiency of the treatment system and the proposed disposal methods, what are the predicted impacts of stormwater discharges on water quality and marine biota?

(f) What are the options for disposal of drainage and treatment system residues?

(g) How will ship sewage be disposed of?

(h) If settlement ponds are envisaged as part of the treatment system, is it possible to design these in such a way that they would provide habitat suitable for waterfowl?

(i) Is the final option holding ponds or spray dispersal on land or both?

(j) What is the proposed land use of the area where spray dispersal takes place, the form and vegetation. Have these been designed to take account of drift?

(k) What are the form and materials of the surrounds to the holding ponds and discharge channels (open or piped) to the discharge point?

(l) What buffer is intended between holding ponds and adjacent land?

(m) Are modifications to be made to the treatment method for runoff from storage areas of treated timber?

8. Construction Management Plan

Construction phase management is not well documented with respect to wind blown sand from dredge deposits on shore. Please outline any relevant construction management plan intended to mitigate this effect.

9. Cost Estimates and Commercial Justification

(a) The capital cost estimates provided by Westmar Consultants in their Section 14 seem to be very optimistic. Could you provide further breakdown.

(b) Is it realistic to cost the dredging based on NPC dredge and manpower, bearing in mind the depth and volume?

(c) What is the area of pavement allowed for?

(d) The size of reclamation (and capital and operating costs) appears to be proportional to expectations regarding export wood flow volumes. Information forwarded to the Panel from the industry suggests that these volumes may have been significantly overestimated in the earlier CFK report. Is NPC aware of this? Could it provide an indication of the sensitivity of the design to expected volumes? At what point would a significant reduction of the reclamation be justified?

10. Operational Flexibility

(a) We note that the planning of the facility allows for considerable flexibility in future use. Will the wharf be designed so as to be able to carry the line loads from container cranes should they be added in the future?

(b) Is it intended that other facilities/operations (eg, fertilizer storage) currently operating at Port Whangarei will be transferred to Marsden Point?

11. Air Quality

Has the impact of adding discharges from ships engines to that from the refinery been considered?

12. Title to the Land and Seabed Included in the Proposal

(a) Does the Northland Port Corporation hold clear title to all the land proposed to be used?

(b) How was that title established?
NB: In considering this question, regard should be had for the original deeds of transfer from the Maori customary owners to English

interests referred to in the Midwood report rather than the translations supplied there.

(c) In considering (b), consideration needs to be given to the nature of these transfers/transactions. This especially given that the Midwood report raises the matter of differing land tenure systems in the Maori and English cultures at the time of the reported transfers from Patuharakeke to the English (between 1839 and 1854). Hence the question - what was the true nature of the transactions referred to in (b) and did they or any subsequent transaction completely extinguish the customary native title? Was that extinguishment (if it happened) consistent with the Treaty of Waitangi? Although all blocks involved should be investigated, particular regard should be had for the Takahiwae Block of which at least part may have been confiscated (see Midwood report page 12).

(d) Has clear title been established to the seabed proposed to be used? If so, who holds it and how was customary native title extinguished? Was the manner of that extinguishment (if it has occurred) consistent with the Treaty of Waitangi?

(e) What is the nature of the present claim to the Waitangi Tribunal (WAI 121) and has the claim been heard and reported on? If so, what were the recommendations and how has government responded?

(f) Does the present claim raise the questions posed in (a) to (d) above or are the matters raised there likely to give rise to further claims?

13. Tangata Whenua Concerns

The Midwood report raises at least 15 quite specific concerns and queries. The EIA states "These concerns have been recognised." (p xii) and provides a slightly expanded but still unclear statement at p289-90, Vol 1.

(a) How has each of the concerns and queries, as detailed in the Midwood report, been addressed?

(b) The report is critical of the consultation process. In particular, there is a comment that information supplied is inadequate. How has the particular criticism been addressed?

(c) Patuharakeke suggested a practical solution to all tangata whenua related problems. To that end, has the Corporation appointed and provided adequate resources for the Kaiwhakahaere and Roopu Kaumatua as suggested? If not, what alternative arrangements have been made which follow up on the comments on p 290, Vol1?

(d) Are there waahi tapu, tauranga waka, mahinga maataitai or taonga raranga in the area concerned? If so, how will these be protected?

(e) How will the proposal affect the customary fishing rights of Patuharakeke in the area?

14. Tribal Concerns

(a) The Ngati Wai Trust Board has indicated concern.
  (i) What is the nature of that concern?
  (ii) How does it relate to the concerns of Patuharakeke?

(b) The Patuharakeke hapu also has links to both Ngati Whatua and Ngapuhi.
   (i) Have these tribes expressed any views on the proposal? Have they been kept informed?
   (ii) Has Te Kotahitanga o te Taitokerau Resource Management Committee been consulted and have they expressed any views on the proposal?

15. Queries Relating to Specific Sections of the EIA

(a) Vol 1 Statutory Considerations, p165: *Kaitiakitanga.* Given that the practice of *kaitiakitanga* varies greatly from tribe to tribe and even from hapu to hapu, what are the specifics of Patuharakeke's responsibilities in this respect? How will these be catered for within the proposal? Similarly for Ngati Wai, Ngapuhi and Ngati Whatua.

(b) Vol 1 Environmental Effects Assessment: Matrix at p186: How were the values for the Maori section calculated?

(c) Vol. 1 Population Characteristics: What are the Maori statistics for the area? How many of those living in the immediate vicinity of the proposal are tangata whenua? Is there a continuing trend of Patuharakeke currently living outside their traditional rohe (district) returning home? Is the proposal likely to encourage more of them to return home?

(d) Given the strong interest expressed by Patuharakeke in the training and employment opportunities relating to the proposal, has some specific undertaking been made to Patuharakeke (as tangata whenua) in this respect (as opposed to the undertaking to give priority to locals)?

16. Traffic

Please provide additional information on:

- Traffic volumes on likely routes from the forests to the Marsden Point area for two scenarios, with and without barging;
- The expected distribution of these movements through a typical day;
- The impacts these flows would have on the routes used;
- The hours of operation of the port and the log storage yard;
- The volume of logs currently carried to the existing port by rail;
- The distribution of current logging traffic movements to the existing port through a typical day;
- Justification of the assumption that laden trucks going to the port (in particular logging trucks) will have an EDA of 2;
- Discussion on the suitability of the alignment at the eastern end of McCathie Road to safely carry logging traffic;
- Statements on which roading works are to be undertaken as part of the port project;
- Discussion on safety, or proposed road works at the entrance to the refinery;
- Statement as to when the "transport corridor" referred to in the EIA, is to be operational; and
- Implications for additional traffic movements if other operations/facilities current at Port Whangarei are transferred to Marsden Point.

17. Impacts of Dredging and Reclamation Work

(a) Port Corporation has indicated that it will produce management plans for the construction dredging and for the maintenance dredging. The

following questions should be addressed:

- What are the details of the operation including proposed hours of work and expected duration?
- What procedures will be used to minimise any adverse impacts on the movement of shipping?
- What noise levels are expected?
- What monitoring procedures will be used to evaluate the suspended sediment problem and what remedial measures will be used if excessive suspended material is generated?
- What methods are to be used for disposal of the unsuitable material dredged during construction and the material dredged during the maintenance dredging?
- How are the disposal sites to be managed and what measures will be taken to ensure any adverse effects on natural waters are minimised?

(b) Should unwanted dredging material be disposed of on land, what are the implications for the groundwater regime in the spit area? Do any of the anticipated changes have adverse impacts on the refinery's relationship with the groundwater regime?

(c) It is assumed that the subtidal benthos in the vicinity of the proposed development has not changed since surveys in the early 1980s. What evidence is there to support this?

(d) It is estimated that of the total amount of sediment to be dredged 5-10% will be lost during dredging and a further 3-6% will be lost as non-settled fines in the decant water. What is the actual quantity (in m^3) of sediment involved and what is the predicted fate of this lost sediment?

(e) If all this fine material is to be released back into the harbour how far will it be dispersed, and what effect will it have on the nearby benthic environment and shellfish beds in particular?

(f) What is the possibility of only discharging this water on an outgoing tide?

(g) Sedimentation is predicted to occur in the dredged turning basin. What will be the source of this sediment? Does the accumulation of sediment in the dredged basin have implications for the processes of sediment transport in the harbour entrance and/or stability of the nearby banks?

(h) With the recognised need for continual dredging of the turning basin, what are the disposal options for this dredged sediment?

(i) What monitoring of sedimentation processes is proposed for the harbour entrance? If changes are detected, what amount of change would initiate action, and what courses of action are possible?

(j) How will the particle size of sediments accumulating in the turning basin compare with those presently there? What differences are expected in the nature of the benthic communities re-establishing there? How will these benthic communities be affected by propeller wash from ships and the continual maintenance dredging which will be required?

18. Monitoring Programme

(a) Plans for a bathymetric survey of the area Snake Bank to Mair Bank and repeated surveys at six-monthly intervals have been agreed between the NPC and the refinery. How does NPC intend to report the results of this monitoring programme?

(b) A satisfactory near shore monitoring programme has been agreed. How does NPC intend to report the results of this monitoring programme?

(c) So that future monitoring programmes can be correctly designed, when will surveys be carried out to establish baseline conditions and natural variability in:

- water quality
- benthic communities
- shellfish populations
- birdlife
- sediment grain size and bed levels
- contaminant levels in sediments and shellfish.

(d) What monitoring is proposed to assess changes in the following:

- sedimentation accretion and erosion
- shore levels and grain size
- benthic communities
- shellfish populations
- shellfish contamination.

19. Solutions to Possible Problems at the Refinery

The NPC and the refinery have agreed to measure present current velocities and sea bed levels and to continue monitoring these during and after construction. The basis upon which costs of necessary remedial work will be apportioned has been agreed. Only the mooring forces problem remains unsolved and the trigger levels at which remedial work will be initiated have yet to be agreed. Could NPC report on these and any further outcomes of its negotiations with the refinery.

20. General

(a) How will the development affect Snake Bank, Parua Bay and Blacksmith's Creek?

(b) What happens if the proposed port does cause significant problems in the harbour, eg Snake Bank disappears or Blacksmith's Creek estuary silts up? Is there to be a bond system to ensure that any damage is ameliorated?

(c) What will be the effect of discharges from the port when it is operational? This problem is addressed in section 4.04 of Volume 3 of the EIA in a general way and some suggestions are made for conditions to be placed on the discharge consent. Could NPC indicate:

(i) A definitive monitoring programme;

(ii) Proposed acceptable levels of temperature change, turbidity, pH, concentrations of toxic substances, dissolved oxygen and coliform bacteria;

(iii) Precautionary measures that it might take to prevent unauthorised discharges or other adverse effects on natural waters and a contingency plan that describes how such events

will be managed so as to minimise and redress any adverse impacts on natural waters

21. Ecological and Water Quality Issues

(a) The proposed port design is considered to be the best practicable option from an economic, engineering and operational perspective. To what extent were ecological values considered in this selection?

(b) What was the best practicable option in terms of minimising impact on the marine environment?

(c) To what extent were ecological factors considered in determining the size of the dredged basin?

(d) If shipping movements were restricted to times of slack water could the size of the turning basin be reduced?

22. Impact on Sandflats

(a) What alternatives for the port layout and/or construction were considered to minimise impact on the sandflats? What is the justification for the proposed option, and what options for mitigating the effects of the reclamation were considered?

(b) What is the relative importance to the harbour ecosystem of the affected sandflats? What other feeding areas are utilised by birds in this section of the harbour, and how is their relative usage divided between bird species? What will be the effect on birdlife in the Blacksmith's Creek area of losing this intertidal sandflat area?

(c) What is the recent history of sediment movement (ie, accretion or erosion) on the sandflats? What evidence can be presented to show that the NPC causeway has or has not affected sedimentation or sediment grain size in the area?

(d) Can the hydrodynamic model account for possible changes in sedimentation that it is suggested have occurred west of the NPC causeway?

(e) What changes could occur in sandflat levels and grain size as a result of the port reclamation, and how will this affect shellfish?

(f) Given that the reclamation would destroy an area presently used for netting trevally, is it proposed that an alternative fishing area will be created?

23. Impact on Blacksmith's Creek

(a) It has been concluded, as a result of the hydrodynamic modelling, that there is little evidence that erosion or deposition will occur at the exit of Blacksmith's Creek other than by processes independent of the proposed development. What is the reliability of the modelling predictions in this shallow intertidal area, especially in view of the lack of digitised model grid there.

(b) It would appear that although bed levels are not predicted to change they could alter by - 5 to + 5 cm per year. What would be the implications of, for example, an annual accretion rate at the entrance

of Blacksmith's Creek of + 5 cm? How might the sediment grain size change, and what would be the ecological implications of bed-level and grain size shifts?

(c) It is suggested that possible sedimentation at the entrance of Blacksmith's Creek should be monitored. What is the nature of this proposed monitoring? What amount of change would initiate action, and what courses of action are possible if the Blacksmith's Creek entrance did begin to silt up?

(d) Data used to assess the importance of birdlife at Blacksmith's Creek were collected in 1980. What is the present usage of this area by birds?

24. Bark

(a) What are present estimates of the quantity of bark which could be generated at the port?

(b) What management practices are planned to control bark loss into the surround area, and what are current disposal options for bark collected at the port?

25. TBT

(a) Given the estimated rate at which TBT is released from the hull of an average sized vessel, the projected number of ships, and their length of stay, how much TBT is likely to be released into the harbour waters? How does this compare with present loadings of TBT from shipping activity at the harbour entrance?

(b) To what extent will this TBT be diluted and dispersed, and what is the likelihood that shellfish in the vicinity will become contaminated? For comparison, what are present TBT levels in sediments and shellfish in the vicinity of the NZRC wharf and the wharfs at Port Whangarei?

(c) Monitoring of TBT has been proposed. If it was found that TBT was accumulating in shellfish, what remedial action would be taken?

26. Ballast Water and Sediment

(a) MAF play a vital role in preventing the introduction of exotic marine species in ballast water and sediments. What monitoring and testing of ballast water and sediments is currently carried out by MAF? What algal and invertebrate species are currently screened for?

(b) If ballast water or sediments are deemed to be unsuitable for discharge in Whangarei Harbour, what options are available for their disposal? What is the feasibility of treating ballast water through the NZRC ballast water treatment facility?

27. Noise

(a) Noise predictions in the assessment are based on zero meteorological conditions. It is requested that NPC provide for other meteorological conditions. Relevant historical data of those weather conditions that are pertinent to sound propagation should be investigated or collected. This information should include wind patterns on a seasonal and diurnal basis. Noise predictions should be adjusted for various

meteorological conditions including those conditions that would generate the worst case scenarios.

(b) Please indicate the cumulative effect of the noise from the proposed terminal when combined with that of the refinery. In this respect regard should also be given to different meteorological conditions.

(c) In terms of noise emissions considered as maximum sound levels (L_{max}); What will be the impact of construction noise, terminal operation noise and transportation noise using L_{max}?

(d) Please describe more fully the proposed mitigation measures. The assessment identifies that night-time noise emissions could exceed noise limits. The mitigation measures rely heavily on the use of screens as noise control barriers. It is not proposed in the assessment that these screens are to be purpose-built. Rather, noise control is to be provided by ships or log piles. The following specific information is sought:

(i) How effective will these measures be?
(ii) What safeguards are there to ensure that the ships and log piles will be in position when noise is being generated and what contingency plans are there?
(iii) How will restrictions on mobile machinery be policed and what safeguards and contingency plans are there?
(iv) Are there to be minimum requirements for the size and extent of screens and who will specify these?
(v) Are purpose-built screens in any way a practicable proposition?
(vi) What difference will meteorological conditions make to the effectiveness of these devices?

(e) Please provide a description of how noise is to be monitored and by whom. Who will have access to the information that is collected and what procedural steps will be adopted if noise emissions do not comply with the prescribed limits?

(f) Operational Noise:
As the existing port currently experiences noise complaints from its log handling operations, how will the operation of the proposed terminal differ.

The following information is required to enable claims in the NPC's consultant's report to be verified:

Explain specifically the acoustical analysis by which the conclusion is reached that noise emissions from 20 t wheeled loaders would be 50 dBA. At what locations does this prediction apply? Give the reasoning to substantiate the 6-7 dBA reduction it is claimed that topographic screening will provide.

Explain specifically the acoustical analysis by which the conclusion is reached that bulldozer noise will reduce to 48 dBA at the closest houses. Which houses are these and are they likely to be the most exposed to noise?

At what distance were sound level measurements taken for figs 3.4 and 3.6 of the acoustic consultant's report (Volume 3).

Boat loading noise is not specifically mentioned. What will be the potential effect of boat loading noise and are there any problems with managing and controlling this aspect of the work?

(g) Traffic Noise:
Does the assessment consider what other future truck movements could occur (eg tanker noise from terminal and traffic flows from other potential developments)? Have Maori concerns been addressed (cross reference)? The report identifies problems with traffic noise to dwellings but how practicable are the suggested mitigation measures?

What are the wider ramifications of traffic increases throughout the region? The proposed terminal development will deny the facility the use of rail. Will this cause a general increase in trucking and will this be significant?

At the top of page 20 of the acoustic consultant's report reference is made to a Figure 5.3 although this is missing from the document. Clarification is sought about what traffic volumes are used for these predictions; are these predictions for year 2007?

(h) Construction Noise:
The Assessment refers to NZS 6803P:1984 *The Measurement and Assessment of Noise from Construction, Maintenance, and Demolition Work,* but then singles out the noise limits recommended by that Standard. Which of the "optional" aspects of NZS 6803P is it proposed to make mandatory? In particular are the limits repeated in the Assessment to be reduced by 5 dBA because the duration of construction work will exceed 18 weeks? Will the consultation and noise assessment aspects of the Standard be adopted?

The following information is required to enable claims in the acoustic consultant's report to be verified:

At what distance were sound level measurements taken for fig 3.5 of the acoustic consultant's report (Volume 3).

Explain specifically the acoustical analysis by which the conclusion is reached that single event noise from pile driving L_{max} will be 53 dBA.

(i) The assessment does not mention the ability of the operation to comply with District Plan noise limits imposed at the Industrial zoned boundary. In this instance is that boundary the site boundary? Are these limits adequate to provide environmental protection other than residential amenity, eg recreational, rural and wildlife habitat? Can these limits be met?

(j) What is the regulatory mechanism that controls vessel noise? What limits are placed on noise from the dredge and are these adequate?

(k) A description of how noise is to be monitored and by whom. Who shall have access to the information collected and what procedural steps shall be adopted if noise emissions do not comply with the prescribed limits? Is it proposed to provide a compliance report and in what time frame?

28. Visual

(a) What illustrative material is to be included in the final EIA and will this form part of the planning application?

(b) Is a 3D model to be prepared and presented? Where/when/to whom?

29. Alternative Options

The optimum method of amelioration would be to site all storage, etc facilities on land and provide only mooring facilities, ie, piers, jetties in the water. Has any, and if so, to what extent has consideration been given to alternative methods of layout and construction.

30. Amelioration Proposals

(a) These appear to be limited to planting of yards in accordance with district plan requirements. Proposals have been reduced during consultation process due to lack of support.

  (i) Have any further plans been produced in agreement with adjacent residents and is there an intention to do this?

  (ii) The visual assessment identified changes to form, line and colour of structures as having potential to ameliorate the visual impact of the development. Are there any revised proposals (or undertakings) for the type of building form and colour scheme of the development?

(b) What is the long-term maintenance plan (5-25 year period for the planted areas)? Proposals seem to only cover installation. What is the maintenance proposal(s) for spray dispersal area (if used)?

31. Recreational Users

(a) Does NPC have any more detailed responses from recreational users on physical facilities and access or on how they perceive and experience the quality of the harbour landscape?

(b) To what extent will new development be seen as an extension of existing development or is felt to be a different and intrusive element in the harbour landscape?

(c) Are there proposals for water access to the southern shore?

(d) Have alternative pedestrian routes been considered through/between the development to compensate for the loss of shoreline access?

(e) The EIA contains largely anecdotal evidence on recreational use of the Marsden Point area and adjacent coastal marine area. Has NPC commissioned any recreational use surveys and, if so, what do those surveys indicate?

32. Landscape Quality

(a) To what extent has the experiential change in the landscape been taken into account in the visual impact methodology?

(b) Has the change in the inherent quality of the landscape as a whole, identified as of regional and national significance, been sufficiently identified?

Appendix 4
RESPONSE FROM NORTHLAND PORT CORPORATION

1. **Hydraulic Modeling**

1 (a) The "existing groin" is taken to refer to the causeway structure some 300m west of the existing "NHB" wharf. This was taken into account in the sense that its explicit inclusion was briefly considered and rejected on the following grounds:

(i) It hardly existed when the 1982 model was developed (see Plate 1 of the 1982 DHI report).

(ii) Although the causeway extends 250m from the foredune, the 1992 survey information provided to update the model shows it does not reach the low tide level and can therefore only possibly be a factor for part of the tidal cycle.

(iii) The 1982 model showed very low velocities and even lower sediment transport in the vicinity.

(iv) The 1992 survey data shows no change in beach profile from one side of the causeway to the other, indicating it has had little local impact on sediment movement since it was built. This is consistent with (iii) above.

(v) The area of the causeway and the immediate vicinity would be covered by the proposed reclamation. Any hydrodynamic impact of the causeway could reasonably be expected to be at least localised enough to lie within the reclaimed area and disappear if the proposed development was implemented.

(b) The difference between allowing for the groin and not allowing for it is considered to be significant in a local area not exceeding the proposed reclamation area (see 1 (a) (v) above). The distinction is therefore only semantic for areas outside the reclamation. A spit across the mouth of Blacksmith Creek can easily be generated by other factors such as the southwards move of the blind channel or a change in river flooding patterns, so an association with the concurrent construction of the causeway, while understandable, is well short of proof. Why was the 1992 beach profile immediately adjacent to the causeway so little affected if the causeway is having such a strong influence on sediment movement along the shore?

(c) As explained above, any effect on calibration should be confined to the area of the proposed reclamation.

2. **Alternative Schemes on Same Site**

2 (a) Yes; this was a major conclusion of the hydrodynamic report. It is not just a matter of the reclamation reducing velocities, it is a matter of requiring the full working draft right up to the berthing face for ship handling. A reduction in offshore extension therefore requires either a relocation southwards of the main channel from its natural position, with dangerous consequences for the oil terminal and Marsden Point itself, or

a change in concept to a piled wharf projecting some distance from the reclamation, with considerable consequences for port operations.

2 (b) In view of 2 (a) above, this is not applicable.

3 **Turning Basin**

(a) The Marine Operations Superintendent, Captain Barling, (Northland Port Corporation) advises that the turning Basin at Port Whangarei was designed in the 1960's to accommodate the movements of vessels having less than 150 m in length. Vessels have increased in length (and width) over the last 30 years and now the Corporation is regularly berthing vessels with an average of around 200 metres. At Port Whangarei in certain wind and tide conditions, the berthing of these vessels is now hazardous as the turning basins is inadequate. The Turning basin at Marsden Point is designed to accommodate vessels of 200 metres in length. Vessel size predictions indicate that in 15 years vessels could be in the range of 250 metres long. The turning basin dimensions at Marsden Point are the minimum required for the current and expected vessel sizes.

The DHI cover this aspect to some degree on pages 80-81 of the 1982 report. Captain Barling completely concurs with this view.

3 (b) This is difficult to answer without a clearer specification of an alternative layout and it would be unwise to rely on an opinion without the backing of a hydrodynamic model study. In principle though, there would still be problem of either relocating the main channel southwards or requiring to move to a wharf/access jetty arrangement.

4 **Reclamation Parameters**

(a) The reclamation size is determined by the hydrological parameters determined by the DHI and Barnett Consultants. To decrease the reclamation, would have significant adverse effects on the Marsden Spit and or the refinery jetties, as outlined in Dr Barnett's comments on 2(a). The reclamation size has not specifically been determined by the operational need to store future cargo. This area will of course be utilised for cargo storage. Modern terminals require that the storage area be wide and that the distance from the cargo storage areas to the "ship side" be short to allow for the efficient transport of cargo from storage to the loading point at ship side. If the storage areas were located further ashore on NPC land, the travel distances would be too great and the terminal would be inefficient and unable to compete effectively. The terminal layout is further discussed in sections 1.1.4.1, page 22 and 1.5, page 57 Volume 1 EIA[1].

(b) The reclamation is necessary to store cargo near to the ship berths and extends into the harbour to the point determined by the hydraulic model studies, as explained above. Cargo storage to provide pre-assembly of ship loads requires land with a width per berth at approximately the ship length. Also, the cargo storage area should be set at a

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1 Question 4 (a) makes reference to page 13. This page contains graphs on forestry volumes not design parameters. Is the reviewer referring to an earlier draft of the EIA?

close distance to the wharf face, which location is determined by the hydraulic model studies. Also, adequate traffic lanes for cargo movement are necessary. These factors set the size of the reclamation for a modern efficient terminal.

The possibility of constructing the storage areas on piles was investigated but the costs were estimated to be about $400 million, which is extremely high as compared to the costs of the sand reclamation.

5 **Wharf Structure**

Section 1.2.2 of the EIA refers to Port Whangarei Background, and the section refereed to is likely to be 1.5.3, page 58 of Volume 1. The piles are to be driven deeper that 15 metres below datum, the exact distance will be confirmed by the final design process, to enable the piles to carry the load. It is accepted that the statement on page 58 incorrectly reflects this and will need to be corrected in the EIA.

6 (a) **Barge Terminal**

(i) Information on the new location is understood to have been supplied.

(ii) No detailed investigation has yet occurred for any future barge terminal sites in the Far North. The Northland Port Corporation has requested that the Regional Coastal Plan, currently being drafted, provide for a barge terminal zone/ provision for barging activities below MHWS. The Proposed Coastal Plan is expected shortly. The Far North District Council is also drafting its District Plan and planning provision for the land based aspects of barging activities will also be requested in that plan. Investigations of suitable sites for barging terminals has commenced and will continue over the next 18 months with the relevant authorities.

(iii) Currently no suitable barge terminal zoning / rules on barging activities on land or water exist in either the Whangaroa, Mangonui or Hokianga sections of the District Plan. The Bay of Islands District Scheme section does have suitable zoning in the Marine 3 (Opua) zone. This applies only to the port area at Opua. This set of rules is part of the Transitional Regional Coastal Plan.

(iv) The Corporation has commenced investigations into suitable sites with the appropriate authorities in the Far North. The timing will be such as to fit in with felling programmes in this District. Discussions are currently occurring and the Corporation hopes to conclude these in the next 18 months. Construction and operation of the terminals is expected to occur by the end of this century.

6 (b) Only minor modifications of the plan geometry of the reclamation area is required to provide access to the barge terminal. The present proposed changes are so small as to be below the 50m resolution of the hydrodynamic model.

6 (c) It is not considered that this revision will in any way change the anticipated effects outlined in the EIA. The new location provides for safer navigation access as compared to the original location which may have prevented safe access for the tugs and barges during the hours of fast tidal currents.

7 **Stormwater**

(a)-(f) Worley Consultants have raised similar comments to those raised by the Review Panel. The Worley Proposal was provided in February this year in response to concerns held over the preliminary stormwater work of other consultants to the Northland Port Corporation. The indication from the Review Panel is now understood to be that the work suggested by Worley Consultants is required to be completed, to address the concerns of the Review Panel. This work is now proposed to be commissioned to be commenced on 9 September 1994.

(e) Stormwater effects (on water quality and biota) cannot be dealt with until the Worley's report has been completed.

(g) Ship Sewage

International flag carrying vessels are exempt form the provisions of the Resource Management Act by section 343, where any discharges to water by these vessels does not require resource consents this includes sewage discharged to sea. However international conventions require that wastes including sewage are not disposed of to sea. Therefore sewage will be required to be discharged to a land based system where these are available in ports. The Marsden Point port terminal does not include a sewage disposal facility for vessels. Therefore disposal will occur at other ports.

The EIA also suggests as a condition of consent that the consent holder not allow the discharge of sewage to the waters of Whangarei Harbour, page 135. The Northland Port Corporation would be required to outline this to each vessel's captain, if this becomes a condition of consent.

(h) Settlement ponds are envisaged. The use of these ponds by birdlife is expected as a matter of course. However the use by birdlife could increase the faecal coliform levels in the stormwater being treated and the system will need to be designed to ensure that these levels are reduced before the waste water is discharged.

(i) Given the calculated volume of stormwater alone (page 63, Volume 1, EIA), holding in ponds can not be sustained. Disposal after final treatment will be required. The details of which have not yet been finalised.

(j) The irrigation system has not yet been designed and it is agreed that such design will need to take into account wind drift potential and the role that vegetation including shelter belts can play in drift control.

(k) Yet to be finalised.

(l) The issue of buffers is a system design aspect. The ponds however will be filled with stormwater and particulate matter, not human effluent, therefore buffers of the size seen for oxidation ponds is not considered necessary as the liquid will not generate pungent odours. The location of the ponds is likely to be in the western area north of One Tree Point Road as shown on Plan 1.12A. The western boundary of the port

terminal is landscaped with a 10 - 12 metres wide landscaping strip, already (planted). The 10-20 m wide edge of the Blacksmiths Creek area is technically legal road which will return to the Crown at some stage. This is partially in native cover and gorse infested at this stage.

(m) Modifications are not currently provided for as all stormwater will pass through a common system. Worley Consultants have recommended that an alternative stormwater management system be developed based on the separation of stormwater into several wastewater systems depending upon the type and level of contamination. Treatment systems appropriate to each wastewater stream would then be developed.

Runoff from storage areas of treated timber may require particular treatment measures, however consideration is being given to the storage of treated timber undercover, to eliminate the potential problems for the treatment of this run-off stream.

8 **Construction Management Plan**

This management plan has not yet been finalised. The Corporation proposes to do so in consultation with a variety of interested groups including the New Zealand Refining Company, Patuharakeke Hapu, commercial shellfish businesses including Sea First, and the Regional Council. From discussions held with other regional councils which have recently approved similar structures, common practice appears to be that these councils propose to have construction managed by conditions of consent. The plans proposed will clarify and augment such conditions. In the interim a dust monitoring program is being prepared for Marsden Point to establish background levels. From the research undertaken at other ports to date, data indicates that the background levels will record salt spray.

The reclamation fill will be dredge spoil and will arrive within the reclamation area at a ratio of 20% sand fill to 80% water. The particle size is relatively large and fines will be settled out in settlement ponds before removal to land. The material will be placed wet and will be watered regularly to ensure windblown sand does not become a problem. Wind blown sand from dredged deposits on shore could also be controlled either by a surface layer of aggregate or by suitable plantings applied by the "hydro spray" method.

9 (a) **Costs**

The capital cost estimates were prepared based on 1992 construction costs in New Zealand for works of a similar nature, such as for the Port of Tauranga "Sulphur Point project" which involved dredging and reclamation, wharf construction, heavy duty pavements and warehouse construction. Costs of aggregates and rock materials were based on discussions with suppliers and contractors. Dredging costs were prepared based on the use of the NPC dredge modified in accordance with designed pump and ladder changes to enable dredging to project depth. Alternative dredging and reclamation costs by contractors were estimated for comparison purposes.

(b) At the time of preparing the EIA, the Northland Port Corporation considered utilising its dredge, for the bulk of the dredging operation if not all, with appropriate

modifications to the dredge. However it has recently been approached by dredging contractors and is giving consideration to the use of their services for the proposed dredging. At the time of preparing the EIA, it was considered appropriate to base this cost on NPC's personpower and equipment.

9 (c) The area of pavement for the stage of development for 1997-1998 as estimated for Section 14[2] was 42 ha total. Of this total, 4 ha of pavement was constructed of aggregates surfaced with asphaltic concrete and 38 ha was pavement constructed of aggregates without asphalt. For later stages of development, asphaltic concrete surfacing will be added as required by increased throughputs.

(d) The size of the reclamation is based on hydrological factors, not export volumes. The Corporation is aware of earlier mistakes and current volume projections. The earlier estimates in 1990 included the double counting of some 20,000 ha of forest. These figures have be updated in 1991, 1992 and 1993, Chandler Fraser Keating (CFK) has also updated its report of 1992 and the volumes with increased planting are slightly higher for 1993 that previously. Given the project volumes of forestry and other bulk cargo and the hydrological modelling parameters, no other alterations to design are considered viable.

The terminal storage area and berth requirements were based on projected export volumes of logs and manufactured forest products derived from the CFK report of 1992. Terminal layout requirements for storage space and transportation access was determined based on the conversion ratio that 1 tonne of forest product cargo such as lumber, board products and logs is equal to 1 cubic metre of wood as represented by the log volume forecast. This conversion provides reasonable accuracy for layout as the cargo handling rates and space requirements are influenced largely by the volume of the cargo. The CFK supplementary report found that the predicted volumes of logs for their 1992 report were closely comparable with the 1993 Ministry of Forestry predictions and the 1993 Carter Holt Harvey (CHH) predictions.

After reviewing the CFK supplementary report and noting their conclusions with regard to the agreement with Ministry of Forestry and CHH with regard to estimated log volumes and also noting the possibility of increased plantings which would tend to offset any reduction in the percentage of forest products available for export, a reduction in the proposed reclaimed area is not recommended. To meet the forest industries need for export facilities at minimum cost, it is essential to create an efficient modern terminal which can berth and load the modern class of deep draft forest product vessels. This development can be staged effectively by the Stage 1 construction of the turning basin, the 32 ha reclaimed area and the first multi-purpose berth, followed in Stage 2 by the second multi-purpose berth, additional paved storage areas and additional covered storage as export tonnages increase.

The industry however is reluctant to advise on the expected cropping, future plantation rotations and types and levels of processing of the bulk logs. It can only advise in general terms on the volume reductions of processing a log. Therefore gross basic data has been used. Indeed any future processing facilities in either the Far and Mid

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2. Westmar Consultant's Report Section 4.01 Volume 3 EIA.

north, or Rodney District Area could have a major influence and or benefit for the types of export cargo the port would export. These possibilities are however extremely difficult to predict accurately. Effectively and in order not to be misleading, we can only identify the area by age and class of plantations and use conservative scenario to indicate the level of volumes which Northland will have to export. It is also noted that a discounting of any forestry products from the Rodney area has been made. This is even though there are volumes from this area which the Corporation currently exports. The volumes predicted could therefore be on the low side.

A reduction of the reclamation has been considered by DHI and Barnett Consultants, in terms of Options 1A, 1B or 1C, subject to extension of Option 1C as discussed (see 1993 report, Section 7.2, Recommendation II). Other reductions would need further model study.

10. **Operation**

(a) Container cranes are not planned for this port proposal. The layout is for bulk cargo only and the Corporation is not intending to consider containers. Other ports such as Auckland and Tauranga are more appropriately equipped and located to service this market. Duplication is not considered necessary or appropriate.

(b) A move by industries to Marsden Point could be a future possibility if shipping requirements and costs change such that these indicate that a more efficient cost effective operation is available at the Marsden Point terminal. The decision for other industries to relocate is to a large extent up to the industry in question. The Northland Port Corporation will however be encouraging where possible the relocation of other facilities such as the fertiliser works, and considerable land is appropriately zoned "Marsden Point Special Industrial Zone" for such activities at Marsden Point.

11 **Air Quality**

11. The impact of ships engine emissions has not been considered in detail, however estimates have been made. Ships under way draw power from their engines at a large proportion of their maximum rate when they are departing from the terminal. The principal air emissions from combustion of heavy bunker "C" fuel are sulphur dioxide derived from the sulphur content of the fuel and nitrogen oxides derived from the relative high temperatures of the combustion within the combustion chamber. The rate of fuel and related air contaminants emissions is roughly proportional to the size of the vessel and its speed. In descending order of pollutant loading, air emissions from ship traffic include:

- Sulphur Dioxide.
- Nitrogen Oxides.
- Particulates from Bunker "C" Fuel.
- Hydrocarbons.
- Carbon Monoxide.

The characteristics of vessel transits departing the terminal is such that this is considered to seldom be a problem. The vessel is a moving source; even under calm

weather conditions, its own headway amounts to a source of dilution and an effective net airflow of 4 - 7 metres per second. Only in those instances when the wind speed and direction are identical to the speed and direction of the vessel will the vessel's stack emission fail to receive substantial dilution from passing airflow. Additionally, since the vessel is a moving source, it will seldom direct its emission plume against any one location for more than a small fraction of an hour. This is a function of the angle of wind and vessel motion but the number of instances when the proper combination of wind speed and direction would arise to cause an exposure to concentrated stack gases for a period of an hour or more are very rare.

Odour from unloading crude oil at the refinery wharfs has generated some complaints to the Northland Regional Council. This to occur when the ships do not have gas recirculation systems and when the fuel used is high in sulphur compounds. Staff at the Northland Regional Council consider that it is a ship management problem of short duration. No problems have been reported with shipping activity at Port Whangarei. The Council is currently preparing its Air Quality Plan and is likely to address the issue of all discharges at Marsden Point with an envelope (zone of air space) approach. This technique could incorporate provision for discharges from ships to air.

13 **Title to the Land and Seabed Included in the Proposal**

(a) The Northland Port Corporation holds clear title to all land on which the port terminal is proposed, and leases of seabed, and coastal permits to occupy .

(b) Title was established by a variety of actions:

Seabed

- To the Crown the reception of English law in New Zealand, ie the principle of eminent domain of the Crown via the Treaty of Waitangi.

- Vesting and Empowering Acts to the benefit of the former Whangarei and then Northland Harbour Board. The seabed was vested in the former Harbour Board, and revested in the Northland Regional Council at the creation of the Port Corporation. The Northland Regional Council granted leases on 2 October 1991 to the Port Corporation. On 3 September 1991 the sea was revested in the Crown.

Legislation	Schedule	Plan Ref/Detail
Whangarei Harbour Board Vesting & Empowering Act 1961	3 rd	Portion Blocks II, III, VI, VII & VIII between MHWM & MLWM
Whangarei Harbour Board Vesting & Empowering Act 1962	6 th	SO 43475
Northland Harbour Board Vesting & Empowering Act 1967	10 th	DP 52379

purchase from vendors of a number of properties by both the former Board and the Corporation.

Description	DP	CT	Purchase date
Lot 15	47603	1825/17	21/10/93
Lot 1	43643	1620/23	21/9/93
Lot 10	47603	1825/18	5/10/93
Lot 5	51845	31B/968	8/7/75
Lots 1,2 & Part Lot 4	51845	7c/228	3/12/65
Lot 1	47603	1825/15	2/9/82
Lot 2	47603	1825/16	16/1/86
Lots 3,4 & Allot 291	47603	5D/1475	1/6/65
Lot 5	47603	2042/48	7/10/82
Lot 6	47603	1851/11	7/2/83
Lots 6 & 7	47603	7B/857	10/4/63
Lot 8	47603	64D/523	27/7/87
Lot 9	47603	1837/43	23/6/64
Lot 11	47603	1871/	25/7/62
Lot 12	47603	1920/99	12/9/63
Lot 13	47603	2032/82	7/4/66
Lot 6	51845	3B/388	19/2/64
Lot 16	47603	1837/44	16/10/63
Lots 2, 3, 4, 5	43643	1931/89	8/1/64 (proc)
Lot 3	51845	31C/50	18/1/82
Lot 1	52380	3B/10	5/2/64
Lot 1	53892	5C/446	4/9/67
Section 1 Block VIII		10B/670	5/4/67
Section 63		16A/57	17/5/93

The process in motion is that of applications for resource consents, pursuant to the Resource Management Act 1991 (RMA).

The RMA clearly states that any "person" may apply for a resource consent where such is necessary[3]. That is to say, title to land subject to resource consent applications is not required of the applicant.

The issue here, however, is represented to be wider. Reference is made to customary native title of the seabed, WAI 121 Waitangi Tribunal Claim and the possibility of further claims. It is regarded that such considerations are outside the scope of the processing of resource consent applications. That is, the matters raised are Treaty issues, not RMA issues.

[3]. Section 88 (1). Resource Management Act 1991.

Both the Waitangi Tribunal[4] and the Planning Tribunal[5] have held that the Treaty was between Maori and the Crown and that the RMA does not impose Treaty obligations on consent authorities. It follows then, that the applicant is not under a duty to give consideration in its application, to the Treaty issues raised.

(c) The land described as Poupouwhenua was sold by way of Deed on 7 July 1854 from the tribe to the Crown. The land was then alienated by the Crown in favour of one John Thomson Munro by Occupation licence issued on 24/4/1908 Volume 173 Folio 192, pursuant to the Land Act 1908. Mr Munro obtained the fee simple to the land on 11/9/1917 with the warrant being issued on 14/3/1917. The land then passed through successive owners and was subdivided at various stages, prior to the above sales to the former Board and Corporation.

Page 12 of section 4.07 Volume 3 records that no mention of the confiscation occurred on the deed. Page 9 of Mrs Midwood's report also states that :

"Although the tribal land and water has passed out of Maori ownership the Tangata whenua believe that the land and water are still a source of spiritual social and tribal identity."

Northland Port Corporation given the above is considered to have clear title to land and seabed (leases) for the majority of the area subject to the port proposal. The remaining seabed areas are subject to the applications which include an application for consent to occupy the remaining reclamation and port operations area, and consent to dredge the turning basins.

If there are any unresolved issues which relate to the passage of tenure prior to 1854, such issues would need to be resolved by way of a Waitangi Tribunal claim.

(d) Clear title to the seabed is held by the Crown. The matter of whether the passage by virtue of the principle of eminent domain is consistent with the Treaty of Waitangi is a matter for the courts to determine. This has been done in the case of Ninety Mile Beach [1960] NZLR 673.

(e) The nature of the Wai 121 claim is unclear, and the Runanga can not supply further information to clarify what in relation to the Whangarei harbour area is specifically being sought. Mr Hawk of Ngati Whatua advises that the claim has not and is not proposed to be heard in the near future as the Crown has proposed a global settlement for all Waitangi Tribunal claims. This proposal by the Government is not close to resolution and given the complex nature of the proposal and the many considerations which must be taken into account by Tangata whenua any form of resolution will take considerable time.

(f) The claim is incomplete and has been amended since first lodged. The claim is considered by the Runanga to be a "global" one, however it does contain specific legal

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4. Ngawha Geothermal Resource Report 1993. WAI 304. Waitangi Tribunal Report p. 153.
5. Hanton v Auckland City Council A10/94. New Zealand Planning Tribunal.

descriptions in some instances, none of which relate to the land or seabed subject to this proposal.

14 Tangata Whenua Concerns

(a) Discussions held with Tangata whenua representatives culminated in a proposal from the Tangata whenua forwarded under cover letter of 27 August 1993[6]. It was presented as a "proposal for settlement of Tangata whenua concerns."

The proposal, taken as read, was that in return for Patuharakeke giving its sanction to the project, "an allocation of fully paid up shares comprising not less than one percent of the authorised share capital in [the] Northland Port Corporation" be given to Patuharakeke. The covering letter and the proposal was signed by Mr. T A Paki on behalf of Patuharakeke Te Iwi.

Believing that facilitation of effective Tangata whenua consultation was required through a neutral party, the applicant approached the Northland Regional Council for assistance by requesting the services of the Council's Iwi Liaison Officer[7].

The Regional Council declined[8], stating that the requested services of its Iwi Liaison Officer was, in its view, inappropriate.

On 28 October 1993, concerned with no response, the Coordinator of Patuharakeke Te Iwi wrote to the applicant[9]. The applicant's response was that Tangata whenua consultation had been referred to its Chairman[10]. Further discussions took place with Tangata whenua representatives. These resulted in the position of the applicant being clearly communicated; that was, the applicant would not hand over a portion of shares as settlement of Tangata whenua concerns.

Mr T A Paki forwarded a fax on 25 November 1993 seeking to revisit the shares request[11].

The applicant replied on 3 December 1993[12] reiterating that:

- it seeks further meaningful consultation with Tangata whenua;
- Such consultation would centre on issues relevant to the environmental effects of the proposal on Tangata whenua;
- it views the requested transfer of Port Corporation shares to the Tangata whenua "as settlement of concerns," as inappropriate;
- it will not consider the shares request any further.

To date, no reply from Patuharakeke Te Iwi has been received.

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6 Correspondence from T A Paki, for Secretary, Patuharakeke Te Iwi. 27 August 1993.

7 Correspondence from J Smellie, Company Secretary, Northland Port Corporation. 24 September 1993.

8 Correspondence from D L Roke, Consents Manger, Northland Regional Council. 8 October 1993.

9 Correspondence from R Hudson, Coordinator, Patuharakeke Te Iwi. 28 October 1993.

10 Correspondence from J Smellie, Company Secretary, Northland Port Corporation. 3 November 1993.

11 Correspondence from T A Paki, Patuharakeke Te Iwi. 25 November 1993.

12 Correspondence from S G A Semenoff for J Guy, Chairman, Northland Port Corporation. 3 December 1993.

(b) The consultation process began before any design or plans had been prepared. During the consultation process the port plans where altered or discussed with Tangata whenua before being developed (such as the Landscape amelioration plan). Therefore consultation began early in the port proposal development. As a consequence of this other consultants had also not completed their work and information was not complete until the draft EIA had been assembled. The completed draft work was forwarded to Patuharakeke, Ngati Wai and Ngapuhi.

(c) The Secretary of the Takahiwai Marae Committee wrote on 27 April 1994[13] detailing a request for the appointment of a liaison officer. In the Committee's view, such an appointment would be consistent with issues raised in the Midwood Report.

The applicant replied on 26 May 1994[14] declining, at that stage, to make such an appointment but reiterating its wish for further meaningful consultation on issues relevant to the effects of the proposal.

(d) Advice from Kaumatua at Patuharakeke are that no waahi tapu are considered to be located at the site. However should any be discovered, the Northland Port Corporation will cease work, advise the Hapu and also contact the NZ Historic Places Trust as required by the Historic Places Act 1993. Further discussion on registered archaeological sites is contained in Volume 1, EIA, Section 3.8, pg. 258. This discussion includes suggested mitigation measures.

(e) One of the purposes of early consultation was to ascertain how the proposal might affect customary rights including fishing in the area. The area is documented as being a customary area for the gathering of Kaimoana, however the resources have significantly diminished since the 1960's. Information supplied by Tangata whenua is that fishing occurs throughout areas of the harbour including the subject site.

15 **Tribal Concerns**

(a) The Midwood Report states[15] that it is "acknowledged by all ... regardless of tribal affiliation that the manawhenua for the whole area is held by the Patuharakeke hapu."

Further, the applicant is advised[16] that the appropriate method is to direct all communication through organisations representing the Tangata whenua. These are identified as:

- Takahiwai Marae Committee.
- Takahiwai Marae Trustees Committee.
- Takahiwai Maori Committee.
- Patuharakeke Te Iwi.

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13 Correspondence from D Kepa, Secretary, Takahiwai Marae Committee. 27 April 1994.
14 Correspondence from J Guy, Chairman, Northland Port Corporation. 26 May 1994.
15 Nudwiidm Z, (1992). Cultural Impact report - Tangata Whenua - Patuharakeke p. 15.
16 Ibid., p. 20.

In accordance with the above advice, the applicant has always sought to consult Tangata whenua through one or another of these organisations.

The RMA is quite specific in its definitions of the terms manawhenua[17] and Iwi Authority[18].

The applicant recognises the manawhenua of Patuharakeke. The applicant seeks to consult with the Tangata whenua through the abovenamed groups which are recognised by them to represent them (that is, Iwi Authorities).

The applicant is of the view that its consultation with Tangata whenua has been in accordance with not only their wishes but with the spirit and intention of the RMA.

Therefore, should the Tangata whenua direct the applicant to consult with the Ngati Wai Trust Board, Te Runanga A Iwi O Ngapuhi, Te Runanga O Ngati Whatua or Te Kotahitanga; the applicant would do so willingly.

Ngati Wai Trust Board and Te Runanga o Ngapuhi were approached in March 1992 and asked to participate in the consultation process, no response was given at that time. Further consultation with Ngati Wai occurred when Mrs Midwood began her preparation of the Cultural Issues report, and one was advised that at that time (mid 1992), Patuharakeke were considered by Ngati Wai to have mana whenua over the area subject to the proposal. Completed Draft EIA were forwarded to Patuharakeke, Ngati Wai and Ngati Whatua Runanga with invitations to make comments direct to the Corporation, the applicant. Ngati Wai has since written advising that it has concerns and will outline these in further correspondence. This has not yet been received. Therefore it is difficult to determine the relationship between concerns of the tribal authorities at this stage.

(b) It is understood that Te Kotahitanga had not been formed at the early stages of the consultation and preparation of the EIA. Since its formation it has expressed the policy that it will assist with directing resource management issues directly to the Takiwa affected. As the Tribal authority which considers that it has mana whenua over the port area was already clearly identified and confirmed with the Northland Regional Council, and dialogue with Patuharakeke had commenced, direct contact with Te Kotahitanga was not initiated.

16 **Queries Relating to Specific Sections of the EIA**

(a) It is considered that Patuharakeke has outlined its view of kaitiaki in the Midwood report. The Corporation certainly accepts the role and responsibility Patuharakeke has in this capacity and is suggesting that *inter alia* Patuharakeke have representation on a consultative group which vets both proposed management plans for construction and operation.

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17 "Mana whenua" means customary authority exercised by an iwi or hapu on an identified area.

18 Section 2. Resource Management Act 1991. "Iwi Authority means the authority which represents an iwi and which is recognised by that iwi as having authority to do so.

As Ngati Wai and Ngapuhi and Ngati Whatua have not responded to invitations to discuss the project, their concerns are not known and are unable to be considered or catered for.

(b) The scoring was developed on a Local, Harbour and District Council scale, with effects ranging from -9 being extremely negative to +9 extremely positive. The Patuharakeke rohe is located within the harbour area not within the district. The Midwood report identified concerns of more than minor magnitude, however concerns expressed at a well represented hui (July 1992) indicated that the perceived impact on cultural values was not considered by Tangata whenua collectively to be of the scale of an extreme level such as a -7 to -9 score. Therefore the order of -5 was given. In terms of archaeological and waahi tapu sites, the area has been surveyed in detail in the 1980's, and further advice from Kaumatua is that no known sites are present in the area were work is proposed with the exception of one midden close to the proposed transport corridor. The rating on employment was also given as a result of views expressed by Patuharakeke people who are either unemployed or families with unemployed people, at the well attended hui and as a result of the survey work Mrs Midwood conducted.

(c) Northland Port Corporation does not have these statistics as it did not consider that such a breakdown of data was specifically relevant to the establishment of a port.

(d) No. However, the first contract to be let in respect of the port proposal was (while not the lowest), given to local, Patuharakeke tribal members. This action was consciously taken by the Corporation as a sign of willingness to create employment opportunities for both local and Patuharakeke tribal members.

17 **Traffic**

(a) **Traffic Volumes from Forests**

At the initial scoping of the project with consent agencies, the matter of the later extent of the consideration of effects, in particular that of traffic was discussed. The consent agencies including the Ministry for the Environment suggested consideration of effects within Whangarei District was the most valid lateral extent. The use of other roading throughout the region including State Highway 1 will occur anyhow.

The specific age by class volumes for each forest plantation are given in confidence to Ministry of Forestry which then processes this data into District Council and regional statistic reports "National Exotic Forest Description". This contains about 92% of all forest information and this national statistical basis has been used as the basis for the forest volumes in the Chandler Fraser Keating and EIA.

Forest owners are not prepared to indicate their forest cropping programs for individual forests. Two forest owners are known to be considering processing options within the Northland Region, and indications are that another forest processing facility is being investigated immediately south of the Region in Wellsford. If any of these facilities eventuates, any predictions on traffic volumes will become invalid, as will the product split volumes.

One aspect which all interested parties agree on is that the region has now approximately 130,000[19] ha planted exotic forest. This has a varying age/class structure. There are innumerable variations on cropping regimes which will change from year to year depending on market forces and processing options. A large proportion of the forest product as logs or further processed will need to be exported from the region as thee is a limited domestic market for the wood products.

Without a port at Marsden Point this will occur through a combination of Port Whangarei (until it is to capacity and or closes due to siltation), and Port of Auckland and Tauranga (more likely for large volumes) for overseas export, also to the domestic market further south or to further processing facilities further south. Essentially increasing volumes over time will need to move about the region (for further processing) and leave the region, by road, rail or barge. Much of this movement will occur if a port at Marsden Point is not built. Therefore the impacts of traffic have only been considered in terms of that which could justifiably be generated by the Marsden Point Port proposal.

The magnitude of traffic predicted after 2007 is only of the order of 10% of the existing traffic on SH 1, although it could increase truck traffic on State Highway 1 by 50%[20]. In general terms however it is considered that the impact on roads from the forest to SH 1 and the impact on State Highway 1 is a result of the land use of growing forests, not specifically attributable to the port.

(b) **Expected Distribution Throughout a Typical Day**

See (d) following.

(c) **Impacts of Flows on Routes Used**

The impacts from SH1 to the port have been assessed. The impacts on routes further afield would occur with or without the port and have not been assessed (see (a)),

(d) **Hours of Operation**

As vessel movements are to some extend tide and weather dependant the port will operate over 24 hour periods from time to time. The movements of products is to some extent up to the individual carrier. However present movements for peak volumes per hour on a monthly basis are indicated in the attached spreadsheets and this provides an indication of the variability of hourly movements. The spreadsheets cover two recent months for which figures are available. The peaks at 1 and 2 am is one train movement. The remainder is truck movements.

(e) **Volumes of Logs**

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19 Supplied by MOF Northland Regional Office 25 August 1994.

20 Volume III, EIA Section 4.8, pg. 19.

The attached spread sheets indicates the range of monthly daily volumes by hour over a two month period. The range varies daily and hourly, without any real level of predicability. This is very likely to be the case at Marsden Point where the export volumes including the range of products to be exported and imported will be market driven.

The carrier firm advises that at present approximately 20% of the export log volume arrives by rail. This is expected to increase to between 25% to 35% of total volume in the next five years.

(f) **Distribution of Logging Traffic**

This can be seen from the traffic movement spreadsheets attached. The peaks at 1 & 2 am comprise one train load. The remainder are truck movements, from 7 am to 7 pm.

(g) **EDA 2 Assumption**

This figure was supplied by Transit NZ at the time of preparation of the Traffic Planning report in 1992. The matter has been further discussed with Transit NZ which has now provided a more accurate figure of 2.36 as an average for all logging trucks, both full and empty. A more accurate figure for fully laden logging trucks was not able to be provided, however the figure is thought to be over 3. This would increase the annual pavement loadings set out in section 5.2.1 of Section 4.08 Volume 3 EIA by 50%. The conclusion would not however change, namely that the operation of the port could wear out the pavement in less than a year. The Traffic Planning Report will be reviewed to take into account more accurate figures recently supplied by Transit New Zealand. This will be contained in the amended EEA.

(h) **McCathie Road Alignment**

The Traffic Planning Consultant's report states in 5.3 of Section 4.08, Volume 3, EIA, that realignment of the critical end of McCathie Road "would be a significant improvement". Discussions have been held with the District Council and as yet no specific realignment options have been determined. Further discussions with the District Council are envisaged shortly to seek a solution to this aspect.

(i) **Roading Works Proposed**

A number of other possible road improvement works were identified in Section 5.3 but there is no commitment at this stage to undertake them as part of the project. Further discussions with the District Council are envisaged.

(j) **Road Safety at Refinery**

The NZ Refinery has indicated that it is considering some development of land at the corner of Mair and Marsden Point Roads, which may impact on any design details for the Transport Corridor. Further clarification will be sought when both the final design stage is approaching and when the Refinery Company has firmed up its proposed plans. Access to the Refinery entrance is not proposed to be altered at this stage. The

Function of the Transport corridor is to separate heavy road transport, rail and conveyors from other road users along this roadway.

(k) **Transport Corridor Timing**

The Northland Port Corporation has publicly assured residents that the Transport Corridor will be built early in the planned development of the port facility and as soon as transport volumes are of a sufficient level to warrant its construction. The Transport corridor is likely to be staged, with heavy vehicle access being first developed, and rail and conveyor systems as required later.

(l) **Implications for Additional Traffic if Other Industries Relocate**

Traffic volumes include 100,000 tonnes of fertiliser and 150,00 tonnes of cement clinker annually. As a variety of industries have only expressed an interest in relocation to Marsden Point it is difficult to predict additional traffic movements for other industries. It is also likely that both fertiliser and clinker will be barged to/from Marsden Point to Port Whangarei facilities for some indefinite period in the future. Therefore the predicted traffic generated by these two specific industries may be over estimated.

18 **Impacts of Dredging and Reclamation**

(a)

- hours of dredging - this is expected to be 12 hours per day;
- submerged pipelines will be used to minimise adverse affects on shipping;
- noise from dredging operations will be similar to the noise from dredging to reclamation at Port Whangarei. Section 3.1 of Mr N Hegley's report[21] sets out the equipment expected to be used for the reclamation and dredging. Figures 3.1 - 3.5 show the results of field measurements taken of items of construction plant operating. From this base information Section 5.1 of Mr. Hegley's report sets out the noise that could be expected at Reotahi Bay and One Tree Point. It is understood these areas would be the two most affected residential communities. If additional data is required please advise setting out specific locations that need to be evaluated.
- disposal of unsuitable material will be to land, inshore and disposal of maintenance dredging on land, for sale.

The management of plans for construction/maintenance dredging will detail such measures, for example: cease dredging temporarily; dredge outside of slack water etc.

The EIA in Section 1.15.2 Volume 1 outlined suggested conditions of consent for monitoring during dredging. These have been formulated from Conditions of consent required of other major dredging activities in both Northland and Marlborough by both Northland and the former Nelson - Marlborough Regional Councils (the latter as clarified by the Planning Tribunal). However these are only suggested conditions, and the NPC's ecological consultant is currently preparing detailed baseline and monitoring programmes - refer comments under Section (19).

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21 Volume 3 EIA, Section 409.

Methods for Disposal of Unsuitable Fill and Maintenance Dredging Material

The EIA in Volume 1 Section outlines that fines (not proposed to be used in the reclamation) will be separated from "useable fill material". However it is accepted that all EIA volumes seem not to explicitly state that fines once settled are to be removed and disposed of to land. The final disposal options for this approximately 130,000m^3 has not yet been identified.

The material to be dredged by maintenance dredging will firstly be used by the Corporation to raise and level the port storage area (landward of MHWS) by 1-2 metres. The remainder will be sold as clean sand to the construction industry in future years.

Management of Disposal Sites

Management of stock piles of sand will need to be outlined in the construction and operational management plans proposed. In addition the Corporation will be required to adhere to any conditions of consent formulated by the Consent agencies, and District and Regional Council Plan rules (as these become proposed in Regional and District Plans).

(b) The groundwater regime will be protected by the control of stockpile size before the sand is sold. The sand storage is not expected to create adverse impacts on the refinery's relationship with the groundwater regime.

(c) **Subtidal Benthos**

The ecological report does not assume that the benthos has not changed. It does assume (with reasons given) that the predominant habitat types are unlikely to have changed and suggests that the pattern of distribution of these habitats and the associated benthic community may be variable due to physical factors such as sediment transport events. As the early 1980's work was not undertaken with monitoring in mind, it would not be possible to now make site specific comparisons with that date.

(d) **Quantities of Sediment, Predicted Fate**

As outlined in Section 8.2 of the Terminal design and construction report, (Volume 2), the quantity of material to be dredged is approximately 2.8 million cubic metres and the reclamation fill volume is approximately 2.25 million cubic metres. Approximately 15 percent of the 2.8 million dredged will be consolidated into the fill during placement. This apparent "loss" will amount to 0.42 million cubic metres. Loss of fines due to non-settlement in the decant water will amount to approximately 5 percent or 0.13 million cubic metres and this very fine sediment will be dispersed in the harbour area adjacent to the terminal.

As explained in Section 8.3, the "loss" of sediment due to cutterhead operation during dredging will be redeposited on the seabed near to the point of disturbance.

(e) **Release of Fines**

The discharge will be released into a high energy environment (currents, wave and wind induced suspension and resuspension) at the north east part of the reclamation. The fines are therefore likely to be transported well beyond the local area and will thus be diluted and dispersed to a level that should avoid potential for impacts on the nearby benthos and shellfish.

Mitigation measures such as flocculation prior to release of the discharge and silt screens are also being considered as part of the Construction Management Plan. Work by Worley Consultants will also address this issue. Monitoring of the discharge is also an important aspect and engineering responses to any ecological problems are also considered necessary to be covered by the Construction Management Plan.

(f) **Discharge Outgoing Tide**

It would be impractical to only discharge the dredge water on the outgoing tide because this would effectively double the time and cost of dredging and reclamation. As described in Section 8.3, approximately 11 million cubic metres of water will be discharged over the 18 month dredging period, or an average of 28,000 cubic metres per day.

(g) The source of sediment in the dredged turning basin will be harbour sediment which normally circulates past the area, but can no longer be kept moving after deepening of the area slows the currents. North of the reclamation however, the concentration of current actually overcomes the deepening effect and the bottom of the dredged area will actually erode. The predicted impacts on the harbour entrance and nearby banks are plotted and discussed in the 1993 report, Chapter 6 and in Addendum A, Barnett Consultants' Report.

(h) The dredging of the turning basin will not be continual but will be periodic - perhaps once every 3 - 5 years.

Disposal for the maintenance dredging material of 20 - 60,000 m^3 per annum is outlined above. The material will firstly be used to raise the level of backup port terminal land by 1-2 metres. Once this filling is complete, the residue will be stockpiled on land for sale as clean sand to the construction industry.

(i) A monitoring regime will be required by Consent agencies as part of any conditions of approval. Section 1.15 of the EIA proposes suggested conditions as a basis for further discussion. As outlined above these have been developed from other resource consent conditions.

In addition Dr Barnett outlines further recommended monitoring which has been discussed and agreed to by the NZ Refinery Company, in Addenda to Original report August 1994, Addendum D. This additional monitoring covers an area from a line joining One Tree Point and Darch Point to the north and a line joining Home Point and the outfall to the south. Frequency of survey is to be every six months until six months after completion of construction, thereafter at yearly intervals for five years if harbour

behaviour is as predicted. Any unexpected behaviour will probably require an increased monitoring frequency. Side scan sonar, current profiling and drogue tracking are also recommended.

(j) There is no reason to expect particle sizes to be markedly different in sediment deposits in the turning basin, as all sampling (1982 report[22], Chapter 8 and 1993 report, Section 2.2[23]) indicates largely uniform sand throughout the active sediment transport zones of the harbour.

If the sediment depositing in the turning basin is similar to that pre-dredging then a similar type of benthic community should re-establish given time. However, as the ecological report notes, the shelly gravel lag which is presumed to occur over part of the area is rich biologically. Presumably it takes time for this material to accumulate from shell material transported in and from dead shells of the many bivalves and gastropods which form the community. If this is lost and replaced by another substrate type, then there may be important changes to the benthic community. The frequency of maintenance dredging will be a primary influence on the ecology of the benthos in the turning basin. At least for the shell gravel lag component of the benthic habitat types, if a 3 year maintenance dredging interval is the likely order, then long term ecological effects are possible. However, it seems likely that not all of the turning basin will receive a uniform rate of sedimentation. Those zones preferentially infilling and requiring dredging are unlikely to be the same locations in which a shell gravel based community will redevelop. So the long term ecological effect will depend a great deal on the pattern of habitat re-establishment in relation to the pattern of maintenance dredging. The probability of this effect occurring will be determined on completion of detailed baseline survey work which can then be assessed against geophysical models of sedimentation patterns post dredging.

Propeller wash will disturb bottom sediments at times, as a significant amount of thrust and water displacement can be associated with such and given that on occasions there may only be 1 - 2 m of clearance at low water between a laden ship and the sea floor. The ecological significance of this would have to be determined by monitoring. However, it is known that the windrows of unconsolidated sand are highly mobile in much of this area. Therefore propeller wash effects seen in the wider context of large natural sediment shifts may not be significant.

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22 DHI 1992

23 DHI and Barnett Consultants, Volume 3 EIA, Section 4.02.

19 **Monitoring Programme**

(a) **Reporting Bathometry Proposed**

Northland Port Corporation will circulate results to the Northland Regional Council and NZ Refining Company on completion.

(b) **Reporting Near Shore Monitoring**

Northland Port Corporation will circulate results to the Northland Regional Council and NZ Refining Company on completion.

(c) **Timing of Baseline Monitoring**

Base line surveys for grain size have already been carried out. Bed level surveys are covered in Addendum D of Dr Barnett's 1994 Addenda Report.

19 (c) (i) **Water Quality**

Regular water quality monitoring is already carried out in the lower harbour by the Northland Regional Council and the Community Health Services of Northland Health Ltd. Some of this information constitutes useful baseline data of relevance to the forestry port proposal and has been reviewed in the EIA. There is a need to coordinate additional baseline data requirements with the present NRC sampling if this is possible, to avoid duplication of effort. There may also be a need to expand the existing work (eg. more sampling stations, greater range of parameters) to provide baseline information on the range of potential contaminants (if any) that may be discharged in stormwater/treated effluent from the Port. This aspect cannot fully be dealt with until Worley's Consultants have completed their assessment of the stormwater/treatment system and determined what these potential contaminants are likely to be. It is expected to have the first baseline survey of water quality implemented in January.

(ii) **Benthic Communities**

Consideration of these needs to be divided into intertidal communities including edible shellfish and subtidal communities.

(a) **Intertidal Communities and Shellfish**

These will be initiated in early 1995. Refer also to later comments under Proposed Monitoring Programmes.

(b) **Subtidal Benthic Communities**

This will be the first part of the ecology (other than the reclamation zone) to be affected once dredging starts. There is a need to survey this at least twice to establish baseline conditions and obtain some measure

of variability through time. This will be done in December 1994 and again in December 1995. Based on the findings of these surveys it will be determined whether additional surveys are warranted before dredging begins.

(iii) **Contaminant Levels in Sediments and Shellfish**

There is a considerable amount of data available on contaminant levels in shellfish and sediments. This is reviewed in the Ecological Report Volume 3 EIA, Section 3.5. The NRC has indicated it is amenable to the present monitoring programmes being expanded to include contaminants which might arise from the Port. Additions are likely to be TBT and organic resin acids. This may need to also await the Worley's report which will identify potential contaminants. The NRC will be carrying out its two yearly sampling of pipi in the harbour for metals and hydrocarbons this spring/early summer by which time any additional parameters will have been identified as to their inclusion.

(iv) **Birdlife**

The Northland Port Corporation has commissioned the Northland Ornithological Society through the Department of Conservation to survey birdlife in the Marsden Point area. This work commenced in January 1994 and involves four surveys at three monthly intervals during this year. Two surveys have been conducted and as yet, the results are only in draft form. We hope to be in receipt of completed reports shortly.

(v) See 19 (a) and (b) above.

(vi) See 19 (c) (iii) above.

(d) **Sediment Accretion and Erosion**

Covered in Dr. Barnett's Addendum D except for grain size. It is difficult to see why dredging an area and pumping the dredgings into a reclamation should affect grain sizes, although some sorting could conceivably occur. Another sediment sampling survey could be mounted say two years after the development if this is seen as a matter for concern.

Monitoring Programmes to Assess Change

These programmes are currently being developed in liaison with the NRC and will be included in a redraft of the ecological report. Details of the proposed baseline and monitoring work will be advised to the RP by the end of September. Some brief comments at this stage are:

Benthic Communities

It may not be very useful to attempt to monitor the entire intertidal benthic fauna. This would have required a comprehensive sampling programme over a relatively long

period to detect "natural" patterns of spatial/temporal variation and natural trends. Monitoring of the intertidal benthic community should focus on shellfish (see comments below).

Monitoring of subtidal benthic communities will focus on monitoring of the pattern of distribution and extent of habitat types. The monitoring programme will be directed by the findings of the baseline surveys and will be largely photographically based (ie. habitat types) although some quantification of fauna may be useful if quantitative collection is possible.

Bivalve Shellfish

There should be careful quantification of the key shellfish beds at Blacksmiths Creek and the One Tree Point area. This will include collection of data on distribution, abundance and size frequency and also grain size analysis.

Shellfish Contamination

Refer earlier comments under 19 (c).

20 **Solutions Refinery**

These are covered in Dr Barnett's Addendum E as far as agreement has been reached. Further discussions and potential resolutions are on going.

21 (a) **General**

(i) **Snake Bank**

See Volume 3 EIA, Section 4.02, DHI and Dr. Barnett's 1993 report, Figure 5.1 and Dr. Barnett's Addendum A, Figure A.6. The main part of Snake Bank is too far away to be affected appreciably. The south-east tip of Snake Bank (the 5 m contour tip is at model grid location (60,26)) is at present slowly moving southwards, while the impact is predicted to be erosive in the area. This suggests the bank tip will tend to be stabilised in its present position, or perhaps pushed northwards towards its 1939 position.

(ii) **Parua Bay**

This is considered to be so far from the proposed development that it is outside the study area set. Currents in such a semi-enclosed bay will be mainly set by tide levels and there is no serious suggestion that these will be affected.

(iii) **Blacksmiths Creek**

See 1993 DHI and Barnett Consultants' report Volume 3 EIA, Section 4.02.

21 **General**

(b) Section 17 of RMA requires that every person has the duty to avoid remedy or mitigate any adverse effect on the environment arising from any activity. This is outlined in Section 2 of Volume I. A Bond system can be required as part of any conditions of consent. Part XII of the Act outlines enforcement procedures which can apply to any activity or potential activity.

(c) It is not known what the full spectrum of potential discharges is possible until Worley's have finished their report. Hopefully this will show, with some assurance, that there will be no significant potential for ecological or water quality effects. This is the level of environmental performance for which the facility is being designed.

(i) Re monitoring - refer to comments above in 19 (c) (i).
(ii) As specified for SA classified water. Toxic substances as specified by EPA or other international standards.
(iii) Contingency Plan for unauthorised discharges is to be outlined in the Operational Management Plan.

21. **Ecology & Water Quality Issues**

(a) Ecological values were not specifically considered to any great extent in selecting the port design. Had they been, the final selection would unlikely to have been different as the design options to meet the primary requisites (hydrological and economic) were extremely limited.

(b) Other options of lesser ecological impact such as those involving no reclamation, a smaller reclamation, piled wharf etc. were not practicable in terms of the primary design requirements.

(c) The main factor considered was ship safety during manoeuvres.

(d) If shipping movements were restricted to times of slack water, the size of the turning basin could be reduced., However, the operation of the terminal would be seriously restricted and costs would be increased. This would not be a practical arrangement for a modern port terminal.

22. **Impact on Sand Flats**

(a) To minimise the impact on the sand flats, a pile supported concrete deck was considered as an alternative to the sand fill. The cost was in excess of $400 million. To mitigate the effects of the reclamation, the size of reclamation was kept to an absolute minimum consistent with the operational requirements of the terminal.

(b) The relative importance of the sandflats to the harbour ecosystem is unknown but is presumed in the Ecology Report to be significant for the reasons given. DOC will presumably also be commenting on the bird values etc. when the ornithological study is completed January 1995.

(c) See 1993 DHI and Barnett Consultants' report, Volume 3, Section 4.02, Figure 5.1. The sandflats west of the NHB wharf have uniformly eroded by around 0.5m between

1982 and 1992. This appears to correspond with the general southwards movement of the main channel and blind channel. East of the NHB wharf the sandflats are much higher (see Plate 1 of the 1982 DHI report), so the survey coverage does not extend much beyond the edge of the beach. See 1 (a) above with respect to the NPC causeway.

(d) No. Refer to 1 (b) above.

(e) The impacts shown in Dr. Barnett's 1994 Addendum A (Figure A.6) are negligible in the beach area (except obviously within the reclamation zone itself). This information concludes that any changes in sandflat levels and grain size attributable to the development will be negligible. Therefore one can conclude that shellfish at the mouth of Blacksmiths Creek and One Tree Point will not be affected.

(f) **Alternative Fishing Area**

The Northland Port Corporation has not considered this suggestion to date. The area proposed to be used by the reclamation will however be less than 0.5% of the total harbour area.

23. **Impact on Blacksmiths Creek**

(a) The model has been set up to indicate the impact of the proposed development on currents throughout the harbour. It shows these currents are very weak in the Blacksmiths Creek area and therefore controlled by local influences such as the intertidal channels across the beach in the immediate vicinity rather than by something as relatively distant as the proposed reclamation. It is true that more detailed modelling would be required to predict existing local trends in this area, but no claim to have done this has been made, as the model study was concerned only with impacts of the developments.

(b) It appears that levels in the Blacksmith Creek area are already changing by around -5 cm per year. No sediment samples appear to have been taken in the area in 1982, but the 1992 samples show only a slightly coarser sediment at the mouth of the creek than elsewhere in the harbour. This effect is probably contributed by the creek itself and will be influenced more by changes in catchment sediment run-off than by harbour developments.

If sediment grain size changes along with the shore profile, then there would be a shift in invertebrate community patterns (including shellfish beds), patterns of bird usage etc. This may or may not be ecologically negative and would depend on whether or not there was a nett loss of species diversity, abundance, biomass, productivity, feeding opportunity etc.

(c) If Blacksmiths Creek is already reported as silting up in 1 (b) above, this appears to be outside the range of the present studies of development impacts. Refer also to comments under 19 (d) Benthic Communities/Shellfish Population.

(d) Refer to 19 (c) (iv) above.

24 **Bark**

(a) Section 3.5.6.4 (iii) of Volume 1 EIA[24] discusses bark and estimates 1 m^3 per 1000 tonnes of logs. This rate is expected to be less as the trend for de-barked log exports and further processing of logs to other products increases.

(b) The Operational Management Plan is intended to cover *inter alia* management of stockpiles of bark. Bark will be sold to a contractor for processing and therefore large stockpiles are not expected to be on site for any length of time.

This Management Plan is in the process of being developed and a draft of this and other management plans will be included in the amended EIA.

25 **TBT**

(a) Potential loadings of TBT at Marsden Point are being calculated based on release rates detailed In the Ministry for the Environment's 1988 report of the Working Party reviewing TBT use. This information will be compared with present loadings at Marsden Point and also compared with present and future loadings at Port Whangarei.

(b) TBT will be greatly dispersed and diluted at Marsden Point far more than is presently the case at Port Whangarei. This issue needs to be assessed in light of the importance of the lower harbour shellfish beds; the potential for bivalve shellfish to biocentrate contaminants; the exceedingly low levels of TBT known to cause biological effects. This information will be reconsidered in a rewrite of the section on TBT in the Ecological Report. There is currently no data on TBT in Whangarei Harbour shellfish or sediments although total tin has been measured in sediments and has shown significant localised contamination around boat yards - the upper harbour and low level contamination around the NZRC jetties.

(c) The potential for remedial action would appear limited. The need for such would be very dependent on how localised the contamination was.

(d) Baseline data on TBT will be collected and TBT monitored in shellfish probably via the use of "sentinel" oysters in the lower harbour. This aspect is being further investigated.

26 **Ballast Water and Sediment**

(a) MAF carries out no testing of ballast water and sediments currently. No algal or invertebrate species are currently screened for.

Mr M Alexander, Technical Officer (Border Inspection), MAF Regulatory Authority (Wellington), who is in a coordinating role re ballast water, commented that it appears that the voluntary controls as evidenced by the information collected by Border Control Officers who board each ship, inspect records etc, are working, ie that ships'

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24 EIA pg. 227-28.

ballast is exchanged in international waters as required. He also commented that were ballast water to be screened by MAF, it would be as part of a research study at this point and there is little prospect of routine screening of all ship ballast waters as part of compliance/law enforcement.

(b) Presumably, because there is no screening, if ballast waters are deemed unsuitable for discharge it would have to be because they were not exchanged in international waters as evidenced by ship records etc. In this case an obvious option would be to have the ship return to a suitable offshore location to exchange ballast. As for treating ballast water through the NZRC ballast water facility, the NZRC advised the facility is only to separate oil; no actual treatment of ballast water occurs.

27 **Noise**

(a) **Noise Levels for Meteorological Conditions in Addition to Zero Conditions**

It is suggested wind patterns on a seasonal and diurnal basis are included. Recent meteorological data has not been collected and is therefore not available. This will be collected shortly by the recommissioning of the Station to enable the answers to be given. However, the nature of the information means this data will be at least twelve months away. In order to try and overcome the problem this type of question raises, Section 5.1 of Mr. Hegley's report, Volume 3, Sec. 4.09, on construction noise gives specific examples of the effects on any received noise with a temperature inversion plus a light assisting wind; neutral conditions and lapse conditions. That is, all likely meteorological conditions. No specific levels are given for the effects of various meteorological conditions on operation noise. However, exactly the same comments are applicable for operation noise as construction noise as the receiver position is exactly the same.

(b) **Cumulative Effects of the Refinery Noise**

This is arrived at by looking at the noise traces given for the existing environment where the refinery is operating and taking the predicted noise level from the proposed report. It is apparent there will be very little additive effects.

If the effects of the wind are considered it is apparent that when the noise from the refinery is maximised at a given measuring point, the noise from the proposed port will not be reinforced by the same weather conditions at the same point. Irrespective of this, it is expected the port will need to comply with set noise levels as measured and assessed in accordance with the appropriate Standards.

(c) **Lmax During the Construction Phase**

With the proposed construction work it is correct to say that if the L_{10} value is complied with, the Lmax will also be complied with. No work is proposed that will generate high Lmax levels, when compared to the L_{10} values and this includes piling. To support this, extensive field tests undertaken overseas show the relationship between various measurement parameters in the construction industry. The results of these tests are shown in the attached figure. From these values it was shown the L_{01}

(which may be assumed close to Lmax) is approximately equal to L_{10} + 5.2. NZS6803P sets the Lmax at 15dBA above the L_{10} value for the period of interest. From this and the noise traces of construction operation in Mr. Hegley's original report, it is apparent the L_{10} controls any construction activity, not Lmax. Similarly, it can be shown that L_{95} is not a controlling factor with construction noise.

(d) **Proposed Mitigation Measures**

The only area where screening has been specifically referred to is in Section 5.2.1 of Mr. Hegley's report. Here a level of 50dBA has been given without the effects of screening. The level drops to 44dBA with screening. As 50dBA would be within any daytime noise control likely to be those for the Marsden Point Special Industrial Zone, screening would only be required for night time work. No specific screening is planned, but any buildings on site would obviously provide some screening as would stock piles existing at the time. The location of logs would vary from day to day and this would need to be taken into account. Any night time work would be programmed so that screening by the logs would ensure the night time design goal of 45dBA was achieved. This is common practice at such facilities. As pointed out in paragraph 5.3.2[25] the overall site layout has included the screening effects to assist in controlling the noise.

As covered in Mr. Hegley's report, no more than 5dBA reduction is required by screening for a night time operation. It is generally accepted that a minimum of 5dBA reduction is achieved with minimal screening between the noise source and receiver position. In other words, if there is no line of sight between the source and receiver, a reduction of 5dBA will be achieved and this will enable a simple form of noise control to be implemented.

The details asked for with respect to screen heights were not included in the original report as no planning approval was available at that time. This detail would normally follow when the final design was undertaken. At this point sufficient work has been undertaken to clearly identify the problems and show that the levels can be controlled to the set values. The Operational Management Plan would be put in place and cover "no go" areas at night time, restrictions on the use of some areas, etc.

(e) **Monitoring**

This is a fine detail and not originally intended to be covered at this stage. However, the requirements for any monitoring are clearly defined in the Resource Management Act and District Plan Rules. In addition, it is expected in-house checking would be set in place to check the various requirements set on the development. This is not different to any other industrial obligation.

28 **Visual**

(a) The illustrative material included in the EIA filed with the consent agencies was LA4's original assessment, ie:

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25 Volume 3 EIA, Section 4.09.

- full panoramas capturing the visual catchment around the proposed wharf site;
- a visual catchment plan also showing analysis viewpoints;
- "before" and "after" views from each viewpoint - showing the existing view towards Marsden Point from each and the same view incorporating anticipated development; and
- night time photos towards the site and refinery.

The consent agencies will determine what documents are reproduced and who they are circulated to as part of the notification process. The Northland Port Corporation proposes to retain numerous copies of the application and supporting EIA, however, the cost of reproduction precluded this material by the Corporation is prohibitive. Inspection of this material will no doubt be possible at the District and Regional Council offices.

28 (b) **Visual**

A 3-D model has not been prepared and there must be some doubt about just how much additional information such a model would provide, ie it would not provide more realistic views or perspectives than those captured by the viewpoint photos and photomontages. In order to be of any use a model would have to be large enough to offer a wide range of views from close to ground level and the costs in producing such a large scale model could be prohibitive.

29 **Alternative Options**

If all storage and other terminal facilities were sited on land and only the mooring facilities were sited in the water, the terminal would not be practical or efficient for cargo handling operations because of the excessive distances between storage and shipside. Other alternative methods of construction and layout were given consideration during the studies.

30 (a) **Amelioration Proposals**

(i) Further plans for amelioration have not been prepared in agreement with adjacent landowners. There is no intention to do so at this stage - although suggestions about planting extending well beyond the yards specified in the district plan were raised in preliminary discussions about this matter and some early concepts.

The residents have expressed more concerns over improvements to recreational facilities than to visual amenity enhancement.

(a) (ii) Building form is principally related to its operational requirements. No changes in form have been considered. No consideration to colour has been made at this stage.

(b) **Amelioration Proposals**

A 3 month period was stipulated in the planting contract - subsequent to the actual planting occurring - within which time plants not meeting the plant material specification were to be replaced. Medium to long term maintenance will be addressed in the Operational Management Plan.

Ongoing maintenance and replacement is required by District plan provisions, and thinning of fast growing upper canopy exotic trees in proposed once the native flora has been securely established. This is likely to occur at year 22 (2015 AD).

31 **Recreation Users**

(a) Detailed responses were sought by NPC but not received, except through the comments made by recreational groups to the Draft EIA.

(b) The issue of recreational users' perceptions of the development is an interesting one; is their perception all that different from the perception of tourists, other visitors to the area and even local residents who live at places like Reotahi because of the quality of the local environment? It is suggested however, that in common with other viewing audiences who would see the development from a wide range of viewing locations, that the proposal would typically be seen as an extension of the existing refinery and tanker piers. This is already stated in the original landscape assessment, with some more specific comment about recreational viewing in the analysis for Viewpoint 9.

(c) No public access within the development is proposed. Access to the southern side will be available via the present road reserve strip along Blacksmiths Creek. This is understood to be proposed to be revested in the Crown, Department of Conservation, and Northland Port Corporation proposes to take road closure action including this strip, to assist this revesting, a matter which has the approval of the Department.

(d) Public access thorough an operational port is considered a risk to the health and safety of the public. It is likely to also compromise port operations to a degree which will endanger workers on site and breach OSH Standards. Public access to the foreshore has effectively not existed since 1982 when the former designations became operative. These have now become coastal permits, and further granting of coastal permits under section 384A also provide exclusive occupancy of the seabed to MHWS in favour of the Corporation.

Public access to the area west of the proposed port development is provided for by the strip around Blacksmiths Creek. A further accessway at the eastern edge of the port development is proposed to be provided to the existing toilets, adjacent to the refinery housing entrance. This will provide a link to the foreshore reserve along the eastern end of Marsden Spit.

(e) No recreation surveys have been commissioned by the Corporation.

32 **Landscape Quality**

(a) The viewpoints used in the landscape impact assessment actually capture a sequence of views around the northern edge of the harbour. Consequently, while each is from a static point and is dealt with in relative isolation, the accumulation of views would also form part of the experience of travelling out towards Whangarei Heads or, alternatively, returning from them. As such, it is considered that the viewpoint analysis and summary provide some pretty clear "clues" as to what would happen in an experiential sense in conjunction with port development.

In order to address experiential change in more detail it would probably be necessary to prepare a video of such journeys that incorporates the proposal.

(b) It is considered that the original assessment by LA4 reached some clear conclusions about the level of change associated with development and placed such change in an appropriate context.

Attachments:

- Log carrier vehicle movements.
- Measured Sound Levels Graph.
- Title Searches.
- Barnett Consultants' Addendum August 1994.

TRAFFIC MOVEMENTS

APRIL 94																									
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
5	26						2		1	7	5	6	5	3	8	4	8	2							77
6	14						4		3	4	7	2	5	8	2	5	5	8							67
7	15						8	1	2	10	6	2	8	8	2	4	7	6							79
8	29						5	4	3	5	3	2	1	3	5	7	4	3							74
11	20						3	2	4	8	4	5	8	8	8	8	11	5							94
12	34						6	4	3	4	6	7	4	1	4	5	5	6							89
13	11						8	5	7	5	16	3	3	2	5	6	3	4							78
14	14						8	2		2	4	4	3	4	2	4	4	3							54
15	56						4	1	3	1	2	6	3	9	4	3	7	1							100
18	26						9		2	6	11	12	9	4	2	14	16	7							118
19	35						8	17		9	7	12	7	11	13	15	9	15							158
20	37						3	15	6	13	12	8	15	11	14	7	10	8							159
21	58						13	19	4	1	11	5	11	15	4	13	18	7							179
22	18						8	5	1	9	7	7	12	10	2	3	12	9							103
26	42						11	18	5	3	12	14	8	6	8	10	19	11							167
27	60						10	18	15	8	10	6	15	18	12	9	13	17							211
28	75						11	18	10	3	15	15	12	15	7	13	18	19							231
29	70						8	19	4	14	8	8	8	13	13	12	21	17							215
	640	0	0	0	0	0	129	148	73	112	146	124	137	149	115	142	190	148	0	0	0	0	0	0	2253

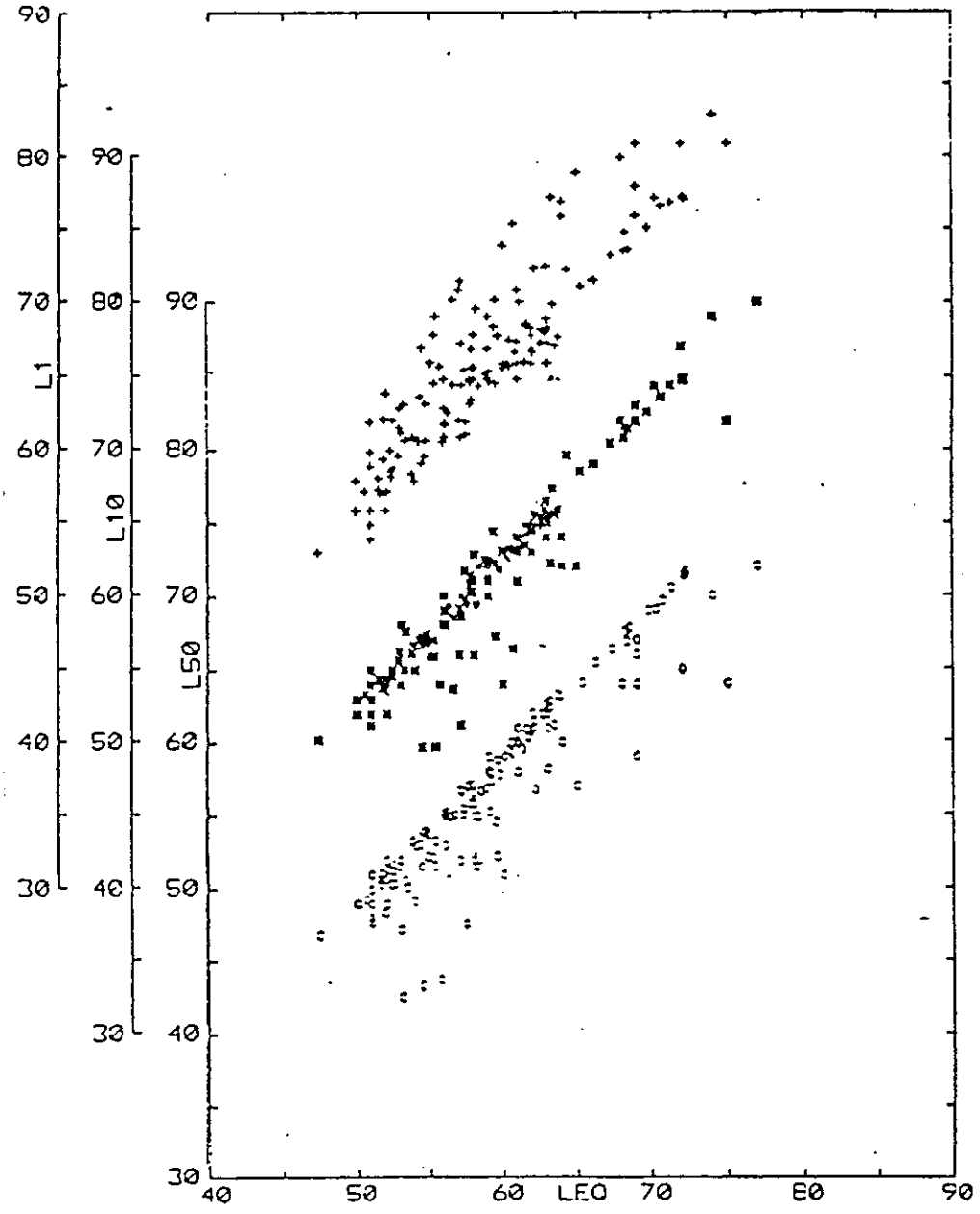
VOLUMES (TONNES)

APRIL 94																									
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
5	650						30	0	15	105	75	90	75	45	120	60	120	30	0	0	0	0	0	0	1415
6	350						60	0	45	60	105	30	75	120	30	75	75	120	0	0	0	0	0	0	1145
7	375						120	15	30	150	90	30	120	120	30	60	105	90	0	0	0	0	0	0	1335
8	725						75	60	45	75	45	30	15	45	75	105	60	45	0	0	0	0	0	0	1400
11	500						45	30	60	120	60	75	120	120	120	120	165	75	0	0	0	0	0	0	1610
12	850						90	60	45	60	90	105	60	15	60	75	75	90	0	0	0	0	0	0	1675
13	275						120	75	105	75	240	45	45	30	75	90	45	60	0	0	0	0	0	0	1280
14	350						120	30	0	30	60	60	45	60	30	60	60	45	0	0	0	0	0	0	950
15	1400						60	15	45	15	30	90	45	135	60	45	105	15	0	0	0	0	0	0	2060
18	650						135	0	30	90	165	180	135	60	30	210	240	105	0	0	0	0	0	0	2030
19	875						120	255	0	135	105	180	105	165	195	225	135	225	0	0	0	0	0	0	2720
20	925						45	225	90	195	180	120	225	165	210	105	150	120	0	0	0	0	0	0	2755
21	1450						195	285	60	15	165	75	165	225	60	195	270	105	0	0	0	0	0	0	3265
22	450						120	75	15	135	105	105	180	150	30	45	180	135	0	0	0	0	0	0	1725
26	1050						165	270	75	45	180	210	120	90	120	150	285	165	0	0	0	0	0	0	2925
27	1500						150	270	225	120	150	90	225	270	180	135	195	255	0	0	0	0	0	0	3765
28	1875						165	270	150	45	225	225	180	225	105	195	270	285	0	0	0	0	0	0	4215
29	1750						120	285	60	210	120	120	120	195	195	180	315	255	0	0	0	0	0	0	3925
	16000	0	0	0	0	0	1935	2220	1095	1680	2190	1860	2055	2235	1725	2130	2850	2220	0	0	0	0	0	0	40195

MAY 94																									
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
2	36						7	24	15	10	15	15	11	12	9	13	15	13							195
3	58	1					14	8	1	12	10	14	15	6	11	8	15	17	2						192
4	69						10	15	3	7	11	8	11	12	9	9	14	8							184
5	56						8	21	4	3	16	8	9	10	19	8	12	13	1						188
6	104						3	26	3	13	14	13	7	22	23	7	3	14							252
9	2	1					5	3	0	2	6	3	3	12	2	7	8	14							66
10	40						9	10	5	3	15	15	15	14	4	7	12	17	4						170
11	38						7	8	2	6	10	12	11	13	8	10	12	8							145
12	32						8	3	2	8	7	14	9	8	5	7	14	5							122
13	36						5	9	4	5	5	9	5	8	8	4	17								113
16	53						3	8	3	4	9	11	6	8	9	11	9	4							138
17	73						5	2	7	4	6	7	14	17	12	3	13	9							172
18	26						10	22	16	13	8	19	21	9	12	11	15	12							194
19	20						11	19	9	8	20	8	17	13	9	14	17	17							182
20	17	1					9	21	5	11	12	16	18	17	13	6	17	5							168
21	3							1	4	5	3	8	4	10		4									42
23	18						13	4	4	9	9	13	12	6	12	9	16	10							135
24	17						8	6	5	8	9	6	7	15	5	2	7	6							101
25	11						1	3	0	4	12	14	3	13	7	9	17	9							103
26	22						6	0	5	7	11	10	20	2	11	12	17	15							138
27	40						9	5	11	7	11	12	7	8	7	11	9	6							143
30	28						6	17	4	7	11	12	17	9	11	5	9	21							157
31	32						8	14	8	12	12	10	18	17	13	11	20	19							194
	831	3	0	0	0	0	165	249	120	166	242	255	260	261	217	188	288	242	7	0	0	0	0	0	3498

VOLUME (TONNES)

MAY 94																									
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
2	900	0					105	360	225	150	225	225	165	180	135	195	225	195	0	0	0	0	0	0	3285
3	1450	25					210	120	15	180	150	210	225	90	165	120	225	255	30						3470
4	1725	0					150	225	45	105	165	90	165	180	135	135	210	120	0						3450
5	1400	0					120	315	60	45	240	120	135	150	285	120	180	195	15						3360
6	2600	0					45	390	45	195	210	195	105	330	345	105	45	210	0						4820
9	50	25					75	45	0	30	90	45	45	180	30	105	120	210	0						1050
10	1000	0					135	150	75	45	225	225	225	210	60	105	180	255	60						2950
11	950	0					105	120	30	90	150	180	165	195	120	150	180	120	0						2555
12	800	0					120	45	30	120	105	210	135	120	75	105	210	75	0						2150
13	900	0					75	135	60	75	75	135	75	120	90	60	255	0	0						2055
16	1325	0					45	120	45	60	135	165	90	120	135	165	135	60	0						2600
17	1825	0					75	30	105	60	90	105	210	255	180	45	195	135	0						3310
18	650	0					150	330	240	195	120	285	315	135	180	165	225	180	0						3170
19	500	0					165	285	135	120	300	120	255	195	135	210	255	255	0						2930
20	425	25					135	315	75	165	180	240	270	255	195	90	255	75	0						2700
21	75	0					0	15	60	75	45	120	60	150	0	60	0	0	0						660
23	450	0					195	60	60	135	135	195	180	90	180	135	240	150	0						2205
24	425	0					120	90	75	120	135	90	105	225	75	30	105	90	0						1685
25	275	0					15	45	0	60	180	210	45	195	105	135	255	135	0						1655
26	550	0					90	0	75	105	165	150	300	30	165	180	255	225	0						2290
27	1000	0					135	75	165	105	165	180	105	120	105	165	135	90	0						2545
30	700	0					90	255	60	105	165	180	255	135	165	75	135	315	0						2635
31	600	0					120	210	120	180	180	150	270	255	195	165	300	285	0						3230
	20775	75	0	0	0	0	2475	3735	1800	2520	3630	3825	3900	3915	3255	2820	4320	3630	105	0	0	0	0	0	60780



Hourly Measured Sound Level (Ln) vs
Equivalent Sound Levels (Leq)

Appendix 5
INITIAL REPORT ON
HYDRODYNAMIC ASPECTS

MARSDEN POINT TERMINAL PROPOSAL HYDRODYNAMIC ASPECTS

Report by
DR SUTHERLAND

to the

PARLIAMENTARY COMMISSIONER
FOR THE ENVIRONMENT

FEBRUARY 1994

TABLE OF CONTENTS

SUMMARY

This report recommends that further actions be taken before the application for resource consents by the Northland Port Corporation proceed. The recommended actions are:

1. That clarification be sought regarding the sediment transport rates and erosion rates predicted by the Barnett/DHI model.

2. That management plans be drawn up to control construction dredging and all aspects of the reclamation work and to control the maintenance dredging programme.

3. That the applicants provide a statement setting out how the proposed port may influence the changes presently occurring around Mair Bank and the harbour entrance.

4. That the applicant compile and report on the data it holds concerning harbour bathymetry.

5. That the monitoring programme set out in the Barnett/DHI report (Section 7.5) be adopted and incorporated in the conditions placed on the resource consents.

6. That engineering solutions to identified possible problems at the Refining Company's jetties be developed and costs.

7. That the near shore data held by the Refining Company be collated and reported on.

8. That a more detailed hydrodynamic study in the vicinity of the Refining Company's jetties not be undertaken.

9. That detailed current measurements as suggested by the Refinery's consultants not be undertaken.

1. THE BRIEF

The Parliamentary Commissioner for the Environment has asked for a review of those sections of the Environmental Impact Assessment prepared for the Northland Port Corporation's proposed development at Marsen Point which deal with the hydrodynamic modelling of existing and proposed situations and with those aspects of Port construction that the write feels competent to review. In particular the writer was asked to determine if there is a need for the consent authorities to seek further information as detailed under s.92 of the Resource Management Act 1991.

2. ACTIONS TAKEN

The Parliamentary Commissioner for the Environment, the Northland Port Corporation, and the New Zealand Refining Company all provided background information by way of reports and letters as listed in Appendix 1.

During a two day visit to Whangarei discussions were held with:

Northland Port Corporation		
	Mr Jim Smellie	Chief Executive Officer
	Ms Hester den Ouden	Planning Consultant
	Mr Bill Haines	Electronics Engineer
New Zealand Refining Company		
	Mr Mike Davis	Environmental Adviser
	Mr Stephen Lee	Chief Mechanical Engineer
	Mr Mac McGowan	Marine Adviser

Following the above discussion a meeting was held with Dr Barnett of Barnett Consultants to discuss the Barnett/DHI hydrodynamic study.

3. ISSUES OF CONCERN

Many issues of concern arising from the Northland Port Corporation's plans for a forest port have been raised by various parties. This report considers only those relating to the hydrodynamics of the harbour.

The Northland Regional Council, the Whangarei District Council and the Department of Conservation have raised the following issues (Item 9 Appendix 1).

1. Audit of the Barnett/DHI report and the accuracy of its modelling.

2. Hydrology and sedimentology of sand banks and shellfish beds.

3. Maintenance dredging.

In 1984 the New Zealand Refining Company recorded its concerns about the establishment of a port adjacent to their oil terminal (Item 10 Appendix 1). These concerns were elaborated and expanded in 1993 (Item 8 Appendix 1) and can be listed as:

4. Dredging during construction and in the future.

5. Impacts on the coastal marine area on the south side of the harbour entrance including the sand spit.

6. Dynamics of the harbour bathymetry and hydraulics now and in the future.

7. Changes in current direction and velocity in the vicinity of the oil terminal jetties.

4. THE BARNETT/DHI REPORT

The Barnett/DHI report is used as the basis for selection of the reclamation location and its orientation, for estimating the effects of the reclamation and the proposed turning basin at the New Zealand Refining Company's jetties and for discussing changes that may occur in the harbour regime. This section addresses Issue 1 of section 3 above by reviewing the report, summarising its main findings and commenting on its adequacy for the purposes of a Commission hearing an application from the Northland Port Corporation.

The report describes the use of a numerical hydrodynamic model, MIKE 21, developed by DHI. The model is state-of-the-art technology and has been used successfully in previous harbour studies. It is however only a model and as such it will produce results conditions by the calculation grid, the input data (bathymetry and boundary conditions), by the equations in the model and by their appropriateness for the particular situation.

The 50 m grid spacing is an appropriate one for looking at the water and sediment flows as a whole. It is too coarse to give details in specific areas such as the vicinity of the Refining Company's jetties.

The accuracies claimed for grid point location and depth measurement are in accord with current practice in numerical modelling and sufficient for the investigation undertaken. The boundary conditions were determined by calculations on a larger, coarser grid in the normal way.

The equations governing the water flow are well established and appropriate and will give very good estimates of the expected velocities. The sediment transport equations are not so well established and do not take into account areas of bed stabilised by shell layers. It is differences between an existing and proposed situation that are of interest so this deficiency is not a serious one, nevertheless the results obtained can only be taken as indications of possible outcomes.

Principal results from the model are:

(i) comparison of three options for staging the construction

(ii) there are only insignificant changes to the harbour dynamics as a whole

(iii) in the vicinity of the Refining Company's jetties there are current speed increases on the ebb and tide, an increased potential for erosion at the berths and a potential for deposition in the shallower water inside the berths.

(iv) up to 50,000 m^3 of material will need to be dredged annually from the turning basin

(v) recommendations for a bathymetric monitoring programme.

All of the above can be accepted and used as a basis for environmental assessment of the hydrodynamic aspects of the proposed port.

The information with respect to sediment transport and associated erosion and deposition is not well presented. Clarification is needed over the units (m^3/year) used in the potential net transport diagrams and as to how these figures are converted to erosion rates. The Commission will be interested in the change in the erosion rates near the Refinery jetties from the present rates. This is not addressed in Section 7.2 of the report where one would expect some comment. Such comment would be based on the differences between Figure 6.30 and Figure 6.33 and should be accompanied by a figure using the same scale as Figure 6.31.

> The writer RECOMMENDS that clarification of form described above be sought from the applicant.

5. RESOLUTION OF ISSUES

The issues noted in 3 above are now discussed and recommendations made for their resolution.

1 Audit of Barnett/DHI report and its accuracy
This has been addressed in 4 above.

2 Sand banks and shellfish beds
The effects of port construction and port operation on sand banks and shellfish beds are discussed in Section 4.06 of Volum 3 of the Environmental Impact Assessment. Information is drawn from the 1981 DHI study. Impacts are seen as small with a residual concern for sediment accumulation on the shellfish beds at the mouth of Blacksmiths Creek. the 1992 Barnett/DHI study concludes there will be negligible impacts at Blacksmiths Creek as a result of the construction and operation of the proposed port.

It is concluded there is no need for further investigation of this issue.

3 and 4 Dredging
Problems associated with the dredging are discussed in general terms at several places in the Environmental Impact Assessment and an indication is given of the methods to be used in the reclamation process. The Barnett/DHI study has looked at the changes in flow patterns induced by dredging the turning basin and has predicted the quantities involved in the maintenance dredging.

The material presented is considered sufficient to allow a Commission to evaluate the appropriateness of the dredging proposals and thus no further investigation is necessary at this stage.

The writer **RECOMMENDS**, however, that management plans with enforceable conditions be drawn up for:

(i) Construction dredging and reclamation work This plan would include a condition that the Northland Regional Council must approve the methods to be used before construction starts; and

(ii) Maintenance dredging This plan would include a condition that the Northland Regional Council must approve quantities, methods of dredging and methods of disposal prior to the plan being implemented.

The Northland Regional Council may wish to see further investigation before approving a particular plan.

5 Impacts on coastal areas

New Zealand Refining Company have an understandable concern about the continued stability of the sand spit at Marsden Point and of the coast south of the harbour entrance. There is limited discussion in the Environmental Impacts Assessment of this issue and the Barnett/DHI model study did not address it.

It is known (discussion with McGowan) that the Mair Bank and the approach channel to the Refining Company's jetty has changed in recent years. This is a natural phenomenon which will continue.

The writer **RECOMMENDS** the applicants provide the Commission with a statement setting out how the proposed port may influence this phenomenon.

6 Changes in bathymetry

There is sufficient information in the Environmental Impact Assessment to address this issue. Surveys done in 1982 and 1992 are available. Differences between these surveys are described as drastic (Item 4 Appendix 1) and as evidence of a dynamic equilibrium (Barnett/DHI report). The differences include a southward migration of the main channel which is substantiated by the Northland Port Corporation having to move a channel makrer buoy (discussion with Haines). It must be noted that the Barnett/DHI model cannot be used to predict these changes since there is no facility for updating bathymetry and moving the calculations forward in time.

Other data sets exist. The Northland Port Corporation has made a number of bathymetric surveys over parts of the harbour (discussion with Haines). It may be possible to work up this data and to obtain a better picture of the natural changes within the harbour.

The writer **RECOMMENDS** that the applicant study the data it holds and report any conclusions that can be drawn from it.

The writer **RECOMMENDS** that the Barnett/DHI monitoring programme (Section 7.5 of that report) be adopted and incorporated into the conditions placed on any consents that may be granted.

7 Velocity changes near refinery

The hydraulic model had identified velocity changes in the vicinity of the Refinery Jetties. There are potential problems associated with these changes which must be addressed, viz:

1. increased mooring line forces and increased loads on the dolphins. Analysis shows that under exceptional conditions design levels may be exceeded for the 50,000 DWT tanker.

2. reduced capacity of the dolphins as a result of scouring

3. lowering of bed levels at the berthing line leading to instability of both the jetty piles and the steep slope which extends shorewards

4. deposition shoreward of the berthing line causing interference with fire pump intakes and further reducing stability of the steep slope

The proposed port location and orientation have been selected to minimise the above problems. What is required now is a monitoring plan and investigation of remedial measures that may be implemented should the problems eventuate. There are engineering solutions to all the above problems.

The writer **RECOMMENDS** these solutions be developed and costed.

The Refining Company holds survey data that the writer **RECOMMENDS** be collated and reported on.

Examples are:

1. 1981 data on sea bed elevation at all dolphins (Drwg T-2084635). These measurements should be repeated so that any trends can be assessed.

2. location of MHWM at intervals since 1960 (VP 3000-A-1-98) which shows the shoreline to be prograding and suggests problem 4 above may already exist.

3. bed contours shoreward of the berthing line determined in 1993 (Drwg T-3.013.113).

The outcome of this exercise should be a statement of the changes occurring at present and a data set from which future changes either from natural causes or from the proposed port can be evaluated.

It has been suggested by consultants to the Refining Company (Item 4, Appendix 1) that a finer grid be used in conjunction with the DHI model to refine the predictions of velocities and sedimentation in the vicinity of the jetties. In theory this should be possible but in practice the presenc eof the dolphins and the jetty structure itself introduce effects that cannot be encountered for by such a model. The writer is of the view that the results from a localised 25 m grid model would not add significantly to the existing data.

> Accordingly it is **RECOMMENDED** that additional calculations as suggested by the Refinery Consultants not be carried out.

Consultants to the Refinery have suggested (Item 6 Appendix 1) that current measurements be made near the Company's jetties. The writer is of the view that such information, while of use to the operation and maintenance of the Refining Company's facilities, would not be of use to the Commission in considering the grant of consents.

> Accordingly it is **RECOMMENDED** that a measurement programme as suggested by the Refinery's consultants is not implemented.

6. COMMENT

This report has recommended some further investigations should be done and extra material prepared for use by the Commission which hears the application. The best way to proceed would be for the Northland Port Corporation and the Refining Company to meet and agree.

(i) as much of the technical material and its interpretation as possible

(ii) in conjunction with the Northland Regional Council, the formulation of management plans for dredging

(iii) base line information that defines the present situation and the natural variations that are occuring

(iv) details of monitoring programmes to be carried out during and after construction

(v) engineering solutions and their costs to identified possible problems at the Refinery's jeeties.

7. ACKNOWLEDGEMENT

The writer would like to acknowledge the hospitality, courtey and cooperation offered to him by the Northland Port Corporation and the New Zealand Refining Company during his visits with them. Their openness and desire to help have been most beneficial to the preparation of this report.

Appendix 6
COPY OF FORMAL CONSENT APPLICATION

Northland Port Corporation (NZ) Ltd

Port Road,
P.O. Box 848,
Whangarei,
New Zealand.

Telephone 0-9-438 1279
Facsimile 0-9-438 7067

30 November 1993

Mrs J A Brosnahan
General Manager
Northland Regional Council
Private Bag 9021
WHANGAREI

Dear Mrs Brosnahan

RESOURCE MANAGEMENT ACT 1991: RESOURCE CONSENT APPLICATIONS: MARSDEN POINT PORT TERMINAL

Pursuant to the Resource Management Act 1991, the Northland Port Corporation encloses applications for resource consents including restricted coastal activities, for the port terminal development at Marsden Point, Whangarei Harbour.

The proposal is fully outlined in Volume One of the report, which contains a condensed Environmental Impact Assessment. Volumes Two and Three are appendixes to the Environmental Impact Assessment and contain unabridged assessments of the port proposal covering a number of disciplines.

As the draft Report was circulated to all agencies, we expect that you will have utilised the opportunity to indicate to the Corporation areas where further information was required. The Northland Port Corporation has further researched areas where such requests had been received and we trust the report is now considered comprehensive in its assessment.

Yours faithfully

J Smellie
COMPANY SECRETARY/
FINANCIAL CONTROLLER

kw:l0212

	Action	Init
Chair		
G.M.		✓
Comm		
Cons		✓
Fin.		
Land		
Mar.		
Mon.		
[illegible]		
Plan		
Sec.		
Supp.		
Ad		✓

REGARDS

APPLICATION FOR RESOURCE CONSENTS

FORM 5 Reg 8(1)

To: The Secretary
Northland Regional Council
Private Bag 9021
WHANGAREI

1. *Applicant*
Northland Port Corporation NZ Ltd.
P O Box 848
WHANGAREI

2. *Owner:*
a) Northland Port Corporation of land described in the Schedule below.
b) The Crown (Department of Conservation P O Box 10-420 Wellington) for those parts of the foreshore and harbour below Mean High Water Springs, pursuant to The Foreshore and Seabed Endowment Revesting Act 3 October 1991.
c) Northland Port Corporation is Lessee of part and Occupier of the remainder of the coastal marine area.
d) Whangarei District Council (Private Bag Whangarei) for Papich Road and that part of Marsden Point Road adjoining the applicant's land at Marsden Point.

3. *Occupier:*
i) Northland Port Corporation NZ Ltd
ii) Mission to Seamen

4. *Location: Site Address*
Locality:
Marsden Point

Legal descriptions:
The legal description of the areas to be subject to these applications are:

Coastal Marine Area:
defined in Designation 493 in the Whangarei District Council Transitional District Plan Whangarei County Section 1987, Map 28 and Map 1 Sheet 14, and partially covered by the following Acts:
- Whangarei Harbour Board Vesting and Empowering Act 1961, 3rd Schedule,
- Northland Harbour Board Vesting and Empowering Act 1962, 6th Schedule,
- Northland Harbour Board Vesting and Empowering Act 1967, 10th Schedule.

Land:
Lots 1, 2, 3 , Pt Lot 4, and Pt Lot 5 DP 51845
Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 15 DP 47603
Lots 6, and 16 DP 51845
Lots 1, 2, 3, 4, 5, and 6 DP 43643
Allotment 291 Ruakaka Parish
Pt Lot 1 DP 52380

Lot 1 DP 53892
Section 1 Block VIII
Lot 1 DP 65603
Section 63 Block IV

and covered in part by designations 380 and 381 in the Whangarei District Council Transitional District Plan Whangarei County Section 1987, Map 28 and Map 1 Sheet 14.

5. *Type of Resource Consent Sought:*

5.1. COASTAL PERMIT (Restricted Coastal Activities)

a) To occupy the coastal marine area as shown on Plan 1.38 and carry on port operations there using existing structures and works to be built. (Consent is required under section 88 (3)(b) of the Resource Management Act 1991, to the extent that the applicant's right to occupy the coastal marine area is not already authorised by a coastal permit being sought under section 384 A of the Act, and by a deemed coastal permit held by the applicant under section 420 (1) of the Act).

b) To build a reclamation of 32 hectares in area and dredge a basin of 45 hectares to a depth of -13 metres below datum for port operations, (a restricted coastal activity requiring the consent of the Minster of Conservation under section 117 - 119 of the Resource Management Act).

c) In the course of construction, to create a bund wall, to deposit sediments and discharge settled decant sea water, to build piles and wharf structure abutting the reclamation and an extension to the existing jetty (requiring consent under section 88 (3)(b) of the Resource Management Act) to the extent that these works are not already authorised under the applicant's deemed coastal permit under section 420 (1) of the Resource Management Act).

d) In the course of operations to discharge settled and treated stormwater runoff to Marsden Bay (requiring consent under section 88 (3)(b) of the Resource Management Act).

e) An extension of time for the applicant to give effect to coastal permits in its favour arising under section 420(1) of the Resource Management Act allowing it to carry out the harbour works the subject of Designation 493, contained in the Whangarei District Council Transitional District Plan - Whangarei County Section. (Section 125 (1)(b) Resource Management Act).

5.2. STORMWATER DISCHARGE AND DIVERSION PERMIT

a) To discharge to 120,000 cubic metres settled and treated stormwater, being a one in ten year storm event, by way of drip irrigation to land (requiring consent under section 88 (3)(b) of the Resource Management Act).

b) To divert rain and stormwater in the course of construction and port operations, arising from the construction of buildings and other structures and the establishment of port operations and human activity, not covered by other resource consents (Section 88 (3)(b) of the Resource Management Act).

5.3. AIR DISCHARGE PERMITS

a) To discharge particulate matter into the air in the course of construction and port operations including the operation of ships and all other classes of maritime vessels, plant, equipment vehicles, storage of materials, the operation of office and personnel facilities. (Requiring consent under section 88 (3)(b) of the Resource Management Act).

b) To discharge contaminants to the air incidental to port construction and operations, not covered by other consents already sought including contaminants arising from:
preparation of food, bark dust, evaporation of water, discharges from hum persons or animals, other fugitive substances. (Requiring consent under section 88 (3)(b) of the Resource Management Act).

5.4. PERMIT TO DEPOSIT DREDGE TAILINGS

a) Consent to deposit dredge tailings on land described as Part Lot 5 DP 51845 during construction during construction, and also as a result of maintenance dredging. (Requiring consent under section 88 (3)(b) of the Resource Management Act).

5.5. LAND USE CONSENT FOR EARTHWORKS

a) To excavate earth material in the course of construction (controlled activity).

6. *Description of the activity for which consent is sought:*

i) The construction and operation of a deep water bulk cargo port terminal development including:

a) A reclamation of 32 hectares extending 500 metres out to sea and running 450 metres along parallel with the foreshore;
b) A deepened dredge basin with an average depth of 13 metres below datum extending 300 metres westward of the reclamation and 400 metres out from the berth face;
c) Ancillary buildings. located along the south-eastern boundary to be built for administration, workshops, stevedoring and a Mission to Seamen facility;
d) Storage areas supported by an extensive dust suppression sprinkler and fire fighting system;
e) An extensive stormwater collection and bark separation system linked to an extensive three pond settling and treatment system.
f) An extension to the existing jetty;
g) Ancillary works including extensive landscape planting and the construction of a segregated transport corridor.

ii) The proposed deep water bulk cargo port terminal will provide:

a) Two general multi - cargo berths;
b) A dry bulk jetty;
c) Safe berthage and vessel manoeuvering;
d) Two barge berths for roll on roll off cargo;
e) Open and covered storage for a variety of forestry cargo;
f) Dedicated storage for products such as clinker, fertiliser wood chips and other dry cargo, and enclosed conveyor systems for transport of dry bulk cargo to the berth face.

7. *Resource Consents required from the Whangarei District Council*

The following applications are concurrently being made to the Whangarei District Council for land use consents:

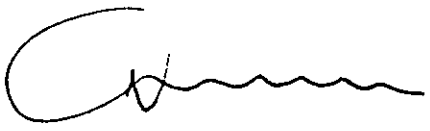
a) To carry on port related activities on reclamation and jetty extension to be constructed;
b) To relocate the Mission to Seamen facility;
c) To construct and operate stormwater settlement and treatment ponds covering 12 hectares;
d) To irrigate land with treated stormwater;
e) To deposit dredge tailings.

8. *Supporting Information:*

(a) Filed with this application is an assessment of any effects that any proposed activity may have on the environment in accordance with the Fourth Schedule to the Act.

(b) Included in the Environmental Impact Assessment and accompanying appendices is information in accordance Section 88 (7) of the Resource Management Act to show the area proposed to be reclaimed, including size and location. None of the area is to be set aside as an esplanade reserve.

Fee Enclosed with Applications



Signature Date: 2/12/93.

ADDRESS FOR SERVICE OF APPLICANT:

Company Secretary
Northland Port Corporation NZ Ltd
Po Box 848
WHANGAREI

Telephone Number: (9) 438 1279 Fax No:(9) 438 7067

The following additional answers were received from NPC on the Appendix 3:27 questions relating to noise:

(1) No detailed meteorological data is available for this site. Predictions have also been made on the worst case scenario in the original report.

(2) (i) The combined effects have been reported

(ii) Based on field surveys there will be no noticeable additive effects from the refinery at the critical locations.

Noise contours have not been undertaken for this site, only predictions at a given point.

(3) There will not be any Lmax effects in terms of NZS8802. Measurements show Lmax will be typically 3-5 dBA above L_{10}, that is, within the generally expected variation for an L_{10} value.

(4) Mitigation taken into account for port noise includes:

- Directivity
- Geometric spreading
- Atmospheric absorption
- Ground effects
- Meteorological corrections
- Source height corrections
- Barrier effects (where appropriate)

4a - f would all be covered by a management plan. They are not considered appropriate for an assessment of effects report.

(5) I do not have any knowledge of existing port problems as that is at a totally different location. 50 dBA from a wheeled loader is based on field measurements (para 5.2.1) and predicted for the closest houses to the north west. Predictions are based on the mitigation criteria above and barrier effects have adopted the prediction technique developed by Maekawa. Exactly the same technique has been adopted for bulldozer noise (and all other noise sources).

Figure 3.4 is measured at approximately 50 m and Figure 3.5 at approximately 100 m.

Boat loading noise is controlled by timber handling and equipment operating in the wood chip area. Sections 5.2.1 and 5.2.2 covers this. Boat generated noise is covered in Section 5.2.3. Figure 3.6 shows a trace of some of these effects.

(6) All traffic information was provided by the traffic engineer. His report should be referred to for any questions on traffic flows.

The practicality of controlling traffic noise is covered in paragraph 5.3.3. Obviously no detailed design has been undertaken or discussions held with residents, but no change to the recommendations is seen as necessary.

The brief is quite clear, traffic effects only to State Highway 1 intersection are to be considered.

The report covers traffic noise with and without the effects of a train (para., 5.2.4 and Figure 5.2). This should answer the question. Figure 5.3 has now been incorporated with Figure 5.2 (hence the two sets of levels on this figure), reference to 5.3 should be deleted.

(7) The requirements of the Construction Standard have been fully adopted, even where there is the option to reduce the level by 5 dBA. Consultation is believed to fall within the area of a management plan, not an effects report. However, where appropriate, I would expect consultation to take place.

The level of 53 dBA from pile driving is based on a combination of technical data available and field measurements, a scaled distance from the pilling area to the closest dwellings and the mitigation effects as set out above.

(8) There is no intra-zone boundary at this site that must be complied with. There is no known recreation zone or wildlife habitat to take into account with the design.

(9) Noise from the dredge clearly comes within the requirements of NZS 6803P as it is maintenance work.

(10) The requirements of monitoring are again a management plan issue. The Resource Management Act 1991 makes monitoring requirements clear. A complaint report is only relevance once the project has approval. Again, these aspects would come into the category of management plans once the project has approval to proceed, not at the planning stage.