## TECHNICAL MEMO – Terrestrial Ecology

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| **To:** | Stacey Sharp & Blair Masefield, Beca (consultant planners) |
| **From:** | Claire Webb & Sandy Huang, Beca (consultant ecologists) |
| Date: | 26th July 2023 |

## APPLICATION DESCRIPTION

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| Applicant's Name: | Northport Limited (Northport) |
| Activity type: | **Land Use (s9), Coastal Permit (s12), Water Permit (s14), Discharge Permit (s15)** |
| Purpose description: | Northport seek to construct, operate, and maintain an expansion of the existing port facility to increase freight storage and handling capacity, and transition into a high-density container terminal. |
| Application references: | Northland Regional Council: APP.005055.38.01<br>Whangārei District Council: LU2200107 |
| Site address: | Ralph Trimmer Drive, Marsden Point, Whangārei |

## SITE AND PROPOSAL DESCRIPTION

### Existing Environment

A description of the subject site and surrounding environment was provided in the following application documents:

1. Section 4.0 of the Assessment of Environmental Effects (AEE) entitled: *Application for resource consents for the expansion of Northport*, prepared by Reyburn & Bryant, dated 6 October 2021.
2. Section 3.0 of the Vegetation Assessment by Boffa Miskell, May 2023.

A site visit undertaken by an ecologist (Claire Webb), on 23rd June 2021, on behalf of Northland Regional Council, confirmed the accuracy of the site description and its surrounding

environment. Therefore, the site description will be adopted for the purpose of this technical memorandum.

### Proposal

A full description of the proposal, as related to vegetation effects, is provided in the following application documents which have been considered in the preparation of this memo:

1. Assessment of Environmental Effects entitled: *Application for resource consents for the expansion of Northport*, prepared by Reyburn & Bryant, dated 6 October 2021 (henceforth referred to as AEE).
2. Design Drawings entitled: *Northport – Proposed Reclamation and Dredging*, prepared by WSP, sheets C01 – C04, plan set dated 18 August 2022.
3. Vegetation Survey Results entitled: *Results of vegetation survey: Northport Beach Reclamation, Ralph Trimmer Drive, Ruakākā*, prepared by Ecology North, dated February 2023.
4. Vegetation Assessment entitled: *Northport Eastern Expansion Vegetation Assessment*, prepared by Boffa Miskell, dated 5 May 2023.
5. Section 92 Response Memorandum entitled: *Northport Expansion Project – S92 response re: terrestrial vegetation assessment,* prepared by Boffa Miskell, dated 20 July 2023.

This technical memorandum is limited to the consideration of matters relating to ecological effects on vegetation at the site. This includes the duneland ecosystem and vegetation, and any residing terrestrial fauna (but noting that effects on avifauna has been assessed separately).

This technical memorandum also notes the following key elements of the proposal as described in Sections 1, 3, and 5 of the Vegetation Assessment:

1. Northport proposes to expand its existing facilities to increase freight storage and handling capacity to support the future freight needs of the upper North Island.
2. Proposed activities and developments include earthworks to the immediate east of the existing facility to expand Northport's footprint, including 2 ha of earthworks outside the Coastal Marine Area (on the Whangerei District Council esplanade reserve), a portion of which is duneland.
3. The duneland at the site, which runs between the existing Northport site and the Marsden fuel terminal jetty, is approximately 800 m in length and between ~10 – 25 m wide. The proposed activities and developments will result in the loss of approximately 360 m of duneland in length and 3600 $m^2$ in area.

## REASON FOR CONSENT

### Reasons for Consent

A list of resource consents sought (as per the application documents as lodged) are summarised in Sections 1.5 – 1.7 of the AEE, and are as amended by the Section 92 Response.

### Overall Activity Status

Overall, the resource consent is considered as a **Discretionary Activity**.

# TECHINICAL ASSESSMENT OF APPLICATION AND EFFECTS

## APPLICANT'S METHDOLOGY

### Assessment Methodology for Significance, Effects, and Values

It is considered good practice to undertake an ecological impact assessment using the Environment Institute of Australia and New Zealand (EIANZ) guidelines and methodology (Roper-Lindsay et al., 2018) as it provides a robust, transparent, and comparable framework.

In the Vegetation Assessment, the duneland ecosystem and vegetation was described and assessed using the Proposed Northland Regional Plan (pNRP). Specifically, it was assessed against the significance criteria under Appendix 5 of the Northland Regional Policy Statement (RPS), and adverse effects were identified and assessed according to Rule D.2.18 (1) of the pNRP.

Following a Section 92 request, an assessment for ecological values and effects was undertaken in general accordance with the EIANZ Guidelines (Roper-Lindsay et al., 2018), but information is still missing. While native fauna that could potentially be present was identified and described, it was not assessed for ecological value and effects. Additionally, while a magnitude of effect and overall level of effect was provided for '*Effects on Predominantly Indigenous Vegetation*,' it was not provided for any of the other identified effects, including '*Effects on At-Risk Flora*' and '*Effects on Significant Ecological Features.'*

Despite some elements not being assessed according to the EIANZ guidelines (Roper-Lindsay et al., 2018), and therefore incurring some inconsistency issues when understanding and interpreting the results, the level of information provided is still sufficient to complete the assessment of this technical memorandum.

### Spatial Scale

The spatial scale and selection thereof for ecological effects assessments is not well-defined in guidance documents, and the results can vary depending on the scale used. Rule D.2.18 of the pNRP does not define the term 'systems wide'. Similarly, the EIANZ Guidelines does not set a specific spatial scale, though it does state the importance of determining an appropriate one (Roper-Lindsay et al., 2018). Therefore, scale selection is an important step in the decision-making process to ensure that the results are not unintentionally diluted, particularly if the rarity of the feature or the ecological effect change at different scales.

The Vegetation Assessment and Section 92 Response aimed to use a 'systems wide' approach based on Rule D.2.18 of the pNRP for the assessment of significance, ecological value, and ecological effects. Between two scales they had put forward to represent this 'systems wide' approach, they selected the scale of the Waipu Ecological District (ED) instead of the scale of the site and its immediate surroundings. However, no specific reasoning was provided for this selection, and it is also possible for the Waipu ED scale to dilute the results. For example, while dunelands are a naturally uncommon ecosystem in New Zealand (Holdaway et al., 2012), it is well represented in the Waipu ED, and as such does not meet significance criterion 2(a) in Appendix 5 of the Northland RPS and has a lower ecological value under the context of the ED. Additionally, the amount of duneland extent lost from the proposed activities and development affects approximately 40-50% of the site, but is considered to be proportionally very small at scale of the ED.

Although it is agreed that a 'systems wide' approach should be used, it is more appropriately represented by the scale of the site and its immediate surroundings rather than the scale of the Waipu ED for this assessment. This is because the site and its immediate surroundings would better capture the ecological value and geomorphology of the duneland ecosystem and vegetation being impacted. In addition, this scale provides a conservative approach to the effects assessment. Specifically, the loss of extent would produce a moderate and low level of effect at the scale of the

site and its surroundings, and the Waipu ED, respectively. A moderate level of effect would require management based on the EIANZ guidelines (Roper-Lindsay et al., 2018).

Nevertheless, the Vegetation Assessment has recommended management to reduce the effects of duneland ecosystem and vegetation loss despite determining low levels of effects in context of the Waipu ED scale. If the management is undertaken, then it is agreed that the residual effects will be very low and acceptable, regardless of which scale is used for the assessment.

### Significance Assessment

The applicant has provided a significance assessment against the Northland Regional Policy Statement, but not against the Whangarei District Council (WDC) – Operative District Plan. The results of the significance assessments are further discussed in the section below.

## SIGNIFICANCE ASSESSMENT

*Significance Assessment under Appendix 5 of the Northland Regional Policy Statement*

The Vegetation Assessment and Section 92 response assesses the site as significant under the Northland RPS Appendix 5. Specifically, they determine that Criterion 2(b) is met by the habitat provision function of the duneland ecosystem and vegetation for shore skinks and ornate skinks, as well as by the patches of pīngao (*Ficinia spiralis*; At-Risk – Declining) scattered throughout the duneland (see **Error! Reference source not found.** for their reasonings).

Table 1. Summary of assessment of the duneland ecosystem and vegetation, and native fauna, against the significance criteria from the Northland RPS Appendix 5

| Criteria | Assessment Result | Reasoning |
|---|---|---|
| Representativeness | Criteria not met | The affected duneland area is not identified as a significant natural area in the Department of Conservation survey of the Waipu Ecological District (Lux et al., 2007).<br>Its native vegetation is modified and of low diversity relative to characteristic duneland ecosystems, and approximately 50% of the total vegetation cover is exotic. |
| Rarity and Distinctiveness | 2(b) met | Criterion 2(a) is not met by the duneland ecosystem and vegetation as Northland retains over 20% of its duneland extent relative to the 1950s.<br>Criterion 2(b) by the patches of pīngao, which has a threat status of At-Risk – Declining (De Lange et al., 2018).<br>Criterion 2(b) is met by the duneland ecosystem and vegetation as it provides habitat for shore skinks and ornate skinks, both of which have a threat status of At-Risk – Declining (Hitchmough et al., 2021). |
| Diversity and Pattern | Criteria not met | There is a single native vegetation community, and a single, very modified ecological sequence (mobile foredune to established dune crest). |
| Ecological Context | Criteria not met | Well connected to the marine environment and located in the marine-terrestrial ecotone, but this is truncated by surrounding development. |

However, this technical memorandum determines that the duneland ecosystem and vegetation may also meet Criterion 2(a) and (d). Therefore, the full extent of the dunelands may be significant for reasons other than skink habitat provision.

This is important, as the Vegetation Assessment only determines the patches of pīngao to be significant (not the full duneland extent), and there is some uncertainty regarding the presence of skinks at the site since no lizard survey was carried out.

The relevant criteria, and the reasonings for meeting these criteria are discussed below:

*Criterion 2. Rarity and Distinctiveness*

> *(a) The ecological site comprises indigenous ecosystems or indigenous vegetation types that:*
> *ii. Excluding wetlands, are now less than 20% of their original extent; or*
>
> *(d) The ecological site contains indigenous vegetation or an association of indigenous taxa that:*
> *ii. Is part of an ecological unit that occurs on an originally rare ecosystem; or*
> *iii. Is an indigenous ecosystem and vegetation type that is naturally rare or has developed as a result of an unusual environmental factor(s) that occur or are likely to occur in Northland; or*

The Vegetation Assessment refers to an inventory stocktake from 1990 (Hilton et al., 2000) and states in Section 4.2.2. that the current remaining duneland extent in Northland is 25%, which is only marginally above the threshold of 20% remaining in the region set out in Criterion 2(a). The same publication (Hilton et al., 2000) notes that Northland is known to have experienced one of the greatest historical declines in duneland extent in New Zealand (approximately 76.35% lost between 1950 and 1990).

Based on the historical rate of loss, it is possible for the duneland extent to have now, 30 years later, fallen below 20% and to meet Criterion 2(a). Unfortunately, no updated stocktake has been completed since the 2000 inventory (Hilton et al., 2000), and as such, no verifiable source of information is available to determine whether 2(a) is definitively met, despite the reasonable conclusion that dunelands would continue to decline in extent in Northland as per historic trends.

Furthermore, the duneland ecosystem and vegetation meets Criterion 2(a) when considering the loss of the duneland extent across New Zealand, since it was estimated that only 19.5% of duneland extent remained in 2008 compared to the predicted pre-human extent (STATS NZ, 2015).

The duneland ecosystem and vegetation may also meet Criterion 2(d) as dunelands are naturally uncommon ecosystems in New Zealand (Holdaway et al., 2012) and are listed as a historically rare terrestrial ecosystems by Williams et al., (2007).However, there is some uncertainty regarding the original rarity (Williams et al., 2007), and so this Criterion is also not definitively met.

> *Significance Assessment under the Ecosystems and Indigenous Biodiversity Chapter of Whangarei District Council – Operative District Plan*

The applicant has not provided a significance assessment against the ECO-SCHED1 Criteria from the Whangarei District Council (WDC) – Operative District Plan.

In the absence of discussion within the Vegetation Assessment and Section 92 response, a high-level significance assessment against the ECO-SCHED1 Criteria from WDC Operative District Plan has been undertaken below as part of this technical memorandum.

Although there are potential size restrictions based on SCHED6, the site meets the criteria from *ECO-SCHED1.2 High Value* or *ECO-SCHED1.3 Moderate-High Value* for the following reasons:

1. The presence of pīngao (*Ficinia spiralis*; formerly *D. spiralis*), as it is listed as a threatened plant under ECO-SCHED3 High Value. It also has a national threat status of At Risk – Declining (De Lange et al., 2018) and is a “rare endemic species, or regionally threatened species, or endemic species of limited abundance throughout the country”.

2. The potential presence of shore skinks (*Oligosoma smithi*) and ornate skinks (*Oligosoma ornatum*), which have a national threat status of At Risk – Declining (Hitchmough et al., 2021), and are considered a "rare endemic species, or regionally threatened species, or endemic species of limited abundance throughout the country".
3. The presence of a duneland ecosystem, which are naturally uncommon ecosystems and historically rare (Holdaway et al., 2012; Williams et al., , and as such, is an "example of a nationally uncommon habitat, sequence or mosaic"

Based on the above, the duneland ecosystem and vegetation, and native fauna, is also significant under the district plan, in addition to the Northland RPS.

## ECOLOGICAL VALUES ASSESSMENT

### Identification of Ecological Features

The Vegetation Assessment and Section 92 Response accurately identifies the following ecological values:

1. Duneland ecosystem and vegetation.
2. Native herpetofauna.

The duneland ecosystem and its vegetation composition were identified in the Vegetation Assessment based on a site visit undertaken by Boffa Miskell (the applicant ecologist) on 7th March 2023 and on results from a vegetation survey undertaken by Ecology North in February 2023.

In the Section 92 Response, herpetofauna are the only native, terrestrial fauna considered likely to inhabit the dunelands (noting that avifauna has been assessed separately). The presence of potential species, including the shore skink (*Oligosoma smithi*) and ornate skink (*Oligosoma ornatum*), were identified based on the habitat created by the duneland vegetation cover, and past iNaturalist records in the One Tree Point/ Ruakaka area. These skink species both have a threat status of At Risk – Declining in New Zealand (Hitchmough et al., 2021). Although the probability of a viable native skink population is low due to lack of remnant habitat in adjacent areas and pressure from mammalian predators, it cannot be completely ruled out without a comprehensive survey of the site.

### Assessment of Ecological Values

The Vegetation Assessment and Section 92 Response accurately assesses the ecological value of the duneland ecosystem and vegetation according to the EIANZ guidelines (Roper-Lindsay et al., 2018). No ecological value was assessed for native herpetofauna.

*Duneland Ecosystem and Vegetation*

The duneland ecosystem and vegetation is assessed as having Moderate ecological value, based on moderate representativeness, high rarity / distinctiveness, low diversity and pattern, and low ecological context.

*Native Herpetofauna*

No ecological value has been provided for herpetofauna. However according to EIANZ guidelines (Roper-Lindsay et al., 2018), herpetofauna at the site is expected to have a value of High as both shore skinks and ornate skinks have a threat status of At Risk – Declining (Hitchmough et al., 2021).

## ECOLOGICAL EFFECTS ASSESSMENT

### Identification of Ecological Effects

The Vegetation Assessment and Section 92 Response accurately identifies ecological effects on the duneland ecosystem and vegetation based on the proposed development activities (i.e.,

earthworks over the duneland to permanently expand the Northport footprint), but does not identify effects on native herpetofauna.

The effects are as follows:

1. Effects on Predominantly Indigenous Vegetation
2. Effects on At-Risk Flora
3. Effects on Significant Ecological Features
4. *Effects on native herpetofauna (not identified and assessed by the applicant ecologist)*

## Magnitude and Overall Level of Ecological Effects

### *Effects on Predominantly Indigenous Vegetation (and Loss of Duneland Ecosystem)*

The Vegetation Assessment assesses the magnitude of effect and overall level of effect as Moderate at the scale of the site and its immediate surroundings, and Low at the scale of the Waipu ED. The applicant ecologist states that the resulting effect of Low at the Waipu ED scale should be used as this to be more equivocal to a 'systems wide' approach.

It is noted that there is a 40 – 50% loss of duneland at the point of impact (within the eastern reclamation footprint) which constitutes a moderate magnitude. Given that the applicant has offered manage this effect via compensation, the residual effects following management is expected to be Very Low regardless of which scale is used to assess the effect.

### *Effects on At-Risk Flora*

In the absence of discussion within the Vegetation Assessment and Section 92 response, a high-level assessment has been undertaken as part of this technical memorandum to assess the magnitude of effect and overall level of effect for '*At-Risk Flora'*. Pīngao is the only plant species with an At-Risk status identified for the site by the Vegetation Assessment.

The magnitude of effect and overall level of effect on pīngao is expected to be Low at both the local scale and at the Waipu ED scale. As described in the Vegetation Assessment, the proposed activities and development will only remove a small number of pīngao at the site, which will not affect the overall viability of the pīngao population along the adjacent beachfront, or in the wider Waipu ED (the stronghold of which is in the Ruakākā Dunelands and southwards along the coastal margin).

### *Effects on Significant Ecological Features*

The Vegetation Assessment and Section 92 Response assesses that there are no adverse effects acting on significant ecological features at the site, which includes the skink habitat (i.e., the duneland ecosystem and vegetation), and the pīngao. It is agreed that the adverse effects acting on the habitat provided by the duneland ecosystem and vegetation for skinks are expected to be reduced to acceptable levels following management. Additionally, the viability of the pīngao population is not adversely affected (as addressed above).

### *Effects on Native Herpetofauna*

No ecological effects have been assessed for native herpetofauna. However, a Lizard Management Plan has been recommended to manage any adverse effects that may arise (for example loss of native herpetofauna habitat, and injury/mortality to native herpetofauna), and residual effects are expected to be Very Low to Low following management.

## Effects Management

Based on the proposed activities and development, the permanent loss of duneland ecosystem and vegetation is unavoidable.

The Vegetation Assessment and Section 92 Response identified appropriate management recommendations to reduce ecological effects to acceptable levels. They are as follows:

1. Management of effects on the Duneland ecosystem and vegetation

   *Option 1: Restoration planting and weed management at the site.*

   *Option 2: Financial contribution to coast care groups active in the Waipu ED to undertake restoration planting and weed management offsite.*

2. Management of effects on native herpetofauna

   *Lizard management plan, including a comprehensive lizard survey, potential lizard salvage during vegetation clearance, and potential ongoing, programme of mammalian pest control.*

*Option 2: Management of Effects on the Duneland Ecosystem and Vegetation*

For *Option 2*, the Vegetation Assessment recommends financially funding a coast care group with an "in-kind" dollar amount equivalent to that required to undertake weed management and revegetation of the Marsden Point beach dune system. A nominal management of 1.5 ha has been proposed as it is roughly equivalent to the area of dune system between the existing Northport site and the Marsden fuel terminal jetty.

This technical memorandum identifies *Option 2* as the preferred management recommendation. It is agreed with the applicant ecologist that restoration of the site post-development is likely to produce limited ecological benefits due to the surrounding operations and the reactional use of the area. On the other hand, nearby dunelands offsite, such as along the Bream Bay, are degraded, but still considered to be significant natural areas in the Waipu ED (i.e., Ruakaka Dunelands – Q07/128) (Lux et al., 2007), and as such, have high restoration potential.

However, the Vegetation Assessment does not include any further detail for the compensation proposal that demonstrates that it meets the fundamental principles for compensation (NPS IB Appendix 4). While it is agreed in principal that compensation and a minimum requirement of 1.5 ha of nominal management (i.e., a 1:1 ratio) would be appropriate, more information is required. Therefore, it is recommended that a duneland restoration and compensation plan is required as a condition of consent to demonstrate that the offsite restoration and weed management will meet the NPS IB compensation principals, can be achieved, and will be successful. This includes the coast care group selected, the site selected for restoration and management, and the total "in-kind" dollar amount to be contributed to the fund, and / or its calculation methodology.

### Conclusion

In conclusion, the Vegetation Assessment and Section 92 Response provides a sound assessment for effects from the Northport development on the Duneland ecosystem and Vegetation, and residential native herpetofauna.

Ecological effects pertaining to the loss of vegetation, native herpetofauna habitat, and injury/mortality to native herpetofauna, can be managed to acceptable (Low and Very Low) levels subject to the successful implementation of the management recommended by the applicant ecologist, as well as the suggested matters for consent condition below.

## TECHNICAL RESPONSE TO MATTERS RAISED IN SUBMISSIONS

Matters on duneland ecosystem and vegetation, and native herpetofauna, as well as proposed management measures, were not raised in any of the submissions. This is likely because the Vegetation Assessment and Section 92 Response were completed in May and July 2023. However, most of the submissions concerned with ecology were completed in late 2022, and as such, the submitters likely did not have the opportunity to review these matters.

## STATUTORY CONSIDERATIONS

### Resource Management Act 1991

Relevant statutory considerations under the RMA include:

- New Zealand Coastal Policy Statement
- Regional Policy Statement for Northland
- Proposed Regional Plan for Northland (Appeals Version)
- Operative Regional Coastal Plan

### Other Statutory Documents

Other relevant statutory considerations include:

- Wildlife Act 1953
- NZCPS

## RECOMMENDATION

### Adequacy of information

The above assessment is based on the information submitted as part of the application. It is considered that the information submitted is sufficient to enable the consideration of the above matters on an informed basis.

### Recommendation

The assessment in this technical memorandum recommends the following:

1. The implementation of management recommendations from the Vegetation Assessment and Section 92 Response to reduce ecological effects to acceptable levels. This includes the following:
    - Management of effects on the Duneland ecosystem and vegetation
        *Option 1: Restoration planting and weed management at the site.*
        *Option 2: Financial contribution to coast care groups active in the Waipu ED to undertake restoration planting and weed management offsite.*
    - Management of effects on native herpetofauna
        *Lizard management plan*
2. The selection of '*Option 2: Financial contribution to coast care groups active in the Waipu ED to undertake restoration planting and weed management offsite'* to manage effects on the duneland ecosystem and vegetation.
3. The provision of the following management plans via consent conditions:
    - Duneland Compensation Plan (based on Option 2)
        *Including details on the coast care group selected for financial funding, the site selected for restoration and management, and the total "in-kind" dollar amount to be contributed to the fund, and / or its calculation methodology.*
    - Lizard Management Plan

*Including details on a comprehensive lizard survey, potential lizard salvage during vegetation clearance, and potential ongoing, programme of mammalian pest control.*

## Recommended Matters for Inclusion as Consent Conditions

Should consents be granted, the following conditions and advice notes are recommended to avoid, mitigate, or remedy environmental effects of the proposal and to implement mitigation proffered by the Applicant.

1. Duneland Compensation Plan
    a. The Plan shall be prepared by a suitably qualified and experienced ecologist.
    b. The Plan should be submitted for certification prior to construction.
    c. The Plan should include but not limited to:
        i. Description and location of compensation site
        ii. Compensation model, calculation and approach used to set financial contribution amount.
        iii. Description of restoration to be undertaken
        iv. The total “in-kind” dollar amount to be contributed to the fund.
2. Lizard Management Plan
    a. The Plan shall be prepared by a suitably qualified and Department of Conservation (DOC) permitted herpetologist.
    b. The Plan should be submitted for certification prior to construction.
    c. The Plan should include but not limited to:
        i. Protocols of a comprehensive lizard survey prior to construction
        ii. Protocols of a lizard salvage and vegetation clearance management during construction,
        iii. Protocols of an ongoing programme of mammalian pest control post-development

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| **Memo prepared by:** | Sandy Huang, Ecologist, Beca |
| **Date:** | 26th July 2023 |

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| **Memo reviewed and approved for release by:** | Blair Masefield, Technical Director, Beca<br><br>On behalf of the Whangārei District Council and Northland Regional Council |
| **Date:** | 2 August 2023 |