

7. ASSESSMENT OF ENVIRONMENTAL EFFECTS

7.1 OVERVIEW

In accordance with Schedule 5 (clause 5 (4), clause 6 and clause 7), Schedule 6 (clause 3 (1)(g)(i)), Schedule 7 (clause 2 (1)(j)) and Schedule 8 (clause 2 (1)(g)) of the Act this section provides an assessment of the actual and potential environmental effects associated with the Project.

WIAL has commissioned independent experts to provide specialist reports on the effects of the Project. Copies of those reports are included in **Part B** of these application documents.

In accordance with the findings of the specialist reports, the relevant actual and potential environmental effects, as summarised in the following sub-sections of this report, are considered to be:

- > Positive effects, primarily in terms of the economic benefits the Project will deliver;
- > General construction-related effects (including erosion and sediment control, dust, contaminated land and other matters);
- > Effects on terrestrial ecology;
- > Effects on kororā / little penguin;
- > Effects on marine ecology;
- > Effects on coastal processes;
- > Effects on surf breaks;
- > Effects on landscape and natural character;
- > Transportation effects;
- > Noise and vibration effects;
- > Lighting effects;
- > Effects on archaeology and historic heritage; and
- > Effects on recreation and access.

In addition, effects on mana whenua values are assessed in Section 4 of this application document.



WIAL proposes implementing the effects management measures referenced in the sub-sections below by way of conditions / terms imposed on the relevant resource consents, wildlife approvals, concessions and archaeological authority, drafts of which are provided in **Part D** of this application. Section 8 of this application document provides further discussion on the approach to conditions, and a summary of the suite of effects management measures proposed by WIAL.

Overall, WIAL has taken a comprehensive approach to the identification and management of effects through its iterative seawall design process, project siting and selection of construction techniques to ensure adverse effects are avoided or minimised in the first instance (discussed in Section 1). With the measures discussed in Sections 7 and 8 implemented, all effects of the Project will be appropriately managed, and of limited scale (especially when compared to the Project's benefits).

7.1.1 The Existing Environment

When considering the effects of the Project, the "existing environment" consists of:

- > The existing environment as described in Section 3 of these application documents, including the associated environmental effects from lawfully established activities;
- > The environment as modified by any resource consents that have been approved, and likely to be implemented; and
- > The environment as likely to be modified by activities permitted by the NRP, PC1 NRP, the 2000 District Plan and the 2024 District Plan.

In the context of this application, the existing environment includes the following:

- > Existing coastal defences and Airport activities, as described in Section 3;
- > The discharge of operational stormwater from the Airport area (110 ha) into the coastal marine area and the public stormwater network;⁹²
- > The ongoing occupation of the coastal marine area with two marine clearways in Evans Bay, Port Nicholas and Lyall Bay;⁹³
- > The ongoing disturbance of contaminated land associated with the operation and maintenance of the Airport;⁹⁴

⁹² Regional Consent WGN230119 (Expires March 2038).

⁹³ Regional Consent WGN230139.

⁹⁴ District Consent SR520690.



- > Development of the Wellington Airport East Side Area (“**ESA**”) for airport purposes;⁹⁵
- > The disturbance and killing of protected birds for the purpose of safe airport operations;⁹⁶ and
- > All of the permitted activities set out in the rules assessment **Part H**. Notably, the ongoing maintenance of the Southern Seawall (and its associated effects) is a permitted activity under the NRP.

All of these activities set out above, and their associated effects, make up the existing environment upon which the assessment of the effects of the Project are assessed against.

7.2 POSITIVE EFFECTS

7.2.1 Economic Benefits of the Project

The economic benefits of the Project, and the Airport more broadly, have been assessed and quantified in the Economic Assessments by BERL (2024 and 2025), copies of which are provided in **Part B** of these application documents.

The Airport significantly contributes to the New Zealand economy, particularly in the Wellington region. In 2024:

- > The Airport generated \$3.9 billion in total expenditure, contributed \$2 billion to regional GDP (4.4% of Wellington's total GDP), and supported 14,503 FTEs (5.1% of the region's total employment);
- > WIAL's operations, including operating and capital expenditure, added \$165 million to GDP and supported 1,104 FTEs; and
- > Over 100 businesses operating on the Airport campus contributed \$534 million to GDP and supported 3,125 FTEs.

Passenger activity was a major driver of economic impact:

- > International visitors contributed \$352 million to GDP and supported 3,109 FTEs;
- > International students added \$173 million to GDP and supported 908 FTEs; and
- > Domestic visitors generated \$780 million in GDP and supported 6,257 FTEs.

⁹⁵ Designation WIAL5.

⁹⁶ Wildlife Act Authority 67919.

As the only international airport in central New Zealand, servicing communities from Marlborough through to Hawke's Bay, the Airport facilitates connectivity, trade, tourism, education, and cultural exchange, driving substantial economic activity in that area (including the Wellington region specifically).

The Project is essential to the future protection of the airport and its operational assets, which are critical to the realisation of these benefits on an ongoing basis (including in the face of threats from sea-level rise and more frequent extreme storm events, discussed below).

As noted in Section 1.3 of this application, the Project will directly employ people and provide significant economic benefits to the region.

Construction of the new seawall is expected to generate employment equivalent to approximately 800 FTE positions over the seven-year construction period. This increase in employment will expand across many sectors including labourers, civil engineers and consultants. Across the most intensive 24-to-30-month construction phase, five percent of the regional heavy and civil engineering construction workforce will be employed to work on the Project.

The Project also provides economic benefits in the form of:

- > Prevented repair costs of the Southern Seawall, Eastern Area, and Council infrastructure;
- > Lower maintenance costs; and
- > Prevented costs from Airport closure.

The total benefits associated with the Project, relative to maintaining the existing seawall, are estimated at \$553.6 million. The economic benefits of the Project are further demonstrated by the Project's estimated BCR of 2.6 with a median net benefit of \$336.9 million NPV over a 50 year timeframe.⁹⁷ In other words, for every dollar spent on the Project, two dollars and sixty cents of benefits are achieved compared to an ongoing maintenance scenario.

7.2.2 The Benefits of Improved Resilience

The Project will increase the resilience of the Airport in extreme storm events and will decrease the likelihood of the Airport needing to close or curtail operations during these

⁹⁷ Net Present Value ("NPV") represents the sums of future money discounted back to reflect its value today.



events. As with many proposals to address natural hazard risks, the key benefit of improved resilience is the avoidance of costs arising from natural hazard events when they occur. In this case, the costs that will be prevented by the Project include disturbances or cessation to Airport operations and costs associated with repairs to the seawall and repairs to the infrastructure that is protected by the seawall.

As noted above, the Airport is a vital economic hub, providing regional, national and international connectivity, and contributing significantly to the Wellington regional economy.

In an extreme storm event that results in failure of the existing seawall followed by a sustained sea state that prevents immediate repair of the storm damage, the Airport could need to close for between ten to 15 days. The economic cost of such an event is significant to the Wellington economy, estimated at \$16.4 million (NPV) over the 50-year timeframe. Other benefits of the proposal which have not been quantified in the cost benefit analysis (“CBA”) include the avoidance of temporary disruptions to Airport operations due to storm debris deposited on the end of the runway. The Project would prevent these disruptions and the associated economic costs.

In addition to the economic cost, disruption to Airport operations results in significant cost to social wellbeing, with cancelled and delayed flights significantly impacting on the lives of individuals and communities. As above, these costs are substantially reduced by enhancing the resilience of the Airport.

7.2.3 Ecological and Amenity Improvements

As will be discussed further under Sections 7.4, 7.5, 7.8 and 7.9, the Project will result in the creation of new and enhanced lizard and kororā habitat, remediation of public reserve land, and there is potential for the Southern Seawall to result in improved surf quality.

The Project area currently provides habitat for a range of indigenous species across both terrestrial and coastal habitats, which are described more fully in Section 3. The coastal habitats are located within a high energy environment, with strong winds and waves common. Terrestrial habitats within the Project area are generally highly modified with human infrastructure road, pipes, and Airport activities located adjacent to terrestrial habitats.

The Stage 1 Kororā Colony will be established ahead of construction works commencing, and will include the placement of nestboxes, branches/driftwood and rocks, planting of native vegetation, fencing the area, and installation of a dedicated penguin access to the colony site. Upon completion the Project, land behind the Eastern Bank Remediation Area will be established as the Stage 2 Kororā Colony. The Stage 2 Kororā Colony will also involve the placement of nestboxes, branches/driftwood and rocks, planting of natives and fencing



of the area to protect kororā from dogs. Together the creation and enhancement of these colonies will provide 2090m² of additional of kororā habitat that is safer and more suitable than the existing kororā habitat in the seawalls and adjacent areas of undulating terrain and informal rock rubble. This additional habitat is expected to result in an ecological net gain for kororā habitat, and from a landscape perspective will introduce site-specific positive landscape and natural character effects.

Upon completion of the construction of the Project, the remainder of the Moa Point Yard will be rehabilitated to create an open yard area suitable for banded dotterel habitat and the local purpose (esplanade) reserve land will be restored to an enhanced state when compared to the current condition of this area. The reserve land enhancement will provide visual connectivity to the coastal environment and include native plantings, a loop track, seating, and information and cultural signage.

The surf quality at the Airport Rights surf break could also be increased as a result of the Project as it could allow for an earlier take off and may prevent a wave from closing out in some surfing conditions.

7.3 GENERAL CONSTRUCTION EFFECTS

The overall construction programme will take approximately six to eight years to complete. The construction will occur in stages with different parts of the Project being constructed, used and remediated at different points in the six to eight year timeframe. In particular, works at the MGC Yard will occur early in the project timeline to enable stockpiling of materials to commence, and the Stage 1 Kororā Colony will be constructed before works on Moa Point Yard and the Southern Seawall commence. Timing of construction activities are set out in Section 2.2.1 of this Report.

The actual and potential general construction effects associated with the renewal of the Southern Seawall include:

- > Geotechnical matters;
- > Discharge of sediment / stormwater;
- > Discharge of dust during construction works; and
- > Disturbance of contaminated soil.

These are discussed further below.

Specific effects associated with construction traffic, construction related noise and vibration, and lighting are addressed separately in Sections 7.10, 7.11 and 7.12, below.



7.3.1 Engineering and Geotechnical Matters

Beca (2025a) have summarised the assessment of options and design process informing the Project. The WIAL Southern Seawall Renewal Option Assessment & Design Summary Report (“the Design Summary Report”) is attached in full in **Part B** of the application documents.

7.3.1.1 Southern Seawall Renewal Design and Performance Considerations

As summarised in Section 1, WIAL engaged a multi-disciplinary team to consider various options for sea defences at the southern end of the Airport. Through a process of option identification, shortlisting and concept development, the proposed option of overlaying the existing seawall using a two-layer Cubipod armour and rock underlayer to re-profile the existing seawall was selected.

Beca undertook investigations between 2023 and 2025, including ground investigation and geotechnical analysis, marine field investigations, and numerical wave modelling to inform the design of the renewed Southern Seawall. These investigations and existing geological maps indicate the site is underlain by reclamation fill (placed variously during the 1950s and 1970s) and Holocene marine deposits, with underlying greywacke.

Based on Beca’s analysis, there is potential for the Southern Seawall to experience seismic slope displacement during large future earthquakes. While seismicity has been taken into consideration during the engineering design of the crest wall for the Southern Seawall, WIAL anticipates that some seismic displacement of the seawall itself may occur during a large earthquake and has contingency planning in place for such a scenario. Taking into consideration the behaviour of the existing airport fill and existing seawall during large earthquakes over the past fifty years, the wider effects of a large earthquake on the Airport and city infrastructure, and the practicality and cost of engineering a seawall to withstand liquefaction of the historic fill landward of it, it was the conclusion of the various technical experts, and WIAL, that the Southern Seawall would not be required to resist seismic loads and retain the hinterland reclamation.

Numerical and physical wave modelling was also undertaken to inform the design of the Southern Seawall. Marine field investigations in the form of remote field cameras and wave measurement devices were used to calibrate these models. The model outputs were then used to inform seawall design, including modelled water levels and offshore wave heights, periods and directions for 0.1% AEP to 63% AEP extreme events.

Detailed design reports, drawings and specifications were issued to Tonkin & Taylor for coastal engineering and geotechnical peer review, and to McConnell Dowell for constructability feedback, in the first half of 2025. McConnell Dowell had no specific



feedback on the detailed design documents and peer review comments received from Tonkin & Taylor have been addressed.

To ensure the continued performance of the sea defences in accordance with design specification, Beca has recommended post-construction monitoring and maintenance as follows:

- > Visual inspections to assess the condition of sea defences and whether any maintenance is required:
 - > Annually for the first 2 years;
 - > Five-yearly thereafter; and
 - > After a significant storm event (being a 10% AEP or greater event) or an earthquake.
- > Monitoring of actual climate change against the projections used in the design on a 10-yearly basis; and
- > Maintenance as required to address matters identified through the monitoring regime proposed above.

These recommendations have been integrated into the conditions attached as **Part D** to the application documents and will ensure that the Southern Seawall operates as the design originally intended. The ten yearly reviews of actual versus projected climate change scenarios will also ensure that WIAL actively manages future maintenance and upgrade of the seawall in response to changing sea level rise and storm frequency and intensity.

7.3.1.2 MGC Yard Geotechnical Matters

Beca prepared a Geotechnical Inspection Report to inform the design of the proposed rock cutting on the southwestern and southeastern slopes within the MGC Yard, as shown in Figure 7.1. These rock cuttings are required as part of the establishment of the MGC Yard.



Figure 7.2: MGC Yard with outline of main cut area (Beca, 2025a).

Based on historical investigations, photographs, site observations, and the anticipated ground profiles, Beca (2025a) concluded that:

- > The proposed southwestern cutting, near the road intersection, is entirely on greywacke with up to 1.7m of fill on top. The thickness of fill around the proposed southwestern cutting increases toward the east. The greywacke on this cut slope is likely to be moderately strong, moderately to highly weathered, with closely to very closely spaced defects (20-200mm);
- > At the flat area between the proposed southwestern and southeastern cutting, the thickness of the fill generally increases to the south, with a maximum thickness potentially up to 10m; and
- > Due to the lack of investigation at the southeastern slopes, the exact thickness of the fill could not be determined. The fill ramps at the toe of the slopes may consist of sand overlying colluvium. The rock underlying the fill is likely to consist of weak to very weak, completely to highly weathered greywacke with extremely to very closely spaced defects in the upper metres, while moderately strong to strong, moderately weathered greywacke present at greater depths.

- > A number of design recommendations were made by Beca in response to the above findings. These recommendations, which address matters such as cut heights and depths, batter slope angles, slope stabilisation, stormwater management and routine inspections have been integrated into the design of the MGC Yard (as shown in **Part C** of these application documents) and, where appropriate, included as resource consent conditions (attached as **Part D** to these documents).

With these recommendations in place, Beca considers the residual geotechnical risks at the MGC Yard are likely to be very low.

During construction of the MGC Yard, Beca has recognised that there is a risk that the rock found on site could be locally less competent than expected. In such circumstances, additional support measures or an amended slope design may be required. To address this risk, an Engineering Geologist or Geotechnical Engineer will be on-site full-time during the excavations in order to pause the works to reassess slope angles and benching if actual conditions encountered differ from assumptions.

7.3.2 Erosion and Sediment, Dust and Stormwater Management

7.3.2.1 Erosion and sediment, dust and stormwater management during construction

The Project necessitates large scale earthworks across various sites, including the MGC Yard, the Moa Point Yard and the Southern Seawall. Earthworks are also required in association with the rehabilitation of the Moa Point Yard and the establishment of the Stage 1 and 2 Kororā Colonies. Without appropriate management, earthworks can result in dust and sediment runoff until the sites are stabilised.

An Erosion and Sediment Control Assessment Report (“**ESCAR**”) has been prepared by SouthernSkies Environmental Ltd (“**SouthernSkies**”) to identify and assess the erosion and sediment control principles and procedures for all earthwork activities across the Project. The ESCAR is included in **Part B** and is summarised below. Draft SSESCPs are provided in **Part G** to these application documents, which provide measures specific to the Moa Point Yard and the MGC Yard.

Where practicable, the erosion and sediment control measures adopted on site will employ the principles from the GWRC *Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Wellington Region* (February 2021) (the “**ESC Guidelines**”). As an alternative approach however, measures from the NZTA *Erosion and sediment control guidelines for state highway infrastructure* (September 2014) will also be adopted. The rationale for this dual approach is detailed in full in the ESCAR, however of note, specific characteristics of the MGC Yard (being the sandy soils) and the Moa Point Yard (being its unique wind and



wave environment at the end of an operational runway) both warrant deviation from measures set out in the ESC Guidelines.

SSESCPs are the main management technique that will be used to ensure the potential effects of dust and sediment runoff are appropriately minimised. While draft SSESCPs have been prepared for the Moa Point and MGC Yards, final plans will be provided to GWRC and WCC for certification prior to earthworks commencing in a given works area. Flexibility in the approach, through a later certification process, is necessary to ensure that the construction team can have ongoing input into the erosion and sediment control design prior to, and during, construction.

An erosion and sediment monitoring plan is also proposed to be implemented to ensure that the erosion and sediment control measures are designed, constructed, maintained, and decommissioned in accordance with best practice, and as anticipated by this ESCAR.

Overall, Southern Skies consider that the proposed erosion and sediment management approach will ensure that the sediment yield from the works will be minimised to an acceptable level, and that any adverse sediment-related effects will be temporary and minor.

It is important to note that CAA and Airways have additional controls that will also apply to the construction works due to the need to maintain operations at Wellington Airport. These controls may necessitate additional measures being applied to avoid dust and manage the potential for erosion.

7.3.2.2 Erosion and sediment, dust and stormwater management during operation of the yards

Erosion and sediment control measures are most typically used during the construction phase of a project, until a site is established. Due to the progressive development of the MGC and Moa Point Yards however, the erosion and sediment control measures described in the ESCAR will remain in place for much of the duration of the Project. Once the sites are established, aspects of the erosion and sediment control measures will be retained for ongoing stormwater management during operation of the yards, as described by Beca (2025a) and summarised in Section 2.4.2.

A permanent and long term stormwater management solution is not proposed as part of the development and use of the MGC Yard. Such long term solutions will be developed in accordance with future land use development plans for the site, which are beyond the scope of this Project. Following stabilisation of the MGC Yard, it is proposed that the following erosion and sediment control devices are repurposed for temporary operational stormwater management purposes:



- > The clean water diversions (cut-off drains) around the southern border of the site. These drains will continue to capture and discharge clean stormwater into the sediment retention pond or decanting earth bund, which will attenuate peak flows and regulate out flows to soakage via the sandy soils; and
- > The clean water diversions (cut-off drains) around the eastern and northeastern side of the MGC Yard. These drains will continue to be conveyed to the existing pond, which is connected to the downstream piped stormwater network.

While temporary ponding may occur within the MGC Yard during the operational phase, the risk of stormwater overflowing to adjacent (WIAL owned) land is low given the finished ground level of the MGC Yard will be lower than surrounding sites, including Stewart Duff Drive.

With regard to potential contaminants within the stormwater, Beca (2025a) note that, while the chemistry of the rocks proposed to be stored within the MGC Yard may contain contaminants such as copper and zinc, these are bound into the rock and are not readily available for release into the environment. In this regard, Beca confirm that no additional treatment or monitoring is required.

In addition, WIAL propose to amend the site-wide WIAL Stormwater Management Plan (authorised under WGN230119) within 3 months (60 working days) of the MGC Yard being fully stabilised. This will ensure the MGC Yard is managed in accordance with the management principles applying to the broader Airport site, and enable a more holistic, catchment-wide approach to managing stormwater quantity and quality.

With regard to the Moa Point Yard, erosion and sediment controls as managed by the SSECP will be maintained for the duration of the operation of the yard. Beca confirm that these measures will appropriately manage stormwater quality and quantity within this yard.

At the George Bolt Yard, the area currently drains to the local piped network and is managed in accordance with the WIAL Stormwater Management Plan 2024. Given there is no change to impervious area proposed at the George Bolt Yard, no change to stormwater quantity is anticipated to arise as a result of the Project. Beca consider the existing stormwater management and application of the WIAL Stormwater Management Plan 2024 remains appropriate to manage stormwater at the George Bolt Yard

7.3.3 Contaminated Soils Management

In November 2024, Beca (2025a) prepared a PSI for the Project Area and its immediate surrounds. The PSI noted that a range of activities identified as HAIL activities have, or are more likely than not to have, occurred within the Project Area. As a result, Beca prepared

three further DSIs – one for the MGC Yard, one of the Southern Seawall and Moa Point Yard, and one for the area of land immediately southeast of the Eastern Bank Remediation and Moa Point Yard.

The only DSI of relevance to this application relates to the Southern Seawall and Moa Point Yard area. A copy of this report is included in **Part B** of the application documents. The remaining two DSIs either relate to land located outside of the Project Area, or land for which no further resource consents are required under the NRP or NES Soil to enable the “disturbance of soil” associated with the Project. The following assessment therefore relates to the management of contaminated land within the Southern Seawall and Moa Point Yard only.

Section 3.15.2 describes the historical land use activities that have been undertaken within the Southern Seawall, Moa Point Yard and the immediate surrounds. Of note, these include land reclamation activities, the stockpiling of asphalt and the potential use of the adjacent land as a fire training ground.

Based on historic land use activities, five potential contaminants of concern were identified and further investigated by Beca. This included sampling and testing for heavy metals, PAH, TPH, PFAS and asbestos. In summary:

- > Asbestos was not detected in soil within the site.
- > Heavy metals and PAHs were not detected at concentrations that exceed human health or environmental assessment criteria.
- > PFAS, specifically PFOS, was detected a concentration that exceeded the indirect terrestrial ecological criteria in samples from two test pits. The PFAS concentrations complied with human health and direct terrestrial ecological criteria.
- > Asphalt fragments are present throughout the fill at the site, however results indicate that the asphalt samples collected did not contain coal tar.
- > Concentrations of PFOS in leachate were below the Australian and New Zealand Guidelines value for marine water quality (95% species protection level) with a dilution attenuation factor of 100 applied.
- > Concentrations of PFAS in leachate exceeded interim waste acceptance criteria for an unlined landfill scenario but complied with waste acceptance criteria for a double composite lined landfill.



At the concentrations encountered, Beca considers the exposure pathways for human and terrestrial fauna receptors to be incomplete, meaning that a potential route by which a person can come into contact with a contaminant is not fully established.

Beca also considers that indirect ecological exposure is likely incomplete while PFAS-impacted soil is left undisturbed and buried.

Notwithstanding these results, Beca consider it is generally best practice to manage the potential disturbance of contaminated soil in accordance with a CLMP. As such, a CLMP has been prepared for the works and is included in **Part G** of these application documents. The CLMP sets out a suite of measures to manage the disturbance of contaminated land throughout the duration of works.

In addition to the above, it is noted that avifauna and lizards will generally be removed from the Southern Seawall and Moa Point Yard areas prior to works (i.e. soil disturbance) commencing. Such measures will therefore avoid any direct exposure of avifauna and lizards to potentially contaminated soil. On the completion of the works, the site will be rehabilitated, with at least 30cm of topsoil introduced across the site, ensuring that the indirect ecological exposure pathway continues to be appropriately managed following the completion of the works.

For completeness, it is noted that WIAL's contractor is investigating opportunities for on-site management, treatment or off-site disposal at a suitably licensed facility of contaminated material from the MGC Yard in accordance with WIAL's existing NES Soil consent. In addition to the NES Soil consent, WIAL is seeking consent from GWRC (reference WGN260247) through a separate resource consent process for the site-wide disposal of contaminated soil.

7.3.4 Summary

As set in the previous sub-sections, a number of measures are proposed to reduce general construction effects during the Project. These measures include the implementation of an ESCP, SSESCPs and CLMP, and the requirement to have an Engineering Geologist be on-site at the MGC Yard during the excavations. With the implementation of these measures the effects from general construction activities are expected to be minor, manageable and temporary.

7.4 EFFECTS ON TERRESTRIAL ECOLOGY

The Terrestrial Ecology Assessment (Biosearches (2025a)) addresses the actual and potential effects of the Project on the terrestrial ecological values within the Project Area. The Terrestrial Ecology Assessment is included in **Part B** of this application. In addition to



the Terrestrial Ecology Assessment, Bioresarches has prepared an AMP and LMP (**Part G**) to direct the management of effects on terrestrial ecology.

The sections below provide an overview of the effects of the Project on terrestrial ecology. It follows the approach taken in the Terrestrial Ecology Assessment of assessing effects at the 'southern' part of the Project Area, then assessing effects at the MGC Yard, and then considering potential indirect effects.

The summary below focusses on effects on vegetation / habitats, avifauna and lizards. The Terrestrial Ecology Assessment also addresses bats and invertebrates, but concludes that no meaningful effects will arise and no effects management is required. Effects on kororā, which are not covered by the Terrestrial Ecology Assessment, have been addressed separately in Section 7.6.

7.4.1 Southern Seawall, Moa Point Yard and Stage 1 Korora Colony

7.4.1.1 Vegetation

The Project will result in the temporary removal of some 0.5 ha of low value coastal vegetation at the Moa Point Yard.

To address this loss, WIAL will undertake remediation works once the construction yard works are complete. These remediation works will include indigenous replanting and the establishment of a rock revetment to stabilise the Eastern Area and reduce the effects of coastal erosion which is occurring rapidly at this location (as described in Section 3). The proposed conditions (**Part D**) include requirements to prepare and comply with a Moa Point Remediation Area Landscape Concept Plan for the post-construction remediation works. The implementation of the Moa Point Remediation Area Landscape Concept Plan will ensure the overall level of effect on terrestrial ecological values will be very low, with potential for positive effects through increasing the indigenous biodiversity cover in the environment.

At the Stage 1 Kororā Colony, a small amount of vegetation clearance will be required to facilitate construction of the perimeter fences and penguin access culvert, the placement of nest boxes, and creation of gravel paths. Areas of existing native plantings will be avoided where possible such that the large majority of vegetation removal will consist of exotic vegetation.

The establishment of the Stage 1 Kororā Colony will also involve the planting of native coastal plant species throughout the site to increase the proportion of native vegetation on site and provide additional fauna habitat. These works are anticipated to occur early in the Project, before works commence at the Southern Seawall. The site is to be established in



accordance with the recommendations of the Project Kororā Biologist (refer to Section 7.5 below for further details), and the Stage 1 Kororā Colony Landscape Concept Plan.

Overall, with the implementation of remediation planting (in accordance with the Moa Point Yard Remediation Landscape Concept Plan and Stage 1 Kororā Colony Landscape Concept Plan (**Part B**)), Biosearches has assessed that the effect of the vegetation removal on terrestrial vegetation will be low. Once the remediation planting has been undertaken the effect will increase from low to positive.

7.4.1.2 Avifauna

The construction and operation of the Moa Point Yard is anticipated to result in the loss of roosting, foraging and breeding habitat for up to three pairs of banded dotterels for up to 7 breeding seasons, if the pairs cannot establish a breeding territory elsewhere.

Biosearches has identified the grassland adjacent to the Wellington Airport runway as being an area that can be utilised by displaced banded dotterels and of a size that could accommodate additional breeding pairs. The area adjacent to the Airport runway and the Moa Point Yard are both suboptimal areas for banded dotterel to nest due to the high levels of anthropogenic disturbance. The historic use of these areas by banded dotterels indicates the resilience and adaptability of the species, and as such, Biosearches consider that any displaced banded dotterel pairs would be able to re-establish within the grassland area. To mitigate the risk of unsuccessful breeding of potentially displaced banded dotterels, nest cages and refuge huts will be provided within the grassland area.

As set out in Section 3, a number of other avifauna species were identified as being impacted by potential works at Moa Point Yard. Biosearches consider that the vegetation within the MGC Yard supports nesting opportunities and that there is the potential for injury or mortality to native birds, eggs and chicks during tree removal. To mitigate this risk, it is proposed to undertake pre-work surveys to identify any nesting native birds and if native birds are identified, buffer zones will be established to ensure nesting native birds can complete breeding prior to vegetation removal. In addition to this, the AMP outlines further methods for avifauna management as discussed below.

An AMP (included in **Part G**) has been prepared, which sets out how potential effects on avifauna (excluding kororā) are to be avoided. These measures include:

- > Timing the establishment of the construction yard to avoid the breeding seasons;
- > Methods to minimise disturbance for potentially breeding birds in the construction yards;
- > Nest checks during the breeding season;



- > Nest exclusion zones within works areas;
- > Implementing sensitive lighting designs; and
- > The provision of refuge huts and nest cages for banded dotterel.

Further to the above assessment on banded dotterels and other avifauna, Biosearches has determined the effect of the vegetation removal on highly mobile species that are not breeding on site but instead may be utilising Project areas for foraging, is low as the wider Wellington Coastline provides higher value habitat for foraging activities.

With the implementation of the AMP, Biosearches considers that the effect of the Project on the displacement on banded dotterels will be no more than low and the effect on other avifauna will be negligible, corresponding to a very low level of overall effect on avifauna.

7.4.1.3 Herpetofauna

As assessed by Biosearches (2025a), the works within and adjacent to the Moa Point Yard area will result in the temporary loss of approximately 1,890 m² of herpetofauna habitat. Biosearches have identified the herpetofauna as consisting of the Northern grass skink and Raukawa gecko with potential for other species such as the brown skink, copper skink, ornate skink, northern spotted skink, and minimac geckos to be present.

To manage the impact on herpetofauna, it is proposed to undertake lizard searches, trapping and salvage prior to vegetation clearance being undertaken during lizard salvage season (October to April, inclusive). [REDACTED]

[REDACTED] The pest control will be undertaken for a period of five years following the completion of the works and restoration works and will include success monitoring where greater than 20 lizards have been released.

In addition to the above, all works will be undertaken in accordance with the LMP (**Part G**) which seeks to minimise adverse construction effects on native lizards, and to maintain or enhance the populations of each species of native lizard present on the site at which vegetation clearance is to occur. The LMP will also ensure that the receiving habitat(s) will support viable native lizard populations for all species present pre-development.

With consideration of the above, Biosearches consider the magnitude of effects on lizard habitat within Moa Point Yard and adjacent areas to be low to negligible.

Further to the above, it is noted that within the Stage 1 and 2 Kororā Colonies, the placement of nestboxes and planting of indigenous species will also provide refugia for lizards.



Although the Stage 1 and 2 Kororā Colonies will contain gravel paths created for kororā, these are not expected to fragment lizards and may provide vegetation edges that skinks will use for basking cryptically under cover. As such, Bioresarches has assessed the effect on herpetofauna within the Stage 1 and 2 Kororā Colonies to be low to negligible.

7.4.2 MGC Yard

7.4.2.1 Vegetation

The works within the MGC Yard will result in the removal of the following vegetation types:

- > Exotic mown grassland - 3.7 ha (as well as a number of mature exotic and native tree species, i.e., pōhutukawa and pine trees);
- > Exotic grassland habitat - 0.57 ha and;
- > Karo treeland and scrub - 0.014 ha.

The extent of native vegetation removal is less than 1 ha. Bioresarches have identified this as a very low proportion of vegetation relative to the surrounding environment, and that the overall vegetation removal within the MGC Yard predominantly comprises species that are not native to the Wellington region (such as pōhutukawa and karo). However, to mitigate the loss, the southern perimeter of the MGC Yard will be planted with native shrubs, grasses and small trees, providing additional vegetation buffering to the adjacent Tukanāe Reserve. With the implementation of this planting, Bioresarches consider the vegetation effects at the MGC Yard will be very low to positive.

7.4.2.2 Avifauna

As set out in Bioresarches (2025a) the habitats for avifauna at the MGC Yard are low value and used predominantly by common native and exotic species on an intermittent basis for foraging and roosting. Some native bird species (e.g. piwakawaka, and riroriro/grey warblers) have relatively small territories, and therefore it is possible that some of the observed birds are resident, particularly at the rough grass edges of the maintained lawns. Other native species such as tūi and kererū are more mobile and may utilise several forest fragments in the surrounding area. However, Bioresarches considers these species to be strongly associated with coastal habitats for which the MGC Yard provides negligible to low habitat value.

Direct effects on native birds may arise from the removal of large trees from the site, with tree felling having the potential to cause mortality or injury if nesting is occurring. The AMP sets out methods to manage such risks. These measures include pre-works surveys, nest checks and provision for a buffer zone around the nests of identified native birds. In



addition, Biosearches considers that the planting of native trees and shrubs at the Tukanae Reserve (adjacent to the MGC Yard) will provide additional habitat and resource for avifauna which will provide a positive impact over time.

With the measures identified above in place, Biosearches consider the level of effect for avifauna at the MGC Yard to be very low.

7.4.2.3 Herpetofauna

Biosearches identified Northern grass skink and the Raukawa gecko as potentially being present with the MGC Yard but noted that the prominence of grassland at the site provides very little habitat complexity or resource for these species. As such, the value of the habitats is considered low. Overall, Biosearches has identified approximately 0.16 ha of potential herpetofauna habitat will be lost along the margins of the MGC Yard, [REDACTED]

In addition to the above, to minimise the effects on the Northern grass skink, Raukawa gecko and any other high value lizard species present at less than detectable levels, a LMP will be implemented for the duration of the vegetation clearance activities. The LMP includes requirements such as lizard searches, trapping and salvage (during lizard salvage season) prior to vegetation clearance being undertaken. [REDACTED]

[REDACTED]. The pest control will be undertaken for five years following the completion of the works and will include success monitoring where great than 20 lizards have been released.

Overall, the potential for mortality and injury to high value herpetofauna during vegetation clearance can be managed via the methods contained in the LMP (**Part G**). Biosearches therefore considers the effects on herpetofauna from the vegetation clearance to be very low.

7.4.2.4 Natural Inland Wetland

As has been previously described in Section 3, an area that meets the definition of ‘natural inland wetland’ under the NPSFM is located adjacent to the MGC Yard⁹⁸. Biosearches has assessed the representativeness, rarity and distinctiveness, and the diversity and pattern of the natural inland wetland and consider the wetland to be of low value.

⁹⁸ It is noted here that the irrigation pond located within the MGC Yard has been assessed by Biosearches as not meeting the definition of a natural inland wetland under the NPSFM.



Bioresearches have determined that there is no hydrological connection between the MGC Yard and the natural inland wetland. The natural inland wetland is also located approximately 45m from the MGC Yard. In the absence of any hydrological connection or works directly in or adjacent to the natural inland wetland, any potential effects on this wetland feature are avoided.

7.4.3 Project Wide Indirect Ecological Effects

7.4.3.1 Edge Effects

Edge effects describe changes to a habitat or ecosystem due to its occurrence at or near the edge or boundary of that environment. The potential and known habitats at the MGC Yard, Moa Point Yard, and the Southern Seawall area are all edge environments and are not considered likely to be degraded by new edge creation. Potential edge effects on flora and fauna are therefore considered to be negligible.

7.4.3.2 Noise and Vibration Effects on Biodiversity

As described below, in Section 7.11, Bioresearches have assessed the effects of construction noise and vibration on terrestrial fauna. Elevated noise levels can impede communication, decrease reproductive success, change foraging behaviours, decrease the ability to detect predators, initiate flushing responses and increase avoidance behaviours in fauna. The effects of vibration have been shown to disrupt animal behaviours, communication and physiology, especially in species that rely on acoustic or auditory signals.

Avifauna surrounding the Airport are currently subjected to existing Airport noise and vibrations, and appear to have adapted to this environment. The AMP includes methods to deter coastal avifauna, particularly banded dotterel and oystercatchers, from nesting within the works area, and where deterrence fails exclusion zones are proposed.

With the mitigation measures described in the AMP and those set out in Section 8 of this application being implemented, Bioresearches has assessed the noise and vibration effects on terrestrial fauna as low.

7.4.3.3 Lighting

As set out in Section 6.12 of this application, lighting is required in the Moa Point and MGC Yards and adjacent to the Southern Seawall to enable construction works. The lighting will include mobile construction lighting, mobile light towers, vehicles headlights, security lighting fixed to buildings, and machinery lighting, the lighting is only required during construction and will be disestablished once no longer required.



Artificial light at night (“**ALAN**”) is shown to have a significant negative effect on migratory seabirds in New Zealand. More specifically, lighting can cause seabirds to become disorientated, resulting in a potential increase in the risk of collision and thus, potential for injury or mortality. WIAL has therefore sought advice from lighting experts LDP, along with input from Bioresarches, to ensure the effects of lighting on seabirds is appropriately managed.

The MGC Yard will primarily be operational during the day, with restrictions placed on its use in the early hours of the morning and during the evening. When this is coupled with the existing level of lighting experienced in and around the MGC Yard, the proposed lighting associated with the Project is not anticipated to increase the baseline lighting currently experienced in this area.

With respect to the Moa Point Yard and adjacent seawall areas, the Project will introduce additional lighting to facilitate works in this area. Poorly managed ALAN has the potential to affect fauna onsite and within distant ecosystems; disrupting behaviours, interactions between individuals and altering community assemblages. LDP have therefore sought to design lighting controls that ensure ALAN is reduced to the extent practicable, while also maintaining the health and safety of an active work site. The recommendations include lighting controls such as:

- > The use of white LED bulbs with a colour temperature of 3000k for lighting used on mounted buildings columns and luminaries being;
- > The intensity of each luminaire being the practical minimum required to ensure safe conditions;
- > Adaptive controls on lighting, including motion sensor controls and timing controls;
- > Mobile plant and vehicle lights being tilted up to no greater than 45 degrees if up to 3 m above ground or 30 degrees if higher; and
- > The use of headlight sweep.

The Project will also utilise non-reflective dark coloured surfaces for buildings to minimise the reflectivity and skyglow from ALAN, which has the potential to affect sensitive fauna within the surrounding environment.

With the implementation of the lighting mitigation, as set out above, Bioresarches consider the effects of lighting on seabirds to be low.



7.4.3.4 Dust

Bioresearches (2025a) have identified that dust generated by the Project has the potential to smother fauna habitats (including foraging areas and retreat sites), small seedlings, ferns and epiphytes, impeding their growth and increasing mortality. To manage dust, Bioresearches suggest the mitigations set out in The Ministry for the Environment's *'Good Practice Guide for Assessing and Managing Dust'* (Ministry for the Environment, 2016) are applied. These methods include:

- > Staging of earthworks activities as much as possible and progressive stabilisation of completed surfaces to ensure that exposed areas at any one time are minimised;
- > Managing the route and speed of vehicles traversing the site taking into account potential dust mobilisation and effects;
- > Monitoring and maintenance of potential nuisance dust effects; and
- > Implementation of appropriate control measures to suppress dust generation effects, such as water carts.

With the implementation of methods set out in the Ministry for the Environment's *'Good Practice Guide for Assessing and Managing Dust'* (Ministry for the Environment, 2016), Bioresearches consider the potential effects of dust on fauna habitats to be low.

7.4.4 Summary of Terrestrial Ecological Effects

With the implementation of the mitigation measures that are discussed in the above sections and further in Section 8 of this application, the level of effects to terrestrial habitats and species across the Project Area will be negligible to low, as summarised in Table 7.1.



Table 7.1: Summary of Terrestrial Ecology Effects

	Habitat or species	Ecological value	Magnitude of effect with mitigation	Level of effect	Management Recommendation
Moa Point	Vegetation	Low	Low	Very Low (potentially positive)	Restoration of the Eastern Bank Remediation site and Reserve Restoration area
	Avifauna	High (banded dotterel) Low (other avifauna)	Low	Low	Precautions re nesting (detail to be set out in AMP)
	Marine Avifauna	High	Low	Low	Implementation of recommended lighting controls
	Lizards	Moderate	Low	Very low	Salvage and relocation (details set out in LMP)
	Bats	Nil	Nil	Nil	Not present
	Invertebrates	Low	-	-	-
Miramar Golf Course	Vegetation	Negligible	Negligible	Very Low (potentially positive)	
	Avifauna	Low	Negligible	Very low	Precautions re nesting (detail to be set out in AMP)
	Lizards	Low	Low	Very low	Salvage and relocation (details set out in LMP)
	Bats	Nil	Nil	Nil	Not present
	Invertebrates	Low	-	-	-
	Pond	Nil	Nil	Nil	-
	Inland Wetland	Low**	Low	Very Low	



7.5 EFFECTS ON KORORĀ / LITTLE PENGUINS

The Kororā Assessment was prepared by Dr Cockrem of Kororā Ornithology Ltd (2025) (**Part B**) and provided an assessment of the actual and potential effects of the Project on kororā within the Project Area. Kororā Ornithology has also prepared the KPMP (**Part G**).

The following potential effects of Project on kororā, as identified in the Korara Assessment, are summarised and discussed in the section below:

- > Potential loss of habitat;
- > Disturbance effects associated with construction activities;
- > Injury or mortality;
- > Effects on foraging; and
- > Effects arising from ongoing maintenance and repair of the Southern Seawall.

It is also noted that to address habitat loss effects, Dr Cockrem recommends the creation of two new Korora Colonies, which will provide high-quality habitat for korora. Bioresarches has categorised that effects management measure as biodiversity compensation. They have undertaken an assessment of the residual (habitat loss) effects of the Project on kororā and have applied a Biodiversity Compensation Model (“**BCM**”) to the loss of habitat at the Southern Seawall, and the creation of new habitat at the colonies (**Part B**).

7.5.1 Loss of Habitat

The Project will result in the loss of up to 1,805 m² of kororā habitat. The following locations are to be impacted and are shown in Figure 3-42:

- > Area A: Southern Seawall beside breakwater, with the kororā habitat consisting of rocks of varying sizes, blocks of concrete and an earth bank;
- > Area B: Southern Seawall rear slope rock bank beside Moa Point Road, with the kororā habitat consisting of rocks;
- > Area C: The Southern Seawall itself, with the kororā habitat consisting of rocks;
- > Area D: Informal Eastern Area rubble seawall, with the kororā habitat consisting of concrete and rocks; and
- > Area E: Moa Point Yard, with the kororā habitat consisting of vegetation and vegetated earth mounds.



Multiple surveys been carried out at these identified kororā habitat. Based on the findings of those surveys, Kororā Ornithology Ltd (2025) estimates that in total there are currently up to 50 pairs of kororā that occupy sites at these areas. While kororā utilise that habitat, it is of low quality, including because it is exposed to significant wave / storm action.

To address the potential loss of habitat and disturbance of penguins during construction, WIAL is proposing to establish the Stage 1 Kororā Colony on land owned by WIAL at Moa Point, totalling 2,060 m², prior to any works commencing within the Moa Point Yard or Southern Seawall.

Upon the completion of works, the establishment of a new revetment rock wall along the shoreline to the east of the renewed Southern Seawall (the Eastern Bank Remediation Area), will provide 610 m² of new habitat for kororā, and the establishment of the Stage 2 Kororā Colony will provide 860 m² of new kororā habitat.

The Stage 1 and Stage 2 Kororā Colonies (Figure 2.9) will include kororā nest boxes,⁹⁹ rock mounds to provide shelter from wind and new native shrub vegetation. These colonies will also include pest control activities and will be fenced to exclude people and dogs. An underpass designed by Dr Cockrem to attract kororā will provide access from the shoreline, under Moa Point Road to the Stage 1 Kororā Colony.

Overall, the Stage 1 and 2 Kororā Colonies will result in a net increase of 1,115 m² in kororā habitat, with a significant number of carefully placed nestboxes available to kororā.

Dr Cockrem's expert opinion is that the Stage 1 and 2 Kororā Colonies will appropriately address the habitat loss effects, and that the end outcome will be better for kororā than the current situation. The BCM that has been applied by Biosearches (2025c), which considers multiple factors including habitat quality, and number of nest sites / boxes (while accounting for 'lag' time in terms of the takeup of nest boxes), indicates that the Project will result in an overall net gain for kororā.

7.5.2 Disturbance Associated with Construction Activities

Dr Cockrem has recommended a number of a number of management measures to be implemented during construction to ensure that any potential disturbance effects associated with construction Project are avoided or minimised in the first instance. Detailed

⁹⁹ There is provision for up to 270 nest boxes to be placed at the two colonies (100 on establishment of the Stage One colony; 70 on establishment of the Stage Two colony; and provision for up to an additional 100 once there is good uptake of nest boxes at the Stage One colony).



in the KPMP (contained in **Part B** to this application) and secured through the proposed conditions (**Part D**). These measures include:

- > Establishing the Stage 1 Kororā Colony prior to the commencement of works shown on Figure 2.10, so that any kororā found within the Project Area can be safely relocated;
- > Undertaking kororā exclusion measures to ensure that kororā cannot enter any construction areas once construction commences;
- > Ensuring a person trained in kororā management is present on site during specific activities to ensure kororā are not impacted;
- > Only allowing specific people, with appropriate training and experience, to handle kororā;
- > Undertaking pre- and post-work shift kororā inspections;
- > Ongoing requirements to survey and monitor kororā; and
- > Restrictions on works within the kororā breeding (August to December) and moulting (December to February) seasons.

Central to the approach proposed by Dr Cockrem is the assumption that kororā could be present under every rock, piece of concrete, crevice and construction materials (i.e stockpiles), unless they have been physically excluded. The above measures are therefore intended to ensure that kororā are not present within active physical works areas, therefore avoiding potential direct disturbance effects.

As kororā will be excluded from construction areas prior to construction activities occurring, construction works occurring at night are expected to have a low magnitude of effect. Additionally, controls are proposed to ensure that activities that would otherwise discourage kororā from coming to shore (such as rock milling) are not undertaken at dawn or dusk.

Micro piling work will occur after the removal of the majority of the existing kororā habitat in the construction area. Exposure of kororā to potential effects will therefore be limited. Notwithstanding, Dr Cockrem recognises that indirect noise effects arising from micropiling or any other construction activity on site may arise for kororā located outside of the immediate construction footprint. A proposed noise limit of 75db LAeq (15min), measured at any known or presumed nest site where kororā are present, is therefore proposed to ensure indirect noise effects are appropriately managed.

With the above measures in place, noise generated by construction activities is expected to have a low magnitude of effect on kororā, particularly given the existing ambient noise



environment, the timing restrictions of work and the kororā exclusion measures that will be in place.

7.5.3 Injury or Mortality During Construction

As with any project occurring in areas of potential kororā habitat, there is the potential for injury or mortality to occur. For this Project it could occur during the removal of rocks, concrete and steel from existing walls, the removal of vegetation from the area of mounds and hollows to the east of the seawalls, and the renewal of the Southern Seawall where there will be movement of machinery, movement of construction materials, rocks and concrete armour units.

As previously noted, central to the kororā management approach proposed by Dr Cockrem is the assumption that kororā could be present under every rock, piece of concrete, crevice and construction materials (i.e stockpiles). The proposed conditions and the KPMP (**Part B**) reflect this assumption and include detailed measures that will be implemented to minimise the risk of injury or mortality to kororā, and these are summarised in Section 7.5.3 above.

7.5.4 Effects on Foraging

The disturbance of the seabed, turbidity fluctuations associated with construction activities and noise due to construction activities will not affect kororā feeding. No effects are expected because kororā rarely forage within several hundred metres of the shore and kororā are unlikely to swim through water where turbidity due to sediment was elevated. In addition, kororā will be excluded from the Southern Seawall prior to renewal activities commencing.

7.5.5 Effects associated with Ongoing Maintenance and Repair

Once established, it is likely that the new seawall will require some ongoing maintenance and repair. The effects associated with construction and repair are similar, albeit of a lesser scale and duration, to the construction effects described above.

Kororā will likely experience disturbance effects associated with maintenance and repair work, including works occurring at night (noting this would not affect kororā at the Stage 1 Kororā Colony). Such effects include those associated with increased plant and equipment on site, rock and cubipods being stored on site, lighting and noise. Maintenance and repair work could cause penguin injury or mortality associated with placement of rock and cubipods.

The same general approach to managing effects on kororā are to be adopted for ongoing maintenance works, as set out in the KPMP.

7.5.6 Summary of Effects on Kororā

Effects on kororā associated with the construction of the seawall, in addition to loss of existing habitat, include disturbance associated with construction activities, potential injury or mortality, and temporal effects on water quality due to sediment suspension.

The Project will result in a net increase of 2,920 m² in kororā habitat that it is of significantly higher value than the habitat it is replacing. Features of the habitat replacement areas include earth mounds to provide shelter, planting, a large number of nestboxes, placement of rocks to attract penguins to nestboxes, pest control, and security fencing to exclude people and dogs.

Measures to avoid, remedy and mitigate potential adverse construction effects on kororā are outlined above, and are described in detail in the KPMP for the Project. With these measures in place, adverse construction effects on kororā will be low or negligible.

7.6 EFFECTS ON MARINE ECOLOGY

A Marine Ecological Impact Assessment (**Part B**) was prepared by Biosearches (2025b) and provides an assessment on the potential effects of the Project on marine ecology values. The following potential effects have been identified and are discussed below:

- > Temporary and permanent habitat loss and physical disturbance during construction;
- > Temporary water quality changes due to the suspension of contaminants;
- > Temporary increases in suspended sediments and turbidity during construction; and
- > Temporary noise from drilling and blasting activities during construction.

7.6.1 Habitat Loss and Physical Disturbance

The new seawall footprint will occupy an additional area of the coastal marine area, up to an additional 20 - 30 m (approx.) seaward of the existing seawall toe. This will lead to the permanent loss of the subtidal zone at the base of the existing seawall, and the temporary loss of an area of the intertidal zone and part of the subtidal reef communities extending seaward during construction.

This temporary loss of marine habitat on the margin of the existing seawall structure will have a high magnitude of effect. However, within three years after the completion of construction activities at the Southern Seawall, Biosearches anticipates that the new seawall, where it occupies the intertidal zone and the subtidal reef communities, will be colonised by benthic species originally present in the area. As such, Biosearches



considers the magnitude of effects of habitat loss will change from high to low as community assemblages increase on the newly installed structures.

To assess and confirm the rate of recolonisation of the seawall, a monitoring survey will be undertaken two years after the seawall works are complete. The survey will assess the diversity and coverage of recolonisation of the seawall, with a results set out in a report which will contribute to our understanding of biota colonisation on artificial structures. The report will assess, based on the results of the monitoring survey, whether a follow up monitoring is required.

7.6.2 Changes in Water Quality

As noted in Section 3.6 of this application, heavy metal and PAH concentrations at monitoring sites seaward of the existing Southern Seawall were well below the low default guideline value of the ANZECC Guidelines. Any mobilisation of those sediments during construction is not expected to result in any significant increase in sediment contaminants or in any level of contaminants which could harm organisms nearby.

Measures to avoid the potential release of contaminants from land during construction are set out in the Project's ESCAR, attached in **Part B** of the application documents.

7.6.3 Increase in Suspended Sediment and Turbidity

Because the seabed in the vicinity of the Southern Seawall is comprised of coarse sand to gravel, the disturbance of sediment during construction of the seawall will be negligible. Total suspended sediment ("**TSS**") monitoring is proposed to verify that any elevated TSS levels are localised and of a short duration. While consideration was given to implementation of mitigation measures such as silt curtains, given the low proportion of fines expected to be generated by placing rock and armour units onto the seawall structure and the high energy wave environment of the site, such measures were not considered appropriate or necessary given the likely magnitude of such effects.

Measures to limit the potential release of sediment from land that will be subject to earthworks during construction are set out in the Project's ESCP and Coastal Processes Assessment included in **Part B**.

7.6.4 Noise from Drilling or Milling Activities

The underwater noise that is anticipated to be generated by construction activities such as rock milling and micro piling has been modelled by Tonkin & Taylor (**Part B**). The Marine Ecological Impact Assessment undertaken by BioResearches used the modelling to assess the effects of underwater noise on marine mammals, seabirds and fish, which are



summarised below. The noise modelling, and other noise and vibration effects are discussed further in Section 7.11.

7.6.4.1 Effects of Construction Related Noise on Marine Mammals

The Marine Ecological Impact Assessment used guidance from the United States Department of Commerce National Oceanic and Atmospheric Administration¹⁰⁰ to identify the received levels above which individual marine mammals are predicted to experience changes in hearing sensitivity caused from peak exposure (high-level impulsive events such as pile strikes) or from cumulative exposure or non-impulsive noise (lower noise levels over an extended period such as vessels or continuous running machinery). Physiological damage to the hearing function is known as either a Temporary Threshold Shift (“**TTS**”) or, in the worst case, a Permanent Threshold Shift (“**PTS**”).

In addition, the Underwater Piling Noise Guidelines published by the Government of South Australia, describes the following ZOI related to underwater noise:

- > Zone of audibility: Area within which marine mammals might hear the source noise but not show any significant behavioural response;
- > Zone of responsiveness: Area within which the considered marine mammals might react behaviourally to the noise source; and
- > Zone of hearing injury: Area closest to the noise source where the noise levels may be high enough to cause a physiological impact such as TTS or PTS.

Of the marine mammals that frequent the ZOI, Hector’s dolphins have the most sensitive hearing. Hector’s dolphins are not commonly recorded on Wellington’s south coast however the assessment conservatively adopted the TTS threshold for high-frequency cetaceans (such as Hector’s dolphins) to account for any underestimation of noise generation.

Based on the results of the modelling, the TTS zone for the Project will be limited to 20 m for Hector’s dolphin and < 20 m for the other species, such as orca, common dolphin and fur seals, which are observed regularly in Lyall Bay.

The zone of responsiveness for Hector’s dolphins, estimated at a maximum of 250 m, is confined well inside Lyall Bay in front of the seawall (Figure 7.3). Lyall Bay does not

¹⁰⁰ Revision to: Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing (Version 2.0). Underwater thresholds for onset of permanent and temporary threshold shifts. Office of Protected Resources, National Marine Fisheries Service. NOAA Technical Memorandum NMFS-OPR-59.

constitute a critical habitat for marine mammals and most of the cetacean sightings report a foraging behaviour. If the availability of prey is impacted by the drilling noise, marine mammals are likely to move away and forage where prey is available.

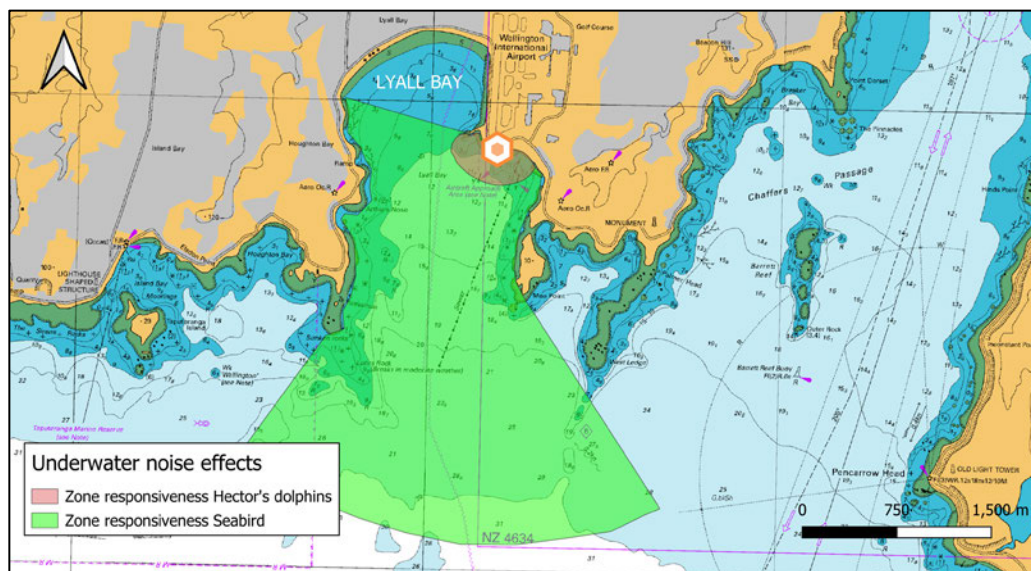


Figure 7.3: Estimated zones of responsiveness for Hector's dolphins and seabirds.

Based on the above, the magnitude of effects from underwater noise on marine mammals generated by the Project is considered to be negligible.

A Marine Mammal Management Plan (included in **Part G** of this application) will be implemented during construction at the Southern Seawall, reflecting the above approach.

7.6.4.2 Effects of Construction Noise on Seabirds

TTS and PTS thresholds for seabirds are not available although there has been research into the noise level at which behavioural effects are expected in penguins. Using the penguin behavioural thresholds as a proxy, the assessment estimates that the zone of responsiveness for seabirds is approximately 3,100 m.

Shag is the only seabird species that spend most of their time submerged when at sea and therefore will be potentially affected by underwater noise. Shags do not breed in the 3,100 m zone of responsiveness and their foraging zones are likely away from Lyall Bay where fish are available. Shags also forage mostly during the day, and construction works associated with the Project (in the coastal marine area) will largely occur at night. Due to these factors, the magnitude of effects from underwater noise on seabirds (noting that kororā and shore birds are considered separately) is considered to be negligible.



7.6.4.3 Effects of Construction Noise on Fish

Fish are more sensitive to noise at lower frequencies and generally have a reduced range of hearing than marine mammals. There is a wide diversity in hearing structures in fish which leads to different auditory capabilities across species. The difference in hearing sensitivity in fish depends on the presence of a swim bladder and, if the swim bladder is present, on its proximity to the inner ear.

Studies have been done on PTS thresholds in fish with different PTS thresholds published for fish without a swim bladder, fish with a swim bladder close to the ear, and those with a swim bladder not close to the ear.

The modelled level of underwater noise is much lower than PTS thresholds for all three fish hearing groups but is higher than behavioural thresholds. Consequently, fish are likely to flee the ZOI and take refuge in surrounding rocky areas. Some bottom dwelling species, which are territorial and dependent to local refuges, are likely to be impacted by the lack of food resources during the construction of the seawall. All fish present in the seawall footprint are common and any adverse effects on bottom-dwelling species represents a small portion of their populations distributed along Wellington's south coast. Overall, the magnitude of effects from underwater noise on fish is considered to be low.

7.6.5 Artificial Light at Night

Lighting during the nighttime hours would be used along the Southern Seawall area to support construction activities, as described in Section 2 of this application.

Marine mammals such as common dolphins, orca and fur seals will be unlikely to use the area potentially impacted by artificial lighting to forage or rest (in the case of fur seals), therefore the magnitude of effects from artificial lighting on marine mammals is considered negligible.

Shags generally forage during the day and therefore will not be impacted by artificial lighting at night.

While some small bottom dwelling fish will be significantly impacted by artificial lighting during construction works, all bottom-dwelling species present at the seawall are common and represent a small portion of their populations distributed along the Wellington southern coast. As such, the magnitude of effects from artificial lighting on fish is considered low.

7.6.6 Summary of Marine Ecology Effects

Bioresearches expects the level of adverse effect on most marine ecology to be very low to low. The exception to this is the permanent habitat loss for benthic communities at the

existing seawall toe, which Bioresarches has assessed as having a moderate level of adverse effect that will reduce over time to a low effect as communities assemble on the newly placed seawall structure.

The new seawall will provide numerous crevasses and gaps of different sizes which Bioresarches anticipates will create a sufficiently complex substrate to enable the new seawall to be colonised by adjacent biota without specific offsetting. The effects on benthic communities and on the intertidal zone will be remedied over time.

To enhance the colonisation of biota, WIAL proposes to adopt Bioresarches recommendations to ensure the seawall construction and placement of Cubipods provides sufficient gaps and crevices.

To ensure noise effects of rock milling are minimised, WIAL will establish a 20m TTS impact zone around rock milling works in accordance with the recommendations of Bioresarches. Construction works will check for the presence of marine mammals within the 20m TTS impact zone before starting any rock milling and will adopt a 'soft start' procedure that will provide any cetaceans not detected time to leave the TTS impact zone, noting that noise generated the installation of rock milling machinery is likely to deter any animals that might be present. If marine mammals are detected within the TTS impact zone, rock milling would stop until they have left the zone.

7.7 EFFECTS ON COASTAL PROCESSES

Beca (2025b) has undertaken a Coastal Assessment to evaluate the potential effects of the Project on coastal processes. The Coastal Assessment (2025b) is included in **Part B** and is summarised below.

7.7.1 Effects on Water Level

Given that the Project will not constrict tidal flows into and out of the bay or create an enclosed water space, Beca considers that it will have no effect on tide levels in Lyall Bay.

7.7.2 Effects on Waves and Currents

Beca used hydrodynamic modelling undertaken by DHI to assess the effects of the Project on waves and currents both for a 'present day' scenario and a future scenario in the year 2130 – incorporating predicted sea level rise. The hydrodynamic modelling indicated that:

- > In 'average' (50th percentile) wave conditions, there was no discernible effect on inner Lyall Bay wave heights and currents, and only localised increases up to 0.4 m at the seawall, for both the present day and 2130 scenarios; and



- > In 'annual storm' (63% AEP) wave conditions there were increases and decreases in wave height up to approximately 0.4 m, compared to existing wave heights of up to 5.5 m south of the seawall, and localised increases of up to 0.2 m, compared to existing wave heights of 2 to 5 m, in inner Lyall Bay. These changes would be limited to the duration of the storm.

Overall, based on the hydrodynamic modelling, Beca considers that the Project will have negligible to minor effects on waves and currents, and any changes will be largely confined to the vicinity of the Southern Seawall and Eastern Bank Remediation.

7.7.3 Effects on Sediment and Sediment Transport

Beca considers that the minimal changes in waves and currents indicated by the modelling, and described in Section 7.7.2 above, will not result in any discernible change to sediment transport in inner Lyall Bay.

Minor changes in waves and currents may increase the potential for localised scouring at the seawall toe however any potential scouring will be limited by the bedrock which underlies the sand and gravel along the seawall.

The modelled increases in wave height and current speed around the rock outcrops east and west of the seawall may result in increased localised mobilisation of gravel and sand during storm events and exposure of more of the outcrops.

Elsewhere in the southeastern embayment and central bay, the modelled changes are small. As a result, Beca expects that sediment transport effects in these areas will be limited to sand mobilisation in slightly deeper water. There will be negligible changes in sediment transport direction, which will continue to vary with wave and wind conditions.

The Project will reduce the erosion of the existing Eastern Bank, reducing local suspended sediment levels and the supply of coarse material to the beach. Over time with sea level rise this may result in local lowering of the anthropogenic beach and the underlying rock outcrop that formed the original (pre-1950s) shoreline could become more exposed.

Overall, Beca considers that the effects of the Project on sediment and sediment transport in Lyall Bay will be negligible to minor.

7.7.4 Effects on Coastal Hazards

The Project will increase the resilience of the existing Southern Seawall and Eastern Bank to coastal erosion and inundation and assist in protecting existing infrastructure and passive recreation land.

The design of the Southern Seawall accounts for predicted climate change, including potential adaptation measures, to the year 2130. These adaptation measures may include further overlay of concrete armour units, and/or installation or raising of a crown wall.

7.7.5 Construction Effects on Coastal Processes

The Coastal Assessment identifies the following effects of Project construction on coastal processes:

- > General marine construction;
- > Excavation of the seabed; and
- > Underlayer and armour placement.

Each is considered further below.

7.7.5.1 General Marine Construction

Construction activities may cause localised disturbance to the foreshore and seabed due to construction plant and temporary access structures. To minimise this impact, WIAL will mainly use land-based plant and keep temporary access structures to a practicable minimum while ensuring there is sufficient working area for plant and equipment. As described in the Coastal Assessment, coastal processes at this site are relatively resilient as the environment is dynamic and frequently exposed to energetic waves. As a result, Beca expects that the foreshore and seabed will return to pre-works condition within weeks to months after the completion of construction.

7.7.5.2 Excavation of the Seabed

The excavation of the seawall toe is likely to cause short term mobilisation of seabed sediment resulting in a localised increase in suspended sediment. Beca expects that most of the suspended sediment will settle out of the water column within 20 m of the cutting head, and the small amount of fine material generated will be rapidly dispersed by waves. Whilst sediment control structures such as silt curtains are unsuitable due to the high energy nature of the site, sediment will be monitored during seawall toe excavation. Gravel and sand will also be removed from the base of the seawall to allow toe armour units or rock to be placed directly on the underlying bedrock. Beca expects that natural wave processes will return gravel and sand to these areas within six months of construction.

7.7.6 Underlayer and Armour Placement

The placement of rock and Cubipods has the potential to release fine sediment into Lyall Bay. However, utilising the seawall 'overlay' solution – which does not expose the filled face

of the seawall to wave action and erosion and also avoids placing smaller rock material to reconstruct the seawall – will reduce the risk of this occurring. Additionally, WIAL will implement standard requirements for clean rock and armour units, and industry standard erosion and sediment control practices, which will be set out within the SSESCP.

7.7.7 Summary of Effects on Coastal Processes

Beca considers that if the management measures described above and set out in the SSESCP are implemented, the short-term effects of construction on coastal processes in Lyall Bay will be minor, whilst the long-term effects will be negligible to minor.

7.8 EFFECTS ON SURF BREAKS

An assessment of the potential effects of the Project on the wave climate, recreational user safety and surf quality of the Corner and Airport Rights surf breaks at Lyall Bay has been undertaken in the Surf Impact Assessment by DHI (2025). A copy of this report is provided in **Part B** to these application documents, and is summarised below.

DHI developed a MIKE 3 Wave FM model to assess the Project's impact on wave climate and recreational user safety, and used its surfing amenity analysis model, OptiSurf, to determine potential changes to surfing quality. The identification of representative wave events for the surf quality modelling was informed by consultation with members of the Wellington Boardriders Club, discussed further in Sections 3.9 and 6.5.

To assess wave climate, DHI modelled:

- > 63% AEP storm (1-year return period event); and
- > 50th percentile wave height.

To assess wave climate and surf quality DHI modelled:

- > Small waves for surfing the Corner;
- > Good waves for surfing the Corner;
- > Exceptional waves for surfing the Corner; and
- > Exceptional waves for surfing Airport Rights.¹⁰¹

¹⁰¹ Surfing conditions at Airport Rights were only assessed under exceptional wave scenarios. Due to the hazardous nature of the break, Airport Rights is typically surfed only when wave conditions are exceptional.



For all simulated scenarios, changes in nearshore wave induced currents, commonly referred to as sweep (longshore) and rip (outgoing cross shore) currents, were predicted to assess any potential impact on recreational user safety.

The model also accounted for projected sea level rise for the years 2080 and 2130, estimating increases of +1.04 meters and +2.19 meters in water levels, respectively.

7.8.1 Wave Height and Current Speeds

DHI's key findings regarding the effects of the Project on wave height and current speeds were as follows:

- > Under a 63% AEP storm scenario, wave heights directly in front of the seawall can fluctuate by approximately ± 0.4 meters. At Airport Rights, wave heights would be approximately 0.1–0.2 m higher with the proposed seawall compared to the existing one. These results are expected, as the proposed structure is less porous, resulting in greater wave reflection than the more porous existing structure. Additionally, the 100-year sea level rise scenario produced a larger area of increased wave heights when compared to the scenario without sea level rise.
- > Under a 63% AEP storm scenario there is virtually no predicted change in current speed between the modelled scenarios for the proposed seawall and the existing one. Under the 100-year sea level rise scenario, differences in current speed between the existing and proposed conditions remain minimal, with variations of approximately ± 0.2 m/s observed east of the proposed seawall, along Moa Point Road.
- > Under a 50th percentile wave height scenario there are almost no differences in current speeds between modelled scenarios for the proposed seawall and the existing one. Wave height differences associated with the proposed seawall are confined to the area directly in front of the Southern Seawall, for both the existing sea level and the 100-year sea level rise scenarios.

In terms of recreational user safety, the impact on mean wave-induced currents is either negligible or limited to the area east of the proposed renewed southern seawall, along Moa Point Road. This area already experiences strong currents, of around 1 m/s, and is generally considered unsafe for most recreational users, regardless of the changes associated with the proposed seawall.

7.8.2 Surf Quality

The Corner surf break was assessed under small, good and exceptional wave conditions. The results showed that upon completion of the Project, the take-off zone under exceptional conditions was within 10 to 15 m of what is expected by the local surf community. For small



and good conditions, the take-off zone is much further inshore but aligns with what is expected by the local surf community. The composition of rides was very similar for the existing and proposed conditions both in terms of wave conditions and ride length.

Overall, DHI concluded that the Project will have no net impact on surf quality at the Corner.

The Airports Rights surf break was assessed under exceptional wave conditions. Although the surf quality analysis indicated a slight improvement on the surf quality for this scenario, uncertainty remains as to whether reflected waves from the proposed renewed southern seawall would have a slight positive or negative impact on surf at this location. Generally, reflected waves directly opposite the direction of incoming waves are bad for surfing. However, in this case, a reflected wave at almost a 90-degree angle could make the take off earlier and even prevent a wave from closing out, which could improve surfing conditions. However, DHI did not consider further modelling was necessary, given the small nature of the impact, and because the break works only under a narrow range of conditions.

7.8.3 Summary of Effects on Surf Breaks

The effects of the Project on surf breaks have been carefully considered by DHI, with the assistance and input of the Wellington Boardriders Club. As set out by DHI, the proposed renewal of the Southern Seawall will give rise to minimal changes in wave height and speed, with negligible to limited change in recreational user safety expected as a result of wave induced currents.

The Project is expected to have no net impact on surf quality at the Corner, while the surf quality analysis indicates a potential slight improvement on the surf quality for exceptional conditions at Airport Rights.

7.9 EFFECTS ON LANDSCAPE AND NATURAL CHARACTER

An assessment of the potential landscape and natural character effects as a result of the Project is provided in the Landscape and Natural Character Assessment prepared by Boffa Miskell (2025). A copy of this report is provided in **Part B** to these application documents and is summarised below.

The Project Area is located between the suburbs of Miramar / Strathmore Park and Rongotai / Lyall Bay. The Project Area sits within an existing heavily modified environment consisting of the existing Southern Seawall, the adjacent reclaimed land, the Miramar Golf Course at the proposed MGC Yard, and mixed use / light industrial urban environment at the proposed George Bolt Yard.

The exception to this is the proposed location of the Stage 1 Kororā Colony which is located within the Hue tē Taka Peninsula / Rangitatau Palmer Head ONF, and the proposed access culvert / underpass for the Stage 1 Kororā Colony is located within the Hue tē Taka Peninsula / Moa Point High Coastal Natural Character area.

7.9.1 MGC Yard

The MGC Yard is located within the Miramar Golf Course which is subject to WIAL's ESA Designation. This designation provides for the extension of the Airport apron into the ESA. Some initial works have commenced under the ESA Designation, including the construction of the first stage of an approximately 840 vehicle carpark along the northern boundary of the MGC Yard. As noted in Section 7.1.1 above, the 'existing environment' includes activities that are permitted under the District Plan, including WIAL's ESA designation.

The Boffa Miskell assessment provides an indication of what the site of the MGC Yard currently looks like, compared to what it would look like once the MGC Yard is fully established, as viewed from 50B Raukawa Street (Figure 7.3).

The Boffa Miskell assessment also provides an indication of what the Miramar Golf Course currently looks like, compared to what it would look like once the ESA Designation is fully realised, as viewed from 50C Raukawa Street (Figure 7.4).

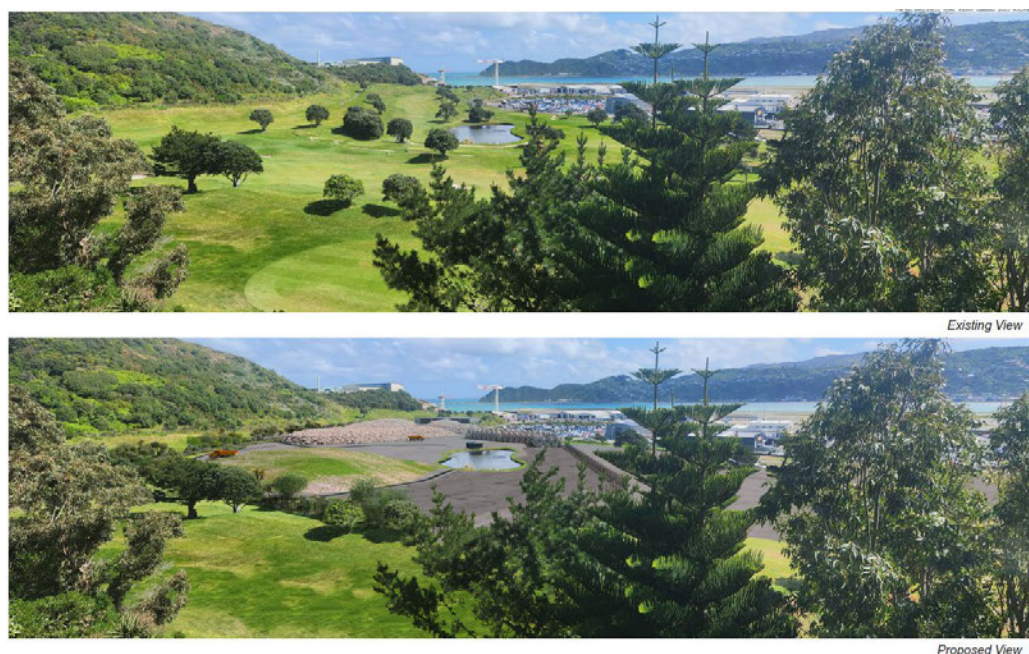


Figure 7.4: Visual simulations of the Miramar Golf Course compared to the MGC Yard (Boffa Miskell, 2025a).



Figure 7.5: Visual simulation of the Miramar Golf Course compared to the ESA Designation (Boffa Miskell, 2025a).

For completeness, the following summary of landscape and natural character effects of the Project at the MGC Yard is provided against both the current environment, and the environment as will be modified by the ESA Designation, once fully implemented.

7.9.1.1 Natural Character

Current environment

The proposed MGC Yard will change a permeable manicured grassed landscape to a gravelled surface with increased presence of structures and industrial elements. While this will influence levels of natural character within the immediate and modified local context, this change will also remain well embedded within the extensively urbanised environment. Based on the low-moderate levels of natural character of the existing environment, Boffa Miskell considers the effects on natural character to be low during construction and operation.

Environment as will be modified by the ESA Designation

Localised natural character effects from the MGC Yard will be consistent with effects otherwise anticipated within the underlying ESA Designation. As such, when compared



against the environment as will be modified by the ESA Designation, Boffa Miskell considers the effects on natural character to be very low.

7.9.1.2 Landscape

Current environment

The proposed earthworks will remove the naturalised rolling landform from within the MGC Yard area, with a flat pad for the yard replacing this previous character. This and the removal of grass and trees will reduce the landscape amenity and naturalness of the land, which has a park-like character at present due to its past use as a golf course. Some character will be retained through the retention of the landscape buffer zone that is intended to sit to the east of the Yard, and landscape mitigation planting within the northeastern and southern area of the Yard. The works will result in a noticeable change to the landform and the landscape character, noting that the existing landscape has changed (and amenity values have reduced) within the past year with the establishment of the stage 1 carpark within the ESA Designation. Boffa Miskell considers the earthworks will result in moderate adverse effects, with the implementation of planting reducing effects to low moderate over time.

Environment as will be modified by the ESA Designation

Upon completion of the ESA Designation, the surrounding area will have a paved airport apron with an industrial infrastructural character, substantially different than the landscape character that currently exists at the site. The physical change anticipated by the Project will create a character that is consistent with that anticipated by the ESA Designation once fully implemented. In this regard, the MGC Yard earthworks are less extensive, and buildings smaller than compared to what is anticipated by the ESA Designation.

As such, Boffa Miskell considers the construction related landscape effects of the MGC Yard to be low when compared to the landscape with the ESA Designation fully implemented, and very low post construction. Potential adverse effects are associated with the storage of materials with their bulk and height which have a different character compared to that of the Airport Apron.

7.9.1.3 Visual Effects

Current environment

The MGC Yard can be publicly viewed from Tukanae Reserve, Hue tē Taka Peninsula, Miramar Links Golf course area, Stewart Duff Drive, the Airport carpark and terminal building, and Lyall Bay. The potential level of visual effect from public viewpoints is directly related to their distance to the site. In this regard, Boffa Miskell considers the adverse visual effects from public vantage points to range from very low to moderate.



In terms of private views to the MGC Yard, properties along Bunker Way, Nuku Street and Raukawa Street where they adjoin, look down and across the MGC Yard from a local area (up to 150 m from the activity) are considered highly affected. The level of visual effect depends on orientation of view, the extent of the site visible within the view, and screening from intervening built form and topography. Post construction, the landscape character will be consistent with the low level industrial infrastructural amenity of the ESA Designation Stage 1 carpark. A landscape buffer along the western fringe will further reduce adverse visual effects to very low.

Environment as will be modified by the ESA Designation

The implementation of the ESA Designation will result in an industrial landscape character, with a landscape buffer zone along its eastern fringe.

In terms of public views to the MGC Yard, no high or very high visual effects were identified in the Landscape and Natural Character Assessment. Boffa Miskell identify very low to low moderate visual effects on public views during the construction phase, and very low to low on completion.

Where residential areas adjoin, look down and across the Project Area from a local area (proximate views up to 150 m from the activity), Boffa Miskell identifies there is the potential for very low to low moderate adverse visual effects on private views associated with construction activity at the MGC Yard, reducing to very low to low post construction.

7.9.2 George Bolt Yard

The George Bolt Yard is proposed to be used as a maintenance workshop and laydown area. Changes to the existing environment involve removal of the existing 1,000 m² hangar (the Gibson Hangar) and replacing this with a smaller maintenance workshop.

7.9.2.1 Natural Character

The proposed George Bolt Yard located within the Lyall Bay coastal terrestrial area, which is a highly modified reclaimed area with a high level of urban development rocky shores and small gravel beaches. The Yard is surrounded by the airport and industrial development. While the broader context of the Lyall Bay coastal terrestrial area is considered to have low-moderate levels of natural character, at a site scale, the natural character of the highly modified George Bolt Yard is considered very low.

Considering the very low natural character of the site, the changes proposed will not further degrade the natural character of the site. As such, Boffa Miskell considers the natural character effects to be neutral.



7.9.2.2 Landscape

As noted above, the George Bolt Yard is located in an area that is highly modified and provides low amenity. The George Bolt Yard is fully developed with no vegetation cover present, however associative values of the site relate to historic use of the site as Taputerangi Pā. Boffa Miskell considers the Project will have a very low effect during construction and a neutral effect post construction on the landscape values of the site, with archaeological conditions proposed to ensure appropriate protection protocol is followed.

7.9.2.3 Visual Effects

George Bolt Yard is located in an area with low landscape amenity, with the proposed use similar in visual effects with its current use. The George Bolt Yard will be absorbed visually into the industrial fabric of that area and will not be overly noticeable. Boffa Miskell considers the adverse visual effects will be no greater than very low adverse during construction and very low or neutral post construction.

7.9.3 Southern Seawall including Moa Point Yard

Changes proposed to the existing environment at the Southern Seawall site involve recontouring the Moa Point Yard and extending the footprint of the formal seawall by 100 m to the east, replacing the informal seawall comprised of rubble (the Eastern Area). The seawall will increase in height by up to one metre and width by some 20-30 m seaward. The Eastern Bank Remediation will replace the rubble slope and eroded bank with a formalised armour rock bank. The establishment of Moa Point Yard involves recontouring to create a flat pad, installation of fencing, and storage of plant and materials. Following completion of the seawall works, the Stage 2 Kororā Colony will be established immediately behind the Eastern Bank Remediation and will involve recontouring and planting part of the Moa Point Yard to create a habitat for Kororā. The area between the Stage 2 Kororā Colony and Moa Point Road will also be rehabilitated to provide lizard habitat and formal public access to a formed walkway. During construction, offices will be placed on the corner of the Stewart Duff Drive and Moa Point Road.

The Boffa Miskell assessment provides an indication of what the existing Southern Seawall currently looks like, compared to what the Southern Seawall and Eastern Bank Remediation (Figure 7.6).





Figure 7.6: Visual simulation of the Southern Seawall and Eastern Bank Remediation Area, as viewed from east of the Southern Seawall (Boffa Miskell, 2025a).

7.9.3.1 Natural Character

The Southern Seawall and Moa Point Yard are located in the coastal interface between the Lyall Bay coastal terrestrial area and the South Coast coastal marine area. The South Coast coastal marine area is characterised by a rocky shoreline, fine sand seafloor and a diverse range of marine species. To this effect the Lyall Bay coastal terrestrial area has a low-moderate level of natural character, while the South Coast coastal marine area has a moderate-high level of natural character.

The Southern Seawall and associated works will occur in a highly modified environment which includes the existing Seawall, Moa Point Road, the Airport and an area of reclaimed land. At the area scale, the Southern Seawall will have negligible effects on the natural character of Lyall Bay. The Southern Seawall works will include the renewal of the Seawall by up to 30 metres into the coastal marine area, which will cover part of the existing coastal reef to the south of the existing Airport runway. Temporary effects on natural character will also include the presence of heavy machinery and lighting. At the site scale, Boffa Miskell considers the proposal will have localised adverse effects on natural character.

While the Project will include temporary disturbance to areas of modified coastal vegetation, this occurs within proximity of a highly modified area of the coastal environment and will be rehabilitated at completion, including through the incorporation of the Stage 2 Kororā Colony and the wider rehabilitation proposed along this modified coastal edge. As

discussed above, effects on marine ecology are anticipated to be temporary, with the new seawall being recolonised within three years.

At the Moa Point Yard, Boffa Miskell considers the pre-construction natural character rating to be low moderate, with the Project having a neutral to positive level of effect.

For the Southern Seawall, Boffa Miskell considers the level of effect on natural character during construction to very low.

7.9.3.2 Landscape

The coastline at Lyall Bay is highly modified, with reclamation occurring in the 1950s and 1970s creating a hard modified edge which contrasts with the more natural edge and rocky coastline of Moa Point/ Hue tē Taka Peninsula and the embayment.

The existing local purpose (esplanade) reserve offers low levels of amenity due to the heavily constructed and built nature of the environment. Amenity of the Eastern Area is also low with the area having been impacted by coastal erosion and showing evidence of past ad hoc revetment efforts.

Landscape values associated with the Southern Seawall and Moa Point Yard sites relate to perceptual and associative attributes due to the open wild and scenic quality of the waters along the coastline and Lyall Bay opening to the Cook Strait. Physical attributes including its ability to provide habitat for flora and fauna also add to the areas landscape values. Perceptual attributes also include experience of salt laden wind and smells of the sea.

Perception of landscape effects during construction of the Southern Seawall and Eastern Bank Remediation will reduce experiential values of the naturalness and scenic qualities of the coastline at the site. However, it is acknowledged that wilderness values of the coastline will remain. As such, temporary landscape effects during construction are considered low moderate.

On completion of the Project, the establishment of the Stage 2 Kororā Colony will provide beneficial landscape effects via terrestrial planting and extending a visually coherent and uniform coastal protection edge. Overall, Boffa Miskell considers the long-term effects on the landscape following the completion of works to be neutral to positive.

7.9.3.3 Visual Effects

According to the Landscape and Natural Character Assessment, visual effects on local public views of the Southern Seawall during construction will be very low to moderate on views from Moa Point foreshore adjoining the Southern Seawall, and (up to) moderate on



views from Moa Point Road. There is also the potential for moderate adverse visual effects on private views from residences along Moa Point Road.

From distant private vantage points (over 500m to 1km or more), the seawall is seen as a smaller component of a wider view and blends into the horizontal nature of the coastline. From some viewpoints, such as from Lyall Bay and adjacent suburbs, the seawall will be viewed as part of the urban fabric.

Post construction, visual effects on public views will reduce to low to positive, and private views will reduce to very low to positive. With increased viewing distances, the Project Area consistently appears as part of the urban infrastructure within a wider panoramic view.

Lights associated with this activity will be one of the main visual effects. This effect will be seen as part of an urban and industrial fabric which includes the Airport, its industrial area and runway, Moa Point Road, and the adjoining residential suburbs of Miramar and Strathmore Park.

The provision of black out blinds to affected residential neighbours is proposed, which will protect humans from the adverse effects of both fixed and temporary lighting at the Moa Point Yard and Southern Seawall.

7.9.4 Stage 1 Kororā Colony

Proposed activities at the Stage 1 Kororā Colony includes the construction of culvert under Moa Point Road to provide kororā passage from the coast to the main site, fencing of the perimeter, placement of dedicated nestboxes and branches/driftwood to provide habitat, creation of gravel paths, and planting of indigenous species suitable to the coastal environment. Changes to the landscape will also include the placement of rocks at the culvert entrance and lighting of the culvert intended to attract kororā, and earthworks necessary to install the kororā passage.

7.9.4.1 Natural Character

The broader coastal area around the Stage 1 Kororā Colony is located within the Hue tē Taka Peninsula, which has high natural character, and the South Coast which has a moderate-high level of natural character. At a site scale, the Stage 1 Kororā Colony site natural character rating is low to moderate due to the presence of roading infrastructure, changes to topography, and erosion.

During construction, the earthworks and inclusion of the underpass in this area of the coastline will have a neutral effect on natural character values due to the limited extent of earthworks in an area that is already modified through coastal erosion and infrastructure.



Dense indigenous plantings will contribute to ecological diversity and habitat values of both the coastal edge and the kororā colony, introducing positive effects, as will the creation of a kororā habitat. It is proposed that weed and pest control will also be undertaken for 20 years in accordance with the recommendations of the relevant ecological management plan (the KPMP).

Overall, Boffa Miskell considers the Stage 1 Kororā Colony will have neutral to positive effects on natural character, due to the enhanced diversity of native coastal species and habitat opportunities, and the proposed weed and pest control.

7.9.4.2 Landscape

While the landscape of the proposed Stage 1 Kororā Colony site is highly modified in terms of vegetation, it is within the boundaries of the Hue tē Taka Peninsula / Rangitatau Palmer Head ONF identified in the 2024 District Plan. As Moa Point Road is highly modified, potential landscape effects are associated with the reduced naturalness of the coastal margin of the ONF through drilling and excavating into the rocky outcrops. Temporary landscape effects during the construction of the kororā access passage are considered low moderate on the west side of Moa Point Road, and very low on the east side of Moa Point Road.

On completion of the Stage 1 Kororā Colony, the site will benefit from enhanced landscape character associated with the removal of weeds and replacement with native coastal species, enhancing the naturalness of the site. As such, Boffa Miskell considers the landscape effects at the Stage 1 Kororā Colony will range from neutral on the west side of Moa Point Road to positive on the east side of Moa Point Road.

7.9.4.3 Visual Effects

During construction, Boffa Miskell considers the Stage 1 Kororā Colony will have very low to low moderate visual effects from private residences, due to the limited and restricted visibility of the Colony site from private views. From public vantage points, moderate adverse visual effects will be temporarily experienced during construction of the kororā passage.

Once the Stage 1 Kororā Colony is constructed, Boffa Miskell considers there will be neutral to positive visual effects on private and public views of the area.

7.9.5 Summary of Landscape and Natural Character Effects

Boffa Miskell have undertaken a comprehensive assessment of effects of the Project on natural character, landscape values, and public and private views. Overall, the Project will not result in any high adverse effects on landscape values and natural character.

With the implementation of the recommended measures and site-specific landscape concept plans, the Project will result in neutral to positive effects at the Stage 1 Kororā Colony and the Southern Seawall and Moa Point Yard.

7.10 TRANSPORTATION EFFECTS

An assessment of the anticipated traffic generated by construction activities associated with the Project, and the potential impacts on the surrounding road network – particularly along key routes between the source material sites and the Project Area – is provided in the Transport Assessment (Stantec (2025)). A copy of this report is provided in **Part B** to these application documents, and it is summarised below.

As outlined in Section 2, construction materials will be transported to the site from outside of the Wellington region, either via:

- > The state highway network from north of Wellington, through central Wellington (along SH1) to either the MGC Yard, George Bolt Yard or to the Moa Point Yard and returning north via Lyall Bay and SH1; or
- > From CentrePort (if a South Island rock source is required), to either the MGC Yard, George Bolt Yard, or to the Moa Point Yard and returning via Lyall Bay.

Once the Moa Point Yard is established and works on the Southern Seawall commence, a haul route will be used between the MGC Yard, George Bolt Yard and Moa Point Yard along Stewart Duff Drive.

Staff and some construction equipment will travel between their origin and the various yards using similar routes to those noted above.

Controlled access to the various sites associated with the Project will be in place while construction activities are occurring, with the gates securely locked during times of construction inactivity.

The primary traffic effects associated with the Project relate to the transport of materials and staff to and from the Project Area. As discussed later in this section, physical works within road corridors will be limited to new or upgraded vehicle crossings required as part of the site establishment works for the MGC Yard, George Bolt Yard and Moa Point Yard.



7.10.1 Traffic Generation

As noted in Section 2.9 of this report, WIAL may source rock material from a quarry located in the North Island or the upper South Island. This has potential to affect traffic generation during the stockpiling phase of the Project. In summary:

- > If rock is sourced from the North Island, a more consistent haulage operation could be maintained, largely utilising the state highway network. Trucks would operate on a greater number of days but at a relatively low daily volume. An estimated 8 to 10 truck movements per day would be required over a four-year period; or
- > If rock is sourced from the upper South Island and barged¹⁰² to CentrePort, haulage would occur on less days but at a significantly higher volume on those days to unload the barge efficiently). Up to 136 truck movements per day¹⁰³ would be required on required on approximately 110 days over the total Project duration. The barge days would not be consecutive.

In undertaking the Transport Assessment, Stantec have taken a conservative approach by adopting the highest anticipated (i.e. 'worst case') daily volume of construction vehicles where rock is barged to CentrePort and significantly higher truck movements are required to unload the barge efficiently, combined with the maximum expected daily movements of other Project-related vehicles (assuming all relevant activities are occurring at their maximum extent simultaneously, which is highly unlikely).

The estimated daily vehicle movements¹⁰⁴ adopted for the purpose of assessing transport effects of the Project through the construction period are summarised in Table 7.2.

Table 7.2: Traffic demand (modelled) profile for the Project, Stantec (2025).

Material / Operation	Route	Vehicle	Daily Movements	Peak Hour Trips
Rock supply - South Island rock source option	CentrePort to MGC Yard	Semi-trailer	110	10
		or	136	13

¹⁰² It is noted here that WIAL is committed to using the smaller 1,100T barge for any rock sourced from the South Island.

¹⁰³ Dependent on the size of the barge and the size of the trucks able to operate in the wharf unloading area.

¹⁰⁴ One movement includes the trip to and from a site.



Material / Operation	Route	Vehicle	Daily Movements	Peak Hour Trips
		Semi-trailers & 6 wheel trucks (2/3 and 1/3)		
Cubipod supply	SH1 Ngauranga to Moa Point	B train or semi-trailer	21	2
Earthworks	MGC Yard to Southern Landfill	6-wheel truck	51	5
MGC Yard to Moa Point Yard shuttle	MGC Yard to Moa Point	6-wheel truck	38	4
General Deliveries	SH1 Ngauranga to MGC Yard	6-wheel truck	13	1
Staff	SH1 Ngauranga to MGC Yard	Car	26	13

7.10.2 Traffic Effects

To enable an assessment of the potential operational and performance impacts of traffic generated by the Project on the surrounding road network Stantec has undertaken modelling using the Ngauranga to Airport Aimsun Traffic Model (“**N2AM**”) against two modelling scenarios, being the 2022 scenario¹⁰⁵ and 2033 do-minimum scenario. As the construction period is understood to have a duration of approximately six to eight years, Stantec consider that the use of both the 2022 and 2033 do-minimum scenarios will show the range of likely effects throughout the construction period – noting that the highly conservative scenario of intensive truck movements from CentrePort would only occur (if at all) on a limited number of days during that period. Full details of the scenarios modelled are presented in Stantec (2025).

Stantec initially modelled a traffic generation scenario based on the use of a larger 3,000 tonne barge (an option now discounted) and 6-wheeler trucks with a 10 tonne carrying capacity resulting in up to vehicles 600 movements on 26 days.

¹⁰⁵ The GWRC modelling team has observed very little traffic volume growth since 2022 and the N2AM 2022 model scenario is considered to be representative for a 2025 scenario.



Following further refinement of the barge and truck sizes most likely to be used, and feedback from NZTA and WCC, Stantec instead adopted two alternative models which better illustrate the range of potential effects throughout the seawall construction period. Therefore, potential traffic effects of two traffic generation scenarios are assessed, as shown in Table 7.2 above.

In summary, the modelling shows that the traffic generated by the Project will not result in a travel time increase of more than five minutes for any of the routes modelled by Stantec. The results indicate that the network can accommodate the anticipated construction demands during peak travel periods.

In addition:

- > For the Airport to SH1 northbound route, slight increases of around 1 to 2 minutes are expected in morning and evening peak periods;
- > For the SH1 to Airport southbound route, slight increases of around 4 minutes in the morning peak and 1 to 2 minutes in the evening peak are expected;
- > For the Airport to CentrePoint northbound and southbound routes, slight increases in travel time of around 3 to 4 minutes are expected in both the northbound and southbound directions during the morning and evening peak periods; and
- > For the Stewart Duff Drive to Kilbirnie Crescent northbound route, no notable changes in travel times are expected.

Overall, Stantec considers the construction traffic volumes associated with the Project can be adequately and appropriately accommodated in a manner that will not create adverse effects on the function, capacity or safety of the local and wider road network.

7.10.3 Intersection Performance

Key intersections along the proposed construction route between Airport and CentrePort have been analysed to understand potential effects at a more localised level.

The Level of Services (“**LoS**”) at all intersections remained the same with one exception, being the CentrePort / Aotea Quay intersection in the evening peak. This intersection changes from LoS A to LoS B.

The LoS at the other intersections remain unchanged, performing at an overall LoS D or better. Stantec set out that this is at an acceptable level for a central city area. It is noted that there are a few movements which are indicated to operate at a LoS E (i.e. Rongotai Road east approach through movement and Onepu Road left turn at the Evans Bay Pde / Onepu Road intersection) in the base (without Project construction traffic) and with construction



traffic in the modelled scenarios. In both these instances, the additional delay associated with construction traffic is either minor (i.e. less than three seconds) or masked by model randomness across each replication (i.e. delay counterintuitively lower with construction traffic). Stantec note that this level of delay and LoS is not unusual within a central city context.

7.10.4 Road Safety

The existing environment with regard to road safety is summarised in Section 3 of this report. There are no identified existing safety issues on the state highway or primary road routes that need to be addressed to facilitate the associated construction traffic.

To ensure road safety is maintained, Stantec recommends that local traffic control measures are developed and implemented through the **CTMP**, which is discussed further below.

7.10.5 Construction Traffic Management and Mitigation

To mitigate any effects on the surrounding transport network, Stantec has recommended the implementation of various management and mitigation measures. These are summarised below.

A draft CTMP has been prepared and is included in **Part G** of these application documents. The draft CTMP will be finalised once construction methodologies and timelines are further refined. In addition to the CTMP, site specific traffic management plans (“**SSTMPs**”) will be developed to manage different activities within the work programme, such as the construction of new site access points at the MGC Yard or the operation of the Moa Point Yard, in accordance with the New Zealand Guide to Temporary Traffic Management. In addition, temporary or permanent signage will be installed in accordance with the relevant guidelines, with signs installed on fixed posts where in place for more than six months.

Furthermore, WIAL will implement a range of measures to ensure that Stewart Duff Drive and Moa Point Road operate efficiently and consistently during both the stockpiling and haulage operations and the seawall construction. These include:

- > Measures to protect public health and safety;
- > Measures to prevent vehicle queuing or congestion;
- > Directions for safe site ingress and egress;
- > Measures to keep roads clean and free of mud, dirt or other debris;



- > Procedures to avoid unnecessary trips between yards, and ensuring that vehicles and loads are suitable for their intended destination; and
- > Directions to ensure construction staff and visitor parking is appropriately located.

Should the South Island rock source barge option be adopted, there will be regular liaison between WIAL, the construction contractors and the traffic management co-ordination team at WCC and NZTA to identify any significant events, roadworks or other activities that may limit network capacity or close key roads schedule barge movements to, if possible, avoid these dates.

In order to observe and report on any roading maintenance requirements, WIAL will undertake a video / photographic survey of key local transport routes prior to the start of works so that any deterioration in road conditions can be identified and repaired as soon as possible.

Regular monitoring of the traffic operations occurs to ensure prompt identification and management of any adverse effects will be undertaken, and the CTMP will be reviewed 3 – 6 months after works commence and once per year thereafter.

Stantec also recommends establishing regular and clear communication with the community. This should include contact details for liaison personnel and a feedback register to capture any feedback, complaints or enquiries and ensure appropriate action and response can be provided.

7.10.6 Summary of Transportation Effects

Overall, Stantec concludes that the construction traffic volumes can be adequately and appropriately accommodated in a manner that will not create adverse effects on the function, capacity or safety of the local and wider road network.

7.11 NOISE AND VIBRATION EFFECTS

The Noise Assessment prepared by Tonkin & Taylor (2025) has provided an assessment of the actual and potential construction noise and vibration effects associated with the Project, which includes underwater noise effects and effects on kororā. A copy of the Construction Noise and Vibration Assessment (“**CNVTA**”) is provided in **Part B**. This assessment is summarised in the following sub-sections.

7.11.1 Construction Noise Effects

Tonkin & Taylor has predicted construction noise levels using the likely worst-case scenarios at each site associated with the Project (i.e. the most significant noise generating



item of construction plant for each activity at the worst-case location). The noise levels for each modelled scenario have then been calculated at the façades of nearby noise sensitive receivers to determine the number of noise sensitive receivers (“NSR”) which are predicted to exceed either the daytime limit of 70 dB or the night-time limit of 45 dB.

Where construction noise occurs during the night (10 pm to 7 am), external sound levels greater than 45-50 dB LAeq will have the potential to result in sleep disturbance if residents sleep with windows open. If residents have windows closed, external noise levels can be up to 50-60 dB LAeq before adverse effects occur.

7.11.2 MGC Yard

The construction and operation of the MGC Yard is not predicted to cause any exceedances of the weekday daytime noise limit. In addition, any night-time operations at the MGC Yard will be limited to light vehicle movements unless in exceptional circumstances.

The only works predicted to cause exceedances from the MGC Yard operations are works on Sundays. Based on the worst-case scenarios there is predicted to be a potential for up to 32 NSRs to experience exceedances, with two NSRs having the potential to experience noise of 12 dB and 13 dB above the Sunday noise limit which will be likely to affect residential activities. At a further 14 NSRs, noise levels will be noticeable but are unlikely to interfere with residential activities. These noise levels will only be for short periods when plant is operating near or at the worst-case location for the NSRs.

It is noted that these day-time exceedances will occur while the Airport is in operation. The existing environmental noise associated with airport operations mean that the current ambient noise levels, specifically during the daytime, may provide a level of masking sound to the proposed construction activities. MGC Yard operations have been designed to maintain the night-time respite provided by the Airport’s curfew.

7.11.3 George Bolt Street Yard

The George Bolt Yard is located within a commercial and industrial area. The operation of the George Bolt Yard is not predicted to cause any exceedances of the daytime noise limit at the closest commercial receivers. No night-time operations are proposed at the George Bolt Yard.

7.11.4 Moa Point Yard

There are two predicted exceedances of the noise limits during the construction phase of the Moa Point Yard. These will be at two WIAL owned properties: 33 and 34 Moa Point Road. The exceedances have the potential to occur between 6:30 am and 7:30 am on weekdays,



as well as 7:30 am to 6:00 pm on Sundays and public holidays. The greatest exceedances are predicted to only be 4 dB. It should be noted that the airport will be in operation during the time of the exceedances from the Moa Point Yard. The existing environmental noise associated with airport operations mean that the current ambient noise levels, specifically during the daytime, may provide a level of masking sound to the proposed construction activities.

During the operational phase of the yard, when the yard will be active overnight to support the sea wall works, there is potential for five NSRs to experience noise levels above the noise limit, not including WIAL-owned properties (because they will not be occupied during this phase). The greatest exceedance is predicted to be 10 dB at the privately owned property at 35 Moa Point Road.

Properties along Moa Point Road and Kekerenga Street are to be offered sound insulation upgrades in 2026 as part of the Southern Seawall Mitigation Programme. As part of the programme, WIAL will offer to provide a ventilation system that allows residents to keep their windows closed within habitable rooms. Therefore, none of the properties where sleep disturbance may occur would need to have windows open for ventilation when night works occur. With windows closed no properties are classified as having a high risk of sleep disturbance.

In addition to the above measures, WIAL is also offering to purchase the remaining five properties located along this road frontage that are not currently in WIAL ownership. The offer of purchase will be made within 12 months of the physical construction works commencing on the Southern Seawall, and will be made in accordance with the fair purchase offer detailed in the draft conditions of consent. This offer of purchase is being made voluntarily by WIAL (it is not a recommendation put forward by WIAL's noise experts).

7.11.5 Eastern Bank Remediation Construction

There is the potential for nine properties to experience noise exceedances from the Eastern Bank Remediation works. Two of the exceedances will be at non WIAL owned properties. The exceedances have the potential to occur between 6:30 am and 7:30 am on weekdays, as well as 7:30 am to 6:00 pm on Sundays and public holidays. The greatest exceedance is predicted to be 8 dB at 33 Moa Point Road which is a WIAL owned property that will not be occupied during the construction time. The greatest exceedance at a non WIAL owned property will be 5 dB at 35 Moa Point Road

7.11.6 Ground Improvement

Discrete ground improvements adjacent to the existing Southern Seawall will be required to safely support construction equipment. Ground improvements will comprise cement stabilised hardstanding, using steel micro piles to provide additional support.

The plant and equipment required to conduct the micro piling will be able to operate under the OLS, therefore, construction hours will be:

- > Weekdays: 6:30 am – 8:00 pm
- > Weekends and public holidays: 7:30 am – 6:00 pm

The micro piling methodology proposed is not predicted to cause any exceedances of the noise limits for the proposed hours of piling.

7.11.7 Southern Seawall

Southern Seawall construction works will largely be undertaken overnight as the works need to occur during WIAL's curfew to avoid penetrating the OLS. Due to the night works, 17 privately owned properties could experience external noise levels above 45 dB which might cause sleep disturbance. If bedroom windows are closed this reduces the numbers of private properties impacted to five.

10 residential dwellings owned by WIAL could also experience noise level that could cause sleep disturbance, it is recommended by Tonkin & Taylor that these properties not be occupied during the construction phase.

7.11.7.1 Underwater Noise Effects

Tonkin & Taylor has identified two potential sources of underwater noise, being onshore micro piling adjacent to the water and rock milling around the toe of the seawall micro piling is not anticipated below the tidal level within the coastal marine area.

The underwater sound levels from the proposed onshore micro piling is expected to be negligible, as minimal sound energy travelling through the air will be transmitted into water. Rock milling will generate a relatively continuous noise which is not impulsive and produces relatively low vibration. Milling typically occurs for short bursts of about five minute grinding periods, followed by brief pauses for repositioning and clearing material. The primary sound source is the interaction of the milling face with the rock, with sound contributions from other sources being negligible.

Based on an estimated sound source level for rock milling and the sound transmission loss properties for water in Lyall Bay, the underwater sound levels are estimated to be around of



140 dB at a distance of 20 m from the rock milling. Taking into account the hearing response of the most sensitive marine mammals, sounds levels are estimated to be 140 dB at a distance of 20m. This noise level is the equivalent to the temporary threshold shift point for the most sensitive marine mammals, with the distance for auditory injury for the most sensitive marine mammals estimated at less than 10 m.

Underwater noise generated from construction works on the temporary and permanent threshold zones for all marine mammal hearing groups will be negligible. As such, no specific noise mitigation measures are considered necessary for the construction works.

For underwater impacts on kororā, rock milling may result in behavioural effects on kororā within hundreds of metres. As kororā typically spend most of their time out at sea (tens of kilometres from shore) and swim to and from nests during sunset and sunrise hours, underwater noise effects on kororā can be mitigated by avoiding rock milling during these times. For in-air noise, setback distances, screening and / or other mitigation measures¹⁰⁶ should be implemented to keep sound levels at kororā habitat areas below 75 dB.¹⁰⁷

For further details regarding construction noise and Korora, refer to Section 7.5.

7.11.8 Vibration Effects

Vibration effects associated with the construction activities of the Project are considered negligible. Micro piling has been identified as the main source of construction vibration. However, the vibration level will not exceed 1 mm/s and no property is expected to experience vibration or any cosmetic damage.

7.11.9 Noise Associated with Vehicle Movements

Tonkin & Taylor has conducted an assessment to determine any increase in sound that would result from the additional traffic movements associated with the Project along the identified transport routes to and from the Project Area. This assessment was based on the original “worst-case scenario” traffic generation scenario where rock is barged to CentrePort using a 3,000 tonne barge and small truck units are used resulting in significantly higher traffic movements than is now proposed. In this scenario there would be an average of 67 vehicle movements per day over the eight year duration of the Project, with approximately 68% (or 52 movements per day) expected to be heavy vehicle movements.

¹⁰⁶ For example, sound levels from impact drilling can be reduced through using a smaller hammer, reduced drop height or a ‘sacrificial wooden dolly’ on the head of the pile.

¹⁰⁷ As measured at the entrance to a nest.



It is noted that the Noise Assessment has not been updated to reflect changes to transport modelling discussed in Section 7.10 above. This is because the Noise Assessment reflects the previous worst-case scenario, and as described below, that assessment gives rise to minimal increases in noise.

The Noise Assessment found that average daily vehicle movements on the surrounding transport network will result in a 1 dB increase in noise, and a potential to increase of 2 dB for traffic along Lyall Parade during peak vehicle movements. Tonkin & Taylor note that as the minimum change in noise level discernible to humans is 3 dB, this change in noise level is not significant.

Stewart Duff Drive is a private road and vehicle movements for the worst-case scenario are unlikely to have a noticeable impact on noise levels during the daytime due to the ambient noise levels at the area. During the night-time, Tonkin & Taylor consider that vehicle movements should be limited to 15 heavy vehicle movements per hour to prevent traffic noise exceeding a night-time level of 45 dB. As the rock and armour unit deliveries are proposed to take place during the daytime period these movements are unlikely to be exceeded.

Regardless, Tonkin & Taylor recommends that vehicle movements, particularly trucks carrying road and armour units, are staged throughout the daytime period to ensure noise levels generated from heavy vehicle movements are not concentrated over a short period.

7.11.10 Noise and Vibration Effects Summary

The potential effects of construction noise on nearby NSRs was identified as an early project constraint by WIAL that required careful consideration and management. The minimisation of noise effects has subsequently informed the siting of various project elements, the construction methodologies used and the hours of operation across the construction yards (as detailed throughout this report and in Section 1).

- > Noise is an inherent part of a large scale construction project such as that being undertaken by WIAL, and Tonkin and Taylor have identified the Project as having a high noise risk categorisation due to the extended duration of construction activities, the night-time construction activities exceeding the construction noise limits and the significant amount of expected vehicle movements. As a result, a number of noise management measures have been proposed by Tonkin and Taylor, as noted briefly in the preceding sections and detailed further in Section 8. With these measures in place, in addition to WIAL's voluntary offer of purchase scheme, the noise effects of the Project on NSRs have been managed to the extent reasonably practicable.



7.12 LIGHTING EFFECTS

An assessment of the potential construction lighting effects of the Project is provided in the Lighting Assessment (LDP (2025)). A copy of this report is provided in **Part B** to these application documents and summarised below.

As described in Section 2, the Project will span six to eight years, with the MGC Yard, George Bolt Yard, Moa Point Yard and the Southern Seawall construction site operating up to 24 hours a day, 7 days a week. Operating at night will require the use of lights on all light and heavy vehicles, cranes and other equipment, along with mobile construction lighting at the Southern Seawall construction site. However, the primary construction activities at the Southern Seawall site are anticipated to take 24 – 30 months, with the greatest nighttime lighting requirements and potential lighting effects expected to occur during this period. The lighting effects from MGC Yard, George Bolt Yard, Moa Point Yard and the Southern Seawall on surrounding residents, motorists and biota are considered in the following sub-sections.

7.12.1 Effects on Residents

The use of construction lighting during nighttime construction activities has the potential to result in obtrusive lighting effects on occupiers of nearby dwellings such as sky glow, light spill, glare, amenity, and health effects due to sleep disturbance and seizures.

Potential lighting effects have been assessed at the closest residential dwellings to each of the Project sites. These include the following:

- > Southern Seawall and Moa Point Yard: 33 – 48 Moa Point Road;
- > MGC Yard: (50-76 Raukawa Street and 18-36 Kekerenga Street; and
- > George Bolt Yard: no residential areas nearby.

The frequency of flashing safety lights on mobile plant equipment is between 1-2 cycles per second which is well below 5-30 cycles per second that could trigger seizures and therefore, risk of seizures is not a concern.

Across all of the Project sites, considering the Project's location within the heavily lit city and the proposed conditions that will be implemented, LDP considers the effects of the construction lighting to be between very low to moderate, or no more than minor effects on residents.

7.12.1.1 Southern Seawall and Moa Point Yard

The scale of light spill and glare effects is directly related to the distance residential dwellings are located from the light source and the intensity of the light.



The Southern Seawall and Moa Point Yard are not directly in front of private residences, and the vehicle access point is well away from private residences which will mitigate headlight sweep effects. The Southern Seawall is not visible by surrounding residences, however taller plant lighting may be partially visible. At the Moa Point Yard, taller plant will generally be screened by the local topography however construction lighting may be visible. The Eastern Bank Remediation is located closest to residences so mobile plant and vehicle lights may be seen. Provided the Eastern Bank Remediation works will occur primarily during daytime hours (6am – 8pm), the limited nighttime operating hours and limited construction period will assist to minimise potential lighting effects.

While LDP considers the effects in this area will likely be greater than elsewhere in the Project due to intermittent visibility of the crane boom lights and mobile plant and vehicle lights when manoeuvring and however still considers the effects to be low – moderate.

7.12.1.2 MGC Yard

The MGC Yard is lower in elevation than the surrounding residences and foliage will screen most of the lighting from the yard. Dwellings further uphill may have some visibility of the yard; however, effects will reduce with distance. The MGC Yard is also located adjacent to the brightly lit airport and surrounding suburban area, with lighting dominating the existing nighttime views that will minimise potential effects from the construction lighting at the site.

LDP considers the lighting effects from the MGC Yard on surrounding residences is low.

7.12.2 Motorists

The Southern Seawall construction site is located directly adjacent to Stewart Duff Drive, such that the use of construction and security lighting has the potential to generate glare and distractions to motorists. The conditions proposed include lighting towers being aimed away from the road and the site being screened by site hoarding to minimise vehicle and plant lighting. In doing so, LDP considers the effects on motorists will be low.

7.12.3 Biota

Potential lighting effects on terrestrial and marine ecology and kororā have been summarised within Sections 7.4, 7.5 and 7.6 above and considered in detail in the corresponding technical assessments provided in **Part B** of this application.

7.12.4 Summary of lighting effects

As set out by LDP, the Project has the potential to give rise to adverse lighting effects on residents, motorists and terrestrial and marine fauna (biota).

The effects of the Project on terrestrial and marine fauna is addressed in Section 7.4, 7.5 and 7.6.

With respect to residents and motorists, LDP note that the Project is located within an existing, heavily lit environment. Against this backdrop, and with the proposed limitation on construction hours as set out for the MGC Yard and the recommendations contained in the Lighting Assessment, LDP consider the effects of construction lighting will be low to moderate, or a no more than minor effect.

7.13 EFFECTS ON ARCHAEOLOGY AND HISTORIC HERITAGE

An assessment of the potential effects of the Project on archaeological and historic heritage values is provided in the Archaeological Assessment (EHA (2025)). A copy of this report is provided in **Part B** to these application documents, and summarised below.

As set out in Section 3, it is possible that subsurface archaeological features may remain intact on both the George Bolt Yard and the MGC Yard site, as well as the Stage 1 Kororā Colony. The significant earthworks required at the MGC Yard will have the potential to impact subsurface archaeological features as will any earthworks deeper than 500 mm at the George Bolt Yard and Stage 1 Kororā Colony. WIAL does not currently propose to undertake earthworks deeper than 500 mm at the George Bolt Yard, but is taking a conservative approach and will treat any earthworks on the site as having the potential to impact subsurface archaeological features on a precautionary basis.

The Southern Seawall area (including the seawall itself, the Moa Point Yard (which will subsequently become the Stage 2 Kororā Colony), and the Eastern Bank Remediation) was originally located on the seabed of Lyall Bay, before being reclaimed during the 1950s for construction of the Airport's runway. Therefore, it is unlikely that any archaeological features will be affected by earthworks and disturbance activities in this area.

In accordance with the recommendations of the Archaeological Assessment, WIAL is seeking an Archaeological Authority as part of this application for any earthwork activities associated with developing the MGC Yard, George Bolt Yard, Stage 1 Kororā Colony and the Southern Seawall area (including the seawall itself, the Moa Point Yard (and subsequent Stage 2 Kororā Colony), and the Eastern Bank Remediation). As noted above, it is unlikely that any archaeological features will be affected in the Southern Seawall area, but the area is included in the archaeological authority application on a precautionary basis.

In accordance with the ASMP included in **Part G** of these application documents, earthworks which have the potential to affect archaeological features will be monitored by a suitably qualified archaeologist while earthworks with no potential to affect archaeological features (i.e. works at the Southern Seawall area) will follow an On-Call Protocol.

The ASMP also sets out guidelines and procedures that WIAL will follow when managing the discovery of archaeological material during the works, including monitoring, management of any material discovered, and protocols relating to the discovery of koiwi tangata (human remains) and taonga tuturu (artefacts). The proposed conditions contained in **Part D** to these application documents reference this management plan and require works to be undertaken in accordance with it, as well as requiring investigation and recording of any archaeological remains or features impacted.

Given the above, EHA considers the potential adverse effects of the Project on archaeological values to be minor in the George Bolt Yard, the MGC Yard and the Stage 1 Kororā Colony. EHA confirms that these effects can be adequately managed by the archaeological monitoring procedures set out in the ASMP and the proposed conditions.

As noted in Section 6, WIAL has provided a copy of the EHA(2025) archaeological assessment, ASMP and draft archaeological authority to HNZPT for comment and review. HNZPT has subsequently confirmed that with the proposed measures in place, they are satisfied that effects on archaeology are being suitably managed.

7.14 EFFECTS ON RECREATION / ACCESS

Based on the assessments summarised above and a survey of recreational activities, this section provides an overview of the effects on recreation uses by the Project. The recreational opportunities within and nearby the Project Area include swimming, fishing and walking. Pedestrian access is possible along the coastline in this area however, access along the Southern Seawall is discouraged due to its proximity to the end of the Airport runway. Furthermore, the current amenity values of the local purpose (esplanade) reserve and the Moa Point embayment is considered low and degraded.

During a six-week period between 17 February to 31 March 2025, WIAL staff undertook twice daily visual observations to understand the extent of recreational activities that were occurring in the area. A total of 81 people were observed across six sections of the Project Area during this six-week period. Further details on the current recreational values of the area have been provided in Section 3.18.

7.14.1 Construction effects

The construction of the Project could affect the ability for people to use the area for recreational purposes; a discussion of these effects has been provided below.

7.14.1.1 Construction Traffic

The outbound heavy vehicle route described in Section 2 and the George Bolt Yard to and from Moa Point Yard construction routes intercept with Moa Point Road. The increase in



heavy vehicle movements may adversely affect the recreational use of the area for walking and cycling. Appropriate traffic management measures will be implemented to reduce recreational impacts for users of Moa Point Road and ensure effects are adequately mitigated. These measures include signage and access controls to prevent traffic queuing onto Moa Point Road, vehicles should be clear of mud and debris before entering the road, and temporary driveways or protection over footpath will be ramped to prevent a trip hazards. Overall, the traffic effects for recreational uses can be managed through the CTMP.

7.14.1.2 Construction Noise

Construction noise could potentially affect the amenity and enjoyment of use of the area for recreational pursuits. Recreational users will generally only be present during daytime construction hours and therefore are not expected to be affected by any night construction noise. Ambient noise levels during daytime hours are already elevated due to the presence of aircraft noise and the sea and this will assist to reduce the impacts of the noise from the construction and traffic during the day. Based on the observations undertaken during the day, a majority of the recreational users are transient (i.e. walking/running or cycling past) and therefore construction noise exposure would be temporary on these recreational users.

7.14.1.3 Marine ecology

The construction of the Project will have underwater noise and vibration impacts which could impact recreational users. As described in the Marine Ecology Impact Assessment, fish are likely to flee the area and take refuge in surrounding rocky locations. Fishing yields may therefore be affected for people fishing or diving in the and around the surrounding Western Seawall, Breakwater or South Coast.

Fish present in the seawall footprint are common in the region and a small portion of the recreational users observed were seen fishing, diving or kai moana gathering. These activities can be continued in nearby locations outside the construction area that will not be impacted. It is noted that habitats on the Southern Seawall itself are anticipated to recolonise the area within three years of construction being completed.

7.14.1.4 Access

Access to the Lyall Bay Breakwater, the Southern Seawall, the dunes and the Moa Point beach (up to approximately opposite Stewart Duff Drive) is expected to be closed to public access during the construction phase of the Project. The indicative area that will be closed is shown in Figure 2-7 (the indicative landside working area).



Recreational users will be affected during construction as the land cannot be accessed for these activities. The remaining parts of the Moa Point coastline will still be accessible and can be used for recreation purposes during the construction period. The effects will be temporary, and access will be restored and enhanced following the construction period.

In addition, the public will be excluded from the coast during the installation of the culvert provided kororā access to the Stage 1 Kororā Colony, and public access to the Kororā Colonies will be restricted in perpetuity to protect the kororā habitat from people and dogs.

7.14.2 Operational effects

The operation of the Project could affect the ability for people to use the parts of the Project area for recreational purposes once the Project has been completed. The two Kororā Colonies will be fenced and access from the public will be restricted to protect the kororā habitat from people and dogs. The Stage 1 Kororā Colony will be on land owned by Wellington Airport and restricted access to this land is not expected to have effects for recreational users. The Stage 2 Kororā Colony will be located within LINZ owned land. The area lost represents only a small section of the recreation area in the region and the activities observed being undertaken in this location (walking and plane spotting) can still be completed in nearby locations. The Stage 1 and Stage 2 Kororā Colonies will also enable amenity planting and native vegetation to be re-established along the coast. This will result in a more visually cohesive coastline with the potential for increased habitat and positive effects for recreation uses.

Once the operational phase has commenced the Seawall, Eastern Bank Remediation Area and Moa Point Yard will all be positively affected and recreation uses will benefit. This positive effect is due to the improved amenity and naturalness associated with the constructed change in these locations.

7.15 CONCLUSION

The Southern Seawall plays a significant role in the wellbeing of Wellington City, the region and nationally by protecting significant infrastructure, such as the Wellington Airport, Moa Point Road and wastewater pipes servicing the city. The Project will provide significant benefits associated with improved resilience of the Airport for the next 50 years alongside a range of economic benefits.

WIAL has carefully considered a wide range of potential and actual effects on the environment and has engaged a range of qualified and experienced experts to assist in understanding and assessing the effects of the Project. As set out in Section 1, this has included expert input to the early seawall design process, the siting of key project elements



and the high level development of construction methodology and techniques to ensure that adverse effects are avoided or minimised in the first instance.

The assessment contained in this section is based on the Project, as described in Section 2, and the results of the technical assessments included in Part B of these application documents. In most cases, the effects arising as a result of the Project are anticipated to be low, or no more than minor, with the implementation of robust mitigation measures. With these measures in place, the overall effects of the Project will be appropriately managed and limited in scale.

On completion, the works will have an overall positive effect on the resilience of the Airport and adjacent WCC assets (including the reserve land) to natural hazard events and sea level rise. This is critical to the realisation of the economic and social benefits of the Airport, as described in Section 7.2.1, and as facilitated by the purpose of the Act, being the delivery of infrastructure with significant regional or national benefits.