2. DESCRIPTION OF THE PROPOSED WORKS

2.1 PROJECT DRIVERS

The Southern Seawall at the Airport has reached the end of its functional life and engineering advice has confirmed that it requires reconstruction in the immediate future. The proposed Southern Seawall Renewal will overlay and extend the existing seawall to help safeguard the long-term operation of the Airport against natural hazards, increase the Airport's resilience to climate change, and reduce the (otherwise increasing) maintenance demands of the existing seawall.

The Southern Seawall not only ensures the ongoing protection of the Airport – a nationally and regionally significant piece of infrastructure – but also protects a range of WCC assets, including Wellington City's main wastewater connection to the Moa Point Wastewater Treatment Plant and Moa Point Road itself.

The Airport's other coastal defences (the Western Seawall and the Lyall Bay Breakwater) may also require renewal into the future, however this application relates only to the Southern Seawall Renewal.

2.2 PROJECT OVERVIEW

The Project is comprised of seven key elements, described below, and shown in Figure 2.1.

1. Establishment and use of the MGC Yard. Site establishment works, including fencing and bulk earthworks will be undertaken to establish the MGC Yard. Once established, the yard will be used for various construction activities, most notably, for the storage of rock and armour units to be used in the Southern Seawall renewal.
2. Clearance and use of the George Bolt Yard. The existing storage yard on George Bolt Street will be cleared, and the hangar on site demolished, before being used for general storage of rock and armour units, construction plant and equipment, as the site of a workshop and staff facilities, and other miscellaneous construction material storage associated with the Project.
3. Establishment and use of the Moa Point Yard, and site facilities at the corner of Stewart Duff Drive and Moa Point Road. Site establishment works, including fencing, vegetation clearance and re-contouring will be undertaken to establish the Moa Point Yard. The location of the Moa Point Yard – directly adjacent to the Southern Seawall working face – is critical to ensure ready access to rock and armour units as well as plant and equipment once works at Moa Point commence, thus reducing both risks associated with weather and sea state, and construction time.

4. Remediation of the Eastern Bank. The remediation works involve protection of the bank with rock. The rock protection provides a transition between the main Southern Seawall and the unprotected coastline further east, helping to reduce the active erosion of the existing bank. It will also help to support the Stage 2 Kororā Colony.

5. Renewal of the Southern Seawall. The works involve overlaying the existing seawall with a layer of rock and re-used concrete units, and a layer of concrete armour units. This work includes some excavation of the seabed at the toe of the seawall and placement of rock to form a new seawall toe, and associated works. A brief overview of this element is provided in the following video: WIAL Presentation_Animation_251009.mp4

6. Creation of two kororā colonies to support kororā habitation and breeding. The Stage 1 colony is located on the landward side of Moa Point Road, and the Stage 2 colony behind the Eastern Bank Remediation (once construction is complete). The Stage 1 Kororā Colony will be developed before effects on any suitable habitat in the construction areas begins, allowing kororā to be relocated before any existing roost and nest sites are affected. The colonies will provide purpose built nestboxes, shelter from the wind and vegetation to provide suitable habitat. Additionally, the colonies will be fenced to protect kororā from attacks by dogs and disturbance by people.

7. Supply of rock and armour units. Due to the number / volume and specific composition of rock and armour units required for the Project, a gradual programme of rock and armour unit delivery and storage will be undertaken. While it is anticipated that most of this material will be transported via road from a North Island quarry, access to a central city marine unloading point to support the importation of rock from the South Island may be needed.

The elements are each discussed further in Sections 2.4 to 2.9 below.

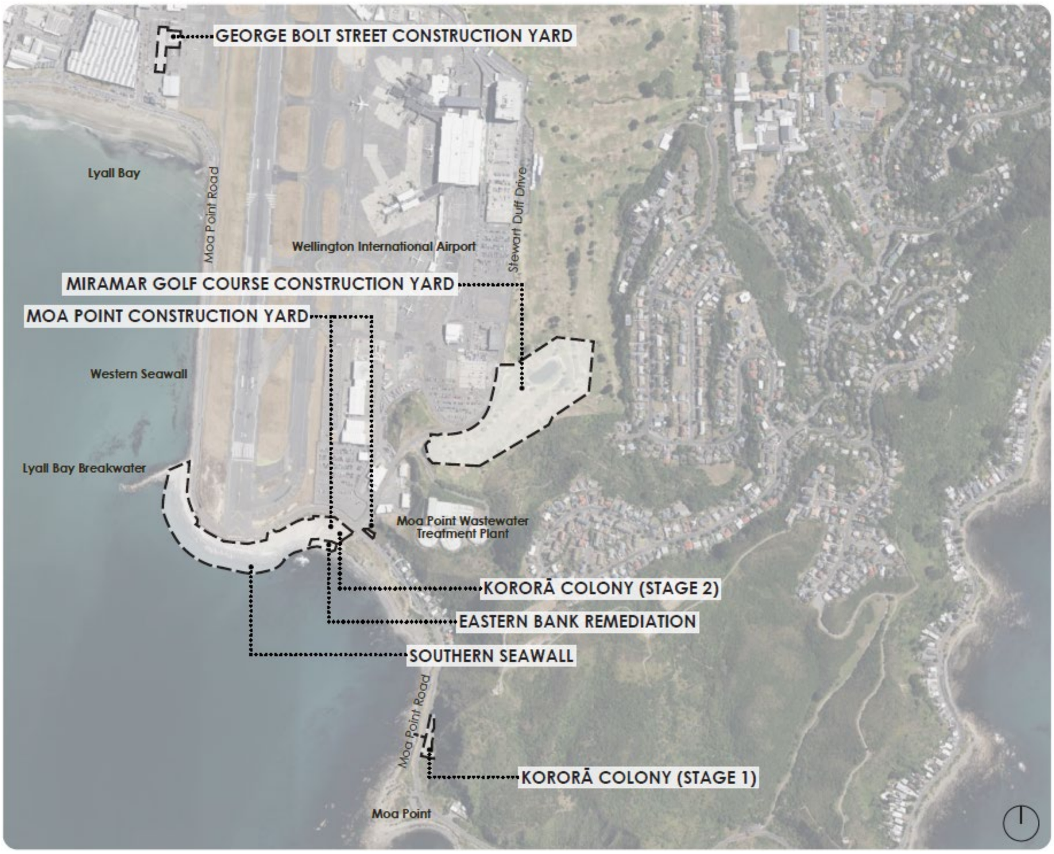

Figure 2.1: Southern Seawall Renewal project area.

2.2.1 Indicative Project Timeline

The Southern Seawall Renewal is a large, multi-year project, with various external dependencies, including ongoing airline consultation. Whilst the Project timeline will be dependent on the outcome of airline consultation, lead times for sourcing construction materials, the availability of specialist plant, safe sea state operating conditions, weather conditions and the Airport's operational requirements, it will generally follow these broad timeframes:

> Establishment of Stage 1 Kororā Colony – up to 6 months;
> Progressive enablement works at the MGC Yard – up to 8 years;
> MGC Yard rock and armour unit storage and associated activities – 4 to 8 years;
> Establishment and use of the George Bolt Yard – up to 8 years;
> Establishment of the Moa Point Yard (excluding kororā management) – 6 months;

- Southern Seawall construction and Eastern Bank Remediation – 24 to 30 months;[14] and
- Establishment of Stage 2 Kororā Colony – up to 3 months.

Elements of the construction programme will overlap; the overall construction programme will take approximately 6 to 8 years to complete. Due to the staging of works, a ten year lapse period is sought for the consents necessary to authorise the works. A 15 year term is sought for all construction related elements of the resource consent, with a 35 year term sought for maintenance and occupation purposes. A 25 year term is sought for the wildlife permits, to align with the lapse period (ten years) and subsequent consent term (15 years). Any wildlife permits subsequently required for maintenance on the completion of the works will be sought separately at a later date.

Upon completion of the Southern Seawall Renewal, WIAL may commence the second stage of its coastal renewal works (i.e. renewal of the Western Seawall). If this occurs, the MGC and George Bolt construction yards established for the Southern Seawall Renewal will potentially operate for an additional two years before disestablishment and rehabilitation works. The western part of the Moa Point Yard may also be retained and continue to operate during Western Seawall works, while the eastern part of the yard will form Stage 2 of the Kororā Colony (refer Section 2.6.1.5). Activities associated with the renewal of the Western Seawall would be subject to a separate consenting process, however.

2.2.2 Construction Workforce

The construction workforce for the Project is expected to average between 20 – 30 people on site over the entire construction period, with short term peaks of up to 50 people on site at any one time. Construction activities – and consequently workforce numbers – are expected to peak at the commencement of the Southern Seawall renewal period.

2.3 CONSTRUCTION CONSTRAINTS

The characteristics of the seawall site, including its location directly adjacent to an operational airport and its exposure to strong northerly and southerly weather conditions, present unique construction challenges that have significantly influenced the proposed construction methodology adopted for the Project.

The construction constraints with greatest bearing on the Project are:

[14] Note that this duration does not delays incurred due to adverse weather events. In such circumstances, the construction duration could increase, the extent to which being dependent on the weather conditions experienced in any given year.

- The exposed nature of the site which experiences southerly storms and swells, and strong northerly and southerly winds.
- The essential need to maintain a fully operational airport throughout the duration of the construction period, and ensuring that CAA requirements are met at all times;
- The need to minimise the amount of noise that will occur overnight to reduce noise effects on the local community as far as practicable;
- The undertaking of construction at the site where normal exposed wind and wave conditions typically preclude the use of marine-based plant and are challenging for land-based plant;
- The need to avoid potential damage to the works from adverse weather conditions which will likely occur during the construction process; and
- The logistics associated with moving, storing and placing large quantities of rock and armour units.

2.3.1 Maintaining a fully operational airport throughout the construction period

One of the mandatory requirements of the Project is that the Airport must remain operational throughout the construction of the seawall. All construction activity will therefore need to be managed in such a manner that it does not impinge on the Airport's ability to meet CAA and operational requirements.

The Airport's designated OLS present one of the most significant construction constraints for the Project. OLS are defined surfaces in the airspace around airports that set limits for the height and placement of obstacles to ensure the safety and efficiency of aircraft operations. To avoid plant and equipment penetrating these surfaces at times when the runway is operating and to otherwise manage or mitigate the effects of construction on airside operations and approaching and departing aircraft, a combination of methods are required to be implemented, such as:

- Scheduling works and the use of construction equipment that will penetrate the OLS outside of the Airport's core operational hours. As part of the Airport's curfew procedures, aircraft operations (i.e. take-off and landing) generally do not occur during the following hours:[15]
  - Domestic operations: from 12 am to 6 am;

[15] There are a number of exceptions to this procedure, which include disrupted flights, emergency / medical flights, and during statutory holiday periods.

  - International departures: from 12 am to 6 am;
  - International arrivals: from 1 am to 6 am;
- Ensuring procedures are in place to allow for the ongoing access and use of the runway (and thus obstacle free flight paths) for flights associated with medical emergencies;
- Implementing measures to appropriately manage lighting, glare and dust generation; and
- Ensuring the integrity of the existing seawall, and thus, the ongoing protection of the Airport during construction.

2.3.2 Minimising nighttime noise

Due to the requirement to allow the Airport to remain operational by preserving the integrity of the OLS, certain aspects of the proposed works will need to occur at night. WIAL will implement measures to avoid or minimise nighttime noise. These include measures such as:

- Avoiding heavy vehicle movements in and out of the MGC Yard overnight and minimising smaller vehicle movements as far as is practicable;
- Installing noise reductors and low impact beepers on on-site plant;
- Using equipment (for example, sand mats) to reduce the noise of rock being unloaded to ground; and
- Investigating construction methodologies and equipment (for example solar or battery powered lighting towers and piling techniques) that could potentially reduce noise effects.

Noise will be regularly monitored at the construction boundary and at the nearest residential dwellings throughout the duration of the project.

2.3.3 The weather and sea conditions in Lyall Bay

The seawall site is exposed to the open sea, which will result in construction sequencing being affected by waves, tides and wind patterns. Sufficiently adverse weather conditions will bring a halt to construction activities. To manage the risk of adverse weather and sea conditions to the Project, construction will be mostly land based, meaning that equipment can be moved to a safe location at short notice if required due to weather conditions.

The equipment used on site will be selected considering the exposed site and will be self-moveable to allow for a rapid return from the work face if required.

Other methods to manage the risk of adverse weather and sea conditions include:

> Utilising data obtained from offshore wave buoys to provide accurate local wave state data;[16]

> Obtaining specialist project specific advice on both weather and sea state conditions (e.g. site-specific forecasting);

> Sequencing work to allow multiple work fronts to maximise fair weather construction periods;

> Utilising temporary protection measures, such as armour rock stockpiles, or filled 20-foot containers, along the top of the working platform to provide day-to-day protection for the working areas; and

> Scheduling construction on more vulnerable areas of the seawall to occur between December and March, when sea conditions are generally lighter, and daylight hours are longer.

2.3.4 Logistics associated with moving and placing a large quantity of bulk material

On an indicative basis, up to 80,000m^3 of rock and 7,600 armour units (Cubipods) are required to complete the seawall renewal. With such large volumes, construction constraints arise from the rate at which the material can physically be acquired, transported to and processed on site.

To address this logistical challenge, and flatten 'peaks' of heavy vehicle movements, WIAL proposes to transport rock (via road), and stockpile rock at the MGC Yard over multiple years, prior to the commencement of seawall construction. A stockpile of Cubipods will also be established at the MGC Yard and the George Bolt Yard for contingency, although most Cubipods will be delivered directly to the Moa Point Yard for placement. If a barge is used to source rock material, a more intense period of truck movements from CentrePort to the Airport will be experienced, coinciding with barge arrivals. The logistics surrounding source construction material is addressed in greater detail in Section 2.9 below.

Once construction of the seawall commences, rock will be transported from the MGC Yard or the George Bolt Yard to the Moa Point Yard and work face by truck, as required.

16 Utilising the existing an existing coastal permit held by WIAL (WGN250069).

2.4 MGC YARD

The MGC Yard (as shown in **Figure 2.2**) will be the primary storage yard for the Project. The MGC Yard will be used for stockpiling rock, storing small numbers of Cubipods and other materials and for storing plant and equipment. The yard will also include a site office and construction staff welfare facilities.

Construction materials will gradually be stockpiled at the MGC Yard over multiple years. The MGC Yard is expected to operate for around 8 years, with its operation potentially extended if required for the Western Seawall renewal works.

Site plans for the MGC Yard are included in **Part C** of these application documents.

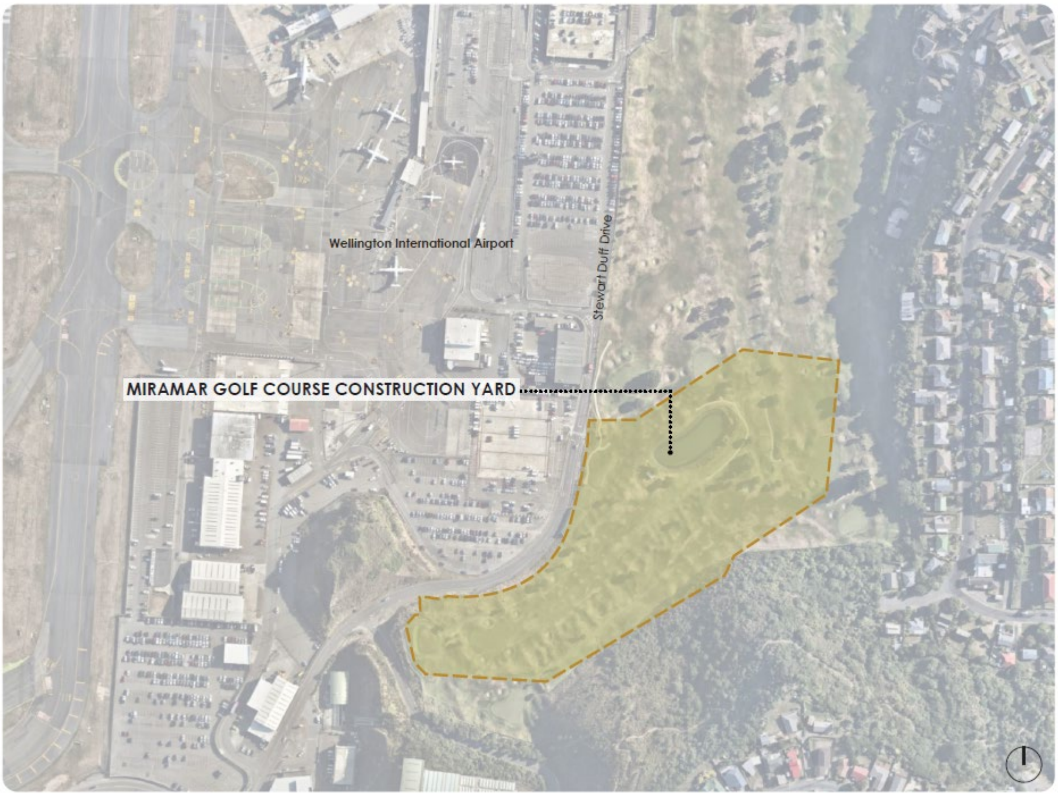

Figure 2.2: Plan of the MGC Yard.

2.4.1 Site Establishment Activities

The MGC Yard will be established in advance of the seawall construction site, in order for WIAL to commence rock and armour unit stockpiling. The MGC Yard establishment works are expected to commence as soon as consent is granted and will take up to 8 years to complete progressively as increased storage area is required. The establishment phase will include the following enabling works:

- Implementation of sediment and erosion control measures including dust suppression irrigation lines, in accordance with the SSESCP, ESCMP and ChemTP. The ESCP, ESCMP and ChemTP are included in **Part G** of these application documents, and described in further detail in Section 2.10;
- Construction of reinforced concrete crossings at entrance and exit points;
- Installation of security fencing with specific controlled site entries and exits to Stewart Duff Drive;
- Installation of portable buildings for offices and amenities purposes, including connections to services such as power and water;
- Location and protection of existing services (including a sewer line, stormwater line and power supply cable), with services relocated as required;
- Stripping and stockpiling topsoil;
- Earthworks to recontour the site to a level surface, suitable for yard activities (excavated material will be carted to approved earthworks disposal and / or engineered fill sites);
- Installation of drainage works;
- Construction of all-weather (permeable granular) pavements; and
- All associated and ancillary activities.

A range of plant will be required to establish the site, as described in Section 2.4.3, below.

Topsoil will be stockpiled in piles between 3 – 5m high. However, due to the existing contour of the site, the bulk of the excavated material will be disposed offsite. Where possible, excess cut material will be removed from site as backhaul to rock deliveries. If this is not possible due to project scheduling, additional truck movements will be required. More details on anticipated truck movements are provided in Section 2.9, below.

The proposed specifications of the MGC Yard works are shown in **Table 2.1**, with detailed design drawings included **Part C** of these application documents.

Table 2.1: Proposed specifications of the MGC Yard works and buildings. [17]

Parameter	Specification
Yard area	< 4.5 ha
Earthworks area	~4 ha
Earthworks cut volume	~100,000 m^3
Earthworks fill volume	~2,000 m^3
Earthworks cut to be removed offsite	~100,000 m^3
Paved area (yard entrance and exit)	up to ~400 m^2
All-weather (permeable granular) pavements	~30,000 m^2
Yard buildings	~500 m^2, up to 5 m high

2.4.2 Site Operation and Stockpiling Activities

As the operational yard area is progressively established to match storage requirements, activities at the MGC Yard will include truck loading and unloading, using both loaders and by tipping, the storage of construction materials, and site management activities. The indicative plant that will be used onsite during the operation of the MGC Yard is described in Section 2.4.3, below.

The estimated quantity of construction material that is required for the Project, and may be stockpiled at the MGC Yard, is shown in **Table 2.2**. Note that the quantities given are the cumulative totals for the Project and not the quantities stored at the yard at a point in time. It is anticipated that approximately 10 percent of total Cubipod units will be stored at the MGC Yard at any time, and most Cubipods will be delivered directly to the Moa Point Yard (from the offsite production yard or George Bolt Yard) for placement. Once works commence on the Southern Seawall, rock, Cubipods and plant and equipment will be moved from MGC Yard to the Moa Point Yard during the day and a surge pile formed at the working face.

[17] These figures are approximate and subject to detailed design.

Table 2.2: Construction materials that may be stockpiled at the MGC Yard.

Material	Estimated quantity required across the life of the project
Cubipods	7,600 units, stored in stockpiles up to 4.5m high.
Rock	60,000 to 80,000 m^3, stored in stockpiles up to 6m high.

The SSESCP for the MGC Yard will remain in place for the majority of the construction period as the yard is being progressively established. Once the yard is stabilised and fully established, the following erosion and sediment control devices will be repurposed to manage construction phase stormwater:

- Clean water diversions (cut-off drains) around the southern border of the site will be retained and will continue to discharge 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
- Clean water diversions (cut-off drains) around the eastern and northeastern side of the MGC Yard will be retained and will continue to be conveyed to the existing pond, which is connected to the downstream piped stormwater network.

Due to the proposed finished ground levels, the MGC Yard will sit below the level of Stewart Duff Drive. Stormwater within the yard will ultimately drain to soakage and the existing stormwater pond. Temporary ponding may occur at the low point during and immediately after a rain event while any stormwater infiltrates the underlying sandy soils.

WIAL holds an existing site wide stormwater discharge permit for the discharge of stormwater within the wider Airport landholdings. Within three months of the site being stabilised, WIAL will submit an updated site-wide Stormwater Management Plan that accounts for the temporary use of the site as a temporary construction yard.

The stormwater measures will be decommissioned when operational activities at the MGC Yard have ceased and a separate project commences to construct permanent works in the southern Miramar Golf Course.

2.4.3 Plant and Equipment

The indicative plant that will be used onsite during the establishment and operation of the MGC Yard is shown in **Table 2.3**.

Table 2.3: Indicative plant to be used at the MGC Yard.

Activity	Indicative Plant
Establishment / Disestablishment Activities	
Landside pavement and site entry / exit construction, may include: > Fencing; > Establishment of erosion and sediment control devices and dust suppression measures; > Vegetation / site clearance; > Removal of topsoil and reuse for landscaping; > Earthworks; > Protection of existing utilities; > Trenching and installation of utilities; > Placement and compaction of aggregate basecourse; > In situ concrete placement for entry / exit crossings; > Installation of either asphalt millings or suitable imported aggregates to create all weather hardstanding areas; > Planting of landscaped areas; and > Truck delivery of materials.	> 2 x 40 tonne excavators > 1 x 12 tonne excavator > 1 x bulldozer > 1 x grader > 1 x watercart > 2 x loaders > 2 x rollers > 1 x 120 tonne crane > Road truck and trailers > Portable lighting towers and generators > Miscellaneous small plant items
Installation of yard building, may include: > Fencing; > Site clearance (including vegetation removal); > Excavation / backfilling for foundation and services trench; > In situ concrete placement for foundation, installation of portable site offices and ablution facilities; and	

Activity	Indicative Plant
> Connection of services.	
Demobilisation and disestablishment of temporary facility, may include: > Removal of yard buildings.	
Operational Activities	
Truck unloading / loading (including by tipping) and storage of construction materials	As above.

2.4.4 Site Access and Traffic Management

The MGC Yard will be accessed off Stewart Duff Drive via newly formed and established crossing points, as shown in the locations identified in the design plans included in **Part C**.

A draft CTMP has been developed for the Project and is included in **Part G** of these application documents. The draft CTMP sets out the traffic management measures that will be used to safely control the interface with road users, pedestrians and construction traffic, including (but not limited to):

- The use of plans and signage;
- The management of traffic entering and exiting the yard, as well within the MGC Yard;
- Staff and visitor traffic movements;
- Parking;
- Haulage hours, movements and routes; and
- Access and adjacent road maintenance.

2.4.5 Hours of Operation

Construction of the MGC Yard will occur during the hours of 7:30 am to 6:00 pm, Monday to Saturday. Other ancillary works, not involving large plant, may occur between the hours of 6:30am and 7:30am.

Once constructed, the MGC Yard will operate between the hours of 6:30 am and 8:00 pm on weekdays, and 7:30am and 6:00 pm Sundays. Operational constraints will be imposed on the use of the yard on weekdays, between 6:30 am and 7:30 am and 6:00 pm and 8:00 pm, with heavy vehicles access restricted to Stockpile 4 only and the remainder of the yard being closed to heavy vehicles.

Outside these hours, access to the yard will be limited to light vehicles and will only be required if contractors need to gain access to equipment and / or facilities in the event of construction plant breakdown.

2.4.6 Construction Lighting

Given that the MGC Yard will mainly be used during the day, overnight lighting will be confined to headlights from light vehicles and security lighting fixed to temporary buildings.

Where required between 6:30 am and 8:00 pm, lighting on mobile plant, and up to three portable lighting towers may be used to provide adequate lighting for yard operations.

2.4.7 Hazardous Substance Management

Hazardous material will be stored onsite in specialised storage containers, in accordance with the applicable hazardous substances regulations.

Refuelling will be undertaken by small mobile refuelling tankers and will follow safe operating procedures.

Servicing and maintenance of plant and equipment used within the MCG Yard will preferentially be completed at the George Bolt Yard; however, such activities may also occur within the MGC Yard from time to time where it is not practicable or efficient for plant or equipment to be transported to the George Bolt Yard for servicing or maintenance.

2.4.8 Site Disestablishment

Once the MGC Yard is no longer required, the site will be demobilised and disestablished by removing all construction facilities, including yard buildings on site.

The site will be left at a level grade and in a clean and tidy state. All landscaping undertaken to manage the effects of the Project will be retained and maintained until such a time that the area is further developed by WIAL.

2.5 GEORGE BOLT YARD

The George Bolt Yard (as shown in **Figure 2.3**) includes a 2,500m^2 site that is currently used by WIAL for various storage activities, and a 1,000m^2 hangar that will be demolished and made contiguous with the existing storage yard.

Figure 2.3: Plan of the George Bolt Yard, including the hangar that will be demolished.

During the Project, the combined George Bolt Yard will be used to store construction material (including Cubipods), plant and equipment, as the site of a workshop and staff facilities, and for associated activities.

The George Bolt Yard is expected to take three months to establish and will operate throughout the life of the Project, with its operation to potentially be extended if required for the Western Seawall works.

The George Bolt Yard will house the primary maintenance facility for all construction plant and equipment, except for the large equipment used for rock and Cubipod placement at the seawall face, which will be serviced at the Moa Point Yard (refer to Section 2.6.1).

2.5.1 Site Establishment Activities

Enabling works will involve:

- Clearing the site of any materials and equipment currently stored there;
- Demolishing the existing hangar on site;
- Installation of CAA compliant airside / landside chain wire security fencing (up to 2.5 m high) with site specific entries and exits;

> Installation of temporary / portable workshop and ancillary equipment to support the maintenance of the plant and equipment required to construct the Southern Seawall (refer to **Figure 2.4**);

> Installation of portable buildings for offices, amenities and maintenance purposes, including connections to services such as power and water;

> Location and protection of existing services, with services relocated as required; and

> Repairs to existing pavement as required.

A range of plant will be required to establish the site, as described in Section 2.5.2, below.

The maximum cumulative area of temporary buildings and workshops on site will be 700m^2, with maximum building height of 5m.

Figure 2.4: Indicative George Bolt Yard maintenance workshop.

2.5.2 Plant and Equipment

The indicative plant that will be used onsite during the establishment and operation of the George Bolt Yard is shown in **Table 2.4**.

Table 2.4: Indicative Plant to be used at the George Bolt Yard.

Activity	Indicative Plant
Establishment / Disestablishment Activities	
Site clearance, may include: > Removal of existing materials located at site; and > Removal of existing hangar. Installation of yard building, may include: > Fencing; > Site clearance; > Excavation/ backfilling for foundation and services trench; > In situ concrete placement for foundation; > Installation of portable site offices; > Ablution facilities and workshops; and > Connection of services. Demobilisation and disestablishment of temporary facility, may include: > Removal of yard buildings.	> Light vehicles > Service and delivery vehicles > 1 x 25 tonne forklift > 1 x 40 tonne excavator > 1 x road legal wheel loader > 1 x water cart > 1 x road sweeper > Tractors with trailers > Road truck and trailers > Low loader transporters > 1 x 150 – 200 tonne mobile crane > Portable lighting towers (daytime storage and servicing)
Operational Activities	
Truck unloading / loading (including by tipping) and storage of construction materials; and Servicing and maintenance of vehicles and machinery.	As above.

2.5.3 Hazardous Substance Management

Hazardous material will be stored onsite in specialised storage containers, in accordance with the applicable hazardous substances regulations.

Refuelling will be undertaken by small mobile refuelling tankers and will follow safe operating procedures.

Servicing and maintenance of plant and equipment used within the George Bolt Yard, the MGC Yard and Moa Point Yards will also be undertaken on site.

2.5.4 Hours of Operation

The George Bolt Yard is surrounded by land owned by WIAL. During yard establishment, operating hours will be Monday to Saturday 7am to 5pm. During the operational phase, the yard will operate 24 hours per day, 7 days per week.

2.5.5 Construction Lighting

Given that the George Bolt Yard will operate overnight during Southern Seawall construction, up to 12 fixed column mounted lights will be required to provide adequate lighting for yard operations.

Additional lighting will include headlights from light vehicles, lighting on mobile plant and security lighting fixed to temporary buildings.

2.5.6 Site Disestablishment

Upon completion of the Project, temporary facilities will be removed and the site left in a tidy state. The site may continue to be used for armour unit storage or other airport related activities on the completion of the works.

2.6 SEAWALL CONSTRUCTION WORKS

2.6.1 Moa Point Yard

The Moa Point Yard, shown in **Figure 2.5**, will be the main operational storage area during the seawall construction works. It will be used for storing construction materials and general plant setup and maintenance facilities adjacent to the seawall workface. The Moa Point Yard will also be used for servicing large equipment that cannot easily be transported to the George Bolt Yard.

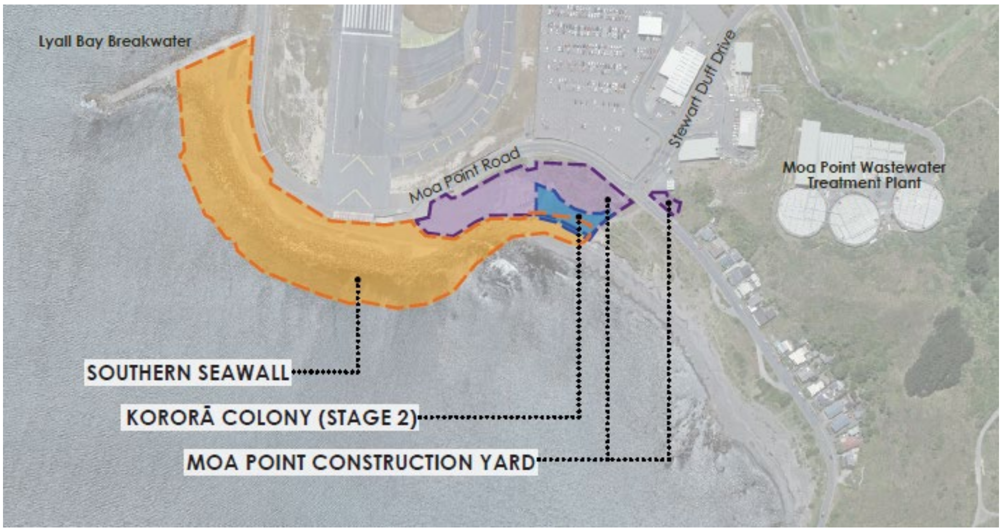

Figure 2.5: Plan of the Moa Point Yard and Southern Seawall.

Site facilities will be installed at the corner of Stewart Duff Drive and Moa Point Road (as shown in the design plans attached as **Part C** to this application).

Once works commence on the Southern Seawall, rock, armour units and plant and equipment will be moved from MGC Yard to the Moa Point Yard during the day to provide a 'surge pile' at the working face. Some deliveries may also be made directly during the works to avoid doubling handling of material. These deliveries will occur between 6am and 10pm.

The Moa Point Yard is necessary to ensure there is ready access to rock, armour units and general plant and equipment to support the works, minimising overnight activity on the MGC Yard, improving construction efficiency (and thus helping to reduce the construction duration) and providing an immediately accessible area for plant to be moved to in the event of adverse conditions.

The preliminary list of plant and equipment for use at the Moa Point Yard is provided in Section 2.6.1.2 below. However, the specific plant to be used will be determined based on the requirements identified during the construction planning and detailed design process.

The Moa Point Yard will be passively used to support ongoing pre-renewal seawall maintenance and kororā relocation from mid-2026. Formal site establishment will commence six months prior to the commencement of the Southern Seawall works and the public will be excluded from that time. It is anticipated that the Moa Point Yard will be used for 24 – 30 months to support the Southern Seawall works, with the operation of the western portion of the site potentially extended if required for any potential Western Seawall renewal works (refer to Section 2.6.1.5, below).

2.6.1.1 Site Establishment Activities

Enabling works are expected to take up to 6 months and will involve the following activities:

> Installation of chain wire security fencing (up to 2.5 m high) with site specific entries and exits (included in design plans contained within **Part C** of these application documents);

> Implementation of erosion and sediment control measures, in accordance with the SSESCP and ChemTP included in **Part G** of these application documents, and as described in further detail in Section 2.10.

> Installation of portable "satellite" buildings for offices, amenities and maintenance purposes, including connections to services such as power and water (by intersection of Moa Point Road and Stewart Duff Drive);

> Location and protection of existing services (including stormwater and wastewater lines), with services relocated if required;

> Stripping and stockpiling topsoil (where it is present), and large plant relocation (for example, harakeke) where practicable;

> Earthworks to recontour the site to a level surface, suitable for yard activities. (If possible, all material will be used for levelling on site, however, if any material was found to be unsuitable for re-use, it would be removed and disposed at an appropriately authorised disposal site). Once the site has been recontoured, clay capping material may be brought in and placed to cover existing historic fill if required;

> Installation of drainage;

> Levelling of area and contouring edge of wave trap for construction access;

> Construction of all-weather (granular, permeable) pavements;

> Installation of reinforced concrete vehicle entrances at site entrance and exit; and

> All associated and ancillary activities.

No earthwork or recontouring is proposed for the site at the corner of Stewart Duff Drive and Moa Point Road.

The proposed specifications of the Moa Point Yard works are shown in Table 2.5, with indicative design drawings included in **Part C** of these application documents.[18]

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[18] These figures are approximate and subject to detailed design.

Table 2.5: Proposed specifications of the Moa Point Yard.

Parameter	Specification
Earthworks area	Up to 10,000 m^2 (including Stage 2 Kororā Colony from Stewart Duff Drive to east end of Eastern Bank rock protection).
Earthworks volume	Up to 25,000 m^3
Paved area (crossings and accessway)	Up to 200 m^2
All-weather (permeable granular) pavements	Moa Point Yard: 9,000 m^2 Moa Point Foreman's Yard: 284m^2
Yard buildings (if required)	Up to 80-100 m^2, and up to 6 m high OR Up to 170 m^2, and up to 4m high

2.6.1.2 Plant and Equipment

The indicative plant that will be used onsite during the establishment and operation of the Moa Point Yard is shown in **Table 2.6**.

Table 2.6: Indicative plant and equipment to be used at the Moa Point Yard.

Activity	Indicative Plant
Establishment / Disestablishment Activities	
Landside pavement and site entry / exit construction, may include: > Fencing; > Establishment of erosion and sediment control devices and dust suppression measures; > Vegetation / site clearance; > Removal of topsoil and reuse for landscaping; > Earthworks to desired levels;	> 1 x 20 tonne excavator > 1 x 12 tonne excavator > 1 x grader > 1 x watercart > 1 x loaders > 2 x rollers > Road truck and trailers > Portable lighting towers and gensets, additional vehicle mounted lighting

Activity	Indicative Plant
> Trenching and installation of utilities if required; > Placement and compaction of aggregate basecourse; > In situ concrete placement for entry / exit crossings; > Installation of either asphalt millings or suitable imported aggregates to create all weather hardstanding areas; > Truck delivery of construction materials.	> Generators > Miscellaneous small plant items
Installation of yard building, may include: > Fencing; > Site clearance; > Excavation / backfilling for foundation and services trench; > In situ concrete placement for foundation, installation of portable site offices; > Ablution facilities and workshops; and > Connection of services.	
Demobilisation and disestablishment of temporary facility, may include: > Removal of yard buildings and rehabilitation; and > Landscaping and enhancement planting / habitat creation (as recommended by experts).	
Operational Activities	
Truck unloading / loading (including by tipping) and storage of construction materials.	As above.

2.6.1.3 Hours of Operation

The Moa Point Yard will be established between 7:00 am and 6:00 pm, Monday to Saturday.

During the stockpiling phase (prior to the commencement of seawall construction), rock and armour unit deliveries will be made between 6:30 am and 8pm on weekdays, and 7:30 am and 6:00 pm on weekends and public holidays.

Once renewal of the Southern Seawall commences, the Moa Point Yard will operate 24 hours per day, 7 days per week. Deliveries may be made directly to this yard, or via the George Bolt and MGC Yards however no rock or armour units will be delivered from the MGC Yard between 8:00 pm and 6:30 am.

2.6.1.4 Construction Lighting

When required for overnight works, the Moa Point Yard will be illuminated with up to eight building mounted floodlights.

Additional lighting will include headlights from light vehicles and security lighting fixed to temporary buildings.

2.6.1.5 Site Disestablishment

The western part of the Moa Point Yard may be retained for use during the Western Seawall works. Demobilisation and removal of the western part of the Moa Point Yard, including removal of temporary facilities and reinstatement where relevant, will occur once the renewal of the Western Seawall (which is to be consented at a later date) is completed. The western part of the yard will be returned to a level, gravel and grassed condition, similar to present. If renewal of the Western Seawall does not proceed, the demobilisation and disestablishment activities will be completed at the end of Southern Seawall works.

The eastern part of the Moa Point Yard will be disestablished upon completion of the Southern Seawall works. The south-eastern portion of the yard will form the Stage 2 Kororā Colony (refer to Section 2.8.1.2). The north-eastern portion of the yard will be rehabilitated in accordance with ecological advice.

2.6.2 Southern Seawall Construction Overview

The proposed construction approach to the Southern Seawall works involves:

> Overlaying the existing seawall with a layer of rock and re-used concrete units (underlayer), and two layers of concrete armour units (armour layer), and construction of the seawall toe;

> Replacing the Eastern Area informal rock and concrete rubble with a formal seawall (using concrete armour units, rock underlayers, hardfill, geotextile and an excavated toe); and

> Replacing the rock armour, reno mattress and gabion baskets at the seawall crest, wave trap and backslope with rock armour and underlayer, gabion baskets and potentially a recurve wave return wall.

The existing seawall elements are shown in **Figure 2.6**. The proposed seawall is shown in drawings 3324338-CA-SK007-SK009 and SK100-SK105 in the design drawings, included in **Part C** of these application documents.

A brief overview of the Project construction methodology is provided in the following video: [WIAL Presentation_Animation_251009.mp4]

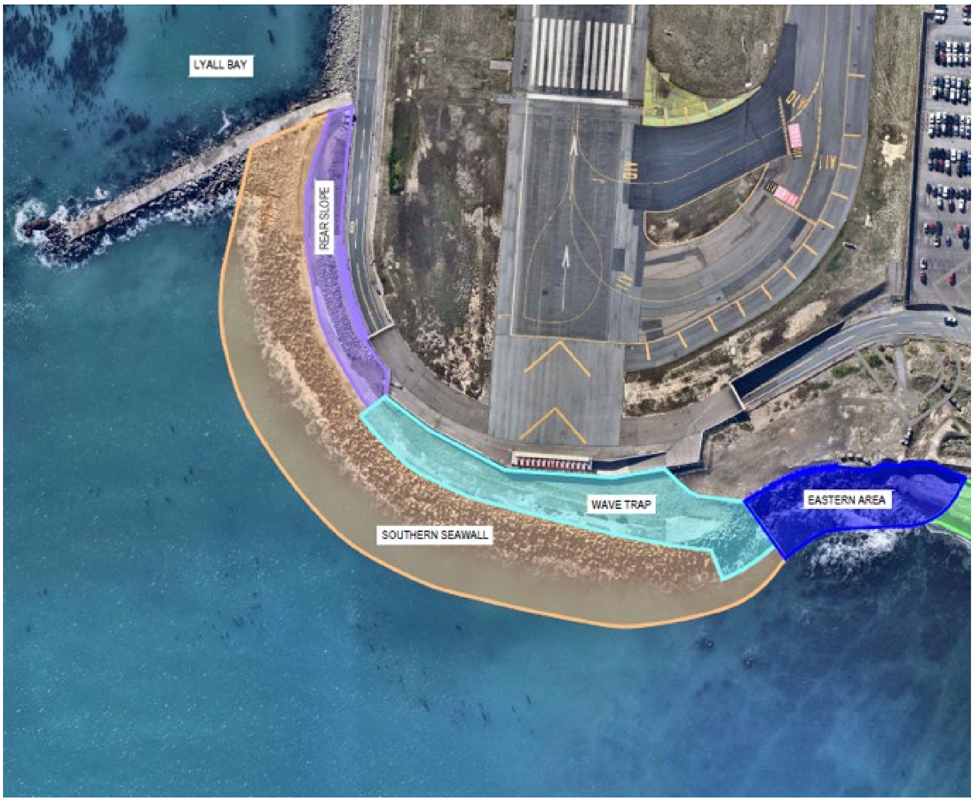

Figure 2.6: Existing Southern Seawall including seawall elements (Beca, 2025a).

A summary of key metrics for the existing and proposed seawall is shown in **Table 2.7**. A visual comparison of the existing and proposed seawall elements is included in **Part C** of these application documents.

Table 2.7: Key metrics of the existing and proposed seawall.

Parameter	Specification
Existing seawall length Includes: > Existing formal Southern Seawall length > Existing Eastern Area informal seawall	~400 m ~300 m ~100 m
Proposed seawall length (at crest)	Up to 430 m (measured at seaward side of the crest)
Increase in seawall width at existing formal seawall	~20-30 m (at varying points)
Potential excavated volume for toe	Up to 10,000 m^3
Increase in total proposed seawall footprint	Up to 12,000 m^2
Seawall crest level	~6.4 m-7.4 m NZVD16 initially (up to 1m above existing crest level) with a potential further uplift to approximately 8.2m NZVD16 in future, depending on future climate change (refer to Section 1.6.5) and Airport operational requirements.
Crest wall	~220 m long (up to 8,000m^3 of steel reinforced concrete)
Concrete armour units	Up to 7,600 units to be used, with up to 40,000-60,000 m^3 of concrete
Gabion	~150 m long (2,000 m^3 of rock)
Armour rock	~10,000 - 20,000 m^3
Underlayer rock	~30,000 - 70,000 m^3
Toe rock	~15,000 - 20,000 m^3

Overall, the work is expected to increase the width of the seawall seaward by approximately 20 m to 30 m. The total finished length of the formal seawall will increase (at the crest) by approximately 100 m. That additional 100 m length of formal seawall replaces the 100 m existing 'informal' length of seawall, meaning the overall 400 m seawall length will be unchanged. It is noted that while the dimensions of the seawall will increase, the purpose of the seawall is not to create dry land.

The proposed works will result in up to an additional 12,000 m^2 of permanent occupation of the coastal marine area (refer to drawing 3324338-CA-SK105 in the design drawing as included as **Part C** of these application documents).[19] No reclamation is proposed as part of the Project.[20]

The construction of the seawall will be predominately undertaken as a shore-based construction activity. With the exception of small marine vessels being used to undertake seawall surveys or dive inspections (when weather permits), no marine based plant will be used during the construction period.

The landside working area during the seawall construction period extends from Moa Point Road to Mean High Water Springs (**"MHWS"**) and from the Lyall Bay Breakwater to approximately opposite Stewart Duff Drive, as shown in **Figure 2.7**. The landside working area covers approximately 30,000 m^2.

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19 This is a conservative figure based on the indicative design. The final figure is subject to detailed design.

20 Within the NRP, reclamation in the coastal marine area or the bed of a river, lake, or wetland means the creation of dry land. In the coastal marine area, reclamation does not include coastal or river mouth protection structures such as seawalls or revetments, boat ramps, and any structure above water where that structure is supported by piles, or any infilling where the purpose of that infilling is to provide beach nourishment.

Figure 2.7: **Indicative landside working area during seawall construction (approximately 30,000 m²).**

2.6.3 Seawall Construction Methodology

As set out in Section 2.3.1, in order to maintain the safe and efficient operation of the Airport, most of the works will be completed outside the Airport's operating hours. Additional safety measures such as geofencing software will be installed on all equipment to ensure aircraft are kept safe from construction equipment.

The construction contractor will determine the construction programme taking into account Airport operating constraints and by analytical review of historical wind and wave data to determine safe and suitable construction periods. This information will inform the programme and duration of construction activity; however it is anticipated that the Southern Seawall renewal works will take approximately 24 – 30 months.

Once works on the Southern Seawall commence, construction is expected to proceed in a sequential manner from east to west, or with rock toe placement in the central section of the seawall and excavation of the toe trench in the western and eastern sections of the seawall, followed by construction of the seawall slope. This is subject to the contractor's final methodology.

2.6.3.1 Site Establishment

Prior to any construction activities occurring, the Southern Seawall worksite will be securely fenced and gated, with purpose-built vehicle entry and exit points, including concrete crossings to minimise the spread of any debris onto the roading network. The locations of the site access points are shown in drawing 3324338-CA-SK0009, included in **Part C** of these application documents.

Erosion and sediment control measures will be implemented in accordance with the SSESCPs (included in **Part B** and **G** of these application documents), along with the inception of a compliance monitoring programme and regular maintenance measures. Once erosion and sediment control measures are in place, the site will be cleared, and the existing wave trap will be overlaid with aggregate to create all weather permeable vehicle access.

The fibre optic cable connected to the WIAL windsock at the Southern Seawall will be relocated to a suitable and safe location to facilitate construction activities and to ensure these critical assets are not inadvertently affected by construction activity. Potholing will also be undertaken to accurately locate and protect all existing underground services that are to be left whilst construction works are being undertaken.

2.6.3.2 Eastern Bank Remediation

The Eastern Bank Remediation is expected to be undertaken either early in or towards the end of the Project, as determined by the contractor's detailed construction phasing and methodology.

Site fencing will be installed as required to prevent fall from heights and to separate construction worker foot traffic from construction equipment movements.

Once the site has been established, the proposed construction activities will be as follows:

- Implementation of sediment and erosion control measures, in accordance with the SSESCP (included in **Part B** and **G** of these application documents);
- Removal of any debris and vegetation within the work area, including within the existing stormwater system;
- Protect existing services and reconstruct existing stormwater outlet;
- Contouring of the existing bank, with any cut material to be placed on the Moa Point Yard;
- Clearance and storage of granular beach material, excavation of toe key in rock (up to 1m deep), and placement of excavated rock on Moa Point Yard, or construct toe rock;
- Placement of geotextile along the bank;
- Construction of rock protection from the toe landward, and working progressively along the structure;

> Replacement of beach material over the lower rock protection; and

> All associated and ancillary activities.

The key metrics of the existing Eastern Bank and the proposed Eastern Bank Remediation are shown in **Table 2.8**. Due to the active erosion of the Eastern Bank, it is possible that the rock armour will be placed 5 – 10 m inland of the location shown on the design plans (included as **Part C** of these application documents). The exact location of the Eastern Bank Remediation works will be determined by a survey immediately prior to works.

Table 2.8: Key metrics of the Eastern Bank and proposed Eastern Bank Remediation.

Parameter	Specification
Existing unprotected bank length	~130 m to 260 m (depending on whether central section of coastline is included)
Length of Eastern Bank Remediation	~80 m
Width of proposed rock protection	<~20 m
Potential excavated depth	<1 m into underlying rock
Eastern Bank Remediation footprint	~ 2,000 m^2 to 3,000 m^2
Eastern Bank Remediation crest level	~6.5 m NZVD16 sloping to approximately 5.5 m NZVD16
Volume of rock armour	2,000 m^3 – 4,000 m^3

Once construction has concluded, regular monitoring and maintenance of the Eastern Bank Remediation (for example, the relocation and replacement of rock and geotextile, and the relocation of beach material) will be required.

The plant and equipment required for works on the Eastern Bank Remediation will not penetrate the OLS, therefore construction in this area will occur between 6:30 am and 8:pm on weekdays, and 7:30am and 6:30 pm on weekends and public holidays.

The preliminary list of plant equipment for works to be undertaken on the site is provided in Section 2.6.3.5, below.

It will take approximately three months to construct the Eastern Bank Remediation.

2.6.3.3 Southern Seawall

To renew the Southern Seawall, the existing reno mattresses and gabion baskets, Akmon armour units and rock at the crest of the existing seawall must be removed to allow underlayer rock and Cubipods to be placed. This work will be undertaken in a staged manner to ensure adequate sea defences are in place to protect the works against storm events. All weather access roads will be constructed using suitable basecourse to enable safe access for workers and equipment, as well to mitigate sediment runoff.

Prior to construction, discrete ground improvements will be undertaken to enable the safe support of construction equipment during the construction process. Ground improvements may comprise cement stabilised hardstanding and micro piling (within the current seawall slope, above low tide level) and steel staging to support the specialist seawall placement equipment. Refer to Section 2.6.3.4 for further details on ground improvements.

Ground improvements are expected to be completed within the first 9 – 12 months of the seawall construction phase. If required, micropiling will occur over a 3 – 6 month period.

Once the ground improvements are in place, the proposed construction activities are as follows:

> Implementation of sediment and erosion control measures, in accordance with the SSESCP (included in **Part B and G** of these application documents);

> Removal of any debris and vegetation within the work area;

> Protection of existing services;

> Relocation of windsock fibre optic cable (and relocation or protection of Instrumentation Landing System if necessary);

> Progressive removal of reno mattresses, gabion baskets, rock and Akmon armour units at seawall crest;

> Construction of temporary engineered access platforms and / or engineered hardstanding for large construction equipment progressively;

> Excavation of toe trench in rock seabed, smooth rock pinnacles as required, and / or place toe rock;

> Place hardfill and geotextile in Eastern Area;

> Placement of underlayer rock and re-used Akmons to the face of the existing seawall to grades as designed;

> Installation of Cubipod armour units over the underlayer, starting from the toe;

- Replacement of Eastern Area informal rubble with formal seawall (Cubipods) concrete armour units, rock underlayers, geotextile, hardfill and rock and/or concrete armour units or toe trench for the seawall toe;
- Place gabion and crest wall (if required) and construct rock protection on crest;
- Replace rear slope geotextile, underlayer and rock armour at western end of seawall, above Moa Point Road; and
- All associated and ancillary activities.

These activities are described in greater detail in the following paragraphs.

Construction of the Rock Toe

Once construction plant is in place, the rock toe will be excavated at the western and eastern sections of the seawall to a depth of 1.3 m to up to 3 m into bedrock, utilising excavator mounted rock milling, excavator bucket or rock pick techniques. A rock toe will be constructed through the central section of the seawall where water depths are greater. Rock pinnacles (i.e. isolated high points of rock) may be smoothed using the rock removal techniques noted above, or a layer of smaller rock placed on the seabed, to provide a more even surface for founding the rock toe. The rock toe may be required in the western and eastern areas if conditions are more difficult for excavation than expected.

Placement of Rock and Armour Units

Once the rock toe has been constructed, the underlayer rock and the first layer of Cubipods will be placed over the existing Akmon units, ultimately proceeding up to the top of the seawall crest. The second layer of Cubipods will then be installed over the first layer of Cubipods, ultimately extending up to the top of the seawall crest. At the eastern end of the seawall, hardfill and geotextile will be placed against the existing fill face to form an even slope. Underlayer rock and Cubipods will be placed over the hardfill.

Crest Works and Rear Slope Protection

Once the face of the seawall has been completed, crest works will commence. Crest works are expected to include the placement of precast concrete crest wall elements and gabions to protect the seawall crest and landward structures (such as the outer tunnel wall). Once the placement of precast concrete wall and gabions has been completed, underlayer rock, crest armour rock and Cubipods will be placed along the length of the seawall crest.

Rear slope protection works include removal of existing rock and gabions, re-grading of the existing fill and placement of geotextile and rock protection (underlayer, armour rock and potentially gabion baskets).

Traffic management will be in place on Moa Point Road during the rear slope protection works, in accordance with the draft CTMP, which is included in **Part G** of these application documents.

Seawall Protection

Temporary protection measures may be used during construction and during high intensity storm events when working on vulnerable sections of the seawall. Such measures will depend on the nature of the risk at the time but may include the use of armour rock stockpiles, precast Cubipods or rock filled 20-foot containers.

2.6.3.4 Ground Improvements and Temporary Works

As mentioned in Section 2.6.3.3 above, discrete ground improvements adjacent to the existing Southern Seawall may be required to safely support construction equipment. Ground improvements may comprise cement stabilised hardstanding, possibly using steel piles or stone columns to provide additional support. Ground improvements will (if necessary) be undertaken at commencement of the Southern Seawall construction and are expected to be completed within the first 9 – 12 months.

If required, micro piling would be limited to the above water footprint of the existing seawall and approximately 20 m landwards. If required, micro piling would occur over a 3 – 6 month period.

Noise mitigation options such as the use of acoustic blankets and shields will be used during ground improvements where safe and practicable.

The construction methodology for any ground improvements will ultimately be determined by the contractor, however it is anticipated that after mobilisation and site establishment of the site compound(s), the sequence of civil works would likely follow the sequence set out in the following subsections.

Micro Piling

If required, approximately 300 sacrificial reinforced micro piles (250 mm – 300 mm in diameter) would be installed using a tracked micro piling rig which could be operated during daylight construction hours (6:30am to 8:00pm Monay to Friday and 7:30am to 6:00pm weekends and public holidays) under the OLS. An example of a micro piling rig is shown in Figure 2.8. The micro piles would be installed using a low head height piling rig to drive temporary steel casings to the designed embedment depth. The excavated temporary steel casings would be reinforced, installed and backfilled with tremie poured concrete to the designed embedment depth.

Due to the existing concrete armour units and high likelihood for obstructions, the micro piling rig would be equipped with a down the hole hammer attachment.

Figure 2.8: Example of micro piling rig used for recent seawall maintenance works at the Airport.

2.6.3.5 Construction Plant

The indicative plant that will be used onsite during the establishment and construction of the Southern Seawall and Eastern Bank Remediation is shown in **Table 2.9**.

It is anticipated that all of the above-mentioned works will be undertaken utilising shore-based equipment.

Table 2.9: Indicative plant and equipment to be used at the Southern Seawall and Eastern Bank Remediation.

Activity	Indicative Plant
Establishment / Disestablishment Activities	
Eastern Bank Remediation Construction of landside access route and workface storage area, may include: > Fencing; > Site clearance; > Removal of existing pavement and entry / exit crossings; > Protection / reconstruction of existing services; > Placement and compaction of aggregate basecourse; > In situ concrete placement for entry / exit crossings; > Resurfacing with asphaltic concrete; > Installation of site hut and utilities; and > Truck delivery of materials.	> 1 x 90 tonne excavator > 2 x 30 tonne excavators > 3 x road class truck and trailers for rock transportation > 1 x readymix concrete truck and concrete pump > 1 x loader >
Eastern Bank Remediation Demobilisation, disestablishment and reinstatement; including planting.	
Southern Seawall Construction of landside access route along Southern Seawall and workface storage area, may include: > Fencing; > Site clearance; > Removal of existing pavement and entry / exit crossings;	> 2 x 30 tonne excavator > 2 x 120 tonne 3 stage boom excavator > 2 x 300 – 400 tonne 3 stage boom excavator > 1 x bulldozer > 2 x road class trucks for Cubipod transportation > 3 x road class truck and trailers for rock transportation

Activity	Indicative Plant
> Placement and compaction of aggregate basecourse; > In situ concrete placement for entry / exit crossings; > Resurfacing with asphaltic concrete; > Installation of staff facilities and utilities; and > Truck delivery of materials.	> 1 x wheel loader > 1 x survey boat (circa 7 m length) > 1 x barge and excavator > 1 x 400 tonne crawler crane > 1 x 300 tonne crawler crane > 6 x portable tower lights, additional vehicle mounted lighting > 3 x concrete trucks > 1 x concrete boom and / or line pump > 1 x compressor > Generators
Southern Seawall Demobilisation, disestablishment and reinstatement; including removal of trestle / gantry crane.	
Construction Activities	
Eastern Bank Remediation Eastern Bank Remediation construction, may include: > Earthworks to trim / regrade slope and form landside and/or intertidal beach area; > Excavation of toe key in rock; > Placement of geotextile; > Rock toe and rock protection; > Replacing excavated sand.	> 1 x 90 tonne excavator > 2 x 30 tonne excavators > 3 x road class truck and trailers for rock transportation > 1 x readymix concrete truck and concrete pump > 1 x loader
Southern Seawall Eastern Area seawall construction may include: > Construction of trestle / gantry crane and / or mobile crane (vertical mast raised / lowered each overnight shift); > Removal of informal armour for reuse where suitable and / or offsite disposal;	> 2 x 30 tonne excavator > 2 x 120 tonne 3 stage boom excavator > 2 x 300 – 400 tonne 3 stage boom excavator > 1 x bulldozer > 2 x road class trucks for Cubipod transportation > 3 x road class truck and trailers for rock transportation

Activity	Indicative Plant
> Earthworks to trim / regrade slope and form landside and/or marine working platform; > Excavation of toe key in rock; and > Placement of hardfill, geotextile, rock underlayer/s, concrete armour units. Southern Seawall construction, may include: > Removal of crest reno mattress / gabion basket, rock and Akmon armour, and backslope rock protection; > Construction of trestle / gantry crane; > Construction of landside and / or marine working platform/s (rock, staging, etc); > Relocation of sand / gravel within outer Lyall Bay to expose underlying rock (approx. 0.5 to 1.5m depth); > Excavation of toe key in rock, smoothing of rock pinnacles, placement of rock for seawall toe, placement of rock and concrete armour units; and > Placement of new gabion and crown wall (if required) and wave trap, crest and rear slope rock protection.	> 1 x wheel loader > 1 x survey boat (circa 7 m length) > 1 x barge and excavator > 1 x 400 tonne crawler crane > 1 x 300 tonne crawler crane > 6 x portable tower lights, additional vehicle mounted lighting > 3 x concrete trucks > 1 x concrete boom and / or line pump > 1 x compressor > Generators

2.6.3.6 Site Access and Traffic Management

The Southern Seawall and Moa Point Yard will primarily be accessed off Moa Point Road via newly formed and established crossing point opposite the intersection of Stewart Duff Drive, as shown in the locations identified in the design plans included in **Part C** of these application documents. Two secondary accesses will also be used, via the existing Southern Seawall accesses (one at each end of the seawall). In some instances, material will be transported from the George Bolt Yard, to the seawall working face, via the runway.

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

A CTMP will be in place, and traffic management measures will be used to safely control the interface with road users, pedestrians and construction traffic. A draft CTMP has been developed for the Project and is included in **Part G** of these application documents. The draft CTMP sets out the traffic management measures that will be used to safely control the interface with road users, pedestrians and construction traffic, including (but not limited to):

> The use of plans and signage;

> The management of traffic entering and exiting the yard, as well within the Moa Point Yard;

> Staff and visitor traffic movements;

> Parking;

> Haulage hours, movements and routes; and,

> Access and adjacent road maintenance.

2.6.3.7 Hours of Operation

The Eastern Bank Remediation site will operate Monday to Friday, between 6:30 am – 8:00 pm, and between 7:30 am – 6:00pm on weekends and public holidays.

The Southern Seawall construction site will operate up to 24 hours a day, 7 days a week.

As set out in Section 2.3 above, the location of the seawall site, immediately adjacent a busy operational airport on an exposed coastline presents one of the greatest logistical challenges to the Project. Whilst construction methods and equipment will be designed and selected to avoid penetrating the Airport's OLS where possible, any works that will penetrate the OLS will necessarily have to be undertaken outside the Airport's core operating hours (generally between midnight and 6 am).

2.6.3.8 Construction Lighting

For works between 6:30am and dawn, and dusk and 8:00pm on the Eastern Bank Remediation, up to 13 portable lighting towers will be used to ensure work areas are safely lit. The lighting towers will be moved as needed to provide adequate lighting for the specific construction activities and locations at any given time.

Overnight (i.e. outside airport operating hours) the Southern Seawall construction site will be illuminated with up to ten portable lighting towers. As at the Eastern Bank Remediation, the lighting towers will be moved as needed to provide adequate lighting for the specific construction activities and locations at any given time.

At both the Eastern Bank Remediation and Southern Seawall construction site, additional lighting will also be fixed to mobile plant and vehicles to illuminate working areas, and will include headlights from light vehicles.

2.6.4 Site Disestablishment and Rehabilitation

Upon completion of the works, all plant and equipment will be removed from the site. The south-eastern portion of the site will be rehabilitated, as described in Sections 2.8.1.2 and 2.11. The remainder of the yard and seawall will be left in a tidy state with an all weather (permeable granular) surface left to provide for ongoing access to the seawall for maintenance purposes.

2.7 SEAWALL MAINTENANCE

Ongoing monitoring and maintenance of the Southern Seawall and Eastern Bank Remediation will be required on the completion of the works. The indicative plant that will be used onsite during maintenance works is shown in **Table 2.10**.

All maintenance works will be undertaken utilising shore-based equipment, however marine equipment may be required for the placement of toe rock or other activities.

Due to the plant and equipment required to undertake such works, future maintenance works may need to occur overnight. The maintenance works will be undertaken in general accordance with the permitted activity requirements for seawall maintenance described in the NRP.

Table 2.10: Indicative plant to be used at the Southern Seawall and Eastern Bank Remediation.

Activity	Indicative Plant
Maintenance Activities	
Eastern Bank Remediation *(Land-based construction)* Bank remediation maintenance may include: > Placement of rock.	> excavator/s > crane/s > trucks and trailers > low loaders

Activity	Indicative Plant
Southern Seawall *(Land-based and potentially marine-based construction)* Seawall maintenance, may include: > Replacement of the western crest gabions and reno mattresses; and > Construction of trestle / gantry crane, placement of rock and concrete armour units; > Reprofiling of Cubipods and rock armour (i.e. relocation / replacement of displaced units or rock), for example following a storm with characteristics exceeding the design event.	> workboat/s (for Southern Seawall only)

In addition to maintenance, the seawall design allows for climate change (sea level rise and increased wave height and wave period) over the 50-year design life. Depending on actual rates of sea level rise and wave increases, adaptation to limit wave overtopping may be needed within the design life. It is expected that actual conditions and climate change projections will be reviewed 10-yearly and adaptation measures designed, planned and implemented based on these reviews.

Adaptive measures could include:

> Raising the level of the Cubipod armour units on the seawall crest;

> Raising the level of the crest wall;

> Strengthening and raising the existing wall located landward of the crest; or

> Further alternatives and / or combinations of these measures.

It is expected that adaptive measures during the design life would be located on the crest and upper slope of the seawall and would not alter the below water seawall footprint of the works. The implementation of future adaptive measures is not provided for by this application and will be subject to a separate consent process, at the time they are required in the future.

2.8 CREATION OF TWO KORORĀ COLONIES

As part of the mitigation of effects on kororā, two kororā colonies will be developed, and any necessary kororā relocation will be undertaken in advance of the Southern Seawall works.

The Stage 1 Kororā Colony will be developed on the landward side of Moa Point Road, and the Stage 2 Kororā Colony will be developed behind the Eastern Bank Remediation once construction is complete, as shown in **Figure 2.9.**

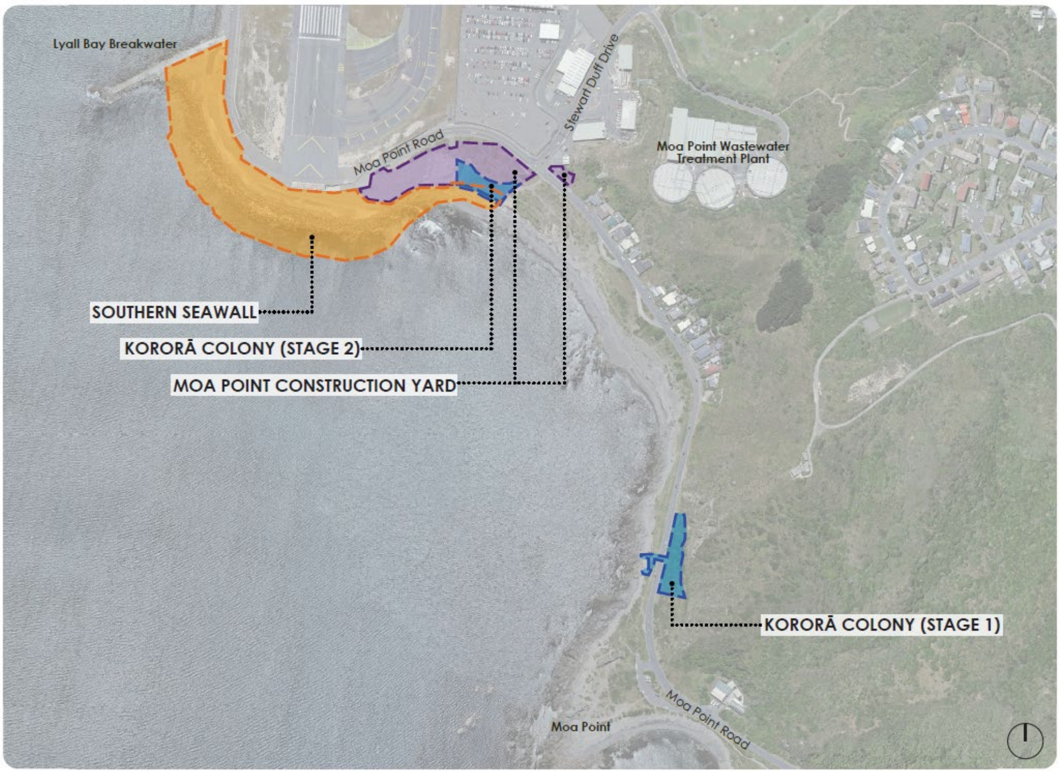

Figure 2.9: Location of two proposed kororā colonies (Stages 1 and 2).

The Stage 1 Kororā Colony will be developed before removal of habitat in construction areas begins, allowing kororā to be relocated before their existing roost and nest sites are affected. Any necessary relocation activities will commence once the Stage 1 Kororā Colony is completed. The colonies will be landscaped and planted and have rock habitat (i.e. selected hand-placed rocks) and purpose-built nesting boxes installed. The colonies will be fenced to protect kororā from attacks by dogs and disturbance by people, and subject to ongoing pest control.

Gabion baskets, Cubipods and rock will be removed from the Southern Seawall under the observation of an authorised kororā management officer who must be suitably qualified and experienced. Each cavity will be inspected for kororā and, if any kororā are found, they will be re-located by the authorised kororā management officer to the Stage 1 Kororā Colony.

The Moa Point Yard and Southern Seawall will be progressively secured to deter kororā from re-entering the construction site using wire mesh fencing and other methods recommended by the kororā management officer. The work will be undertaken by a small to medium sized excavator working with the kororā management officer, in accordance with KPMP, included in **Part G** of these application documents. As set out in the KPMP, removal of any present penguin habitat in advance of seawall construction will occur outside of the main kororā breeding season (August to December inclusive) and, where practicable, the main moulting season (January and February inclusive).

Indicative plans of the Stage 1 and Stage 2 Kororā Colonies are included as **Figure 2.10 and Figure 2.11**, respectively and are included in **Part B**. Key metrics for the kororā colonies are shown in **Table 2.11**.

Table 2.11: Key metrics for the kororā colonies.

Parameter	Specification
Area of Stage 1 (to be developed before Southern Seawall works)	2060m^2
Area of Stage 2 (to be developed on completion of the Southern Seawall works)	860m^2

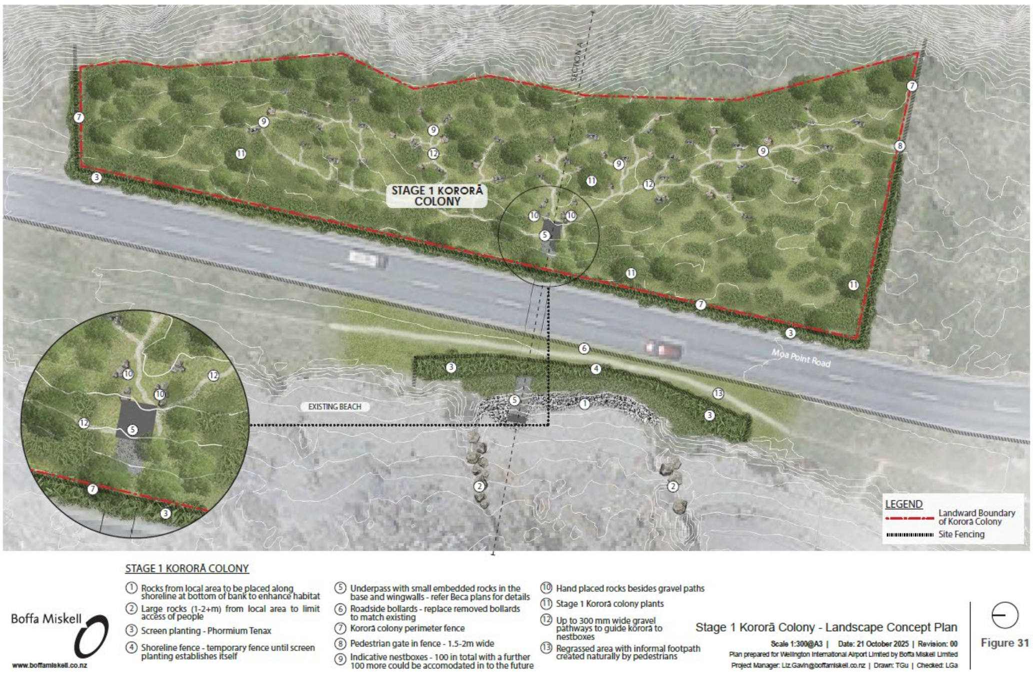

Figure 2.10: Plan of the Stage 1 Kororā Colony (Boffa Miskell, 2025). Refer to Figure 31 of Boffa Miskell (2025) for full size image.

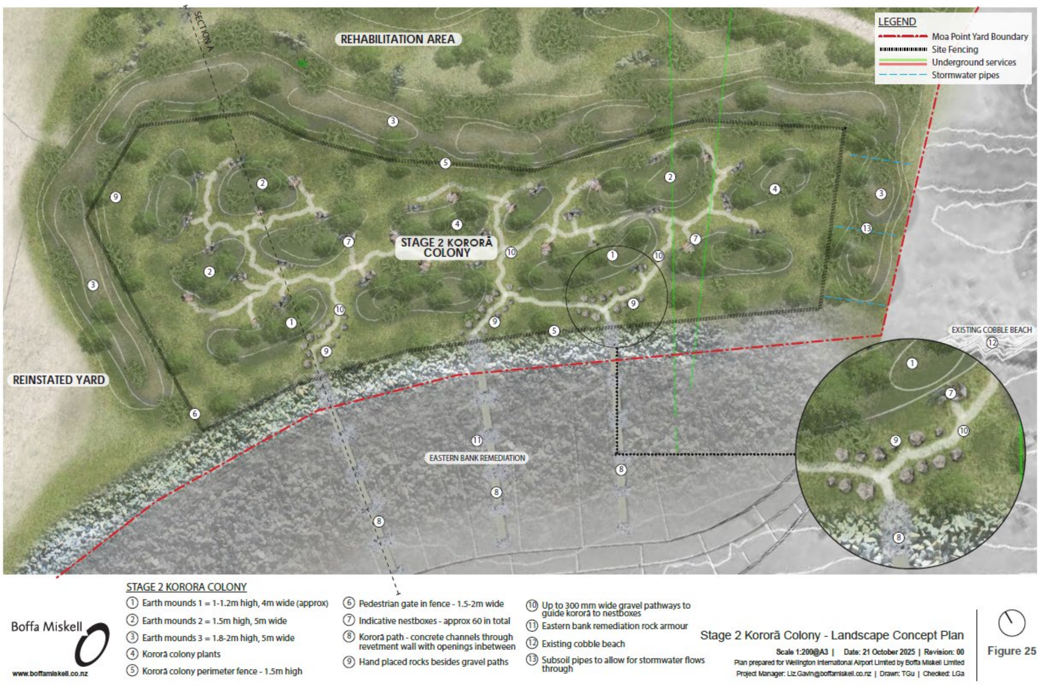

Figure 2.11: Landscape Concept Plan of the Stage 2 Kororā Colony (Boffa Miskell, 2025). Refer to Figure 25 of Boffa Miskell (2025) for full size image.

2.8.1 Kororā Colony Construction

The construction activities required to develop each colony are set out below. Refer to the KPMP for detail, in particular in respect of the habitat enhancement works.

Stage 1 Colony

- Capture and handling of any affected lizards and release of lizards into suitable habitat at the same site;
- Location, marking and protection of all existing services at the site;
- Installation of a kororā passage from the shoreline to the colony, including:
  - Removal of any debris and vegetation within the work area;
  - Construction of raised section of road, and excavation and installation of an 800 mm high, 2.3 m wide precast concrete underpass beneath the road;
  - Reconstruction of granular road pavement, installation of chip seal wearing course and line marking to reinstate road to original operating condition;
  - Excavation and placement of geotextile and rock to form a shallow ditch through the grass berms on both sides of the road (if required);
  - Installation of LED lighting with adjustable light intensity along the roof of the passage;
- Placement of nestboxes;
- Placement of rocks (including reuse of excavated rock), mainly by hand with some limited machine placement on both the eastern and western side of Moa Point Road (refer **Figure 2.10**), based on ecological advice;
- Removal of weed species, and planting of appropriate native planting as generally indicated in the Stage 1 Kororā Colony Concept Plan, included in **Part B and C** of these application documents;
- Erection of a permanent fence around the colony area, to protect kororā from dogs and human disturbance, and to prevent kororā access to and from the colony other than via the underpass; and
- All associated and ancillary activities.

Stage 2 Colony

- Implementation of sediment and erosion control measures, in accordance with the SSESCP (included in **Part B** of these application documents);

- Removal of any debris and vegetation within the work area;
- Location, marking and protection of all existing services at the site;
- Earthworks to recontour the site to a suitable level, with earth mounds constructed inside the colony area to provide shelter based on ecological advice (refer **Figure 2.11**);
- Placement of rocks (including reuse of excavated rock), mainly by hand with some limited machine placement if required, and nestboxes;
- Planting and landscaping, as generally indicated in the Stage 2 Korora Colony Landscape Concept Plan, included in **Part B and C** of these application documents;
- Erection of a permanent fence around the colony area, to protect kororā from dogs, wind and human disturbance; and
- All associated and ancillary activities.

2.8.2 Hours of Operation

The plant and equipment required for works on the kororā colonies will be able to operate under the OLS, therefore, colony construction will occur between 7:00 am and 6:00 pm Monday to Friday. It will take approximately three months to construct each colony.

2.8.3 Plant and Equipment

The preliminary plant and equipment for each colony's construction is listed in **Table 2.12**.

Table 2.12: Plant and equipment required for each kororā colony.

Equipment	Stage 1 Kororā Colony	Stage 2 Kororā Colony
20 tonne excavator	✓	✓
Crew truck	✓	✓
Foreman ute	✓	✓
6 wheel open body tipping trucks	✓	✓
Bitumen sprayer and roller spreader	✓	-
Traffic management trucks	✓	-

2.8.4 Monitoring and Maintenance

Following completion of each of the Kororā Colonies, planting and pest control stations at each will be maintained for no less than 10 years. Such maintenance is anticipated to include:

> Replacement of diseased or dead plants with the same or similar species that are appropriate for the site;

> Regular monitoring of kororā nest boxes;

> Weed control;

> Regular maintenance of pest control stations.

2.9 LOGISTICS REGARDING CONSTRUCTION MATERIAL

As set out above, a substantial volume of rock and armour units (Cubipods) will be needed to undertake the proposed works. Sourced construction material will be stockpiled at the Moa Point Yard, George Bolt Yard and MGC Yard and trucked to the seawall site as required. It is intended that a large surge pile of rock and Cubipods will be stockpiled prior to starting construction of the seawall.

Stockpiling construction materials over multiple years is the preferred approach because:

> There is a limited supply of suitable rock in New Zealand, and it will take time for suppliers to produce the volumes required;

> If rocks are trucked to the site (ie from North Island sources), it spreads truck movements and associated effects over a longer period and flattens the ‘peaks’ of truck movement that would otherwise occur, therefore reducing the effects on the community;

> Alternatively, if rocks are barged to a central city port (ie from South Island sources) and then trucked to the site, movements will be consolidated over 110 days over the entire life of the Project; and

> It is more efficient from a project management perspective.

It is not intended for all of the rock and armour unit supply required to construct the Project to be stored on-site before works commence. Deliveries and stockpiling will continue to occur throughout the duration of the Project.

2.9.1 Rock and Armour Supply and Associated Truck Movements

Because there are no suitable rock sources in Wellington, the rock required for the Project will need to be trucked, and potentially barged, from outside the region. Rock sourced from the North Island would be trucked directly from the quarry to the MGC Yard and Moa Point Yard, on truck and trailer units. Rock sourced from the South Island would be barged to an existing city marine unloading point, then unloaded and trucked to the MCG Yard and Moa Point Yard. If possible, truck and trailers will be used to transport rock from the marine unloading point to site, however 6 wheel trucks may be required if space at the city marine unloading point is constrained.

If rock is sourced from the North Island, delivery times can be adjusted to suit local traffic conditions (i.e. delivery before or after morning and afternoon peaks, and truck movement peaks can be ‘flattened’ over a four-year period). If rock is sourced from the South Island, there will be more intense periods of truck movements, coinciding with barge arrivals. Such movements would peak at up to 136vpd, for a total of 110 days (spread over four years).

Cubipods will be precast offsite in Otaki and trucked to site on B-train trucks, with an estimated 9,500 truck movements required over the life of the Project. As noted above, most Cubipods will be delivered directly to the Moa Point Yard for placement, whilst a small stockpile will be stored at the MGC Yard, and / or the George Bolt Yard for contingency.

2.9.1.1 Transportation Routes

As discussed in Section 2.3.4 the rock required for the Project will need to be trucked, and potentially barged, from outside the region.

Trucks transporting rock, Cubipods and other materials from destinations north of Wellington would enter Wellington on SH1, and from the Ngauranga Interchange follow the SH1 urban motorway through to Vivian Street, right into Kent Terrace then through the Mount Victoria Tunnel. If rock is sourced from the South Island, it would be barged to a central city port using a 1,100 tonne barge, unloaded on the wharf and trucked from the Port to the Airport. Trucks coming from the Port would access the public road network at Aotea Quay, then enter SH1 via Kent Terrace at the Basin Reserve.

Trucks returning to the construction material source sites would likely follow the reverse of their inbound route from the Mount Victoria Tunnel.

South of the Mount Victoria Tunnel, the two main routes for trucks to travel to and from the Project Area are split into separate inbound and outbound routes.

The inbound route would follow SH1 to the Airport, from which connection through the Airport to the MGC Yard, before turning onto Moa Point Road and accessing the Southern Seawall. The route through the Airport is suitable southbound (only) at all times of the day.

The outbound route from the Project Area follows Moa Point Road and Lyall Parade, before turning north onto Onepu Road and connecting with SH1 at Kilbirnie Crescent.

The site entry and egress points for the MGC Yard would be positioned so the trucks shuttling between the MGC Yard and Moa Point Yard can run in both directions on Stewart Duff Drive. The public roads between the George Bolt Yard and the Moa Point Yard allow two-way movement in both directions.

The runway may be used outside of operational hours to transport goods and materials from the George Bolt Yard to the Southern Seawall.

Figure 2.12 below shows these indicative routes south of the Mount Victoria Tunnel.

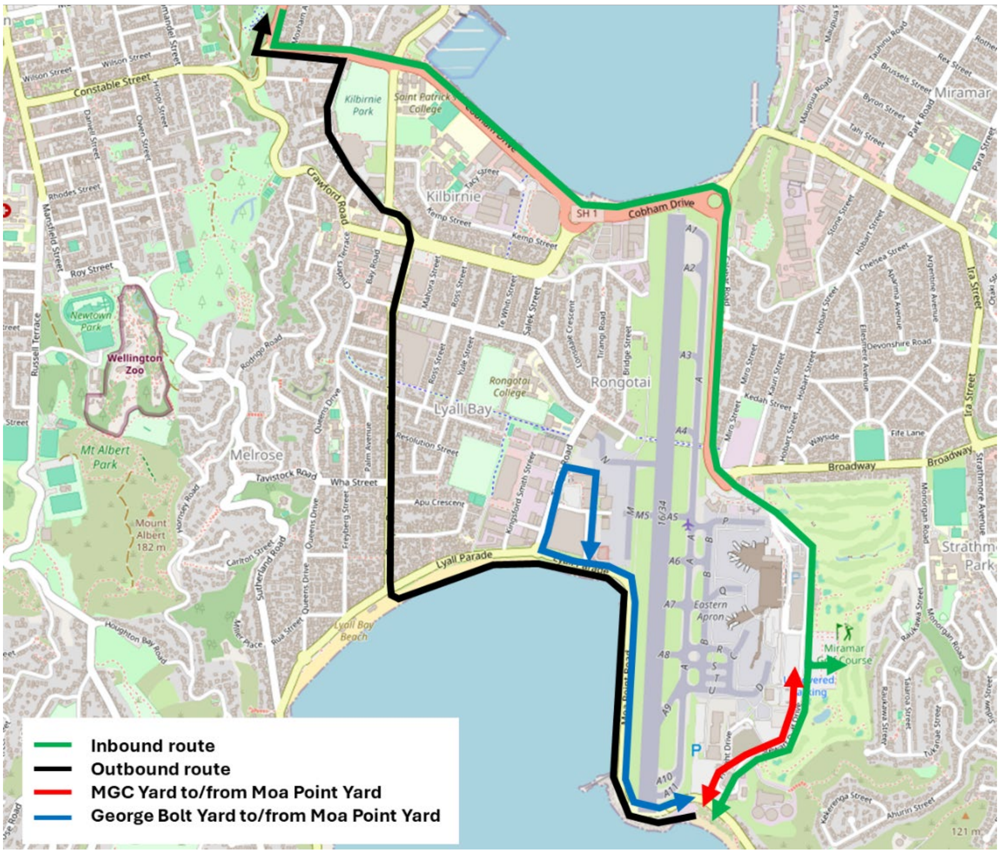

Figure 2.12: Proposed truck routes south of Mount Victoria Tunnel (Stantec, 2025).

2.9.1.2 Over-Dimension Vehicle Routes

Oversized vehicles may be occasionally required for the transport of larger equipment and plant to and from the site. Such movements will be infrequent. New Zealand Transport Agency's ("**NZTA**") published Over-dimension Vehicle Routes ("**OVR**") are shown in **Figure 2.13**.

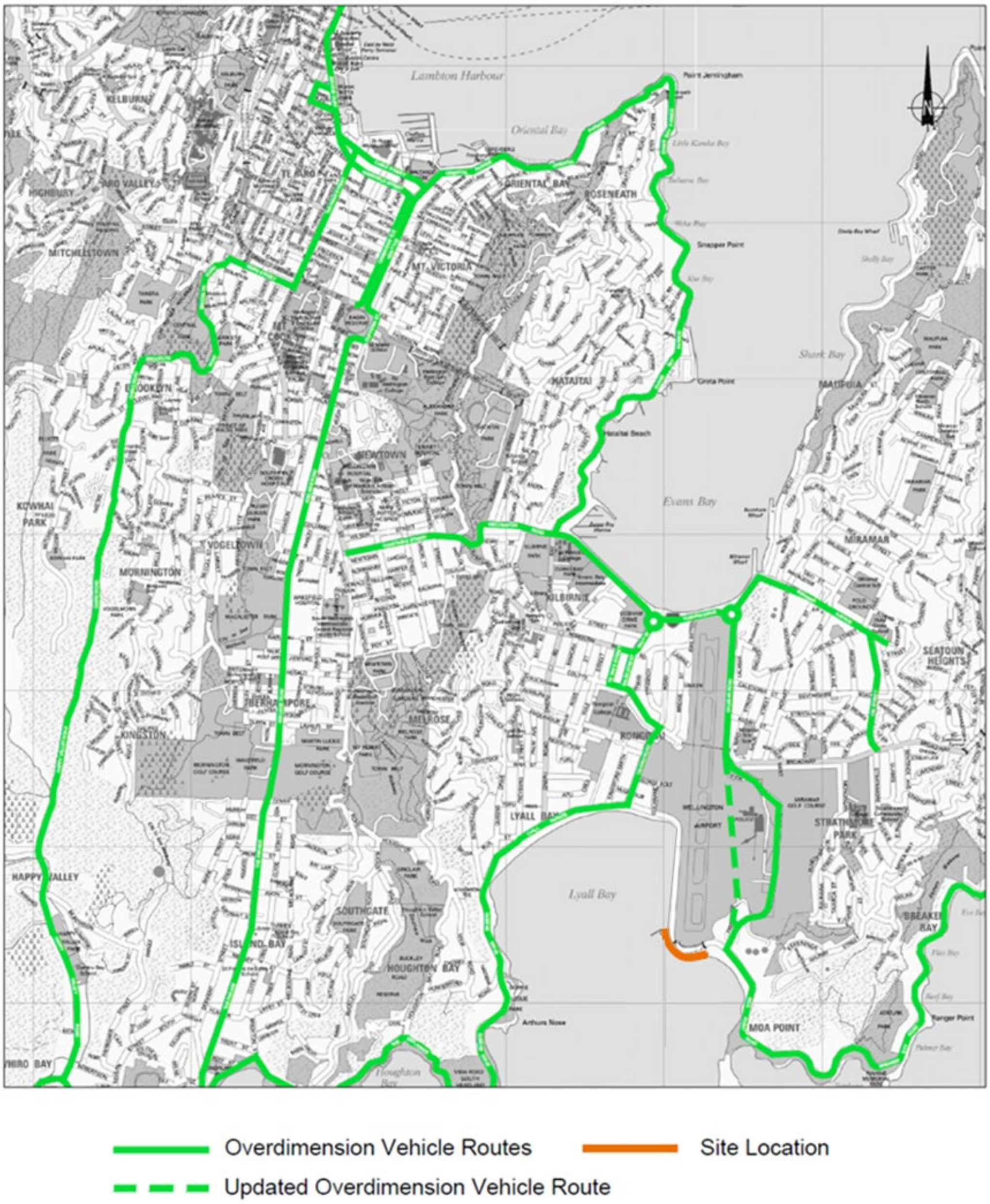

Figure 2.13: **NZTA over-dimension vehicle routes (Stantec, 2025).**

As shown in **Figure 2.13**, none of the tunnels on SH1 are approved for over-dimension loads. Due to previous and ongoing physical changes at the Airport, over-dimension vehicles can no longer travel south along Stewart Duff Drive through the Airport precinct. Consequently, NZTA's designated OVR, which had previously followed Stewart Duff Drive, now diverts from the route at the intersection of Station Drive and continues (airside) across the Airport to link with Freight Drive, as shown by the dashed green line in **Figure 2.13**. The revised airside OVR is subject to strict Airport permissions. Moa Point Road is excluded from the over-dimension vehicle route due to the clearance restrictions of the Moa Point Road Tunnel.

Considering this, any over-dimension vehicles would most likely travel around the waterfront from the CBD (Oriental Bay – Evans Bay) and use SH1 through the Airport to access either the MGC Yard, Moa Point Yard, or the Southern Seawall. Once unloaded, the trucks should then be able to pass through the Moa Point Road Tunnel and Mount Victoria Tunnel and can follow the outbound route shown in **Figure 2.12**. The right-turn from Stewart Duff Drive at the intersection with Moa Point Road will be managed under appropriate temporary traffic management measures, as set out in the draft CTMP, included in **Part G** of these application documents.

It is expected that an equivalent arrangement would be adopted for the collection of plant / equipment from the site. These arrangements will be further defined nearer the time and will be subject to authorisation under the relevant oversized load permits, prior to transportation. If an over-dimension vehicle is unable to pass through the Moa Point Road Tunnel, the vehicle could run northbound on Stewart Duff Drive and via the airside of the Airport, managed under appropriate temporary traffic management measures.

2.9.1.3 Estimated Truck Movements

Estimated total, average and peak vehicle movements are summarised in **Table 2.13**. All values are approximate noting that the Project is at an early stage of design and construction planning. The estimates included in **Table 2.13** represent a 'worst case' scenario from a transportation perspective (using a truck only, rather than a truck and trailer unit, across a five day working week). This 'worse case' scenario forms the basis for the transportation modelling for the project, however actual vehicle numbers are likely to be less.

A detailed breakdown of indicative truck movements by month is provided as an appendix of the Transport Assessment included in **Part B**.

Table 2.13: Indicative total, average and peak vehicle movements associated with the project.

Item	Estimated vehicle movements[21]
Peak vehicle movements associated with MGC Yard establishment works (indicatively between October 2026 – December 2028, and June 2029 – October 2029)	51 per day
Average vehicle movements associated with MGC Yard establishment works (indicatively between October 2026 – December 2028, and June 2029 – October 2029)	28 per day
Total vehicle movements associated with MGC Yard establishment works (indicatively between October 2026 – December 2028, and June 2029 – October 2029)	17,900
Likely peak vehicle movements associated with rock supply (indicatively between October 2026 – September 2028, and June 2029 – October 2029)[22]	15 per day
Likely average vehicle movements associated with rock supply (indicatively between October 2026 – September 2028, and June 2029 – October 2029)[23]	11 per day
Likely total vehicle movements associated with rock supply (indicatively between October 2026 – September 2028, and June 2029 – October 2029)[24]	8,500
'Worst case' peak vehicle movements associated with rock supply (indicatively between October 2026 – September 2028, and June 2029 – October 2029)	136 per day – on up to 110 days across four years

21 Assessed conservatively across a five-day working week.

22 Given the difference between the 'likely' rock delivery scenario and the 'worst case' scenario, the 'likely' scenario is included for completeness. The transportation assessment has modelled the 'worst case' scenario, shown in the subsequent rows.

23 As above.

24 As above.

Item	Estimated vehicle movements[21]
'Worst case' total vehicle movements associated with rock supply (indicatively between October 2026 – September 2028, and June 2029 – October 2029)	14,000
Peak vehicle movements associated with Cubipod supply (indicatively between October 2026 – February 2031)	21 per day
Average vehicle movements associated with Cubipod supply (indicatively between October 2026 – February 2031)	9 per day
Total vehicle movements associated with Cubipod supply (indicatively between October 2026 – February 2031)	9,750
Peak heavy vehicle movements MGC Yard to Moa Point Yard (indicatively between November 2028 – March 2031)	38 per day
Average heavy vehicle movements MGC Yard to Moa Point Yard (indicatively between November 2028 – March 2031)	29 per day[25]
Total heavy vehicle movements MGC Yard to Moa Point Yard (indicatively between November 2028 – March 2031)	17,000
Peak light vehicle movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	30 per day
Average light vehicle movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	15 per day
Total light vehicle movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	17,200
Peak general delivery / concrete truck movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	13 per day
Average general delivery / concrete truck movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	7 per day

25 The number of truck movements is expected to be constant each day, without variation. Since there are no fluctuations in daily activity, the average is equal to the peak – both represent the same consistent daily value.

Item	Estimated vehicle movements[21]
Total general delivery / concrete truck movements MGC Yard to Moa Point Yard (indicatively between October 2025 – May 2031)	7,400

2.10 CONSTRUCTION MANAGEMENT PLANS

A Project Management Plan ("**PMP**") will be implemented for the duration of the Project to manage the potential environmental effects arising during construction. Compiled during the pre-construction phase of the Project, the PMP will contain the general principles and approach for managing environmental effects, with the management of specific construction effects set out in accompanying management plans.

The accompanying management plans are provided in **Part G** of this application and listed in **Table 2.14**. WIAL is seeking for a number of these management plans to be approved as part of the fast-track process, and some to be certified by the relevant authority at a later date.

Table 2.14: Southern Seawall Renewal Project Management Plans

Management Plans to be approved as part of the fast-track process
> Archaeological Site Management Plan
> Avifauna Management Plan
> Lizard Management Plan
> Kororā Penguin Management Plan
> Contaminated Land Management Plan
> Marine Mammal Management Plan
Management Plans to be certified at a later date by Greater Wellington Regional Council
> Site Specific Erosion and Sediment Control Plans
> Erosion and Sediment Control Monitoring Plan
> Chemical Treatment Plan

> Construction Noise and Vibration Management Plan ("**CNVMP**")

Management Plans to be certified at a later date by Wellington City Council
> Construction Traffic Management Plan
> Construction Noise and Vibration Management Plan
> Site Specific Erosion and Sediment Control Plans
> Erosion and Sediment Control Monitoring Plan
> Chemical Treatment Plan

Further description of the detail and intent of these management plans is contained in Chapter 8.

2.11 ENVIRONMENTAL ENHANCEMENTS AND REHABILITATION

At the completion of the Project, as shown in Figure 2.14, the Moa Point Yard will be rehabilitated to:

> Reinstate an area of open yard which provides suitable nesting habitat for banded dotterel on the western portion of the site;

> Reinstate the existing Southern Seawall maintenance and access area (the "reinstated yard");

> Rehabilitate an area of public amenity space on WCC owned local purpose (esplanade) reserve on the eastern portion of the site; and

> Create new kororā habitat by establishing the Stage 2 Kororā on Crown land on the eastern portion of the site.

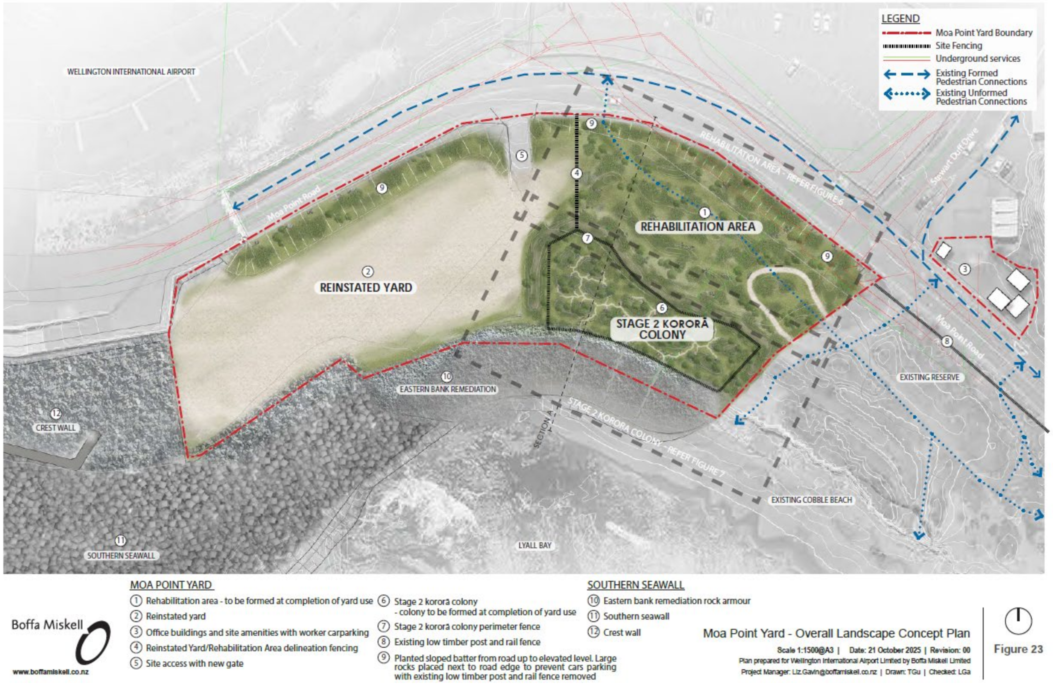

Figure 2.14: Overall landscape concept plan for the Moa Point Yard (Boffa Miskell, 2025). Refer to Figure 23 of Boffa Miskell (2025) for full size image.

A detailed description of the activities associated with the establishment of the Stage 2 Kororā Colony is provided in Section 2.8.1 above and is not repeated here.

2.11.1 Reinstated Yard

The reinstated yard will comprise a level, open area, lined with appropriate aggregate to create all weather permeable surface which is suitable for providing nesting opportunities for banded dotterel.

The slopped batter from the road will be planted with appropriate indigenous plant species, with large rocks placed along the road edge. The Moa Point Yard access will be retained to enable future maintenance works, however a gate will be installed.

Works to reinstate the yard will be undertaken in accordance with the associated Landscape Concept Plan and include:

> Earthworks to level the yard area;

> Planting of appropriate indigenous plant species on the battered slope adjacent to Moa Point Road;

> Placement of rock along Moa Point Road;

> Installation of a gate; and

- All associated and ancillary activities.

2.11.2 Rehabilitation Area

Upon completion of construction activities at Moa Point Yard, the eastern portion of the site (which is local purpose (esplanade) reserve land owned by WCC) will be rehabilitated to restore landscape and amenity values, and reconnect the area with adjacent reserve land used by the public along the coast.

Activities to rehabilitate the area will be undertaken in general accordance with the associated Moa Point Remediation Area Landscape Concept Plan (**Figure 2.15** and included in **Part B** of the application documents) and include:

- Location, marking and protection of all existing services at the site;
- Undertaking earthworks to create undulating mounds and recreate natural land form;
- Planting of appropriate indigenous plant species on the battered slope adjacent to Moa Point Road;
- Placement of rock along Moa Point Road;
- Installation of seating, wayfinding signage and cultural interpretation panels;
- Creation of a loop walking track with compacted gravel which connects with existing adjacent reserve walkways;
- Installation of fencing to separate the area from the Stage 2 Kororā Colony and Reinstated Yard area; and
- All associated and ancillary activities.

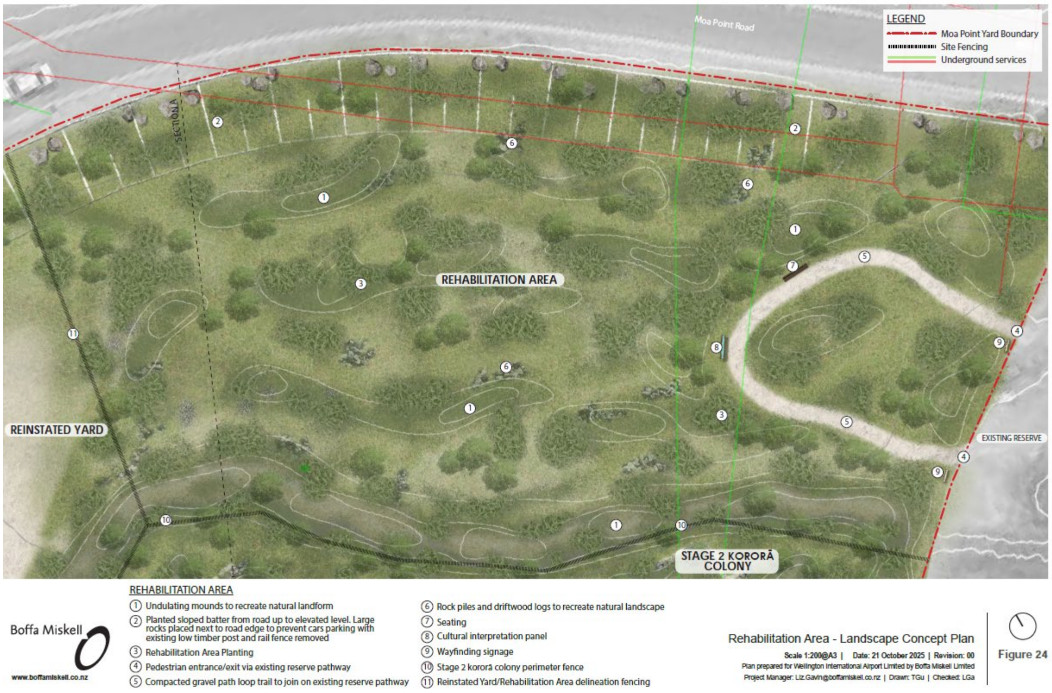

Figure 2.15: Landscape concept plan for the Moa Point Yard Rehabilitation Area (Boffa Miskell, 2025). Refer to Figure 24 of Boffa Miskell (2025) for full size image.

2.11.3 Monitoring and Maintenance

Following completion of the Moa Point Yard rehabilitation, planting and pest control stations at the each will be maintained for no less than five years. Such maintenance is anticipated to include:

> Replacement of diseased or dead plants with the same or similar species that are appropriate for the site;

> Weed control;

> Regular maintenance of pest control stations.