Wellington International Airport Limited Southern Seawall Renewal Project

Transportation Assessment Report

Stantec

Prepared for:
Wellington International Airport Limited

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Prepared by:
Stantec New Zealand

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Stantec New Zealand

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This report has been prepared for Wellington International Airport Limited ("WIAL"), to inform the Expert Consenting Panel's consideration of WIAL's application for approvals under the Fast-track Approvals Act 2024 and any subsequent regulatory processes.

Stantec has assumed all information received from Wellington International Airport Limited (the "Client") and third parties in the preparation of the Report to be correct. The report is intended solely for use in connection with WIAL's application for approvals under the Fast-track Approvals Act 2024 and any subsequent regulatory processes, and is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorised use or reliance is at the recipient's own risk.

Prepared by

Signature

Niro Jayananthan

and

Signature

Alasdair McGeachie

Reviewed and Approved by

Signature

Hilary Papps

Executive Summary

Wellington International Airport Limited (**"WIAL"**) has engaged Stantec to evaluate and report on the transport demands and potential transportation effects arising from the proposed reconstruction of the seawall defences at the southern end of the airport runway. The existing seawall structure, referred to as the Southern Seawall, is reaching the end of its practical life and needs replacement. In addition, to provide improved resilience to adverse weather conditions, a larger and more robust structure than the existing facility is required.

Due to the scale of the proposed works and the need to maintain safe and efficient airport operations during the construction works the seawall reconstruction will be a multi-phase project extending over a six to eight year period.

This assessment has been prepared with a focus on the construction-related transport effects and assumes a worst-case scenario in respect to the volume of material that may need to be transported by road to site.

The principal traffic engineering and transportation planning considerations set out in this report include the following:

- transportation route characteristics, including existing traffic volumes;
- transport network road safety;
- access requirements and provisions, including the suitability of existing roads;
- the movement and number of construction vehicles to and from the site;
- transportation of over-dimension loads; and
- construction traffic management planning.

From a traffic effects perspective there are two separate operations involved in the seawall reconstruction project:

- the stockpiling of construction materials and equipment in three construction yards near to the worksite; and
- the transport of those materials and equipment from the construction yards to the worksite.

The stockpiling operation will commence prior to the construction works, and then there is likely to be a period of overlap between the construction and stockpiling operations. The construction works will be highly mechanised and as such only a limited number of staff trips would be generated on a daily basis.

Traffic modelling has been undertaken to assess the potential effects of forecast peaks in construction traffic demand.

A draft Construction Traffic Management Plan (**"CTMP"**) will be provided as part of the consent package and with a final CTMP and site-specific traffic management plans (**"SSTMP"**) will be prepared at a later date (post-consent) when construction methodologies and timelines are further refined.

In summary, this report concludes that the scale of construction and associated road transport demands is not of a quantum that will trigger any new capacity issues or safety concerns on the wider road network, and that with appropriate temporary traffic management measures, any associated impacts on Moa Point Road can be adequately mitigated.

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1 Introduction

Stantec has been engaged by Wellington International Airport Limited (**"WIAL"**) to evaluate and report on the transport demands and potential transportation effects arising from the proposed reconstruction of the seawall defences at the southern end of the airport runway.

The principal transportation effects arising from the proposed seawall reconstruction relate to the transport of construction materials and equipment from their source to the proposed construction yards (including the development of these construction yards), and then the transportation of the construction materials from the yard to the seawall construction site itself.

The principal traffic engineering and transportation planning considerations set out in this report include the following:

- transportation route characteristics, including existing traffic volumes (Section 3);
- access requirements and provisions, including the suitability of existing roads (Section 3 and 5);
- transport network road safety (Section 4);
- the movement and number of construction vehicles to and from the site (Section 5);
- transportation of over-dimension loads (Section 5); and
- construction traffic effects (Section 6).

This report is provided as part of a suite of documentation for the consenting of the Southern Seawall Renewal Project. As such it should be read in conjunction with the other relevant reporting including the Construction Methodology and Planning reports. A draft Construction Traffic Management Plan (**"CTMP"**) will be provided as part of the consent package and a finalised CTMP and site-specific traffic management plans (**"SSTMP"**) will be prepared at a later date (post-consent) when construction methodologies and timelines are further refined.

1.1 Code of conduct

The author of this report is Alasdair McGeachie. I have the qualifications and expertise set out in Appendix A and confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. This report has been prepared in compliance with that Code, as if it was expert evidence presented in proceedings before the Environment Court. Unless I state otherwise, this report is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this report.

2 Southern Seawall Renewal Project

2.1 Existing Seawall

The current Wellington International Airport ("**the Airport**") opened in October 1959. It features a single north-south runway extending between Evans Bay and Lyall Bay. The southern and western end of the runway at Lyall Bay is protected by a seawall. Construction works for the Airport commenced in 1953 and the original sea defences in Lyall Bay were constructed in 1954.

While various maintenance and upgrade works have occurred in the intervening period, it has been identified that the Southern Seawall (shown in Figure 2-1 below) has reached the end of its functional life and engineering advice has confirmed that it requires reconstruction in the immediate future.

2.2 Sea Defences Structures Renewal

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 Project ("**the Project**") 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 Wellington City Council 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) also require replacement, but WIAL intends to take a staged approach to the works. As such, this application relates only to the Southern Seawall replacement, which is the first stage of the coastal defences works.

The Project is comprised of seven key elements, described below, and shown in Figure 2-1.

1. Establishment and use of the Miramar Golf Course Construction Yard (**"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 replacement.

2. Clearance and use of the George Bolt Street Construction Yard (**"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 Construction Yard (**"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 rocks 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 to the Stage 2 Kororā Colony.

5. Reconstruction 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, excavation of the seabed and placement of rock to form the seawall toe, and associated works.

6. Creation of two new Kororā Colonies to support kororā habitation and breeding. The colonies are located on the landward side of Moa Point Road (Stage 1), and behind the Eastern Bank Remediation (Stage 2, once construction is complete). 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. The colonies will provide shelter from the wind, kororā nestboxes and vegetation. 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 supply and storage will be undertaken. While it is anticipated that most of this material will be transported via road, access to a central city marine unloading point to support the importation of rock from the South Island via barge may be needed.

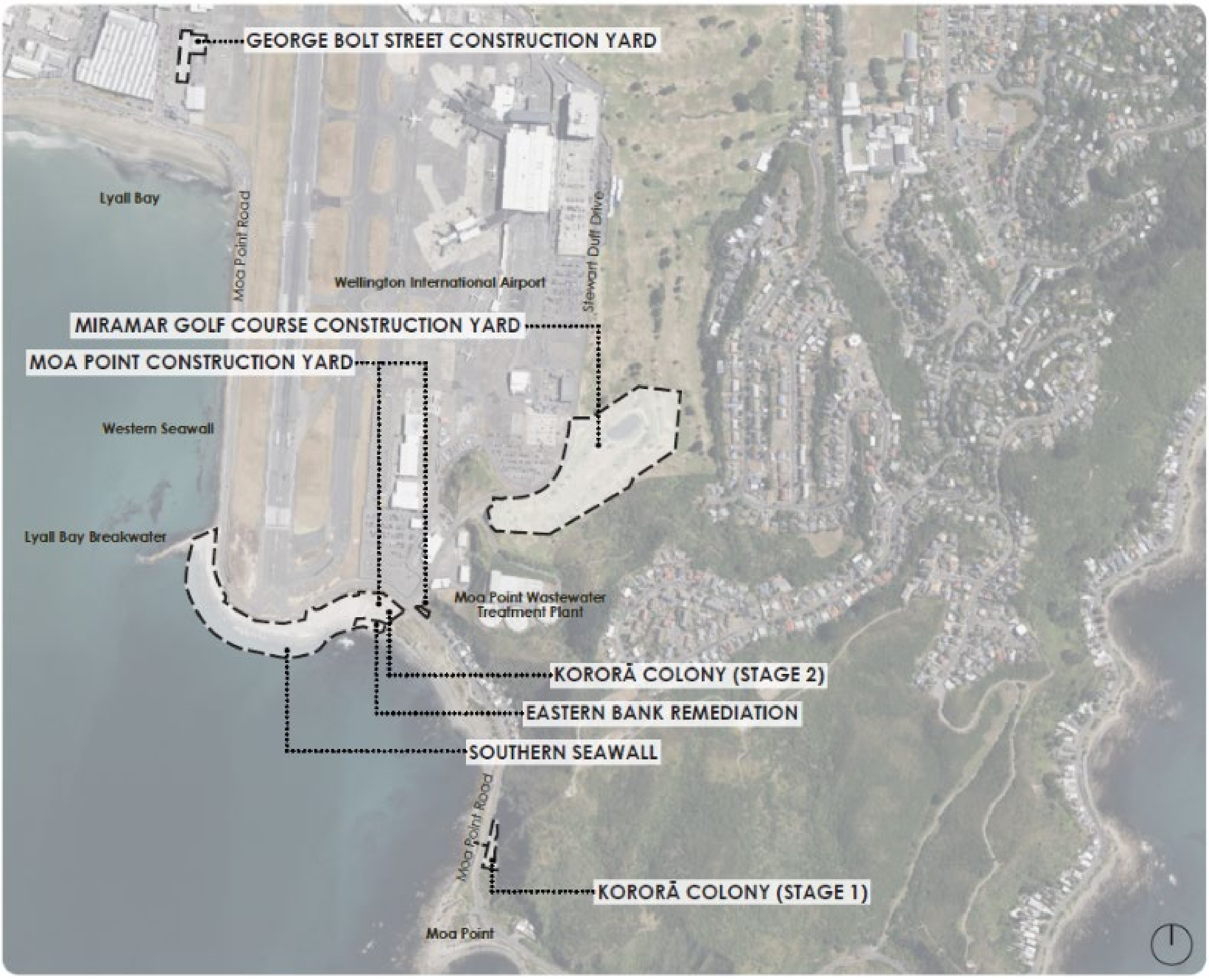

Figure 2-1: Proposed Construction Yard Locations

The Southern Seawall renewal is a large, multi-year project, with various external dependencies. Whilst the Project timeline will be dependent on 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:

- Progressive enablement works at the MGC Yard – up to 7 years;
- MGC Yard rock and armour unit storage and associated activities – 4 to 7 years;
- Establishment and use of the George Bolt Yard – up to 8 years;
- Establishment of the Moa Point Yard (excluding kororā management) – 6 months; and
- Southern Seawall construction and Eastern Bank Remediation – 24 to 30 months.

Elements of the construction programme will overlap; the overall construction programme will take approximately 6 to 8 years to complete.

Upon completion of the Southern Seawall renewal, WIAL may commence the second stage of its coastal renewal works (i.e. the Western Seawall renewal). 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 2.2.4). Activities associated with the Western Seawall renewal would be subject to a separate consenting process and are therefore not considered further in this report.

The construction workforce for the Project is expected to average between 20 – 30 people over the entire construction period, with short term peaks of up to 50 people. Construction activities – and consequently workforce numbers – are expected to peak at the commencement of the Southern Seawall reconstruction period. Further detail is provided in Section 5.4.

Construction will be managed to maintain airport operations, minimise nighttime noise, and work around adverse weather and sea conditions. The Project will also appropriately manage constraints arising from sourcing, transporting and stockpiling the significant volumes of rock and Cubipods required to complete the seawall works.

2.2.1 MGC Yard

The Miramar Golf Course was formerly an 18-hole course on a site extending approximately one kilometre from north to south. The southern half of the course has been purchased by WIAL and is being progressively redeveloped for a variety of airport purposes. In the interim, it is intended to use a section of the land for the construction 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 staff welfare facilities.

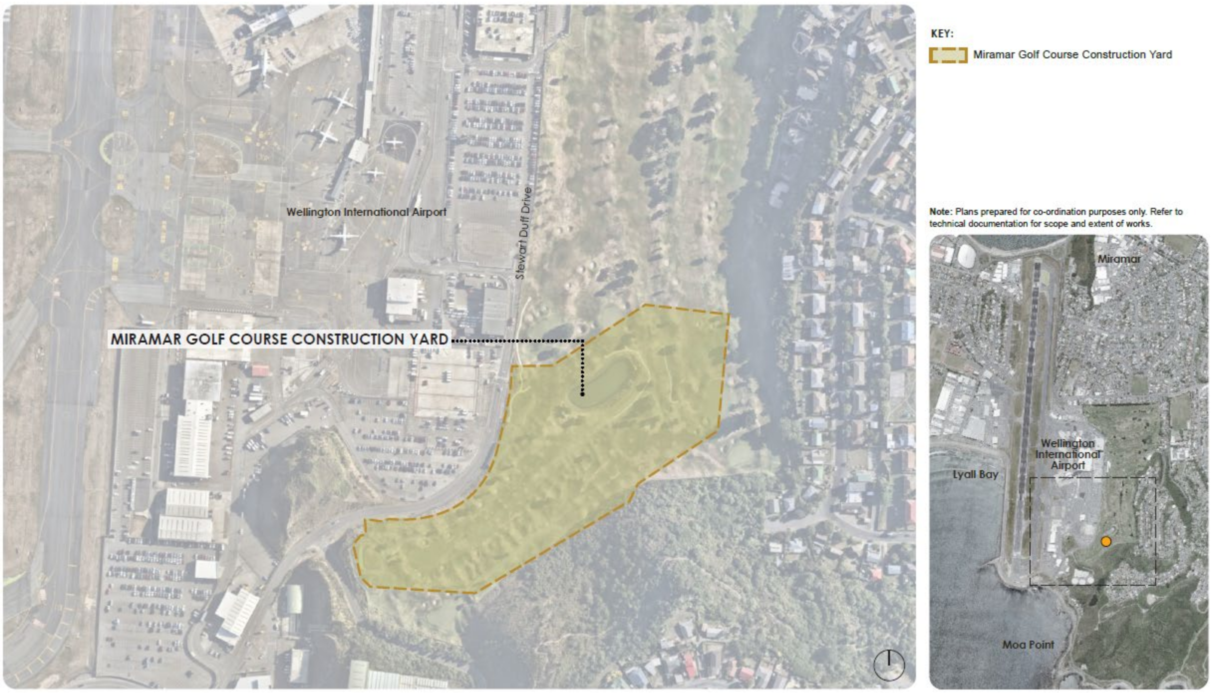

Figure 2-2: Plan of the MGC Yard

Construction materials will gradually be stockpiled at the MGC Yard over multiple years. The MGC Yard is expected to operate for around 7 years, with its operation potentially extended if required for the Western Seawall renewal works.

2.2.1.1 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 7 years to complete progressively as 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 Erosion Sediment Control Plan (**"ESCP"**) and the associated Site-Specific Erosion and Sediment Control Plan (**"SSESCP"**);
- 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;
- Relocation of existing pohutukawa where practicable;
- 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.

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 have to be disposed offsite. Where possible, excess cut material will be removed from site as backhaul to the rock deliveries. If this is not possible due to project scheduling, additional truck movements will be required.

2.2.1.2 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 estimated quantity of construction material that is required for the Project, and may be stockpiled at the MGC Yard, is shown in Table 2-1. Note that the quantities given are the cumulative totals for the

Project and not the quantities stored at the yard at any particular 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 for placement. Once works commence on the Southern Seawall reconstruction, 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.

Table 2-1: Construction materials that may be stockpiled at the MGC Yard

Material	Estimated quantity required across the life of the Project
Cubipods	7,600 units
Rock	35,000 to 50,000m^3, stored in stockpiles up to 6m high

2.2.1.3 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 of the application.

A draft CTMP has been developed for the Project and is included in Part G of the 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.

2.2.1.4 Hours of Operation

The MGC Yard will be fully operational between the hours of:

7.30 am to 6.00 pm, Monday to Sunday; Between 6:30 am and 7:30 am and 6:00 pm and 8:00pm on weekdays, heavy commercial vehicle (**"HCVs"**) access will be restricted to Stockpile 4 only (farthest from the residential areas to the north of the MGC Yard), with the remainder of the yard closed to heavy vehicles. Stantec understands these restrictions have been imposed for noise management and mitigation purposes.

Outside of the 7.30 am to 6.00 pm 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.

2.2.1.5 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.

2.2.2 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

During the Project, the 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 placing rock and Cubipods at the seawall face, which will be serviced at the Moa Point Yard.

2.2.2.1 Site Establishment Activities

Enabling works at the George Bolt Yard will involve:

- Clearing the site of any materials and equipment currently stored there;
- Demolishing the existing hangar on site;
- Installation of Civil Aviation Authority compliant airside / landside security fencing (up to 2.5m 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;
- 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.

2.2.2.2 Hours of Operation

The George Bolt Yard is surrounded by land owned by WIAL. During yard establishment, operating hours will be Monday to Saturday 7.00 am to 5.00 pm. During the operational phase, the yard will operate 24 hours per day, 7 days per week.

2.2.2.3 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.

2.2.3 Seawall Construction Works

2.2.3.1 Moa Point Yard

The Moa Point Yard, shown in Figure 2-4, 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.

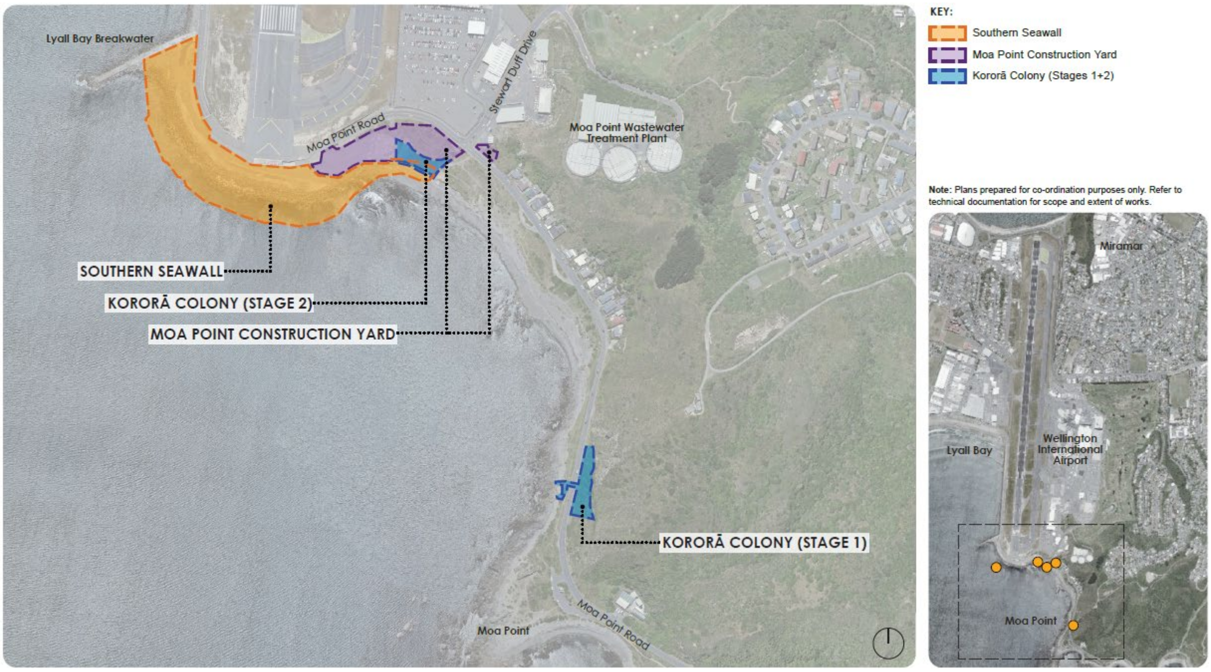

Figure 2-4: Plan of the Moa Point Yard

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 6.00 am and 10.00 pm.

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 Moa Point Yard will be passively used to support ongoing pre-reconstruction seawall maintenance and kororā removal from mid-2026. Formal site establishment will commence six months prior to the commencement of the Southern Seawall reconstruction, 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 reconstruction, with the operation of the western portion of the site potentially extended if required for the Western Seawall renewal works.

2.2.3.1.1 Site Establishment Activities

Enabling works at Moa Point Yard 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;
- Implementation of erosion and sediment control measures, in accordance with the ESCP (included in Part C and G of these application documents);

- 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.

2.2.3.1.2 Hours of Operation

The Moa Point Yard will be established between 6.00 am and 7.00 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 8.00 pm on weekdays, and 7.30 am and 6.00 pm on weekends and public holidays.

Once reconstruction of the Southern Seawall commences, the Moa Point Yard will operate 24 hours per day, 7 days per week. However, no rock or amour units will be delivered from the MGC Yard between 8.00 pm and 6.00 am.

2.2.3.1.3 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 reconstruction 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, grassed condition, similar to present. If reconstruction 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 Stage 2 of the Kororā Colony. The north-eastern portion of the yard will be rehabilitated in accordance with ecological advice.

2.2.3.2 Southern Seawall

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 2-5. 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.

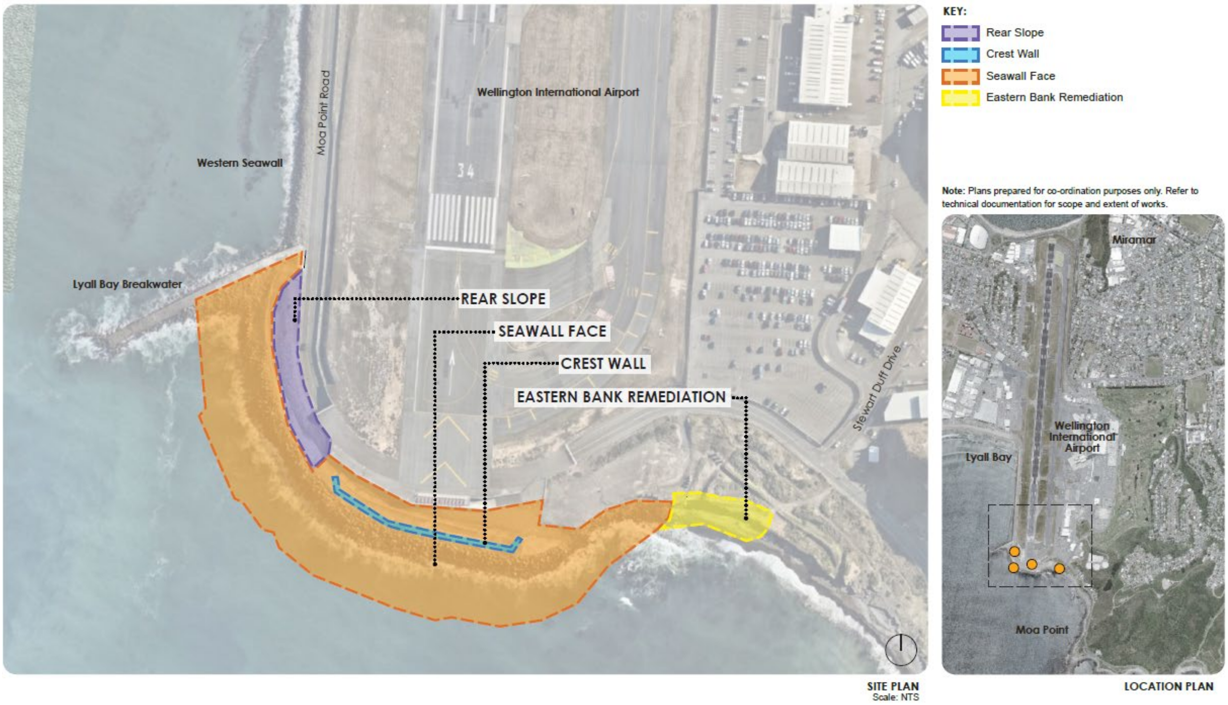

Figure 2-5: Plan of the Existing Southern Seawall

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.

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 reconstruction will take approximately 24 – 30 months.

2.2.3.3 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 ESCP (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 1 m 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.

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 Airport's designated obstacle limitation surfaces (**"OLS"**), therefore construction in this area will occur between 6.00 am and 10.00 pm.

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

2.2.3.4 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 the application. 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 draft CTMP has been developed for the Project and is included in Part G of the 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.

2.2.3.5 Hours of Operation

The Eastern Bank Remediation site will operate Monday to Sunday 6.00 am – 10.00 pm.

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

The location of the Southern 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).

2.2.3.6 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. 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.

2.2.4 Kororā Colonies

As part of the mitigation of effects on kororā, two kororā colonies will be developed, and kororā re-homing will be undertaken in advance of the Southern Seawall works.

The Stage 1 Kororā Colony – located on the landward side of Moa Point Road, south of the Airport – will be constructed early in the Project, in advance of the main seawall construction. This will allow for the relocation of kororā before habitat within the construction footprint is lost. The Stage 2 Kororā Colony will be constructed on the south-eastern part of the Moa Point Yard (following site demobilisation), on completion of the Southern Seawall.

Construction of the Stage 1 Kororā Colony will involve the installation of a precast concrete underpass beneath the road, and placement of rocks to enhance the kororā passage entrance. Piles of hand placed rocks will be used to improve kororā access, shelter and nesting opportunities, based on ecological advice. Minor earthworks will be required to improve kororā access, shelter and nesting opportunities at the Stage 2 site.

The re-homing will commence once the Stage 1 Kororā Colony is completed. The colonies will be landscaped and planted as needed and have rock habitat (i.e. selected hand-placed rocks) and burrows installed. The colonies will be fenced to protect kororā from attacks by dogs and disturbance by people.

The re-homing activity comprises progressive removal to stockpile of rubble on the western and eastern sections of the Southern Seawall, re-location of any kororā by an authorised kororā management officer to the Stage 1 Kororā Colony, and progressive securing of the cleared area using grout mattresses, rock bags, wire mesh or similar means. The work will be undertaken by a small to medium sized excavator working with a trained kororā management officer, in accordance with the Kororā Management Plan, included in Part G of the application documents. As set out in the Kororā Management Plan, removal of penguin habitat in advance of seawall construction will occur outside of the main kororā breeding and moulting seasons (August to February inclusive) where practicable.

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 5.00 pm Monday to Friday. It will take approximately three months to construct each colony.

Works associated with the Kororā Colonies are considered to have very minimal traffic effects, relative to the works required for the Southern Seawall reconstruction. As these works will be undertaken either before (Stage 1 Kororā Colony) or after (Stage 2 Kororā Colony) seawall reconstruction and not concurrently, traffic effects are assessed to be less than minor and at a reduced scale compared with the other works detailed in this assessment for the Southern Seawall reconstruction.

A draft CTMP has been developed for the Project and is included in Part G of the 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 construction site;
- Staff and visitor traffic movements;
- Parking;
- Haulage hours, movements and routes; and,
- Access and adjacent road maintenance.

2.2.5 Traffic Operations Overview

As will be examined more fully in the following sections of this report, the primary traffic effects from the Project will be due to the transport of materials and staff to and from the sites associated with the Project. There will be only very limited works in the road corridors (principally confined to the construction of accessways for the construction yards).

Construction materials will be transported to the site from outside of the Wellington region, either via the state highway network from north of Wellington, through central Wellington (along SH1) to either the MGC Yard, George Bolt Yard or to the Moa Point Yard and returning north via Lyall Bay and the State Highway 1 ("**SH1**") network, or from CentrePort, again to either the MGC Yard, George Bolt Yard, or to the Moa Point Yard and returning via Lyall Bay.

Once the Moa Point Yard is established and works on the seawall are progressing, there will be a haul route established along Stewart Duff Drive between the MGC Yard, George Bolt Yard, and the Moa Point Yard. Staff and some construction equipment will travel between their origin and the various yards using similar routes to those noted above.

Modelling has been undertaken to assess the effect on the road network from the forecast peak truck and staff demands. The key roads which would be used by the construction traffic associated with the Project are described in Section 3.

3 Existing Transport Network

3.1 Transport Network Hierarchy

The Airport is well connected to the wider road network with direct access to SH1 from the northern end of the airport precinct at the SH1 / Stewart Duff Drive / Broadway roundabout. In addition to the state highway network, a number of other key roads connect through the eastern suburbs, including the route around the south coast that provides access to the Southern Seawall site.

A map of both the immediate road network adjacent to the Airport, and the wider road network connecting to SH1, is illustrated in Figure 3-1 and Figure 3-2. SH1 is shown in orange.

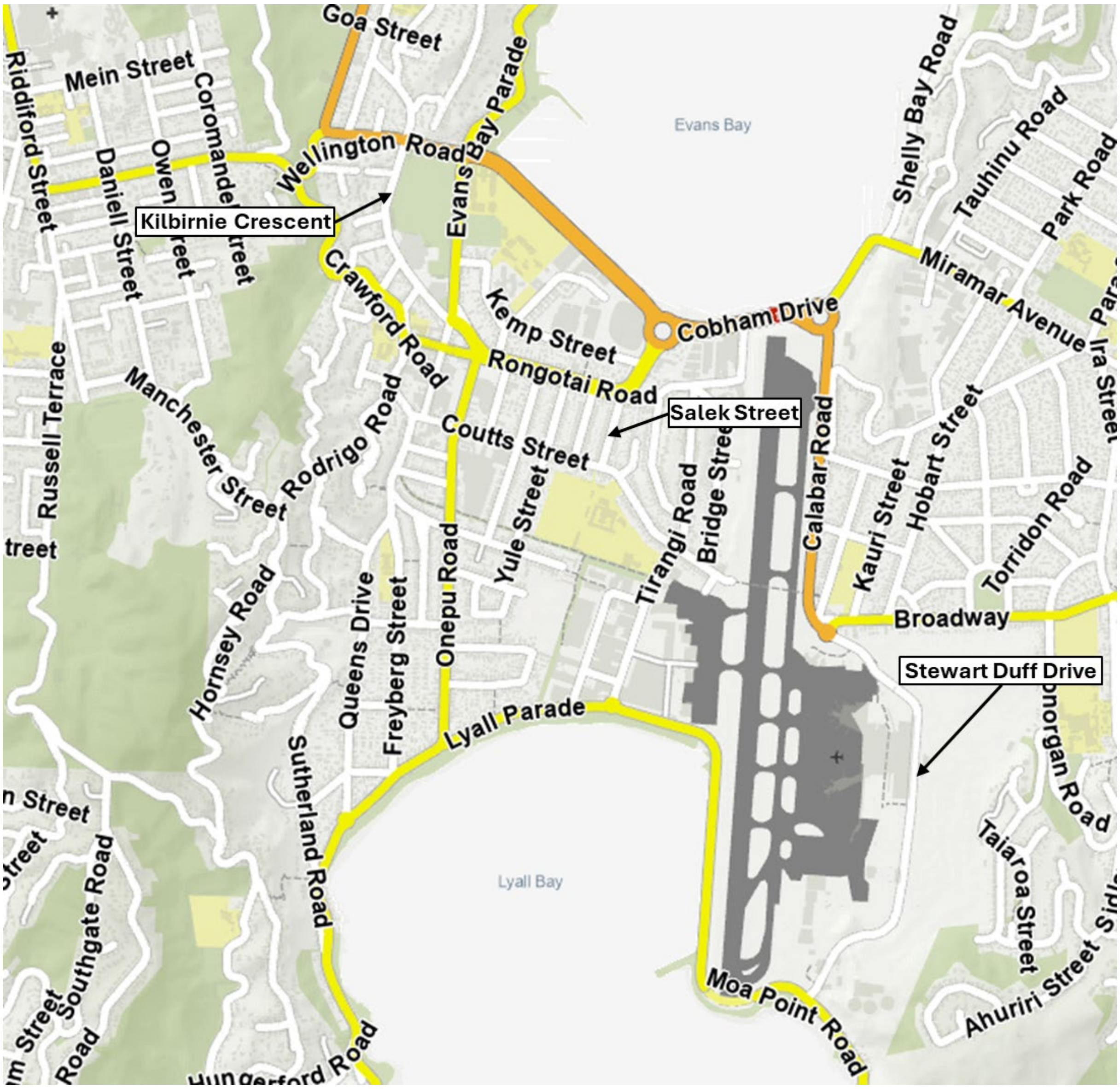

Figure 3-1: Immediate road network adjacent to the Airport

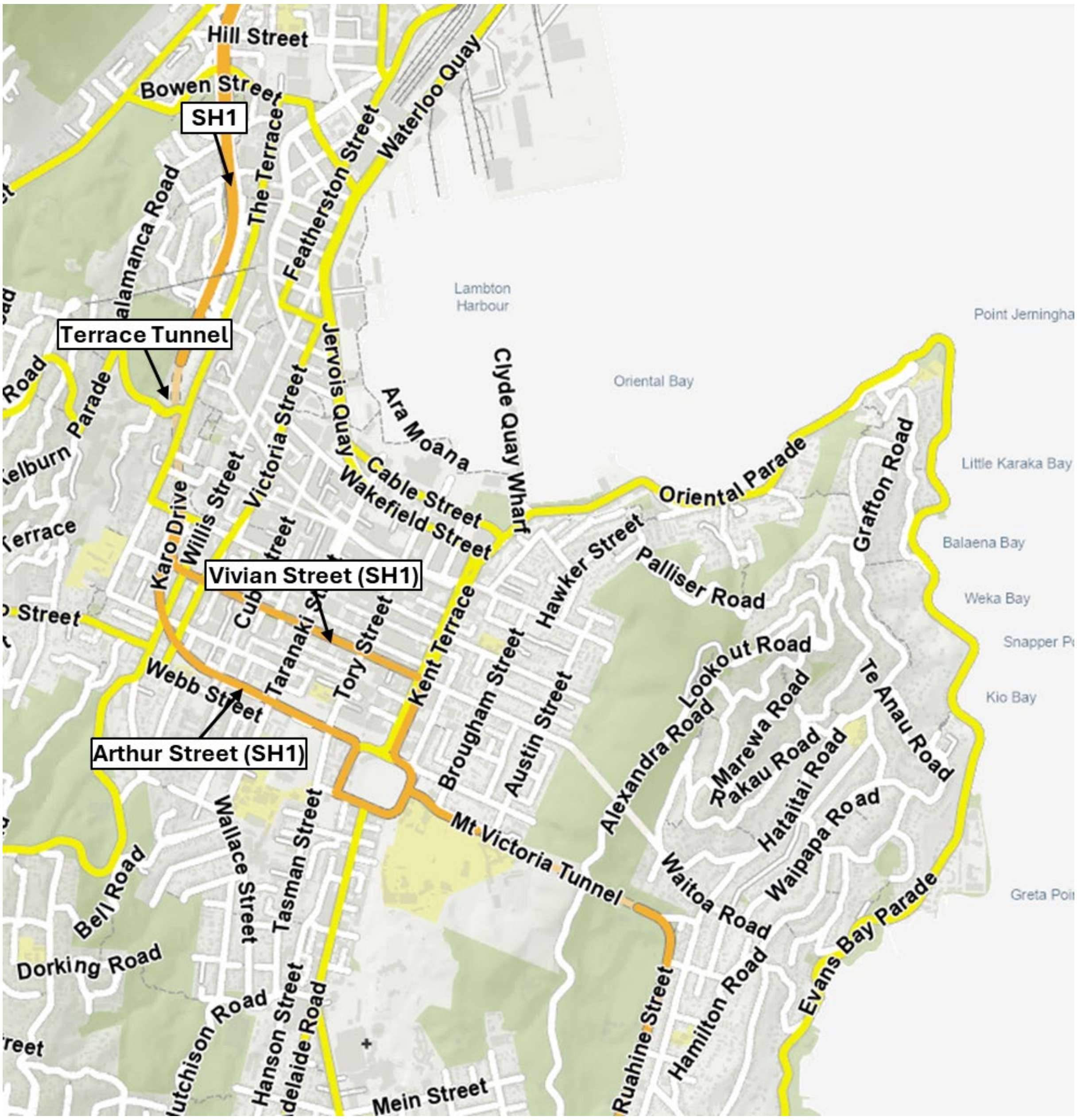

Figure 3-2: Wider road network connecting to SH1

SH1 is managed by the Waka Kotahi NZ Transport Agency (“**NZTA”**), Stewart Duff Drive is a private road (although the public have access) managed by WIAL and the other roads are managed by Wellington City Council (“**WCC”**). Figure 3-3 illustrates the roading hierarchy for the eastern suburbs, as defined by the Wellington City District Plan (“**District Plan”**).

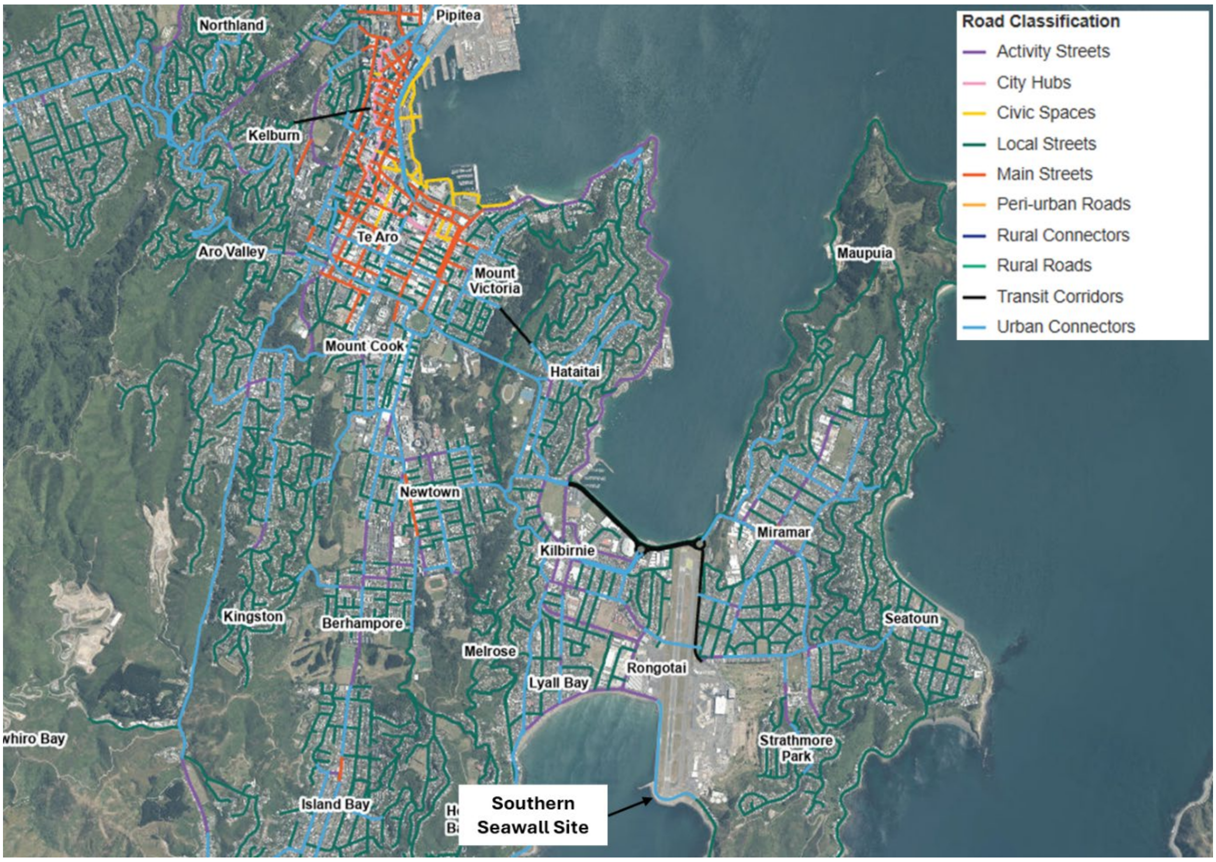

Figure 3-3: Roading Hierarchy

As shown, SH1 is defined as a Transit Corridor and Urban Connector road between the Airport and the CBD/SH1 Motorway and has the predominant function of providing a high-standard limited access route.

Moa Point Road and Onepu Road, which together form the route around the south coast and provide access to the site, are classified as an Urban Connector road. Lyall Parade, some sections of Onepu Road, and Kilbirnie Crescent are classified as Activity Streets.

Oriental Parade and Evans Bay Parade are also classified as Activity Streets, with this route between the eastern suburbs and the city forming part of the published overdimension route (to avoid the Mt Victoria tunnel). These State Highway, Transit Corridors, Urban Connector roads and Activity Streets form the primary road network to/from the site.

A series of Urban Connector and Activity Streets including Tirangi Road, Coutts Street and Salek Street on the western side of the airport, form the secondary road network to/from the site.

The proposed Southern Seawall site is therefore well positioned with respect to access using predominantly Transit Corridor, Urban Connector roads and some Activity Streets.

While significant quantities of material are required for the construction works (if rock is to be barged from the South Island), as discussed in Section 5, it is proposed that site establishment and material acquisition occurs at a constrained rate to minimise the impact of the required traffic movements.

Heavy construction equipment and over-dimensioned loads will be delivered to the site using SH1 and SH2 and other defined over dimensioned routes described at Section 3.3. Trips by construction workers, sub-contractors, and routine deliveries will be made to and from the site compounds and the site directly, in the manner described next at Section 3.2.

The proposed use of, and effects on these roads, is set out in Section 6 of this report.

3.2 Transport Route Options

Trucks used to transport materials to site will be no larger than a 25m long High Productivity Motor Vehicle (**"HPMV"**). These are standard sized vehicles and are not restricted to using over-dimension routes. All of SH1 and SH2 in the Wellington Region are fully HPMV capable, with many such trucks using these roads every day.

Where practical, it is intended to use the Transit Corridor and Urban Connector roads, which includes sections of the state highway network for transporting construction materials. A Transit Corridor provides for the fast and efficient long-distance movement of people and goods within the urban realm, including motorway and urban expressways. An Urban Connector road is typically considered to be a major route designed and intended to carry high levels of motor vehicle traffic, including freight, and make it safe, reliable, and efficient for people and goods to move between different parts of urban areas. Consequently, utilisation of the Transit Corridor and Urban Connector road network for the transport of construction materials is considered to be both appropriate and practical.

Further commentary on the available transport routes for HCV traffic associated with the Southern Seawall works is set out below, separated into the network between the CBD and potential supply site to the north of the Mt Victoria tunnel, and the localised routes to/from the site in Rongotai to the south of the tunnel.

3.2.1 North of Mt Victoria Tunnel

The supply sources for the construction materials are still being confirmed and may potentially change during the construction of the Project. However, principal source locations for the primary materials are understood to be Otaki (cubipods), North Island (rock) and the northern South Island (alternative rock supply). Trucks coming from Otaki or further north would run along SH1 in the Wellington region, and from SH1 Ngauranga Interchange follow the SH1 urban motorway through to Vivian Street, right into Kent Terrace then left and through the Mt Victoria Tunnel.

If the rock is sourced from the South Island, it would be barged to CentrePort, unloaded on the wharf and trucked to the Airport. Trucks coming from CentrePort would access the public road network at Aotea Quay, then enter SH1 via Kent Terrace at the Basin Reserve.

Other materials are likely to come from destinations north of Wellington and hence follow SH1 south to the Ngauranga interchange then, as discussed for the main materials, along the SH1 urban motorway to the Mt Victoria tunnel.

Trucks returning to the construction materials' sources, would likely follow the reverse of their inbound route from the Mt Victoria tunnel. The destination of the excavated material from the MGC Yard is not yet known, and hence commentary on this route(s) cannot be provided. However, it is recommended that where practicable the network of Transit Corridors, Urban Connector roads, and state highway highways are used.

3.2.2 Mt Victoria Tunnel

The Mt Victoria Tunnel is approximately 620m in length connecting Haitaitai to central Wellington. It provides one eastbound lane and one westbound lane and is part of SH1. A separate pedestrian/ cycling lane is provided on the northern side of tunnel. Traffic volumes through the Mt Victoria tunnel are in the order of 38,000vpd, with some 4.3% HCV usage. The tunnel provides a direct route between the Basin Reserve and the SH1/ Evans Bay Parade negating the need to use the winding coastal route via (2.5km versus 6.4km) Oriental Parade and Evans Bay Parade. The height clearance allows for the use of the tunnel by trucks up to the maximum legal height (4.25m).

It is proposed that all construction traffic of compliant dimensions would utilise the Mt Victoria tunnel for travel to/ from destinations north of the Tunnel. The benefit to the project operation and road network from this routing is seen as twofold. First, the route is part of the arterial state highway network and hence avoids the need to use local roads which may have a greater proportion of vulnerable road users and be in greater proximity to residential areas. Second, as noted the route is more efficient, reducing travel distances and times for the construction vehicles.

3.2.3 South of Mt Victoria Tunnel

On the eastern side of the airport, Stewart Duff Drive connects with SH1 (Calabar Road) and extends through the Airport precinct. Whilst this is a viable southbound truck route (daytime and nighttime), access for return northbound journeys through the Airport precinct immediately adjacent the terminal building is not, since the bridge structure at the Level 01 concourse was not designed or built to carry frequent heavy trucks. Furthermore, the access underneath this bridge structure is not suitable for trucks and is also used as a pick-up zone by Airport passengers. Converting one of the southbound lanes on Stewart Duff Drive to allow for northbound traffic is not considered feasible due to potential opposing vehicle conflicts in taking such traffic from the contraflow lane across inbound southbound traffic to the Level 01 concourse and then merging with the existing northbound traffic lanes.

On the western side of the Airport, Lyall Parade, Onepu Road[1] and Kilbirnie Crescent will provide the route back to SH1 for trucks returning to CentrePort or destinations further north.

Site vehicles using the George Bolt Yard, would likely use Lyall Bay Parade, Tirangi Road and an internal WIAL access.) in addition to the previously mentioned routes. Use of the George Bolt Yard is likely to be limited to storage of some equipment, and site offices/ utilities, hence truck movements to and from this location would be infrequent. As set out in this report, it is recommended that, where

[1] It is noted that separated cycle lanes have recently been implemented on both sides of Onepu Road. A site drive through has been undertaken to confirm that this route is still suitable for truck movements. It is also noted that the Onepu Road corridor is a bus route and is the location of a bus depot.

practical, trucks transporting rock material to the site be accommodated on the network of Transit Corridors, Urban Connector Roads, and state highways.

South of the Mt Victoria Tunnel the two main routes for trucks to travel to and from the site can be summarised as follows:

- **Route A** (Inbound) – follows SH1 to the Airport, then uses Stewart Duff Drive to traverse the Airport itself, before turning onto Moa Point Road and accessing the site. The route through the Airport is suitable southbound (only) at all times of the day.
- **Route B** (outbound) – from the site, 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 point for the MGC Yard would be positioned so the trucks shuttling between the MGC Yard and Moa Point Yards could 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.

Figure 3-4 shows these routes south of the Mt Victoria Tunnel. Appendix C shows truck tracking through key intersections south of the Mt Victoria tunnel.

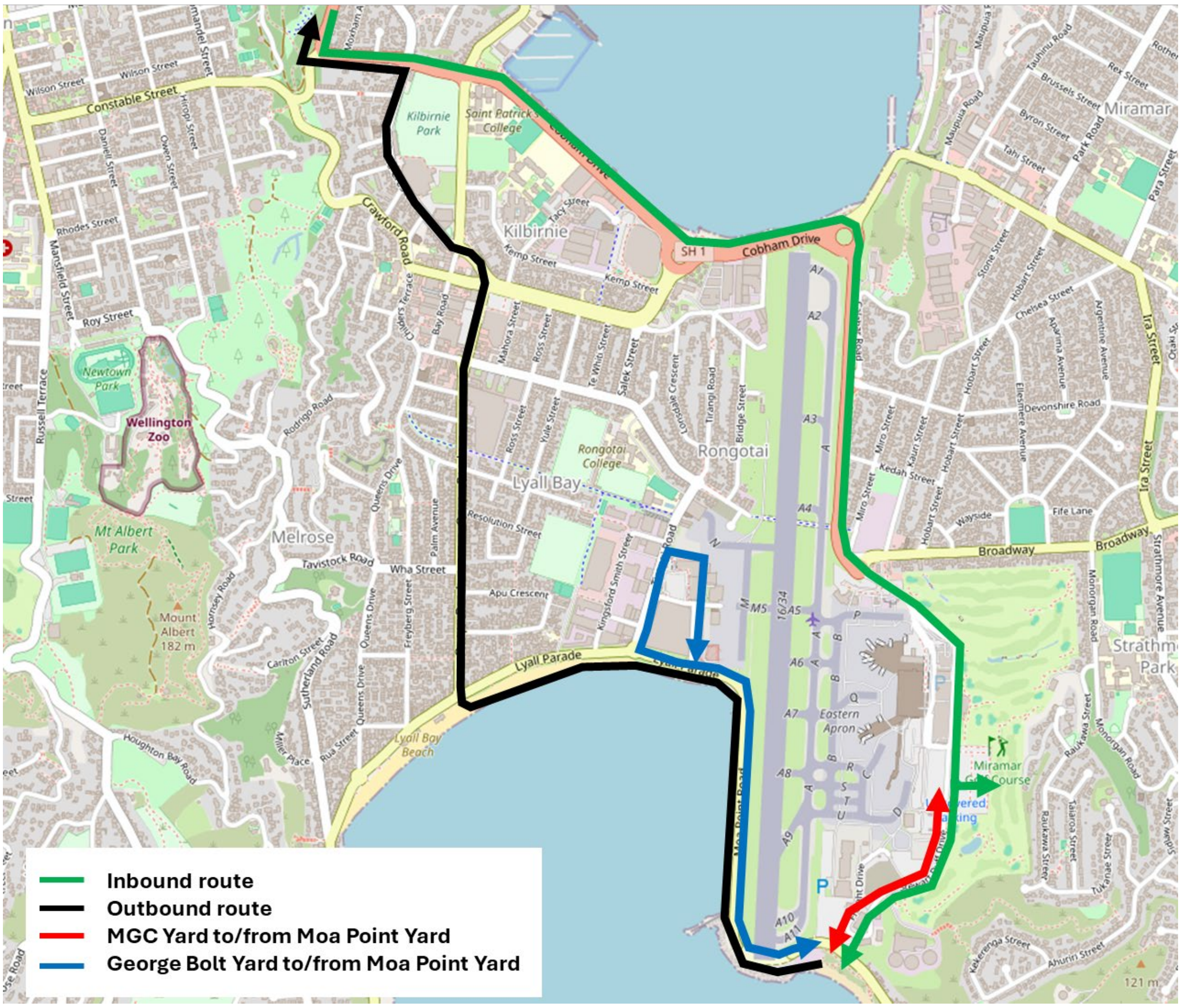

Figure 3-4: The four proposed routes south of the Mt Victoria Tunnel (Source: OpenStreetMap)

3.3 Overdimension Vehicle Routes

For the occasional transport of some larger equipment and plant between contractor yards and the site, an oversized vehicle movement may be required. While the exact number of overdimension loads to be transported over the course of the Project is not currently confirmed, it is anticipated that only some 10-15 over dimension loads would be required over the course of the Project. Specific approval would be gained for each overdimension movement. NZTA's published Overdimension Vehicle Routes ("**OVRs**") are illustrated in Figure 35.

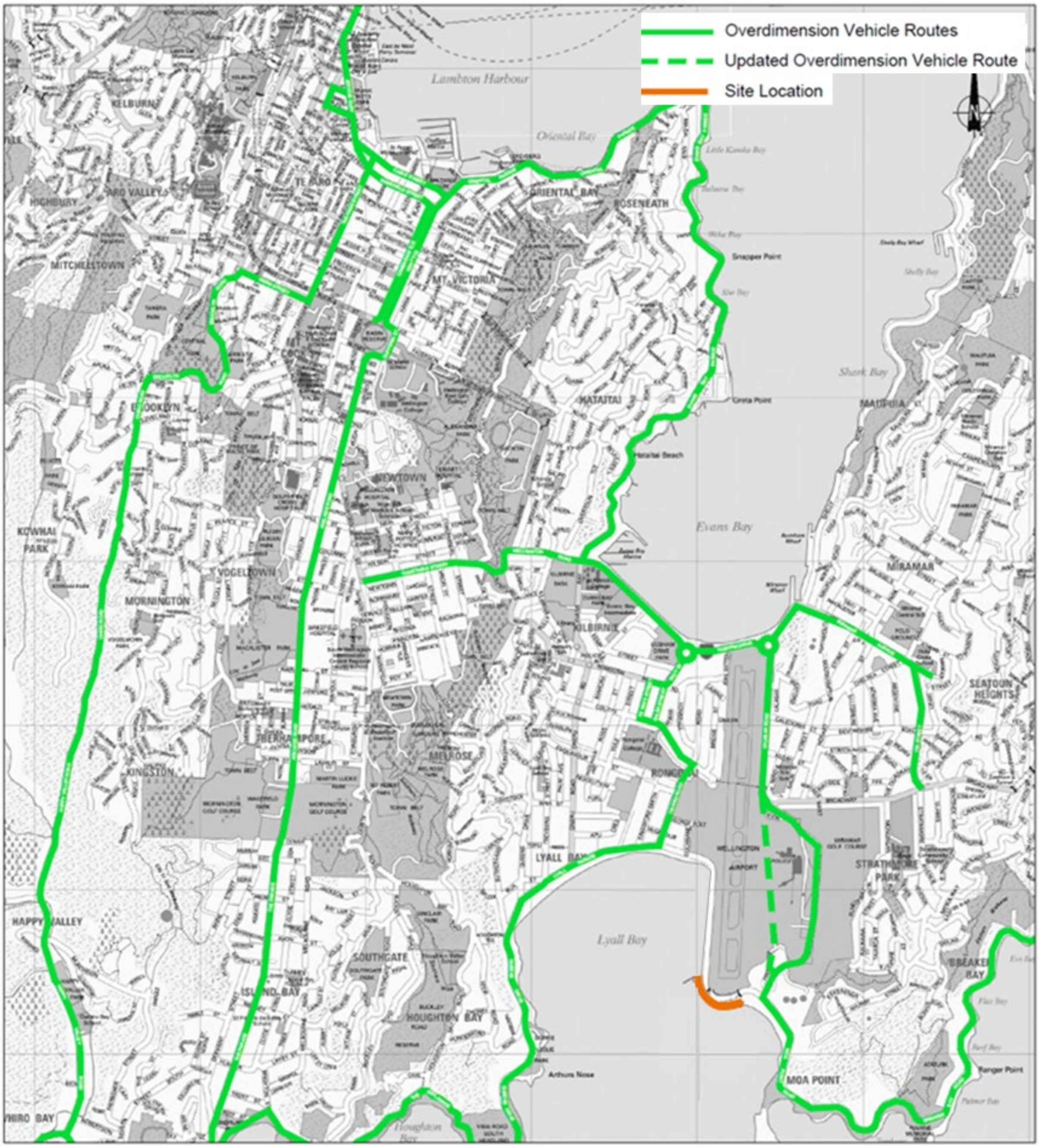

Figure 3-5: Overdimension Vehicle Routes (source: Terralink Maps)

As shown, none of the tunnels on SH1 are approved for overdimension loads. Due to previous and ongoing physical changes at the Airport, overdimension vehicles cannot travel south along Stewart Duff Drive through the Airport precinct. Consequently, the 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, in the manner shown by the dashed green line in Figure 3-5. The revised airside OVR is subject to strict Airport permissions. Moa Point Road is excluded from the overdimension vehicle route due to the clearance restrictions of the Runway End Safety Area (**"RESA"**) Tunnel on Moa Point Road.

In this manner, it is expected that any overdimension vehicles would most likely route around the waterfront from the CBD (Oriental Bay – Evans Bay) and use SH1 through the Airport to access either the construction yards or seawall site. Once unloaded, these trucks should then be able to pass through the RESA and Mt Victoria tunnels and can follow the Outbound route earlier illustrated in Figure 3-4. The right-turn from Stewart Duff Drive at the intersection with Moa Point Road for overdimension vehicles will be managed under appropriate Temporary Traffic Management measures, as highlighted in Section 7 of this report and further detailed in the CTMP.

An equivalent arrangement could be adopted for the collection of plant/equipment from the site.

The intention is to avoid the use of Oriental Bay Parade and Evan Bay Parade by heavy vehicles associated with the Project works, unless the use of such routes is required due to the dimensions of the vehicle load.

These arrangements will be further defined nearer the time and will be subject to authorisation under the relevant oversized load permits, prior to transportation. Permits and planning for such loads would include specific details as timing / authorised movement hours, the specific route(s) to be followed and any escorting/ traffic management procedures.

If an overdimension vehicle is unable to pass through the RESA tunnel, then options could be to run northbound on Stewart Duff Drive and via the airside of the Airport (as shown above in Figure 3-5). Appropriate traffic management measures would be required for either of these options.

3.4 Traffic Volumes

Daily traffic patterns and volumes for the various routes under consideration for transportation of material to the site are described below, using available recent count data from Council[2] and the NZTA's traffic monitoring system website[3].

A summary of daily traffic volumes for SH1 and the key local routes to the site, is set out in Table 3-1 below.

Table 3-1: Daily Traffic and HCV Volumes for Key Routes on the Network

Road	Road Section	Total	Northbound/ Eastbound	Southbound/ Westbound	AM Peak Hour	PM Peak Hour
SH1	North of Ngauranga	77,198	38,896	38,302		
SH1	North of Terrace Tunnel	43,311	23,205	20,106		
SH1	at Mt Victoria Tunnel	38,089				
Waterloo Quay	Hinemoa Street to Aotea Quay	32,126	16,229	15,897	2,424	2,684

[2] Council traffic volumes from 2023 / 2024
[3] State Highway traffic volumes from 2024 have been averaged to inform typical weekday and weekend traffic profiles

Road	Road Section	Total	Northbound/ Eastbound	Southbound/ Westbound	AM Peak Hour	PM Peak Hour
Aotea Quay	North of Waterloo Quay	32,180	15,552	16,629		
Vivian Street	Willis Street to Cambridge Terrace	20,864	-	20,864	1,533	1,442
Karo Drive	Willis Street to Cambridge Terrace	25,856	25,856	-	1,902	2,065
Cobham Drive		34,250	16,037	18,213	2653	2672
Calabar Road	South of Cobham Drive	23,981	11,221	12,760		
Stewart Duff Drive	South of Calabar					
Stewart Duff Drive	North of Moa Point Road				263	297
Moa Point Road	Lyall Parade to Stewart Duff Drive	4,139	2,005	2,134	398	383
Moa Point Road	Stewart Duff Drive to Breaker Bay Road	1,960	966	994	124	173
Lyall Parade	Tirangi Road to Kingsford Smith Street	7,035	3,507	3,528	441	603
Onepu Road	Rongotai Road to Coutts Street	7,964	3,954	4,009	475	635
Kilbirnie Crescent	Childers Terrace to Tully Street	7,784	4,442	3,342	489	601
Tirangi Road	McGregor Street to Kingsford Smith Street	4,938	2,559	2,379	329	282

Further detail on the daily traffic patterns for these routes is provided in the sections below.

3.4.1 State Highway Network

SH1 (including the Wellington Urban Motorway), is expected to be the principal travel route for trucks transporting rock materials and concrete cubipods to and from the quarries and manufacturing facilities in the north. Additionally, it follows the western side of Wellington Harbour, traverses the city via the Basin Reserve, links through Mt Victoria tunnel to connect with Cobham Drive, and then terminates at the southern end of Calabar Road at Wellington Airport (from which connection through to the Southern Seawall site is provided via Stewart Duff Drive). As such, this route includes urban and motorway sections.

For the purpose of providing a sense of scale of the traffic activity associated with the works, average hourly traffic volumes at key sections along this route between the city and the Airport have been provided graphically (below) for each of the following locations:

- SH1 - Karo Drive (SH1 northbound) and Vivian Street (SH1 southbound);
- SH1 - Cobham Drive, west of Troy Street; and
- SH1 - Calabar Road, south of Caledonia Street.

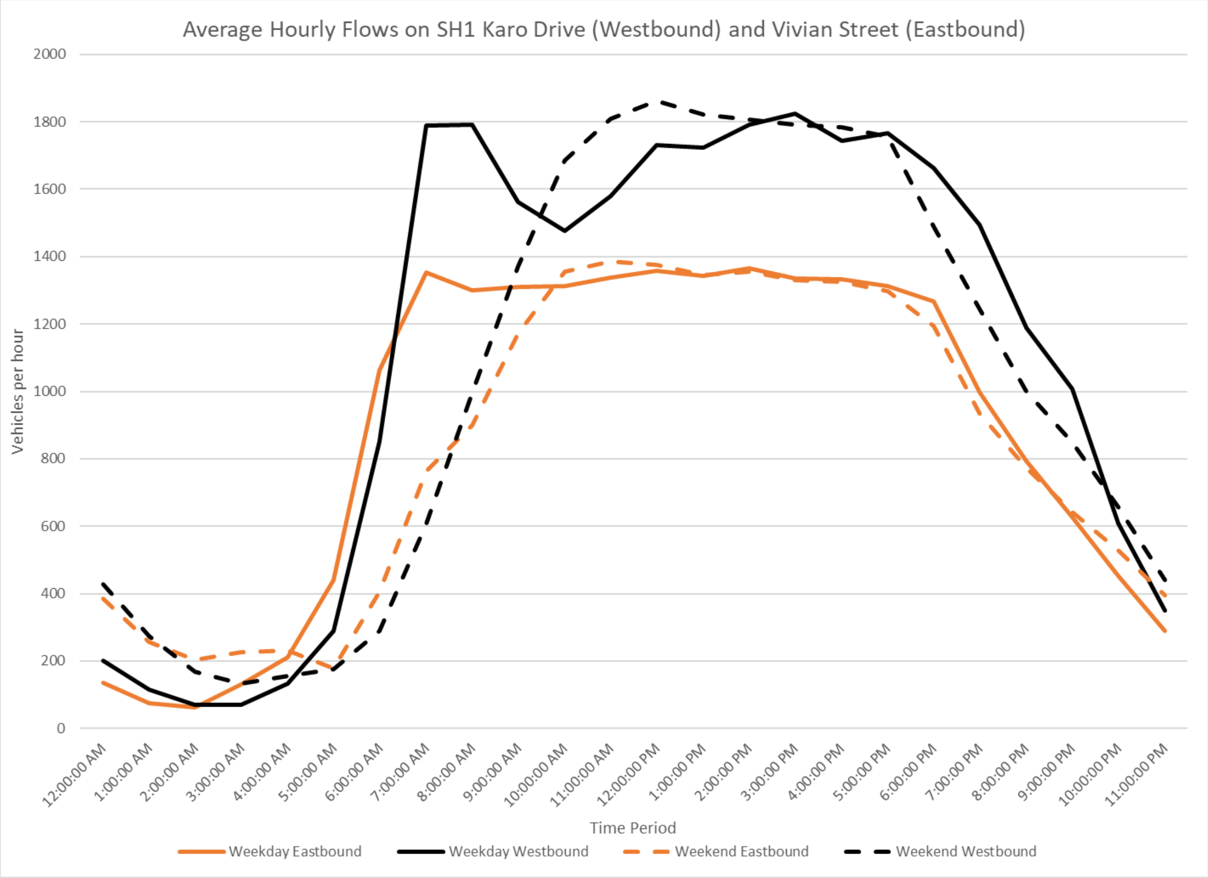

Figure 3-6: SH1 Karo Drive / Vivian Street Traffic Flows

Figure 3-6 shows higher SH1 westbound flows on Karo Drive between the Mt Victoria tunnel and the Motorway, than the eastbound Vivian Street route, with more pronounced weekday AM and PM commuter peaks. Weekday flows on the westbound route peak at around 7am, with volumes through the middle of the day/early evening remaining reasonably consistent and showing comparable volumes between the weekday and weekend. The TMS system records that 2,500 HCVs use these two roads each weekday.

Figure 3-7 shows the traffic profile for SH1 Cobham Drive.

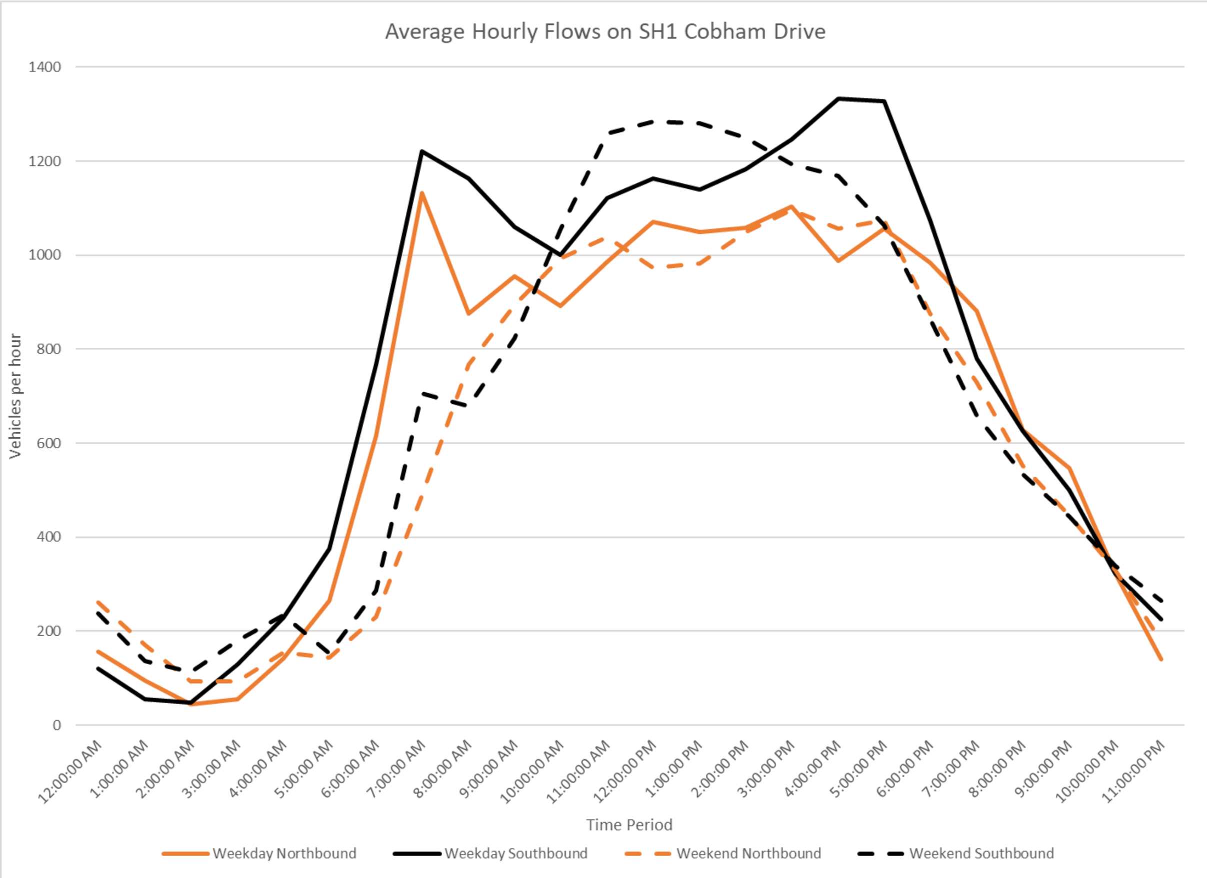

Figure 3-7: Cobham Drive Traffic Flows

Count data for Cobham Drive indicates a peak flow in the southbound direction of around 1,300-1,400 vehicles per hour ("**vph**"), which occurs during the typical AM and PM commuter peaks. An average of 1,600 HCVs use Cobham Drive each weekday.

Figure 3-8 shows the traffic profile for SH1 Calabar Road.

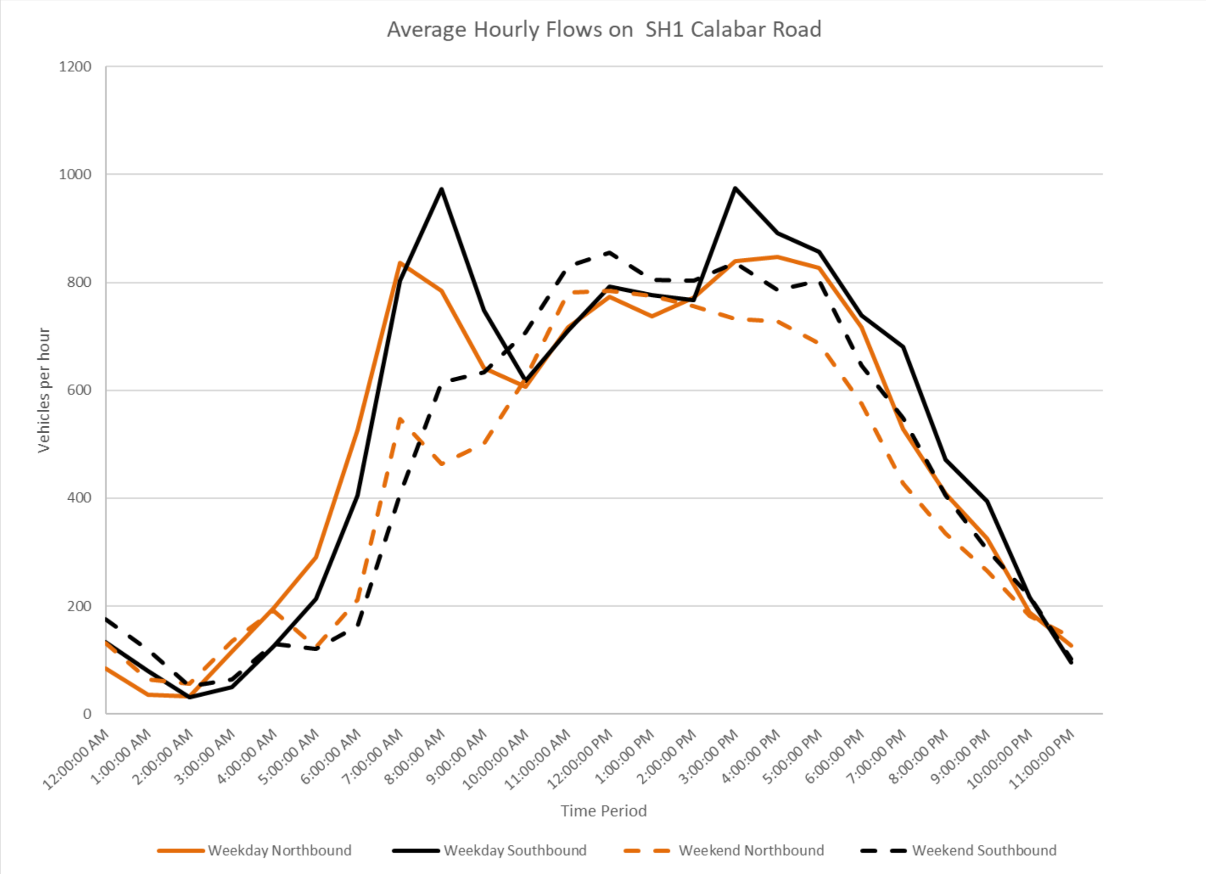

Figure 3-8: Calabar Road Traffic Flows

Calabar Road shows clear commuter peaks with very similar northbound and southbound volumes of around 1,000vph, influenced largely by the traffic activity of the Airport. The TMS system estimates approximately 1,300 HCVs use Calabar Road each weekday.

At these existing volumes, the highest peak traffic activity of the proposed Southern Seawall works at 30-40 vehicles per hour (as discussed later in this report) represents between 2% and 4% of the existing peak hour volumes on SH1.

Further to the above, average hourly volumes at key sections of SH1, the 90th percentile hourly volumes have also been analysed for peak periods as a sensitivity test, during weekdays, Saturdays and Sundays. These volumes are detailed below in Table 3-2 to Table 3-4.

Table 3-2: 90th percentile peak hour volumes on SH1 Karo Drive and Vivian Street in 2024

Day	8-9AM		12-1PM		3-4PM	
	WB	EB	WB	EB	WB	EB
Weekday	1,939	1,490	1,852	1,458	2,115	1,463
Saturday	1,293	1,326	2,097	1,455	2,090	1,445
Sunday	919	859	2,116	1,482	2,069	1,463

Table 3-3: 90th percentile peak hour volumes on SH1 Cobham Drive in 2024

Day	7-8AM		12-1PM		5-6PM	
	NB	SB	NB	SB	NB	SB
Weekday	1,258	1,368	1,203	1,306	1,162	1,408
Saturday	667	854	1,162	1,329	1,102	1,085
Sunday	493	657	1,208	1,380	1,186	1,142

Table 3-4: 90th percentile peak hour volumes on SH1 Calabar Road in 2024

Day	8-9AM		12-1PM		3-4PM	
	NB	SB	NB	SB	NB	SB
Weekday	880	1,056	847	884	924	1,074
Saturday	584	793	799	833	755	866
Sunday	514	583	872	930	857	968

The weekend midday peak two-way volumes are similar to weekday PM peak volumes, with peak directional volumes generally less than observed during the weekday morning and evening peak periods. From this data, it is concluded that the weekday morning and evening peak periods are the more critical periods to assess in terms of the additional development traffic. This is further detailed in Chapter 6.

3.4.2 Non-State Highway Network

3.4.2.1 Onepu Road

Onepu Road functions as part of the overdimension vehicle route through Kilbirnie. Traffic volumes provided by WCC for Onepu Road between Rongotai Road and Coutts Street are presented in Figure 3-9.

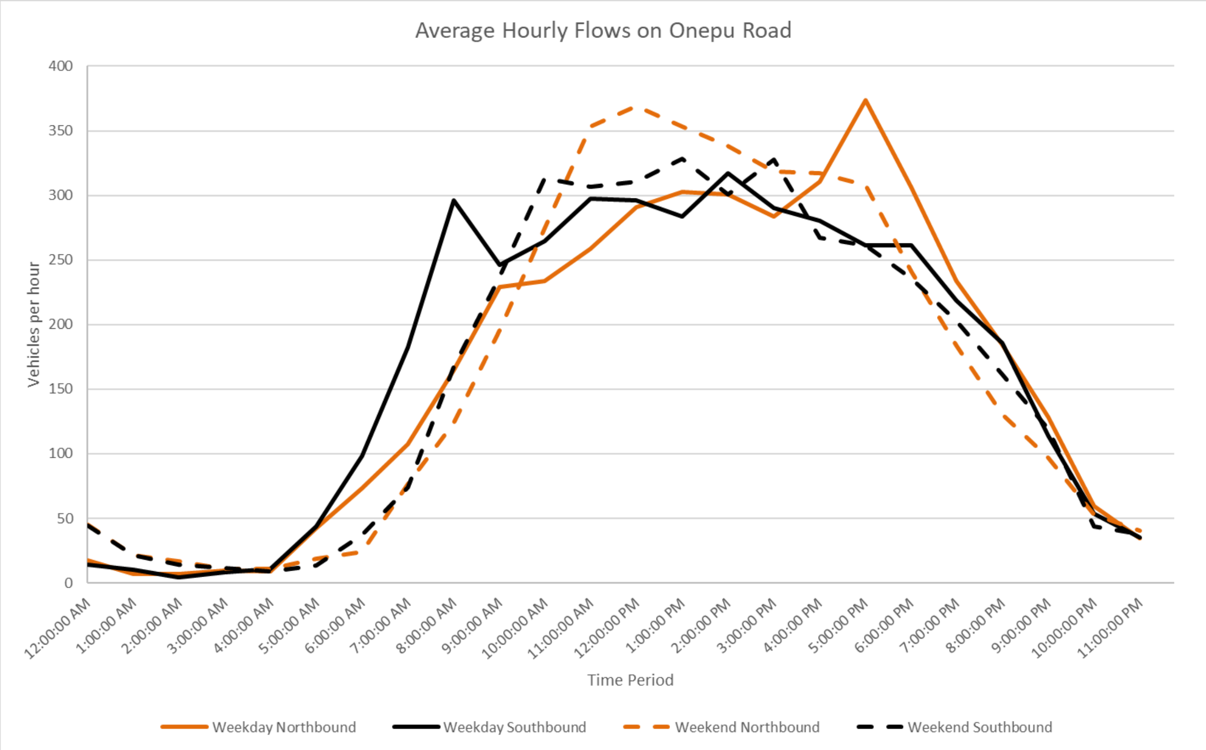

Figure 3-9: Onepu Road Traffic Flows

Onepu Road shows a typical weekday commuter pattern. Its proximity to, and function in, connecting retail and recreational areas is also visible with weekend flows illustrating similar peak traffic volumes to weekdays. An average of 550 HCVs use Onepu Road per day, with a reasonable proportion of these being buses associated with the Go Wellington bus depot, which is located on Onepu Road just south of the Kilbirnie town centre.

3.4.2.2 Moa Point Road

Moa Point Road provides the most direct public road route to the Southern Seawall that does not traverse Airport property. Traffic volumes sourced from WCC between Lyall Parade and Stewart Duff Drive are shown below in Figure 3-10, and between Stewart Duff Drive and Breaker Bay Road in Figure 3-11

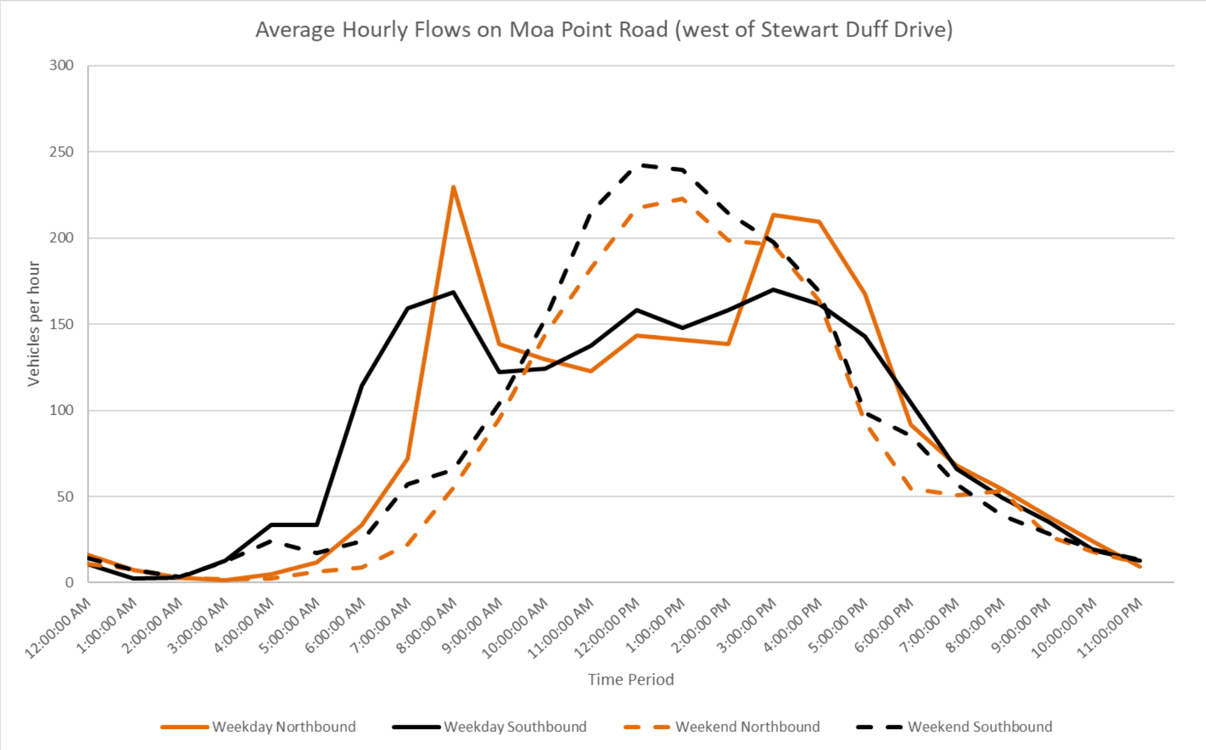

Figure 3-10: Moa Point Road Traffic Flows (west of Stewart Duff Drive)

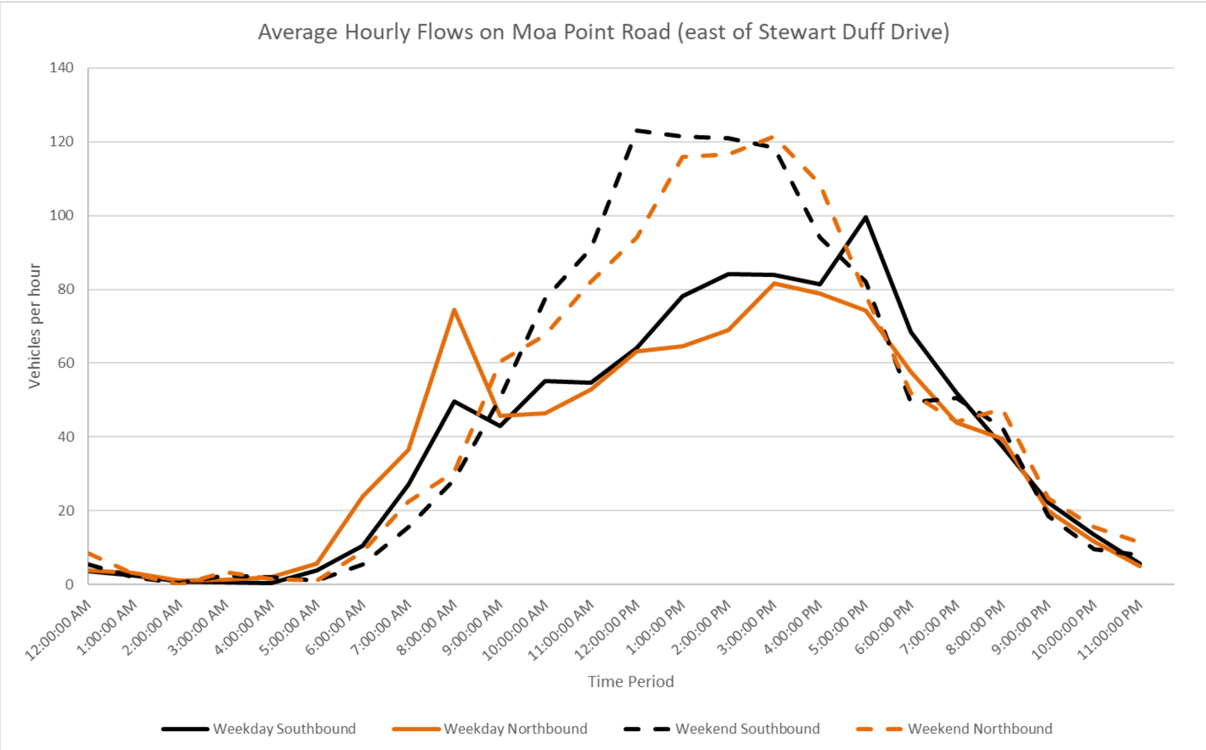

Figure 3-11: Moa Point Road Traffic Flows (east of Stewart Duff Drive)

As shown, weekday traffic volumes on Moa Point Road west of Stewart Duff Drive typically peak at around 200-250vph (in the northbound direction), during the PM commuter period, whilst weekend volumes are not dissimilar to weekday flows (albeit with a different peak profile), reflecting its function as a recreational route as well as connecting to shopping destinations at the Airport Retail Park. An average of 350 HCVs use this section of Moa Point Road each day. East of Stewart Duff Drive, traffic volumes are relatively lower with weekday peak volumes around 100 vph in the southbound direction during the PM period, whilst weekend flows are slightly higher at around 120 vph in both directions.

3.5 Access to Southern Landfill

Earthworks are required to develop the MGC Yard, and on a more minor scale, to prepare the Moa Point Yard and Southern Seawall site. The dump location for the excavated material is yet be confirmed. Potential options could include locations north of Wellington (accessed via SH1 or SH2) or the Wellington Southern Landfill. Trips to Wellington’s Southern Landfill would likely follow Lyall Bay Parade (and subsequently Queens Drive, and The Esplanade) on the south coast before turning onto Happy Valley Road, noting there are no feasible alternatives which offer significant benefits over and above this route. This proposed route is the same as that adopted for the wastewater treatment plant sludge transport project which involved significantly higher truck movements (of up to 150 trips per day) to that required for the Project.

4 Road Safety

A search of the NZTA's Crash Analysis System ("**CAS"**) has been undertaken for the key routes to and from the site south of Cobham Drive, as pictured in Figure 4-1. This search extent includes Calabar Road, Stewart Duff Drive, Moa Point Road, Lyall Parade, Onepu Road, Evans Bay Parade, and Kilbirnie Crescent.

Crashes within the most recent complete 5-year period between 2020 and 2024 were analysed.

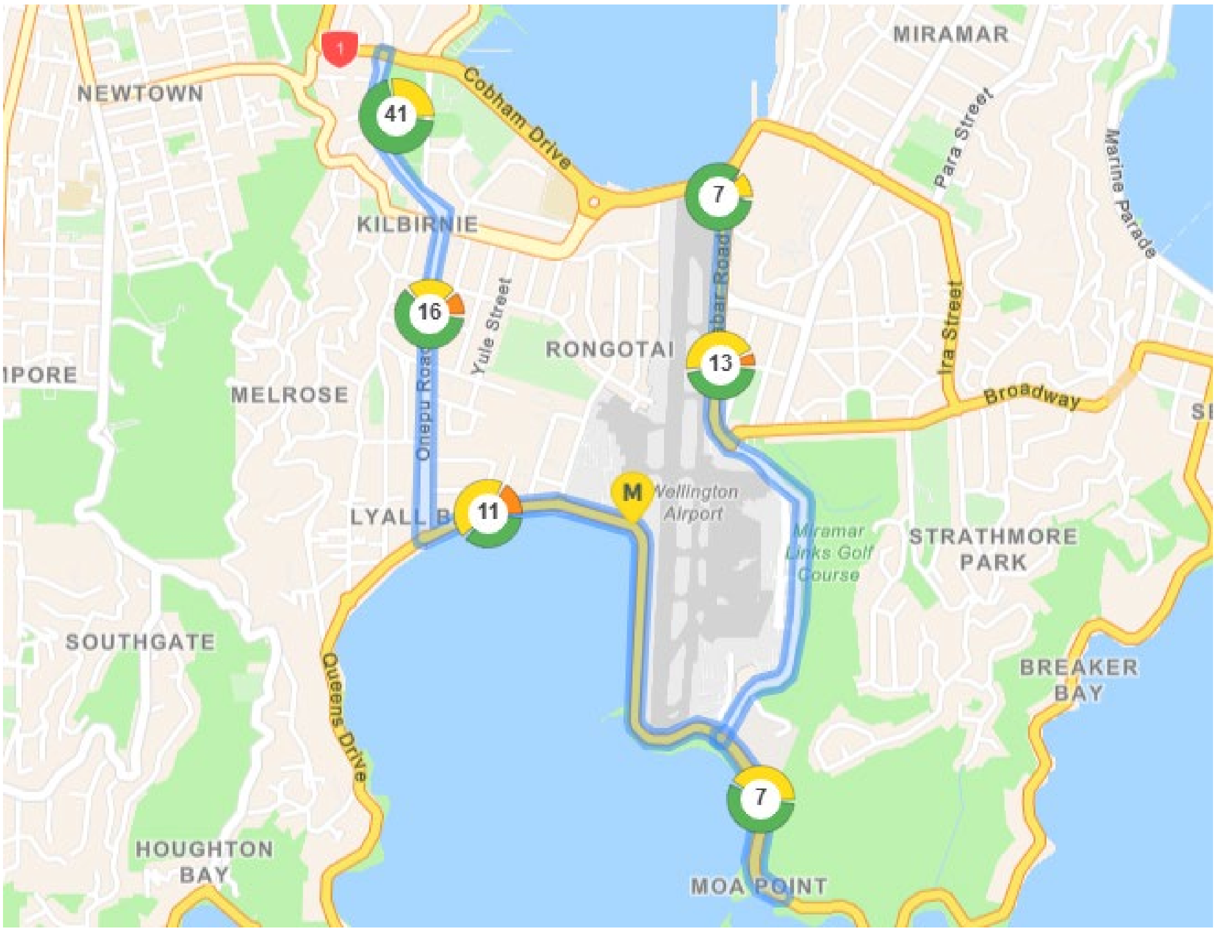

Figure 4-1: CAS Search extent

A total of 96 crashes were reported in this five year period. Of the 96 crashes, 38 resulted in an injury (4 serious injury crashes and 34 minor injury crashes).

Table 4-1 below summarises principal crashes, locations and typology.

Table 4-1: Crash Analysis for a five year period between 2020 and 2024

Crashes	**Total**	Right angle or right turn vs through	Merging/ Overtaking or lane changing	Rear End	Loss of Control	Vehicle vs Cyclist	Vehicle vs Pedestrian	Other
Cobham Drive/ Calabar Road roundabout	**6**		1	4	1			
Calabar Road btwn Cobham Drive & Caledonia Road	**4**		1		3			
Calabar Road / Caledonia Rd intersection	**4**	1	1	2				
Calabar Road btwn Caledonia Rd & Broadway	**4**		2	1	1			
Stewart Duff Drive	**2**				2			
Moa Point Drive btwn Stewart Duff Drive & 850m south of Stewart Duff Drive	**6**				3	1		2
Lyall Parade btwn Moa Point Drive & Tirangi Rd	**3**			1		1	1	
Lyall Parade btwn Tirangi Road & Onepu Road	**2**					2		
Lyall Parade/ Onepu Road intersection	**2**				2			
Onepu Road btwn Lyall Parade & Coutts St	**9**	1			1	2	2	3
Onepu Road/ Coutts Street intersection	**5**	3			1			1
Onepu Road btwn Coutts St & Rongotai Rd	**5**		1				3	1
Evans Bay Parade/ Rongotai Road/ Onepu Road intersection	**6**	3	1		1		1	
Kilbirnie Crescent/ Evans Bay Parade/ Bay Road intersection	**4**	1		1	1			1
Kilbirnie Cresent btwn Evans Bay Parade & Duncan Terrace	**3**						1	2
Kilbirnie Crescent/ Duncan Terrace intersection	**5**		2	1	1	1		

Crashes	**Total**	Right angle or right turn vs through	Merging/ Overtaking or lane changing	Rear End	Loss of Control	Vehicle vs Cyclist	Vehicle vs Pedestrian	Other
Kilbirnie Crescent btwn Duncan Terrace & Wellington Road	**5**	1		1	1		1	1
Kilbirnie Crescent/ Wellington Street/ Hamilton Road	**21**	9	6	5		1		

In general, the crash types are consistent with what would be expected in a busy urban/ suburban area, with the principal crash types being collisions between right turning and through vehicles (~20%), rear-end collisions (17%) and merging/ lane-changing (16%).

Twenty-two of the crashes occurred between 6.30 am - 9.00 am (12) and 4.00 pm - 6:00 pm (10) on a weekday. Although the percentage of crashes occurring during these periods is higher than the percentage of the week represented by the assessed hours, these are of course the typical weekday peak travel periods. A standard traffic engineering assumption is that 10% of daily traffic movements occur within the peak hour. The 6.30 am – 9.00 am and 4.00 pm – 6.00 pm includes both the weekday morning and afternoon peak hours, plus the shoulder periods of those peak hours, hence would typically represent over 20% of daily traffic volumes. The proportion of crashes occurring in the peak periods is thus considered consistent with proportion of daily traffic. Ten of the injury crashes (about 25% of injury crashes) and 26 of all crashes (again about 25%) occurred between 8.00 pm and 6.30 am. Given the typically lower volumes of vehicles on the road at this time the percentage of crashes is somewhat out of scale with the percentage of daily traffic between theses hours. It is noted that, typically, apart from some servicing of the Southern Seawall construction site, it is not generally proposed to operate construction traffic during these times.

Six crashes involved a heavy vehicle, but the majority of these involved buses.

Only one crash involved a truck. This crash occurred at the Coutts Street/ Onepu Road intersection, where a truck on Coutts Street lost control while turning and struck a parked vehicle.

Nine vehicle versus pedestrian and seven vehicle versus cyclist crashes were reported, of which six resulted in injury. These injury crashes included one which was identified as an intentional event due to road rage, and another was due to a cyclist's medical event.

Key factors/ causes in the vehicle versus cyclist crashes were:

- Vehicle driver being distracted;
- Car door opened into the path of cyclist; and
- Cyclist being struck by a u-turning vehicle.

Of the nine pedestrian incidents, two involved a pedestrian under 18 years old, two pedestrians were over 70, with the remaining five being between 18-70 (one of these was noted as having a physical disability). Neither of the incidents involving the under 18 pedestrians occurred at a time corresponding to the start or end of the school day. Key factors/ causes in the vehicle versus pedestrian crashes were

- Failure to give way (including at driveways);
- Distraction; and
- Driving under the influence of alcohol or other medical factors.

A common theme in the pedestrian and cyclist crash incidents is driver distraction/ lack of awareness of other road users, and a failure to give way. Discussion on the potential mitigation and management of potential incidents between Project vehicles and pedestrians and cyclists is provided below and in Section 7.3 and 7.4. Compliance with road rules and being alert for the behaviour and actions of other drivers would be fundamental skills for a professional driver.

Nonetheless, it is recommended that the use of such skills is emphasised during induction and toolbox meetings for site staff. Similarly, the need to avoid distractions and being alert for more vulnerable road users (pedestrians and cyclists) should be part of core competencies for professional drivers, but again will be emphasised at toolbox meetings.

The intention with the proposed truck routes is that they utilise Transit Corridors and Urban Connector roads as much as practicable and turning movements (apart from to/ from site accesses) occur at intersections. Right turn movements typically occur at roundabouts or signalised intersections.

Dedicated cyclist facilities are provided along Onepu Road. Apart from where trucks will be turning into Onepu Road from Lyall Parade (at a roundabout), trucks will be running parallel with the cycle lane (and cyclists using the northbound cycle lane). Signalised pedestrian crossing facilities are provided on Onepu Road north of Wha Street (at the Onepu Road/ Coutts Road intersection and Onepu Road/ Rongotai Road/ Evans Bay Parade intersection).

Between the Aotea Quay interchange and the Airport, the proposed truck route directly passes two schools; St Mark’s Church School and St Patricks College. However, neither school has direct pedestrian / vehicle access from the sections of road which construction vehicles will traverse. Similarly, the route passes the Evans Bay artificial turf and Ākau Tangi Sport Centre, but again not on a frontage with direct road or pedestrian access. However, the route does pass through Kilbirnie Crescent which includes Kilbirnie Park, Wellington Regional Aquatic Centre, Kilbirnie Recreation Centre, Lyall Parade (Lyall Bay beach) and sections of the Wellington CBD where pedestrians will be walking along or crossing roads. As discussed, primary factors in crashes involving vulnerable users are drivers failing to give way or conform to traffic controls, distraction and undertaking, and inconsideration/ ill-judged manoeuvres. Where these activities occur, the truck route is generally running straight along the road, hence minimising the need for turning manoeuvres which may cut across the path of vulnerable road users. Turning manoeuvres occur at intersections under priority or traffic signal control. It is proposed that warning signage is installed at the Lyall Parade/ Onepu Road and Moa Point Road/ Stewart Duff Drive intersections to alert other roads users to truck movements.

A wider search history of the state highway network has not been undertaken as they are designed to accommodate hundreds of HCV movements including haulage, general servicing and construction related trucks, transporting goods and materials to, from and through Wellington. There are no identified existing safety issues on the state highway or primary road routes that need to be addressed to facilitate the associated construction traffic.

That said, local traffic control measures will be developed and implemented through the CTMP, including driver protocols. Moreover, the CTMP will include a particular focus on safety, both on and off-site, and include provisions around the safe management of truck movements to, from and around the site, and including conditions for pedestrians and cyclists. Initial recommendations are made in Section 7.

In summary and as relevant to safety, the types of measures recommended to be implemented, as is common for projects of this nature, include:

- Site vehicles to enter and exit site access points in a forwards direction (where practical).
- Where reverse manoeuvres onto public roads are required, traffic control and management measures e.g. signage, spotters will be in place.
- Heavy vehicles will operate an orange flashing beacon or similar when slowing and entering site access points, and similarly when exiting a site and accelerating to traffic speed.
- Site access points will be clearly signposted.
- Where temporary driveways or protection over footpaths is installed, these will be ramped down to the existing footpath level to prevent a trip hazard to pedestrians.
- During the induction process site drivers will be reminded to be alert for pedestrians and cyclists when entering and exiting the site and when parking.
- Drivers not to stop in cyclist advance boxes at signalised intersections.
- Not using hand-held mobile phones while driving.
- Side running lights will be fitted to trucks.
- Using an orange flashing beacon to alert other road users when trucks are slowing to enter a site, or picking up speed after turning out of site.
- Keeping loads covered will minimise the potential for dust/ grit / other debris to blow off from trucks, which may be a hazard or distraction for following drivers or cyclists.
- Additional location or activity specific measures may be adopted as appropriate.

5 Traffic Generation

5.1 Outline

It is proposed that the Project be delivered in two stages, with there being a number of phases within each stage.

The two stages of the Project are:

- Stage 1: Enabling Works (including construction material stockpiling); and
- Stage 2: Southern Seawall construction.

Stantec understands that the plan is to gather all (or most of) the necessary construction resources and materials prior to the commencement of actual construction works. However, there will be some overlap; the initial phases of the construction works will likely commence as the final phases of material stockpiling occurs.

5.2 Enabling Works

The enabling works encompass the initial phases of the works and are intended to create the necessary operating environment for the construction works to process efficiently and safely. Space at the Southern Seawall construction site is restricted and hence the ability to provide area to accommodate construction materials, plant and staff amenities is limited. Instead, it is proposed to provide three construction yards to store construction materials and accommodate staff amenities.

The key components of the enabling works are:

a) The development of the MGC, George Bolt and Moa Point construction yards.
b) Formation of staff parking area at 30-32 Moa Point Road.
c) The delivery of a stockpile of construction materials and the pre-assembly of construction materials and plant.

When the enabling works are complete, stockpiling and the pre-assembly of construction materials will begin.

5.2.1 Construction Yards

Three construction yard locations have been identified. The largest is the MGC Yard, accessed from Stewart Duff Drive. A secondary storage yard on George Bolt Street west of the Airport runway will be utilised for equipment and vehicle storage and construction staff amenities. The traffic generation and activities discussed below are only for the construction and development of the yards, traffic generation for the stockpiling activities is discussed in Section 5.2.2.

5.2.1.1 MGC Yard

As discussed in Section 2, construction of MGC Yard requires significant earthworks, in addition to the construction of internal pavements and the installation of temporary buildings and site facilities.

Approximately 100,000 cubic metres of material is required to be removed from the MGC Yard. However, as discussed further in Section 5.2.2.3, it is intended that the haulage of this material would be a backhaul operation during the stockpiling of rock.

The other construction activities associated with the MGC Yard are forecast to generate a traffic volume of 5-10 HCV movements per day.

5.2.1.2 George Bolt Yard

The George Bolt Yard is already in use by the Airport for a variety of storage activities. Construction works to bring the yard into operation for the project are thus limited. These include clearance of the existing activities on the site (including the hangar), upgrading / installing security fencing and minor repairs of the existing pavement (if required). Construction traffic volumes would vary depending on the activities or activities in progress on a particular day but is forecast to be in the region of 5-10 HCV movements per day.

5.2.1.3 Moa Point Yard

The Moa Point Yard requires approximately 25,000m^3 of earthworks along with establishment of erosion and sediment control devices and dust suppression measures, vegetation/site clearance, installation of utilities (if required), installation of basecourse, concrete placement for entry/exit crossings and installation of hardstanding areas. Construction traffic volumes would vary depending on the activities or activities in progress on a particular day but is forecast to be in the region of 10-20 HCV movements per day.

5.2.2 Stockpiling Operation

To manage sourcing, assembly and transportation operations, associated with the collation of the construction materials required for the Project, it is proposed that the majority of materials will be collected and stockpiled prior to the commencement of construction of the Southern Seawall and that this stockpiling operation would occur over a number of years (particularly for the cubipod deliveries and in the scenario where the rock is sourced from the North Island).

5.2.2.1 Cubipods

The concrete cubipods are to be sourced from a manufacturer in Ōtaki and would be a mix of 15 and 18 tonne units. It is forecast that around 7,600 cubipod units are required for the reconstruction of the Southern Seawall itself. The cubipods will be trucked from Ōtaki via SH1 on semi-trailer trucks. Two 15-tonne cubipod units could be carried on a single truck, while only one 18-tonne cubipod unit could be carried per truck. Based on the planned split between the 18 and 15 tonne units, approximately 4,875 truckloads (generating 9,7500 truck movements) are required to transport all of the cubipod units over some 53 months (4 ½ years). This equates to around 20 daily truck movements on average. Cubipod deliveries are forecast to begin in October 2027 and run through to February 2031.

5.2.2.2 Rock

Rock sourced from the North Island will be trucked directly from the quarry to the MGC Yard, on truck and trailer units.

If it is required, rock sourced from the South Island may be used as part of the Project works. Rock sourced from the South Island would be barged to CentrePort, then unloaded and trucked to the MGC Yard. Due to limited storage space on (and storage fees for using) the wharf, and to minimise berthing fees for the barge, it is proposed that the barge be unloaded and the rock cleared from the wharf within a day.

From a traffic generation perspective, under the North Island rock source option, a more consistent haulage operation could be maintained. Trucks would be operating on a greater number of days (potentially between 900-1,200 days), but at relatively low daily volume of deliveries (estimated at 8 to 11 truck movements per day).

For the South Island rock source option, which would necessitate barging to CentrePort, haulage would occur on far fewer days (only when the barge was in port). However, to unload the barge and clear the wharf efficiently a significantly higher number of truck movements would be required on those days. Potentially up to 136 truck movements per day would be required depending on the size of the barge and size of the trucks able to service the wharf unloading area.

The South Island rock source option therefore provides a relatively 'short and sharp' haulage programme. The 'worst case', most conservative, **total** number of truck movements associated with South Island rock supply is 14,000. At the assumed daily maximum of 136 truck movements between CentrePort and the MGC Yard, this total number of 14,000 movements could be achieved in around **110 days**.

It is possible that there would be a greater number of South Island rock barge deliveries, with lesser volumes of rock material on each barge. If that is the case, fewer than 136 truck movements between CentrePort and the MGC Yard would be required on each barge delivery day, albeit that there would be a greater number of trucking days. Similarly, if larger trucks are used, less truck movements would be required to move the same volume of rock material.

Nonetheless, as is discussed further later in this report in Section 5.5, for a very conservative assessment of the traffic effects of the Project, the barging operation truck traffic generation – including the maximum daily number of truck movements (136) – has been adopted for modelling. It is noted that the adoption of this option is solely for the purposes of a conservative traffic assessment and does not reflect any recommendation or preference for the rock source, truck size or barge size.

5.2.2.3 Earthworks

As has previously been described, significant earthworks are required at the MGC Yard to create the site laydown/ storage area for the stockpiling and Southern Seawall reconstruction operation. In total, some 100,000 m^3 of material must be removed from MGC Yard to cover these various uses. It is proposed that this material would be excavated on a fairly consistent basis over six earthwork seasons starting as soon practicable after consent is granted (approximately 23,500 m^3 per season).

To reduce the additional traffic generation created by these earthworks activities as far as practicable, it is proposed to use the rock trucks (if running from the North Island) to back haul the earthworks material to a destination north of Wellington. Based on a typical earthworks season, and assuming a steady rate of excavation of the six seasons, approximately 28 truck movements per day (on average) would be required to achieve the proposed excavation rate.

If the option to source the rock from the South Island required, then earthworks haulage would not occur on the days when the barge unloading operations were in progress. This is to minimise the requirement for trucks and also to minimise traffic effects.

5.2.2.4 Other Materials

While cubipods and rock are the main construction materials required for the construction works, other materials required include concrete, steel, sand, aggregates and geotextile material.

As with the main materials, some stockpiling of these other materials will commence prior to the actual Southern Seawall reconstruction. Trucking volumes for these "other materials" during the stockpiling operation are forecast to be low – approximately 4-10 truck movements per day.

5.3 Southern Seawall Construction Works

Reconstructing the Southern Seawall will require the partial removal and demolition of the existing seawall to allow for the installation of the new seawall structure. The works will be completed in stages to retain the strength and function of the interim seawall and to provide for Airport operational and weather requirements.

However, from a traffic generation and operations perspective, it is assumed that the majority of heavy traffic movements would occur during the daytime. Trucks will haul materials south from the MGC Yard and George Bolt Yard to the Moa Point Yard, via Stewart Duff Drive and Lyall Parade / Moa Point Road, respectively. These trucks would return in the reverse direction of their inbound route.

It is forecast that some 20-30 daily truck movements would be required to shuttle construction materials to the Moa Point Yard from the MGC Yard and George Bolt Yard. Another 6-10 daily truck movements may occur bringing materials direct to the Moa Point Yard from the source. Night-time traffic movements to and from the seawall site would typically be limited to staff and servicing/ maintenance contractors in light vehicles. Potentially 20-30 staff would be on-site during the construction works.

5.4 Staff Traffic Movements

Both the enabling and construction works for the Southern Seawall reconstruction will be highly mechanised and only a relatively small workforce will be required for most stages of the Project.

The average workforce will typically be 20-30 persons, and at peak periods, may increase to 50 persons.

It has been assumed that all staff travel to and from the site in a mix of individual and shared vehicles, with an average occupancy of around 2 persons per vehicle and make two daily movements (one to site, and one from site).

It is noted that some works sites, e.g. the Southern Seawall construction area itself, will have limited space available for use as parking areas and hence some form of shuttle service to run staff between a parking area (e.g. MGC Yard) and the working area would be appropriate to ensure an effective use of the construction area and to contain the spread of staff parking.

Given the length of the construction workday (6.00 am – 8.00 pm when day works are occurring), construction staff movements would typically occur on the edges of the commuter peak travel and in the reverse direction (i.e. be heading out of Wellington CBD toward the Airport in the morning).

Traffic volumes on SH1 north of Stewart Duff Drive are in the region of 600-700 vph between 6.00 am -7.00 am and 700-800 vph between 6.00 pm and 7.00 pm. Staff trips would thus represent a fairly minimal proportion of the total traffic on the network.

When night works are occurring, the staff traffic movements again would be outside of peak periods.

5.5 Construction Traffic Volumes

Construction traffic volumes will vary significantly over the course of the Project based on the stage of construction, which operations are active and, additionally, in the case of the rock sourcing, whether or not the South Island rock barging operation is required. A conservative assessment of the traffic effects of the Project has been adopted for the modelling, that includes truck traffic generation from a rock barging operation from the South Island. It is noted that the adoption of this option is solely for the purposes of a conservative traffic assessment and does not reflect any recommendation or preference for the rock source. The assumptions that form the basis of our conservative assessment are set out below. Traffic modelling will be discussed further in Section 6.

Construction is forecast to run for some 6-8 years. Given works are proposed to start as soon as consents are granted (estimated to be early 2026), this implies an estimated end date in 2034.

In terms of the traffic demand generated by the Southern Seawall construction works, the following additional assumptions have been made to provide this conservative, worst case, assessment:

- Both the cubipod and rock stockpiling operations are active;
- Trucks hauling the “other” material to the site are active;
- Rock supply is via barge from the South Island – which would concentrate deliveries into significantly fewer days, as discussed earlier in this report;
- The barge employed is a 1,100 tonne capacity barge, and it is assumed that for each voyage the full load capacity would be utilised;
- The trucks employed to haul the rock are 20-tonne articulated trucks. As a sensitivity test, a blended option has also been assessed which assumes using a mixture of 20-tonne articulated trucks and 10-tonne 6-wheel trucks, with a 2/3 and 1/3 split respectively (in practice, it is likely that only articulated trucks are utilised for efficiency purposes). Trucks would be able to make multiple trips per day;
- Earthworks are operating at the same time as barge rock unloading (although Stantec has been advised this is very unlikely that both operations would run simultaneously);
- The Moa Point Yard and Southern Seawall Construction site is operative and hence there are vehicle flows between the MGC Yard and the Moa Point Yard; and
- Approximately 20-30 staff are on site (typical average).

Building from these assumptions and information supplied by McConnell Dowell, the following traffic demand profile was created for the modelling.

Table 5-1: Traffic Demand (Modelled)

Material/ Operation	Route	Vehicle	Daily Movements	Peak Hour Movements
Rock Supply	CentrePort to MGC Yard	Semi-trailer or Semi-trailers & 6 wheel trucks (2/3 and 1/3)	110 136	10 13
Cubipod Delivery	SH1 Ngauranga to Moa Point Yard	B train or Semi-trailer	21	2
Earthworks	MGC Yard to Southern Landfill	6 wheel truck	51	5
MGC Yard to Moa Point Yard Shuttle	MGC Yard to Moa Point Yard	6 wheel truck	38	4
General Deliveries	SH1 Ngauranga to MGC Yard	6-wheel truck	13	1
Staff	SH1 Ngauranga to MGC Yard	Car	26	13

Except for the staff movements, which have been assumed to occur only in the peak hours (50% inbound in the morning and 50% outbound in the evening), the other traffic movement demands have been spread over a 7.00 am – 6.00 pm operating day, with trips specifically to / from the MGC yard not running between 6.00 am - 7.30 am. This is shorter than the proposed working day and allows for some loss of time at the start and end of the day due to start-up/ close procedures, some peaking of traffic movements and other constraints which may limit operating hours.

It is again noted that these assumptions are generally conservative and represent a possible "worst case" scenario where two higher trip generating phases of the construction programme are active simultaneously and even within that higher trip generating options (e.g. small trucks for the rock haulage) were assessed. Consequently, it is considered that the modelled demands represent a very conservative scenario.

Again, this very conservative scenario may only eventuate on a limited number of days. This is potentially around 110 days, depending on the type of barge and trucks used, occurring at intervals across a much longer construction period, coinciding with arrivals of rock supply via barge from the South Island (in the event that a North Island source is not used throughout the Project's duration).

5.6 Overdimension Loads

While the specific details of overdimension loads will be dependent on the type and size of construction plant to be used, some special deliveries can be anticipated. These loads will be transported to and from site via the designated OVR routes (as discussed earlier in Section 3.3) by experienced specialist heavy haulage contractors, who will apply for the relevant permits in advance.

Loads on the Wellington motorway network are restricted to a maximum height of 4.8m and width of 3.7m.

It is anticipated that the construction machinery will be transported along the preferred OVR route involving SH1 and then across the Airport airfield via the authorised airside route between Station Drive and Freight Drive (as identified earlier in Figure 3-5), with appropriate managed turn-around locations.

5.7 Traffic Management Scenarios

Principally the main impact on the road network and road corridor from the construction programme will be due to movement of HCVs hauling materials and equipment to and from the various source locations and construction yards. Actual physical works in the road corridor are understood to be limited to the enabling works stages where new or upgraded site access locations are required to be created for the three yards (MGC Yard, George Bolt Yard and Moa Point Yard) and to allow for the construction of the Kororā underpass.

5.7.1 Access Location Construction

Construction of new or upgraded vehicle crossings for the three yards will require works in the road corridor to install the vehicle crossing and tie into the adjacent traffic lane and footpath. This may require a short-term footpath closure for the MGC Yard and George Bolt Yard (acknowledging that there is unlikely going to be a need for a footpath adjacent to this yard once the hangar has been removed) and noting there is currently no footpath on the access side for the Moa Point Yard. At the MGC Yard location there is no footpath on the opposite (airfield) side of the road and a temporary footpath may need to be installed to allow pedestrians to pass the site. Alternatively, if it is determined that the number of pedestrians is very low, and it is safe and practical they could be escorted through work site by a traffic controller ("**TC**"). At the George Bolt Yard, there is limited pedestrian access beyond the site, a full footpath on the opposite side of the road and low traffic volumes on the road, so pedestrians could safely cross and use the other footpath.

A shoulder closure and / or stop / go traffic control system may be required to tie into the traffic lanes. It is anticipated that such an operation would have a duration of no more than a week at each location. Where practical a stop / go system should only occur outside of peak hours.

Similar works may be required to provide temporary access to the Kororā Colonies during the construction / formation works for these. Again, temporary traffic management processes would be similar to those employed for the yard access location construction.

6 Traffic Analysis

As identified in the previous sections of this report, traffic volumes generated by the Southern Seawall works will vary significantly depending on stage of the Project, and the active works operations on a particular day (e.g. days when a barge is unloading will be significantly busier than days when no barge work is occurring).

To provide a robust traffic effects assessment, the potential effects associated with the highest anticipated daily volume of construction vehicles (i.e. barge unloading) was modelled using the Ngauranga to Airport Aimsun[4] traffic model (**"N2AM"**).

The N2AM is an operational traffic assignment model that covers the Wellington city area, built using the Aimsun microsimulation traffic modelling software. It extends from roughly the SH1 / SH2 interchange in the north, to the Airport and Miramar area in the southeast, as pictured in Figure 6-1.

Figure 6-1: Aimsun Model Extent

[4] Aimsun is a microsimulation modelling software package widely used in the transportation industry.

This model is managed, overseen, updated and applied by the Wellington Transport Analytics Unit (**"WTAU"**), a team within Greater Wellington Regional Council.

Over time, the N2AM has gone through a series of refinements, adjustments and updates, with the most recent improvements occurring as part of the Let's Get Wellington Moving Detailed Business Case. This involved the development of a new 2022 model scenario, which was supported by updated forecast demands in the high-order regional traffic model. A future 2033 do-minimum[5] scenario was also developed.

Although a full calibration / validation exercise has not been undertaken on the 2022 N2AM by WTAU, it is the reference traffic model for Wellington City and has been used to test traffic impact scenarios for a variety of infrastructure and development projects. As such, it is considered that the model appropriately reflects the Wellington traffic environment and is deemed fit for this assessment. However, the model data is limited around the southern extent of the Airport, and new traffic surveys have been undertaken at the Stewart Duff Drive / Moa Point Road intersection and at the Onepu Road / Lyall Parade intersection as part of this assessment, along with a localised traffic data validation assessment (discussed in Section 6.2) to provide further model verification.

As confirmed through this report, the roads identified as site-related truck routes are all able to accommodate HCVs and already do so at present.

6.1 Modelled Scenarios

Discussions with WTAU suggest that there has been very little growth in traffic volumes since 2022 and that the N2AM 2022 ("**2022 Bas**e") model scenario would be representative and within the typical margins of error / day to day variation for a 2025 scenario. The 2033 N2AM do-minimum ("**2033 DoMin**") model includes wider network assumptions which have been previously accepted by WTAU as a base line future network.

Accordingly, anticipated construction traffic has been added (on the very conservative basis outlined in the previous sections of this report) to both the 2022 and 2033 do-minimum scenarios, to enable an assessment of the potential operational and performance changes on the connecting and surrounding road network.

As the construction period is understood to have a duration of approximately 6-8 years, use of both the 2022 and 2033 do-minimum scenarios will show the range of likely effects throughout the construction period – noting that the highly conservative scenario of intensive truck movements from CentrePort would only occur (if at all) on a very limited number of days during that period.

There are three peak periods within the N2AM model; morning peak (6.00 am – 10.00 am), inter peak (10.00 am – 2.00 pm), and evening peak (3.00 pm – 7.00 pm). During the development of the

[5] This 2033 do-minimum scenario includes wider network assumptions which have been previously accepted by WTAU as a base line future network

N2AM 2022 model scenario, the shoulder peaks within each of these peak periods (i.e. first and last hour) were not extensively calibrated or validated. It was advised by WTAU to exclude these shoulder peaks and accordingly, the central two-hour peak periods (i.e. 7.00 am – 9.00 am, 11.00 am – 1.00 pm, and 4.00 – 6.00 pm) have been reported on in this assessment.

As discussed in Sections 5.2.2.2 and 5.5, there are two options for sourcing the rock. The option for sourcing rock from the South Island is the only option which has been modelled. This is to provide a robust assessment of the potential traffic effects, given the peaking of construction traffic volumes on days when the barge is in port. The North Island rock source option has significantly lower traffic generation, around 8 to 10 truck movements per day, or 1 to 2 truck movements per hour (allowing that a truck may arrive at the MGC Yard, be unloaded and depart within a single hour. Thus, the effect on the road network was thus considered very modest and not directly assessed in the modelling.

6.2 Traffic Data

TMS traffic count data for Cobham Drive between 2022 and 2024 was analysed to get an understanding of growth, and to confirm whether the N2AM 2022 model scenario is generally representative of current traffic performance near the Airport area. This analysis indicated that average monthly two-way weekday volumes between 2022 and 2024 included some over and under counts but were generally at a similar level.

It is noted that the calibration and validation of the N2AM 2022 model scenario did not focus on the Lyall Bay area. As such, available count data from WTAU's Traffic Data Portal was reviewed and supplemented by new intersection count surveys undertaken on 31st October 2024 at Lyall Parade / Onepu Road roundabout and Moa Point Road / Stewart Duff Drive. This data analysis indicated that the N2AM 2022 model was slightly underrepresenting traffic volumes along Moa Point Road and Lyall Parade. Accordingly, an additional demand of some 240 vehicles per hour was added into the model between the suburbs of Houghton Bay and Rongotai, to better match the surveyed and WTAU traffic data.

6.3 Model Assumptions / Refinements

Similar to the modelling approach used for the N2AM 2022 model, ten model replications have been run for each scenario and outputs averaged across these replications.

A new demand centroid was added in the N2AM to represent the Moa Point Yard. Vehicle movements to and from this centroid is through a new road link located on Moa Point Road, approximately 50m west of the intersection with Stewart Duff Drive. This road link represents an entry and exit point from the centroid only and does not model internal circulation within the Moa Point Yard. It is assumed that appropriate loading / unloading zones and sufficient space for truck turnaround will be provided within this yard.

Construction vehicle types were set up in the Aimsun model to represent each of the construction activities mentioned earlier in Section 5. Generally, the six-wheeled truck was represented by a 9m truck within Aimsun (the standard truck dimension used in the base model), while a new 21.5m long B-train vehicle was set up in the model to represent cubipod delivery vehicles, and 18m long semi-trailer set up to represent rock supply delivery vehicles.

These construction vehicles were modelled to follow specific origin-destination ("**OD**") routes, which align with the recommended construction routes determined in this assessment. These routes are summarised in Table 6-1.

Table 6-1: Construction Vehicle OD Routes

Construction Activity	Route Taken
MGC Yard	Airport to / from Southern Landfill via Lyall Parade, Owhiro Bay Parade and Happy Valley Road
Rock supply[6]	CentrePort to / from Airport via Aotea Quay, Kent Terrace and SH1.
Cubipod delivery	SH1 to / from Moa Point Yard via SH1 and Stewart Duff Drive
Movements between MGC Yard and Moa Point Yard	Airport to / from Moa Point Yard via Stewart Duff Drive and Moa Point Road
Staff vehicles	SH1 to / from Airport (no OD route specified)
General deliveries / concrete trucks	SH1 to / from Airport via SH1 and Stewart Duff Drive
All	Northbound route from the Airport for all the above activities is through Stewart Duff Drive, Lyall Parade, Onepu Road and Kilbirnie Crescent

As mentioned earlier in Section 5.5, two rock haulage options have been modelled for the South Island rock course / barge scenario, with the first option assuming all deliveries will be made by articulated trucks and the second option assuming that 2/3 of deliveries will be by articulated trucks while the remaining 1/3 by 6-wheel trucks. In practice, it is likely that only articulated trucks will be used for efficiency purposes, however, this mixed option has been modelled as a sensitivity test for higher hourly construction traffic volumes. For reporting purposes, the first option is referred to as 'Option A' and the second option as 'Option B'.

6.4 Modelled Travel Time Outputs

Travel time outputs along five key routes have been analysed for the modelled scenarios, as illustrated in Figure 6-2, to better understand the effects associated with the additional construction traffic.

[6] Assuming a South Island supply for conservative model purposes.

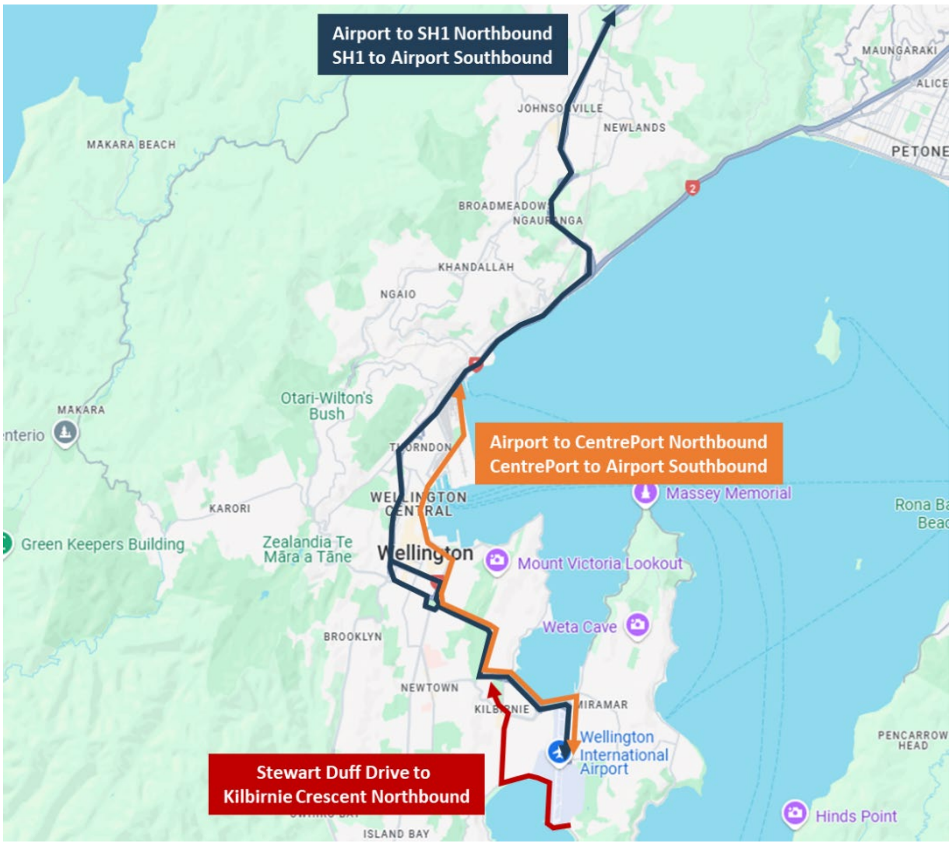

Figure 6-2: Modelled Travel Time Routes

These travel time routes were selected as they align with the proposed construction routes and will directly be affected by the increase in traffic volume resulting from the construction vehicles. The routes include:

- Airport to SH1 northbound, SH1 to Airport southbound;
- Airport to CentrePort northbound, CentrePort to Airport southbound; and
- Stewart Duff Drive to Kilbirnie Crescent northbound.

Increases in travel time have been compared against guidance within the Traffic Control Devices Manual Part 8: Code of Practice for temporary traffic management ("**CoPTTM**"), which suggests that many road controlling authorities set a maximum of five minutes for delays to traffic.

Again, it is important to note that:

- The travel time changes presented below are based on very conservative 'worst case' modelling assumptions, including large numbers of truck movements associated with rock deliveries to CentrePort by barge;
- Accordingly, the modelling does not include vehicle movements associated with the option of utilising rock sourced from the North Island.
- Deliveries by barge, if they occur, are likely to take place on a limited number of days within the broader construction period of around 6-8 years; and

- The modelling undertaken does not include construction vehicle movements north of SH1/ SH2 interchange as these volumes are low (less than three to four vehicle movements per hour) and are considered to be well within network capacity.
- Other vehicle movements associated with construction of the Project are relatively small and unlikely to have much influence on network flows and travel times.

A summary of the modelled travel times are included in Table 6-2 to Table 6-5.

Table 6-2: Modelled Travel Time Summary 2022 (representing 2025) - First Peak Hour

Peak Hour	Route	2022 Base (mins)	2022 Option A and Difference (mins)		2022 Option B and Difference (mins)	
Morning Peak (0700 to 0800)	Airport to CentrePort northbound	21.90	22.22	0.33	22.06	0.17
	CentrePort to Airport southbound	18.34	17.98	-0.36	18.32	-0.01
	Airport to SH1 northbound	23.06	23.29	0.23	23.12	0.06
	SH1 to Airport southbound	30.74	31.87	1.13	30.96	0.22
	Moa Point to Kilbirnie Cr northbound	7.69	7.73	0.04	7.67	-0.03
Inter Peak (1100 to 1200)	Airport to CentrePort northbound	23.57	23.84	0.28	23.22	-0.35
	CentrePort to Airport southbound	16.86	16.74	-0.11	16.64	-0.22
	Airport to SH1 northbound	22.49	22.78	0.29	22.42	-0.07
	SH1 to Airport southbound	20.19	20.19	0.01	20.15	-0.04
	Moa Point to Kilbirnie Cr northbound	7.38	7.40	0.02	7.47	0.09
Evening Peak (1600 to 1700)	Airport to CentrePort northbound	25.82	25.96	0.14	25.05	-0.77
	CentrePort to Airport southbound	19.82	19.46	-0.36	19.20	-0.62
	Airport to SH1 northbound	27.66	27.81	0.15	26.92	-0.74
	SH1 to Airport southbound	26.88	27.02	0.14	26.28	-0.60
	Moa Point to Kilbirnie Cr northbound	8.54	8.38	-0.17	8.43	-0.11

Table 6-3: Modelled Travel Time Summary 2022 (representing 2025) - Second Peak Hour

Peak Hour	Route	2022 Base (mins)	2022 Option A and Difference (mins)		2022 Option B and Difference (mins)	
Morning Peak (0800 to 0900)	Airport to CentrePort northbound	37.99	36.49	-1.49	38.45	0.46
	CentrePort to Airport southbound	28.12	26.19	-1.93	29.18	1.05
	Airport to SH1 northbound	37.78	36.30	-1.48	38.21	0.43
	SH1 to Airport southbound	36.83	34.98	-1.85	39.93	3.10
	Moa Point to Kilbirnie Cr northbound	10.75	9.23	-1.52	9.87	-0.88
Inter Peak (1200 to 1300)	Airport to CentrePort northbound	26.48	26.46	-0.02	27.23	0.74
	CentrePort to Airport southbound	18.28	18.16	-0.12	18.24	-0.04
	Airport to SH1 northbound	25.60	25.23	-0.37	25.67	0.06
	SH1 to Airport southbound	21.39	21.43	0.04	21.55	0.16
	Moa Point to Kilbirnie Cr northbound	7.75	7.94	0.19	7.95	0.20
	Airport to CentrePort northbound	26.25	25.52	-0.73	25.41	-0.84

Peak Hour	Route	2022 Base (mins)	2022 Option A and Difference (mins)		2022 Option B and Difference (mins)	
Evening Peak (1700 to 1800)	CentrePort to Airport southbound	22.16	21.42	-0.74	21.67	-0.49
	Airport to SH1 northbound	28.05	26.88	-1.17	27.32	-0.73
	SH1 to Airport southbound	30.60	28.82	-1.78	31.58	0.98
	Moa Point to Kilbirnie Cr northbound	8.69	8.34	-0.35	8.40	-0.29

Table 6-4: Modelled Travel Time Summary 2033 - First Peak Hour

Peak Hour	Route	2033 DoMin (mins)	2033 Option A and Difference (mins)		2033 Option B and Difference (mins)	
Morning Peak (0700 to 0800)	Airport to CentrePort northbound	20.29	20.45	0.15	20.32	0.03
	CentrePort to Airport southbound	18.38	18.21	-0.17	18.44	0.07
	Airport to SH1 northbound	21.69	21.67	-0.02	21.26	-0.43
	SH1 to Airport southbound	32.40	32.30	-0.10	32.76	0.36
	Moa Point to Kilbirnie Cr northbound	7.47	7.52	0.05	7.60	0.13
Inter Peak (1100 to 1200)	Airport to CentrePort northbound	21.53	21.80	0.27	20.87	-0.66
	CentrePort to Airport southbound	17.93	18.09	0.16	17.98	0.06
	Airport to SH1 northbound	21.28	21.00	-0.28	20.83	-0.46
	SH1 to Airport southbound	21.22	21.58	0.36	21.23	0.01
	Moa Point to Kilbirnie Cr northbound	7.69	7.80	0.11	7.92	0.23
Evening Peak (1600 to 1700)	Airport to CentrePort northbound	24.78	24.04	-0.74	23.98	-0.80
	CentrePort to Airport southbound	20.41	20.05	-0.36	20.78	0.37
	Airport to SH1 northbound	24.29	24.34	0.05	23.77	-0.52
	SH1 to Airport southbound	25.94	26.61	0.67	27.40	1.46
	Moa Point to Kilbirnie Cr northbound	8.44	8.85	0.41	8.27	-0.16

Table 6-5: Modelled Travel Time Summary 2033 - Second Peak Hour

Peak Hour	Route	2033 DoMin	2033 Option A and Difference (mins)		2033 Option B and Difference (mins)	
Morning Peak (0800 to 0900)	Airport to CentrePort northbound	37.60	39.44	1.84	41.15	3.54
	CentrePort to Airport southbound	25.33	25.22	-0.12	25.66	0.32
	Airport to SH1 northbound	33.14	32.99	-0.15	34.45	1.31
	SH1 to Airport southbound	41.30	41.46	0.16	45.54	4.23
	Moa Point to Kilbirnie Cr northbound	8.67	8.79	0.13	8.61	-0.06
Inter Peak (1200 to 1300)	Airport to CentrePort northbound	23.84	23.64	-0.19	23.69	-0.15
	CentrePort to Airport southbound	20.02	19.67	-0.35	20.18	0.16
	Airport to SH1 northbound	23.60	23.24	-0.37	23.26	-0.34
	SH1 to Airport southbound	23.09	22.81	-0.27	23.31	0.22
	Moa Point to Kilbirnie Cr northbound	8.15	8.24	0.09	7.91	-0.25
	Airport to CentrePort northbound	26.38	29.79	3.41	27.08	0.70

Peak Hour	Route	2033 DoMin	2033 Option A and Difference (mins)		2033 Option B and Difference (mins)	
Evening Peak (1700 to 1800)	CentrePort to Airport southbound	26.17	28.23	2.06	26.59	0.42
	Airport to SH1 northbound	25.29	26.74	1.45	25.88	0.59
	SH1 to Airport southbound	32.44	34.49	2.04	33.05	0.60
	Moa Point to Kilbirnie Cr northbound	8.67	10.08	1.41	9.08	0.41

As shown in the above tables, none of the modelled routes experience a travel time increase of five minutes or more. It is also noted that the CoPTTM guidance is generally for within a construction site with temporary traffic management as opposed to an entire route as included in this assessment. However, the guidance has been used in this assessment to provide a relatable base point for understanding the potential travel time impacts. While it is potentially a conservative parameter in that it is usually used to consider discrete construction sites, it has been applied to these routes given their importance to the Wellington road network and to emphasise that the traffic effects from the construction haulage associated with the Project can be managed appropriately.

It can also be seen from the above tables that some routes counterintuitively indicate a small reduction in travel time with the additional construction traffic. This is not due to the construction traffic, but a result of model randomness across each replication. Each of the ten model replications have a unique 'random seed' number, which creates some variation and randomness to elements of the simulation such as when a vehicle is released into the network, vehicle lane changing decisions, and vehicle route choice decisions. This replicates variability in day-to-day traffic in practice. As a result, the observed reduction in some travel time routes is due to the variability in performance of background 2025 base and 2033 do-min demands, not due to the additional construction traffic.

These instances of reduced travel times are more noticeable in the 2025 scenarios, as shown in Table 6-2 and Table 6-3, which suggest that the additional construction traffic does not significantly add delays to the modelled travel time routes and are masked by model randomness / variability. However, there are fewer instances of travel time reductions in the 2033 scenarios, as shown in Table 6-4 and Table 6-5, which suggests there is less residual capacity in these model scenarios given the greater traffic demand in the future. As a result, the effect of construction traffic is more noticeable in the modelled travel time routes, even when considering model randomness / variability.

Generally, the second peak hour across each of the three peak periods indicates a higher travel time than in the first peak hour. This is reflected by the highest travel time increases due to construction traffic modelled in the 2033 scenario during the second peak hour, as highlighted in Table 6-5. Furthermore, the critical peak periods were seen to be the morning and evening peak, which represent a relatively higher traffic demand in the network than in the inter peak.

When comparing travel time outputs between Options A and B, there are some increases and decreases along the modelled routes, but no clear overall trend. Again, this indicates that variability in performance of background 2025 base and 2033 do-minimum demands has a greater effect on travel times than the additional construction traffic.

Importantly, these modelled travel times indicate that the network can accommodate the anticipated construction demands during the peak periods. Further commentary on individual travel time routes and modelled performance at key local intersections during the more critical second peak hour in the morning and evening peaks of the 2033 scenarios are included in the following sub-sections.

6.4.1 Impact to Route between Airport and SH1

The modelled travel times in the northbound and southbound direction between the Airport and SH1 during the second peak hour of the 2033 scenarios are pictured in Figure 6-3 and Figure 6-4.

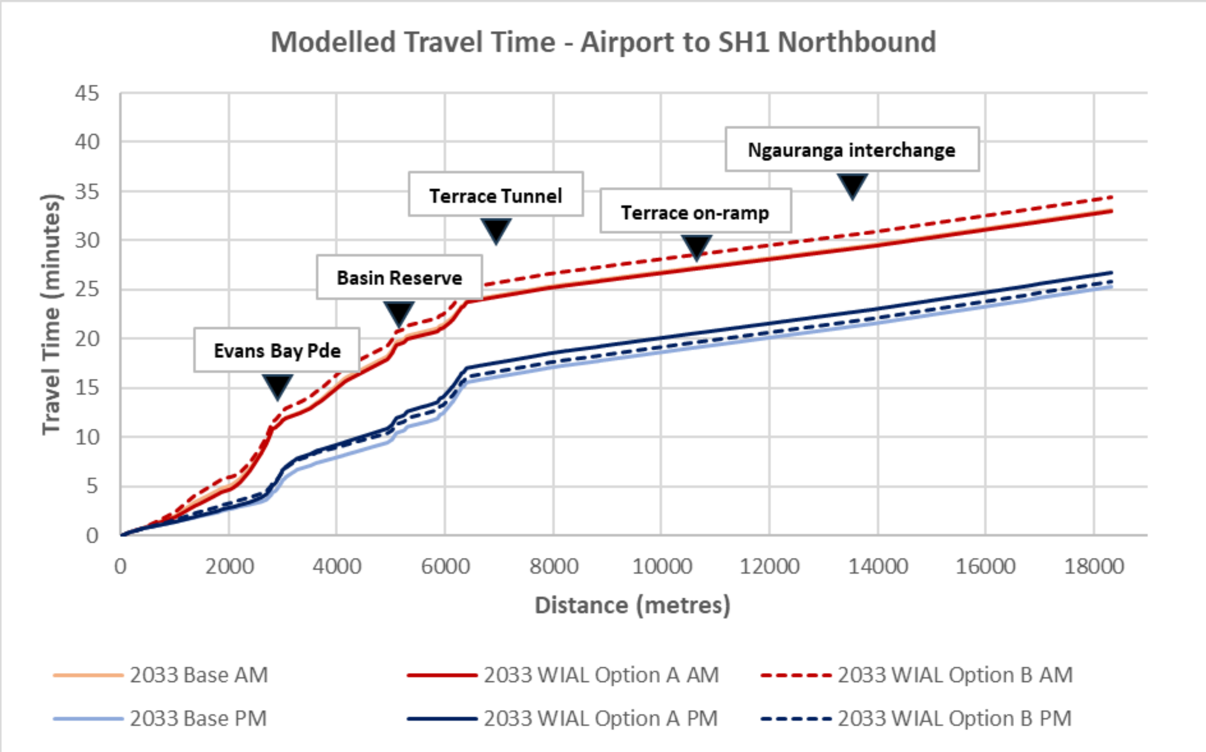

Figure 6-3: Modelled Travel Time (Airport to SH1 northbound) - Second Peak Hour

As shown in Figure 6-3, slight increases in travel time of around 1 minute are seen in the northbound direction during the morning and evening peak periods.

This increase is generally observed between the Airport and Terrace Tunnel segment of the route, which aligns with traffic congestion within this part of the network due to the presence of signalised intersections and heavy conflicting east-west and north-south traffic movements.

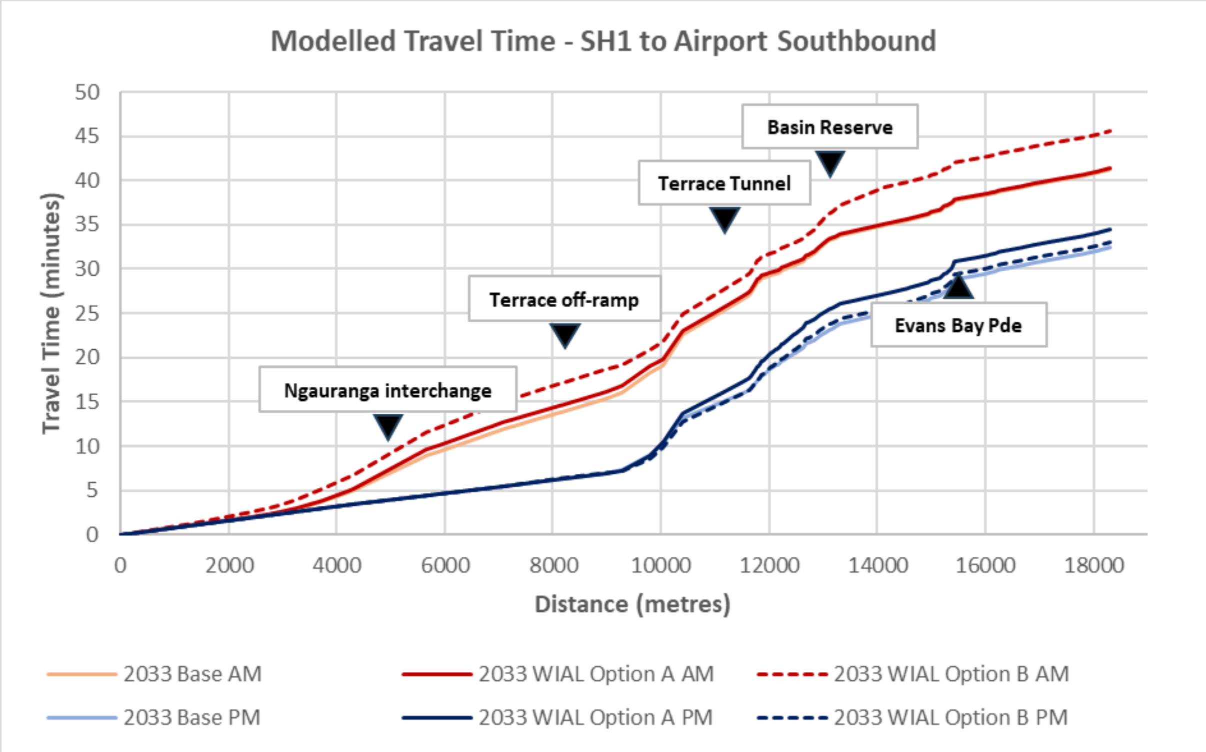

Figure 6-4: Modelled Travel Time (SH1 to Airport southbound) - Second Peak Hour

Figure 6-4 indicates a slight increase in travel time for the southbound direction of around 4 minutes in the morning peak and 1-2 minutes in the evening peak. Similarly to the northbound route, travel time increases are more evident along congested portions of the network. This is seen between the Ngauranga interchange and Terrace Tunnel in the morning peak, reflecting the traditional inbound commuter peak to the city centre.

6.4.2 Impact to route between Airport and CentrePort

The modelled travel times in the northbound and southbound direction between the Airport and CentrePort during the second peak hour of the 2033 scenarios are pictured in Figure 65 and Figure 66.

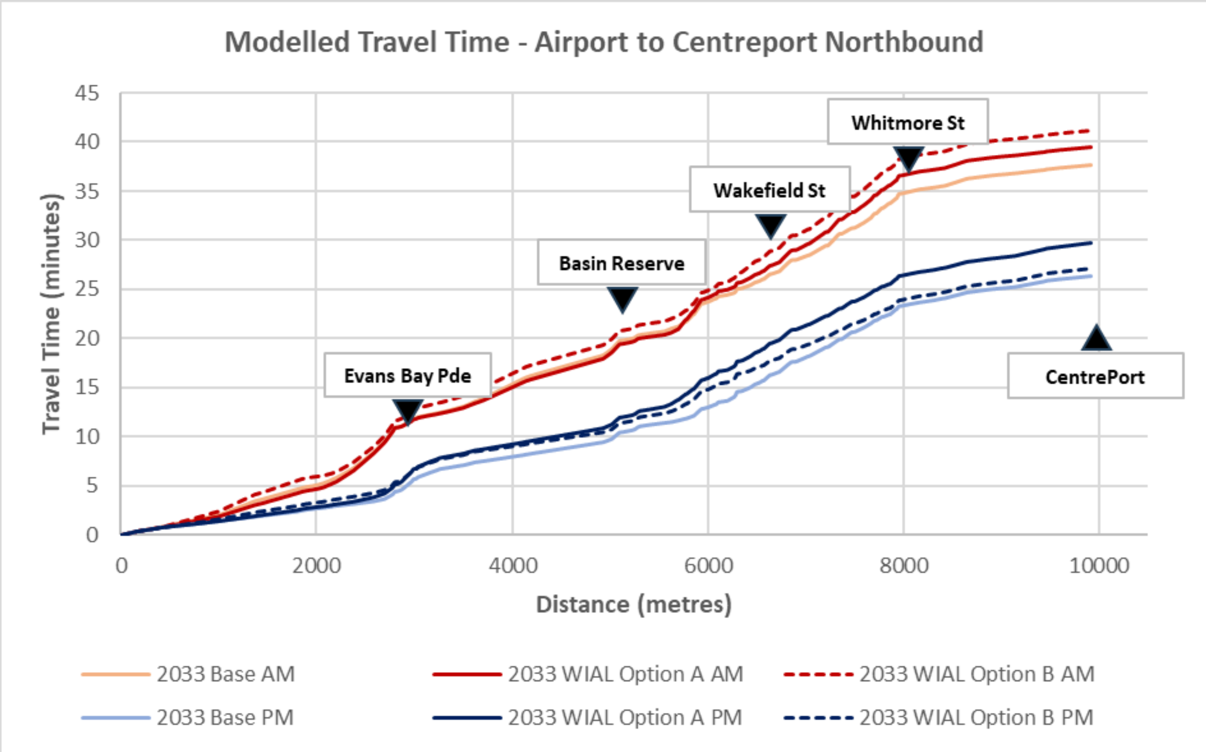

Figure 6-5: Modelled Travel Time (Airport to CentrePort northbound) - Second Peak Hour

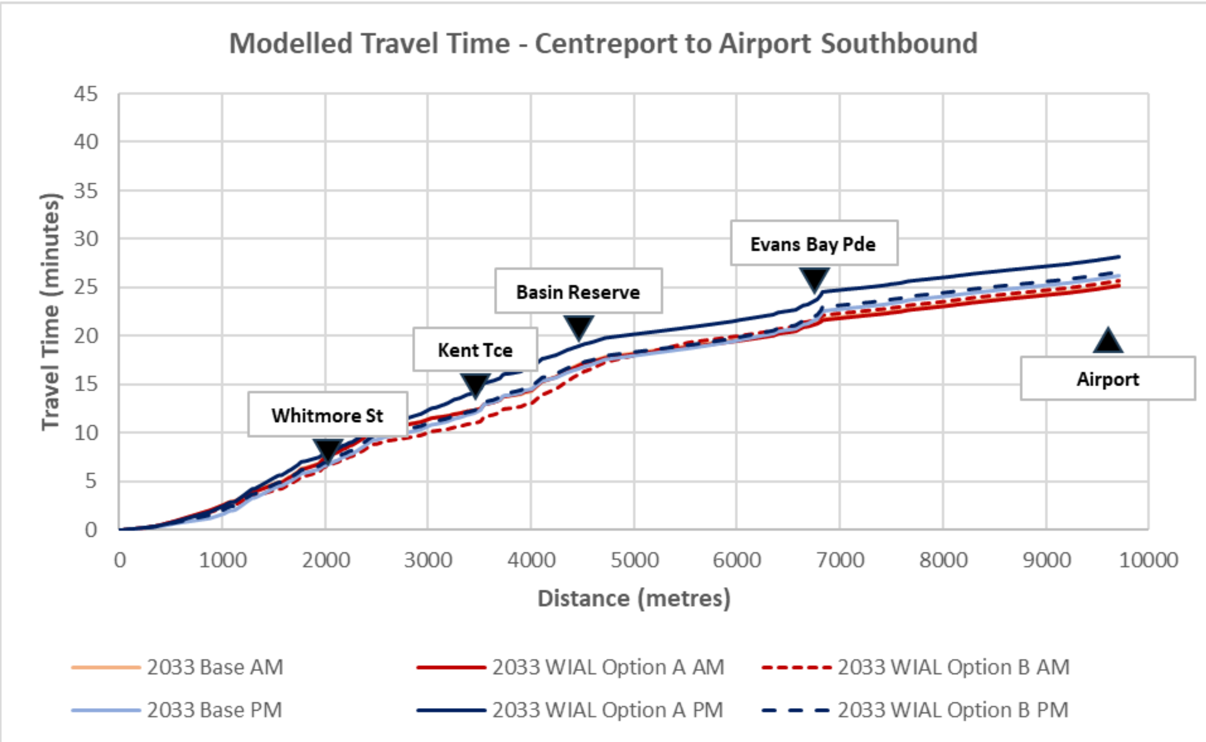

Figure 6-6: Modelled Travel Time (CentrePort to Airport southbound) - Second Peak Hour

As shown in Figure 6-5 and Figure 6-6, slight increases in travel time of around 3-4 minutes are seen in the northbound and southbound directions during the morning and evening peak periods. This travel time increase is predominantly seen to occur between the Basin Reserve and CentrePort.

6.4.3 Impact to route between Stewart Duff Drive and Kilbirnie Crescent

The modelled travel times in the northbound direction from Stewart Duff Drive to Kilbirnie Crescent during the second peak hour of the 2033 scenarios are pictured in Figure 6-7.

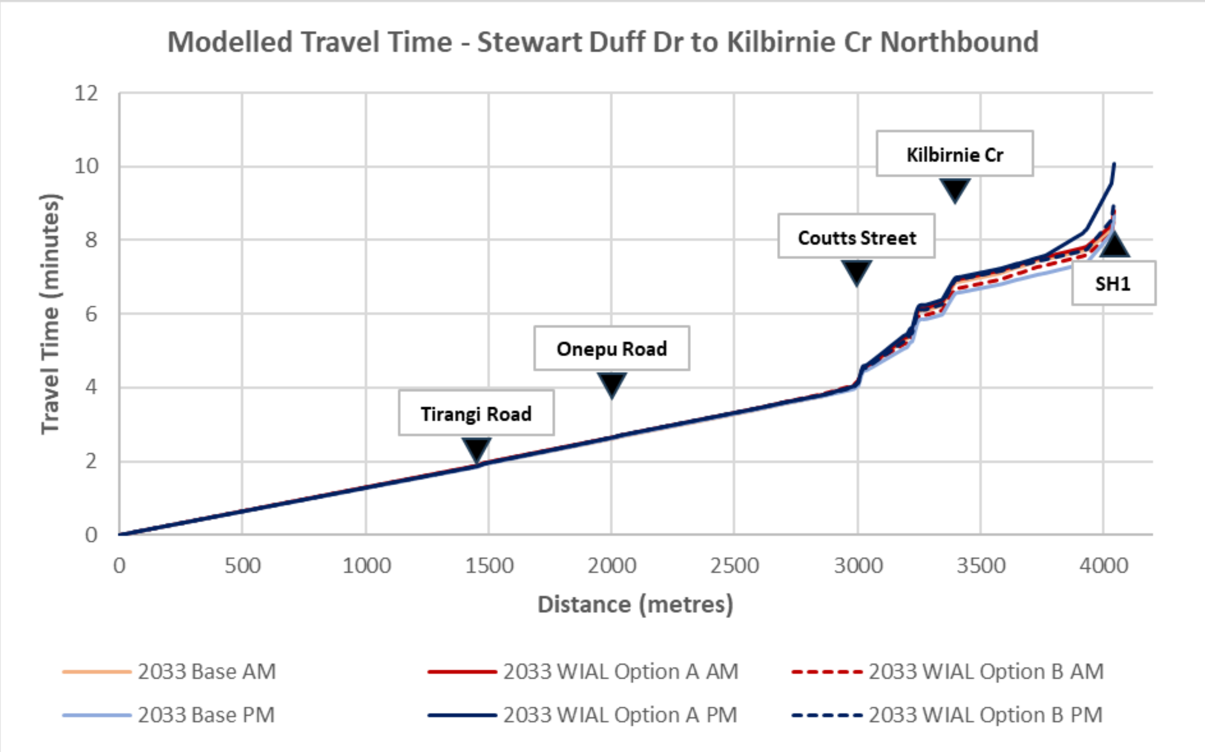

Figure 6-7: Modelled Travel Time (Stewart Duff Dr to Kilbirnie Cr northbound) - Second Peak Hour

No significant effects on travel time were observed in the northbound route from Stewart Duff Drive to Kilbirnie Crescent, as highlighted in Figure 6-7, with travel time increases of two minutes or less.

6.4.4 Intersection Performance

Key intersections along the proposed construction route between Airport and CentrePort have been analysed to understand potential effects at a more localised level. Intersections along this route were specifically selected as they will accommodate construction traffic associated with rock supply if the barging operation is selected.

Modelled counts, delays and associated levels of service ("**LoS**") at these intersections are shown below in Table 6-6 and Table 6-7.

Table 6-6: Modelled Intersection Performance Summary 2033 – AM Second Peak Hour

Intersection	Approach & Turn	2033 Base			2033 WIAL Option A			2033 WIAL Option B		
		Count	Delay	LoS	Count	Delay	LoS	Count	Delay	LoS
Stewart Duff Dr / Moa Point Road	Stewart Duff Drive (North) Left	2	2.2	A	2	2.4	A	1	2.6	A
	Stewart Duff Drive (North) Right	75	2.7	A	79	3.0	A	88	3.3	A
	Moa Point Road (East) Through	32	1.1	A	31	1.1	A	32	1.2	A
	Moa Point Road (East) Right	6	3.4	A	5	3.7	A	5	3.4	A
	Moa Point Road (West) Left	53	4.0	A	56	4.4	A	55	4.0	A
	Moa Point Road (West) Through	15	1.6	A	14	1.7	A	17	1.5	A
	All movements	**184**	**2.7**	**A**	**187**	**3.0**	**A**	**199**	**3.0**	**A**
Evans Bay Pde / Onepu Road	Evans Bay Pde (North) Left	55	6.2	A	50	3.2	A	48	4.8	A
	Evans Bay Pde (North) Through	49	31.7	C	47	33.9	C	47	33.2	C
	Rongotai Road (East) Left	47	46.3	D	45	46.4	D	43	46.3	D
	Rongotai Road (East) Through	189	55.6	E	182	54.4	D	190	54.5	D
	Rongotai Road (East) Right	138	52.9	D	146	53.3	D	133	51.8	D
	Onepu Road (South) Left	40	39.6	D	38	38.6	D	35	36.9	D
	Onepu Road (South) Through	90	35.3	D	98	35.5	D	95	33.5	C
	Onepu Road (South) Right	42	32.7	C	41	31.7	C	45	31.2	C
	Rongotai Road (West) Left	8	32.2	C	9	31.9	C	8	29.7	C
	Rongotai Road (West) Through	113	26.9	C	114	27.1	C	130	25.4	C
	Rongotai Road (West) Right	24	28.5	C	25	28.4	C	25	26.2	C
	All movements	**796**	**40.2**	**D**	**794**	**40.1**	**D**	**799**	**38.9**	**D**
Evans Bay Pde / Kilbirnie Cr	Evans Bay Pde (North) Left	52	22.6	C	47	22.1	C	48	22.9	C
	Evans Bay Pde (North) Through	19	24.7	C	12	24.1	C	16	26.3	C
	Evans Bay Pde (North) Right	6	24.2	C	6	24.2	C	5	24.6	C
	Evans Bay Pde (East) Left	10	31.9	C	8	30.4	C	13	31.0	C

Intersection	Approach & Turn	2033 Base			2033 WIAL Option A			2033 WIAL Option B		
		Count	Delay	LoS	Count	Delay	LoS	Count	Delay	LoS
	Evans Bay Pde (East) Through	103	32.9	C	112	33.0	C	100	30.7	C
	Evans Bay Pde (East) Right	120	31.0	C	130	30.6	C	120	28.9	C
	Bay Road (South) Left	8	32.9	C	6	27.4	C	6	34.4	C
	Bay Road (South) Through	46	31.0	C	41	25.6	C	42	32.5	C
	Bay Road (South) Right	22	31.6	C	17	26.6	C	14	33.9	C
	Kilbirnie Cr (West) Left	15	22.3	C	16	23.3	C	16	23.8	C
	Kilbirnie Cr (West) Through	29	22.7	C	31	24.2	C	32	24.7	C
	Kilbirnie Cr (West) Right	8	25.3	C	7	25.7	C	6	27.8	C
	All movements	**437**	**29.2**	**C**	**430**	**28.6**	**C**	**417**	**28.7**	**C**
Kilbirnie Cr / Wellington Road	Hamilton Road (North) Left	56	30.9	C	61	29.8	C	59	30.6	C
	Hamilton Road (North) Through	34	31.3	C	29	30.3	C	33	31.1	C
	Wellington Road (East) Left	9	8.2	A	12	8.1	A	11	9.2	A
	Wellington Road (East) Through	548	12.4	B	536	12.1	B	515	14.1	B
	Wellington Road (East) Right	17	16.3	B	21	16.4	B	19	17.1	B
	Kilbirnie Cr (South) Left	70	26.9	C	79	26.8	C	69	30.9	C
	Kilbirnie Cr (South) Through	35	24.7	C	35	24.7	C	30	28.1	C
	Wellington Road (West) Left	1	20.6	C	1	20.3	C	0	20.6	C
	Wellington Road (West) Through	544	20.2	C	561	20.4	C	528	20.0	B
	All movements	**1314**	**18.0**	**B**	**1334**	**18.0**	**B**	**1264**	**19.0**	**B**
Centre Port / Aotea Quay	CentrePort Left	20	11.7	B	21	23.7	C	23	15.0	B

Table 6-7: Modelled Intersection Performance Summary 2033 – PM Second Peak Hour

Intersection	Approach & Turn	2033 Base			2033 WIAL Option A			2033 WIAL Option B		
		Count	Delay	LoS	Count	Delay	LoS	Count	Delay	LoS
Stewart Duff Dr / Moa Point Road	Stewart Duff Drive (North) Left	3	2.4	A	4	2.7	A	3	2.7	A
	Stewart Duff Drive (North) Right	68	2.8	A	78	3.1	A	76	3.3	A
	Moa Point Road (East) Through	21	1.1	A	22	1.1	A	20	1.4	A
	Moa Point Road (East) Right	3	3.3	A	3	3.4	A	4	3.9	A
	Moa Point Road (West) Left	59	3.7	A	65	3.9	A	69	4.1	A
	Moa Point Road (West) Through	42	1.4	A	43	1.5	A	42	1.6	A
	All movements	**196**	**2.6**	**A**	**215**	**2.8**	**A**	**213**	**3.0**	**A**
Evans Bay Pde / Onepu Road	Evans Bay Pde (North) Left	92	4.3	A	87	7.2	A	82	10.6	B
	Evans Bay Pde (North) Through	67	31.2	C	66	32.0	C	62	31.3	C
	Rongotai Road (East) Left	75	34.4	C	71	36.5	D	78	33.9	C
	Rongotai Road (East) Through	168	64.9	E	174	67.9	E	163	63.8	E
	Rongotai Road (East) Right	146	36.3	D	149	39.4	D	131	37.2	D
	Onepu Road (South) Left	41	61.7	E	39	63.1	E	40	62.5	E
	Onepu Road (South) Through	93	33.3	C	86	35.0	C	94	36.2	D
	Onepu Road (South) Right	58	31.6	C	55	32.3	C	52	33.2	C
	Rongotai Road (West) Left	18	40.2	D	17	42.3	D	14	43.0	D
	Rongotai Road (West) Through	114	38.6	D	112	40.2	D	116	40.6	D
	Rongotai Road (West) Right	28	39.5	D	28	40.9	D	29	40.9	D
	All movements	**900**	**38.8**	**D**	**883**	**41.4**	**D**	**861**	**40.5**	**D**
Evans Bay Pde / Kilbirnie Cr	Evans Bay Pde (North) Left	92	25.0	C	86	25.8	C	82	24.6	C
	Evans Bay Pde (North) Through	24	27.0	C	30	29.6	C	18	26.7	C
	Evans Bay Pde (North) Right	27	33.4	C	26	33.9	C	29	32.8	C
	Evans Bay Pde (East) Left	22	29.9	C	23	32.3	C	15	33.9	C

Intersection	Approach & Turn	2033 Base			2033 WIAL Option A			2033 WIAL Option B		
		Count	Delay	LoS	Count	Delay	LoS	Count	Delay	LoS
	Evans Bay Pde (East) Through	124	29.8	C	127	30.9	C	107	34.2	C
	Evans Bay Pde (East) Right	112	29.5	C	102	31.0	C	115	35.0	D
	Bay Road (South) Left	52	25.4	C	46	27.5	C	49	26.7	C
	Bay Road (South) Through	62	25.2	C	62	27.7	C	67	27.3	C
	Bay Road (South) Right	27	30.6	C	26	32.2	C	24	31.4	C
	Kilbirnie Cr (West) Left	11	21.5	C	12	23.4	C	14	27.0	C
	Kilbirnie Cr (West) Through	36	22.3	C	36	24.1	C	32	26.4	C
	Kilbirnie Cr (West) Right	6	23.4	C	7	26.3	C	6	27.4	C
	All movements	**594**	**27.6**	**C**	**583**	**29.1**	**C**	**558**	**30.3**	**C**
Kilbirnie Cr / Wellington Road	Hamilton Road (North) Left	19	32.0	C	17	32.1	C	17	33.5	C
	Hamilton Road (North) Through	57	30.4	C	48	30.6	C	51	31.6	C
	Wellington Road (East) Left	11	11.7	B	13	12.7	B	14	11.7	B
	Wellington Road (East) Through	454	18.1	B	438	20.3	C	460	18.2	B
	Wellington Road (East) Right	17	19.3	B	16	21.0	C	15	21.0	C
	Kilbirnie Cr (South) Left	81	33.7	C	83	38.8	D	72	36.4	D
	Kilbirnie Cr (South) Through	46	29.2	C	44	33.1	C	40	31.6	C
	Wellington Road (West) Left	0	18.9	B	1	23.2	C	0	23.8	C
	Wellington Road (West) Through	486	23.5	C	490	24.8	C	492	25.6	C
	All movements	**1171**	**22.7**	**C**	**1150**	**24.6**	**C**	**1162**	**23.7**	**C**
Centre Port / Aotea Quay	CentrePort Left	62	8.3	A	62	12.8	B	61	6.0	A

As shown, the only intersection which has an increased LoS with construction traffic added is the Centre Port / Aotea Quay intersection, with a minor increase from a LoS B to LoS C in the morning peak and from LoS A to LoS B in the evening peak for Option A.

The LoS at the other intersections remain unchanged, performing at an overall LoS D or better. This is at an acceptable level for a central city area. It is noted that there are a few movements which are indicated to operate at a LoS E (i.e. Rongotai Road east approach through movement and Onepu Road left turn at the Evans Bay Pde / Onepu Road intersection) in the base and with construction traffic in the Options A and B scenarios. In both these instances, the additional delay associated with construction traffic is either minor (i.e. less than three seconds) or masked by model randomness across each replication (i.e. delay counterintuitively lower with construction traffic). Again, this level of delay and LoS is not unusual within a central city context.

Queuing at the Evans Bay Pde / Onepu Road intersection was analysed through the model simulation and seen to generally clear every one to two signal cycles in both Options A and B. Along Onepu Road and Kilbirnie Crescent, the proposed outbound construction route, queues were not seen to spill back to upstream intersections. Screenshots from the model simulation for the 2033 morning and evening peak with construction traffic is illustrated in Figure 6-8 to Figure 6-11, with trucks associated with rock supply shown in pink.

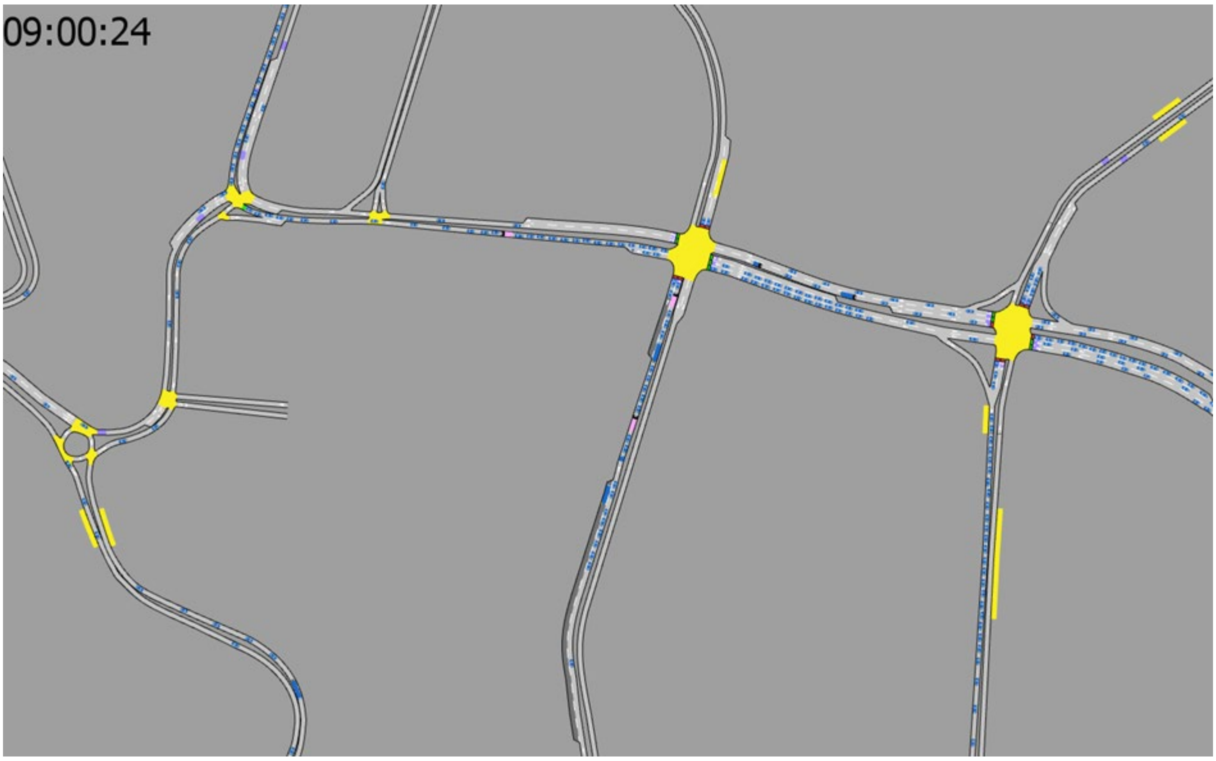

Figure 6-8: 2033 WIAL Construction AM Peak - queuing at Kilbirnie Cr / Wellington Rd

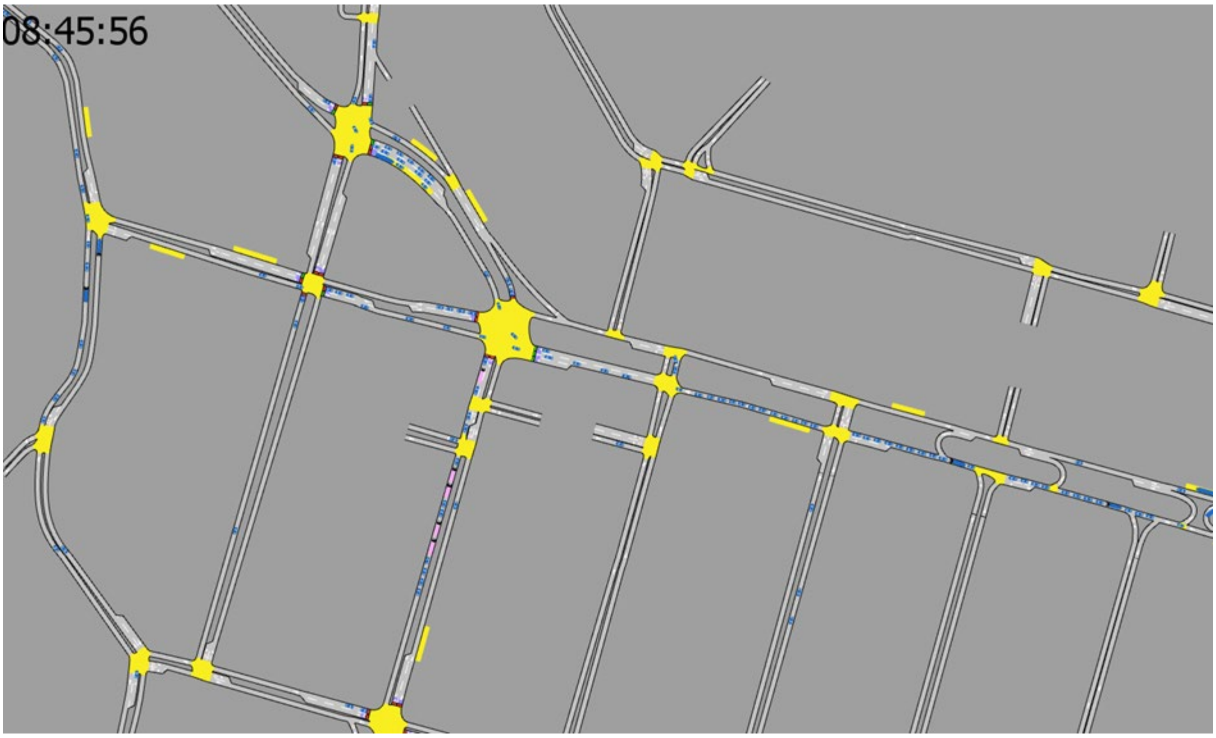

Figure 6-9: 2033 WIAL Construction AM Peak - queuing at Evans Bay Pde / Onepu Road

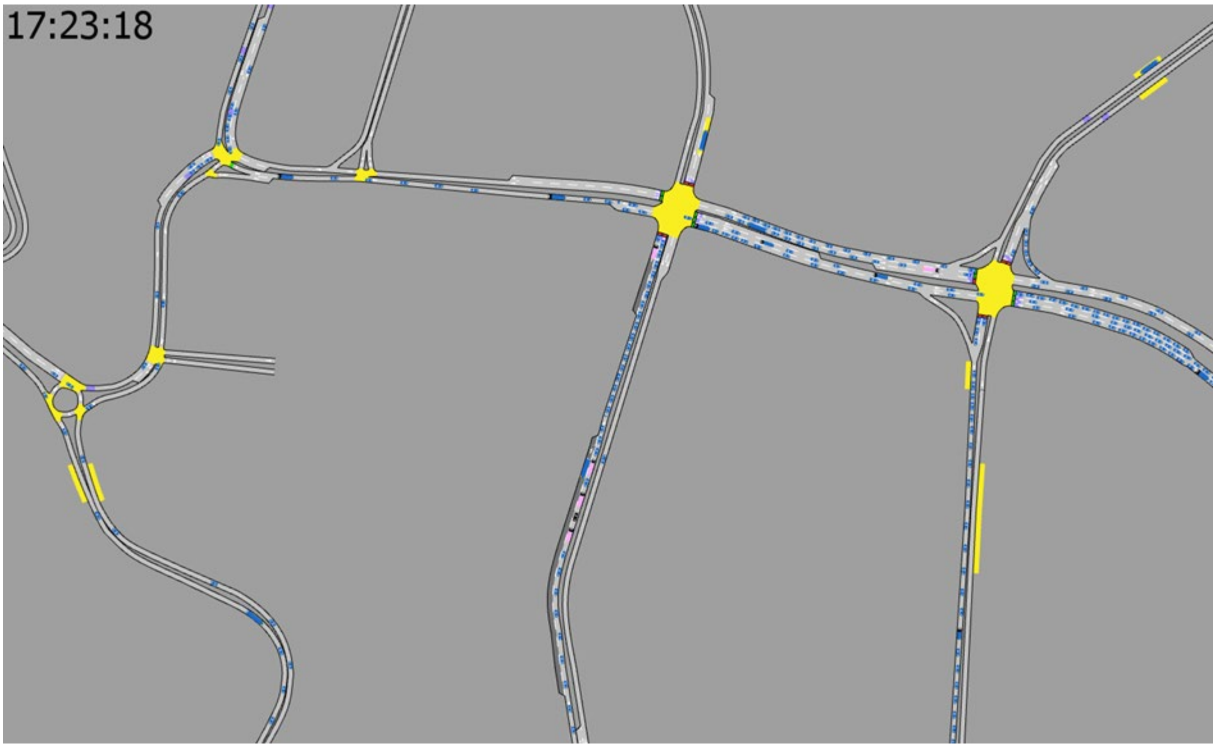

Figure 6-10: 2033 WIAL Construction PM Peak - queuing at Kilbirnie Cr / Wellington Rd

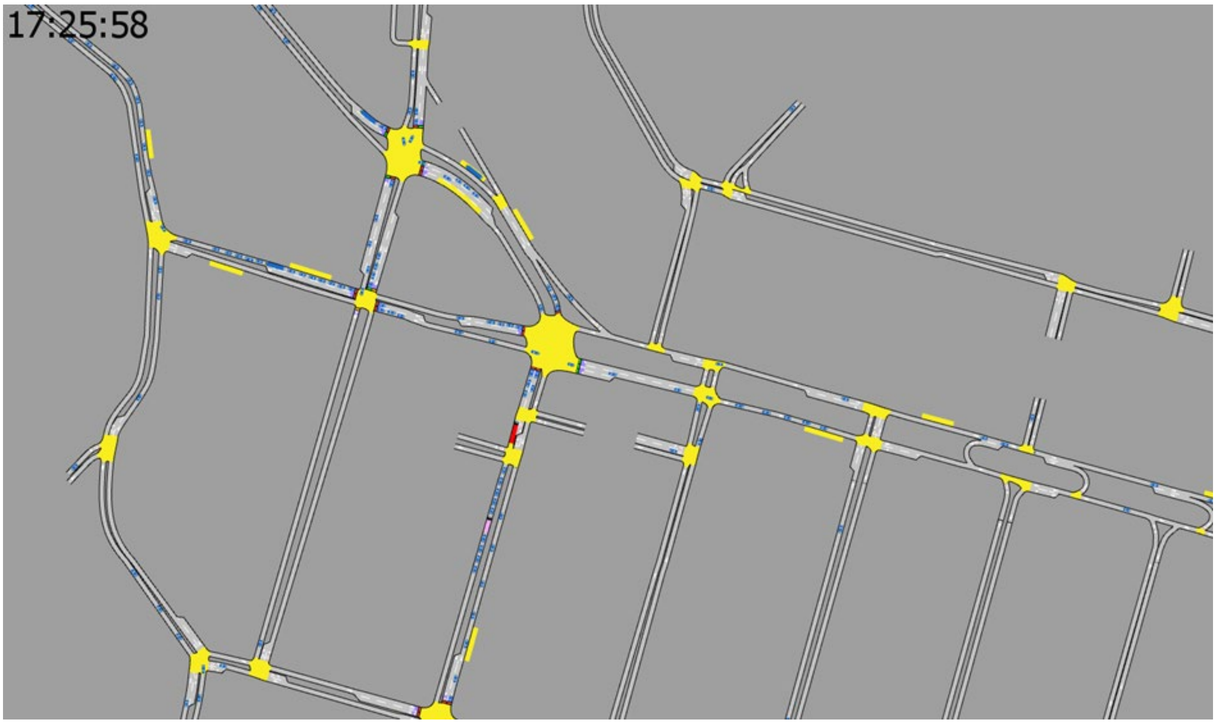

Figure 6-11: 2033 WIAL Construction PM Peak - queuing at Evans Bay Pde / Onepu Road

7 Construction Traffic Management and Mitigation

7.1 Overview

This section of the report assesses the potential traffic effects of the proposed Project construction based on known methodology and construction forecasts. It is possible that as construction planning progresses, some changes to the construction methodology, timeline or other operation details may occur. Accompanying this report is a draft CTMP; to account for such potential changes, it will be important for the CTMP to be finalised and submitted for certification based on the best available information at that time. The CTMP can also be updated as need be to respond to new information over time. The following sub-sections summarise the proposed management and mitigation measures for the project. These measures are intended to inform the CTMP. It is noted that the assessment has taken a conservative approach to the potential traffic generation and traffic effects of the construction works (e.g. assuming that earthworks and rock barging traffic would occur simultaneously, although this is unlikely) as detailed in Section 5.5. Consequently, the proposed mitigation measures are also considered to be conservative.

7.2 Traffic Management Plans and Signage

In addition to the CTMP, SSTMPs covering particular sites or activities within the work programme (e.g. the construction of new site access points at the MGC Yard or the operation of the Moa Point Yard) will be developed by the construction project team and submitted to the relevant road controlling authorities prior to the commencement of the activity. The SSTMPs will be developed in accordance with guidance in the NZTA Guide to Temporary Traffic Management.

Temporary or permanent signage installed will be in accordance with the specifications of the Traffic Control Devices Manual. Given the duration of some of the phases of work, it is recommended that if signs are to be in place for more than six months, these are installed on fixed posts. Installing signage on fixed posts will help with the security of signage. Such longer-term signage is likely to include the site access point signage, and trucks crossing signage. The final signage plans will be part of the SSTMPs that will be submitted to and certified by WCC before works commence.

7.3 Construction Yards

The MGC Yard site connects to the wider road network via Stewart Duff Drive. Although Stewart Duff Drive is a private (WIAL) road, it is the main spine road of the Airport precinct and used by the public to access the Airport terminal, airport parking areas and golf course. Therefore, there is an expectation that Stewart Duff Drive will operate efficiently and consistently (i.e. travellers to the Airport should be able to plan for a consistent and reliable travel time). This expectation would hold true for Moa Point Road, which although less used as an access to the airport, is part of the public road network. Similar operational principles should apply to the George Bolt Yard; however, it is acknowledged that this site is less directly exposed to public traffic flows. Accordingly, the following measures are recommended:

- Signage should be installed so that the site access points can be clearly identified by construction staff, and so that it is clear there is no public access.
- Safe and appropriate sightlines should be provided at all site access locations.
- Access controls at the MGC Yard and Moa Point Yard should be sited and administered so as to prevent queuing extending back to Stewart Duff Drive or Moa Point Road.
- Access controls at the George Bolt Yard should prevent queuing onto Tirangi Road or within the retail park carpark.
- Reliable communication between CentrePort, yards, construction site, and trucks should be provided so that in event of an incident, emergency or breakdown with loading equipment, truck movements can be managed so as to avoid queuing or congestion on the road network due to delays from construction vehicles.
- Turning movements for trucks into and out of the site access points on Stewart Duff Drive and Moa Point Road should be single point manoeuvres, and unless in exceptional circumstances, only occur in a forward direction. This is to ensure that public / construction vehicle interactions are simple and provide no unexpected surprises for unfamiliar drivers or road users.
- Consideration should be given to having trucks activate a flashing orange beacon when slowing to enter a site access, or when exiting, until they are up to free flowing speed of the road.
- Where loads are loose and may be dispersed from the truck by air / movement during haulage, these loads should be covered appropriately prior to the truck leaving the site.
- Where trucks are required to travel over exposed ground, a wheel wash or other truck cleaning process should be in place to clean trucks (particularly the wheels) before exiting the yards to prevent deposition of mud, dirt and other debris onto the road network.
- If debris is dropped onto the road, then it should be cleared as quickly as practicable, using an experienced contractor operating under an approved SSTMP.
- When multiple yards are in operation, drivers should be given clear instruction as to their destination to avoid unnecessary cross trips in between yards.
- If access to a particular yard is restricted to trucks of certain dimensions or capacity (e.g. if height/ weight or length restriction applies), then an internal load/ vehicle check process should be developed to ensure that only suitable vehicles and loads are directed to use that yard.
- Where reverse manoeuvres onto public roads are required, traffic control and management measures e.g. signage, spotters will be in place.
- Where temporary driveways or protection over footpath is installed, these will be ramped down to the existing footpath level to prevent a trip hazard to pedestrians.
- During the induction process, site drivers will be reminded to be alert for pedestrians and cyclists when entering and exiting the site.

7.4 Site Staff Traffic

As discussed in Section 5.3, Project works will be highly mechanised, and staffing levels will be modest (20-30 persons). The effect of these traffic volumes on the access roads, some which have traffic volumes of over a 1,000 vehicles per hour at peak times, will be negligible and no specific staff traffic mitigation measures are proposed (beyond those discussed in the parking section below). Nonetheless, as part of the induction process for all staff, safe and courteous driving behaviour should be emphasised. Clear signage of site access locations and staff parking areas will provide advance guidance to users and limit last minute decision making/ sudden manoeuvres.

7.5 Site Visitor Traffic

The Project is relatively unique and potentially visitors may visit the site. Prior to making a visit, all visitors should be provided with clear instructions as to where to access the site, and where to park. Depending on circumstance (e.g. during live construction works), it may be appropriate to direct visitors to park in an off-site carpark and be transported by site staff to site rather than have unfamiliar drivers access the site.

7.6 Parking

Parking at the Southern Seawall construction site will be limited, and on-street parking is not permitted on Moa Point Road west of Stewart Duff Drive. Accordingly, to manage the space resource at the Moa Point Yard, it may be preferable to limit parking at this location and provide additional parking at either MGC Yard or George Bolt Yards. It is proposed to provide sufficient parking on WIAL property to accommodate the parking demands of construction staff. Parking management details should be provided to all staff and contractors to ensure that there is a clear expectation of where and how Project parking can occur. Where staff do park on-street, they should be directed to comply with the local parking regulations and to be aware of the need to check for cyclists when opening car doors.

7.7 Haulage Hours

While the seawall construction operations may occur 24/7 (subject to operating limits imposed by working under a flight path), truck haulage operations will generally occur over a more confined timeframe. Works during the construction of the various yards are expected to occur between 7.00 am to 6.00 pm. The stockpiling operation and haulage between the MGC Yard and Moa Point Yards would run between 6.00 am and 8.00 pm. This will assist in limiting traffic noise effects for nearby residents.

7.8 Haulage and Truck Movements

It is assumed that truck volumes would generally be constant over the course of the haulage day, with no specific peaks in haulage traffic. Maintaining a steady flow of truck movements supports a consistent pattern of loading and unloading, minimises the potential for truck wating / queuing at either end of the route, and is a more efficient use of trucking resources.

As discussed in Sections 5 and 6 of this report, in the South Island rock-barging scenario, (the highest conservative truck traffic generation scenario) truck volumes would be around 13 vehicles per hour, 6-7 inbound to the MGC Yard, and 6-7 outbound to CentrePort, or roughly one heavy vehicle in each direction every four to five minutes. Again, as discussed in previous sections of this report, in the event that the South Island rock barging option is adopted, only a limited number of barge deliveries are required and will occur on a limited number of days. On working days when the barge is not in CentrePort, or in the event that barging is not selected, truck volumes are more modest, with 10-20 truck movements per day and potentially 2-4 truck movements per hour.

As identified in Section 6, under the most conservative truck movement scenario, any increases in delay on the road network are generally modest. Further truck movements are generally confined to Transit Corridors, Urban Connector roads and state highway where the movement of trucks are common and expected.

However, it is noted that if the South Island rock source barging operation is required for rock supply, a large number of trucks will be required to run through the Airport precinct and in the central city area of Wellington. Accordingly, there should be regular liaison with the traffic management co-ordination team at WCC and with NZTA to identify when there are significant events, roadworks or other activities that may limit network capacity or close key roads, so that barge vehicle movements associated with unloading and transporting rock from CentrePort can, where practical, avoid these dates.

Where traffic incidents or maintenance cause the closure of a road (or roads) along the haulage route, construction trucks would follow the approved detour route. It is noted that, in general, the proposed haulage routes use Transit Corridors, Urban Connector roads and state highway network which are available for use by heavy vehicles, and detour routes for traffic on these roads should thus be designed to allow for heavy vehicles.

Similarly, if severe weather events require the closure of a road or roads along the haulage route, construction trucks would follow approved detour routes. Depending on the type and effect of the weather event, these may in any case cause haulage or other works operations to be suspended for safety or operational practicality reasons (e.g. barge is delayed in arriving in port).

Communication between the construction yards, dispatch points for the various materials, and trucks will be available, and hence staff and drivers can be updated of changing operational requirements or traffic circumstances as information becomes available. The MGC Yard has space available for truck parking in the event that a pause on haulage operations were to become necessary.

7.9 Roading Maintenance

Prior to the start of works, it is recommended that a video/ photographic survey of Stewart Duff Drive, Moa Point Road (between Stewart Duff Drive and Lyall Parade), Lyall Parade (between Moa Point Road and Tirangi Road), Tirangi Road (south of George Bolt Road), and George Bolt Road is undertaken to verify the initial condition of these roads. These roads are the ones on which it is considered there would be the greatest level of truck movements associated with the Project. The condition surveys must consist of a photographic or video record of the carriageway, and include roughness, rutting defects and surface condition.

As soon as practicable following completion of construction of the Project, the project team will conduct a post-construction condition survey of the road network affected by the Project.

These recorded surveys can then be used as a reference point for discussion with the road controlling authorities in respect of any deterioration in road conditions associated with the Project.

While the Project will result in increased truck movements on the specific roads, there will already be a base and ongoing usage of these roads by other heavy vehicles not related to the Project. Determining specifically if a particular example of deterioration is related to the Project or other general usage is hence likely to be problematic. Subject to agreement with relevant road control authorities, appropriate maintenance costs based on the relative increase in heavy vehicle volumes, may be a pragmatic methodology for assigning cost.

7.10 Special Events and Other Projects

The works will have a duration of up to 7 years, during these times there are likely to be special events or other projects generating additional or unusual traffic flows within the Airport precinct or on the Wellington arterial road network.

Liaison between the Project Team, WIAL, WCC and NZTA should occur on a regular basis (e.g. every 3-4 months) to forecast these events and identify if any short-term changes to traffic operations are required (e.g. changing a rock haulage day to avoid the Round the Bays run).

When directed by WCC, NZTA or otherwise where appropriate, the Project Team should liaise with other projects working within or adjacent to the Project area to ensure compatibility of TTM layouts and works operations.

7.11 Monitoring

It is recommended that regular monitoring of the traffic operations occurs to ensure prompt identification and management of any adverse effects associated with the Project. Suggestion aspects for monitoring are provided in Table 7-1:

Table 7-1: Potential Monitoring Scheme

Monitoring Activities	Frequency	Responsibility
Check requisite SSTMP has been approved	Prior to works commencing	Project Manager (or appointed delegate)
Check appropriate permitting has been approved for overweight or overdimension haulage movements	Prior to haulage operation	Project Manager (or appointed delegate)
Check / Review scenarios and methodology in this report and the CTMP remain relevant/ appropriate	At 3 months after construction operations start, then every 6 months or when a change in scenario/ methodology is proposed	Project Manager (or appointed delegate)

Monitoring Activities	Frequency	Responsibility
Inspect temporary traffic management layout(s)	As required by the SSTMP conditions when the site is in operation.	STMS/TC
Documented check of temporary traffic management	Daily and as layouts change	STMS/TC
CoPTTM audit to ensure installed CoPTTM is in accordance with approved SSTMP(s) and aligns with Guide to Temporary Traffic Management	As required, but not less than monthly	Appropriately qualified auditor
Road Condition	Weekly	Appointed Engineer
Complaints / Communication Register	Continuous	Stakeholder Liaison Manager

Any injury events or serious near misses should be reported immediately to the Project Manager and the WIAL contact for discussion with external authorities (as appropriate) and for internal review.

Where standard inspections, audits or other reporting identifies that TTM equipment is missing, damaged or otherwise in an unsuitable condition, steps must be taken to remedy such deficiencies as appropriate. This may require a pause in construction operations until the deficient/ missing TTM equipment is remedied.

A review of this report, and the CTMP, should be undertaken by the Project Management team 3 to 6 months following commencement of the Project. The review should take into consideration the following matters, but need not be limited to these matters:

- Compliance with the project consent conditions, and any other relevant management plans;
- Any significant changes to construction activities or methods;
- Key changes to roles and responsibilities within the Project team;
- Results of inspections, monitoring and reporting procedures associated with the assessment of effects during construction;
- Comments or recommendations from WCC, NZTA, WIAL or their representatives; and
- Unresolved complaints and any response to complaints and remedial action taken to address the complaint.

7.12 Communication

While the overall traffic effects of the Project on the community surrounding the Airport is generally considered to be limited, there will be observable increases in the number of trucks on the road network, particularly on the South Island rock barge unloading days (if this rock source is required). Accordingly, regular and clear communication with community should occur.

This communication (electronic or otherwise) should include contact details for liaison personnel. In the event of feedback, complaints, enquiries or complements from the local community or other stakeholders, these should be recorded in a feedback register so that an appropriate action and response provided.

The Communication Manager / Community Liaison and the Project Manager will be confirmed prior to Project works commencing.

8 Conclusion

WIAL has commissioned Stantec to examine and describe the traffic and transportation needs and effects associated with the required rehabilitation of the Southern Seawall along the southern edge of the Airport runway.

Assessment of the forecast truck volumes expected to be generated by the Project indicates that, although significant truck volumes may be generated on a limited number of days of the Project, (e.g. if and when South Island rock barge unloading occurs – noting that this will be unnecessary if rock is sourced from a quarry in the North Island where the state highway system will be utilised) the traffic effects are generally modest, with delays on the key CBD to Airport route increasing by less than 5 minutes.

Notwithstanding the potential for high truck volumes on South Island rock barge unloading days, typical truck volumes associated with construction of the Project are modest, in the order of 100 to 120 truck movements per day. These volumes translate to the equivalent of around 10 to 11 truck movements per hour. As described in this report, the road network is assessed as being capable of adequately and safely accommodating the expected truck volumes generated by these necessary construction activities, without the need for restricting movements to particular times of the day and without the need to make physical improvements to the roading network.

Overall, the assessment has examined the traffic-related features and potential effects of the Project and finds that the associated construction traffic volumes can be adequately and appropriately accommodated in a manner that will not create adverse effects on the function, capacity or safety of the local and wider road network.

A draft CTMP has been prepared as part of the substantive application , and a final CTMP and SSTMPs will be prepared at a later date (post-consent) when construction methodologies and timelines are further refined, in accordance with required conditions of consent.

Appendix

Appendix A Qualifications and Expertise

Alasdair McGeachie

Principal Transportation Engineer

Stantec

Alasdair is a Principal Transportation Engineer based in the Auckland office of Stantec and has over 20 years' experience in the field of transport engineering. In this time Alasdair has gained experience in several facets of transport engineering, including road safety auditing and level crossing safety assessments, construction traffic management, concept design, and development traffic analysis. This breadth gives him a good understanding of the various factors which combine to achieve good traffic engineering practise.

Alasdair has been involved in a variety of projects within the public and private sphere. He has acted as an expert witness at Council Hearings and in 2022 and 2024 was a key part of the presenting team running the national Level Crossing Safety Impact Assessor training course on behalf of KiwiRail.

He is motivated to find safe and practical solutions for internal and external clients to ensure that a safe and efficient traffic network is achieved.

LOCATION

Auckland

YEARS OF EXPERIENCE

20

QUALIFICATIONS & TRAINING

Bachelor of Science (Geophysics), University of Auckland, Auckland, New Zealand, 1999

Post Graduate Diploma in Science (Applied Geophysics), University of Auckland, 2000

Level 2/3 NP Safe Traffic Management Supervisor (STMS),

Safe Systems Engineering Workshop 2014

Accredited Level Crossing Safety Auditor 2017

Accredited ALCAM surveyor 2025

SPECIALISATIONS

Construction Traffic Assessment

Level Crossing Safety Assessment

Transportation Assessments for Resource Consent

Road Safety including road safety audits and speed limit assessment.

PROJECT EXPERIENCE

Ōtaki to North of Levin Expressway 2024-25
Client: New Zealand Transport Agency
Alasdair has provided advice to the Otaki to North of Levin project team on the potential effect on level crossing safety risk with regard to proposed construction truck movements over level crossings adjacent to the project route.

Public Good LCSIA Project 2023, 2024 and 2025
Client: KiwiRail Holdings Ltd
Alasdair has been the Project Manager and Project Technical Lead for last three years while the Stantec has undertaken an assessment of 15-25 level crossings around New Zealand per year as part of KiwiRail's annual project to assess and consider mediation of high risk level crossings. The

2025 iteration of this project is currently in progress.

Southwest Wastewater Treatment Plant 2023-Curent
Client: Watercare Services Ltd
Alasdair has been providing transportation advice to the project team preparing the designation for a proposed new wastewater treatment plant in southern Auckland. The advice covers both the construction and operation phases of the plant.

Air New Zealand Freight Terminal, Auckland 2017, 2021 and 2023
Client: Air New Zealand
The Air NZ freight terminal at Auckland Airport is the airline's principal freight hub where goods are transferred between trucks and airfreight containers and vice versa. Alasdair advised Air NZ on upgrades to the layout of the freight terminal to improve safety in 2017. A further review was undertaken in 2021 following further increases in freight demand. These 2021 review upgrades were completed late in 2021. A further upgrade occurred in 2023.

Wellington & Picton Interisland Ferry Terminals CTMP 2022-2023
Client: Downer New Zealand Limited
Alasdair led the Stantec team which prepared Construction Traffic Management Plans for the prosed iReX Interislander terminal upgrades. Both CTMPs were approved prior to the cancellation of the project.

Waikowhai Watermain & Pump Station 2021
Client: Watercare Services Ltd
Growth in the Mt Roskill area requires the replacement and upgrade of existing water infrastructure. Construction of the replacement utility will require road and lane closures. Alasdair led a team assessing the potential traffic impact of the proposed construction works.

Cordis Hotel Redevelopment, 2018-2021
Client: Great Eagle Hotels & Hawkins 2017
Assessment of the potential construction traffic effects during the construction of new hotel wing at the Cordis Hotel in the Auckland CBD. Liaison with Auckland Transport to achieve the approval of the Traffic Management Plans. Once the main CTMP and TMP was approved, Alasdair had an ongoing role developing TMPs for subsidiary aspects of construction operations. Works on this project finished in late 2021.

277 and 309 Broadway Construction Traffic Management Plan, 2017-18
Client: Scentre Group
Assessment of the potential construction traffic effects during the construction of new shopping centres at 277 and 309 Broadway, Newmarket. Liaison with Auckland Transport to achieve the approval of the Traffic Management Plans. Liaison with the client and traffic management contract was part of Alasdair's involvement.

Niro Jayananthan BE (Hons) (Civil)

Stantec

Senior Transport Planner

Niro is a Senior Transport Planner based in the Wellington (NZ) Stantec office and has around eight years of experience in transport consultancy work in New Zealand.

As a member of the Transport Planning team, Niro has experience working on projects which are multi-disciplinary in nature and integrate a variety of transport-related services. He has been involved in preparing transport assessments, providing transport planning advice for business cases and developing traffic models, which range from isolated intersections to larger scale networks.

In terms of traffic modelling, Niro is experienced in both mesoscopic and microscopic traffic modelling, having used the Aimsun modelling software on numerous projects to date. Niro has also used SIDRA extensively on both private and public sector projects.

EDUCATION

Bachelor of Engineering (Civil) (First Class Honours), University of Auckland, Auckland, New Zealand, 2016

CERTIFICATIONS & TRAINING

Traffic Inspector , NZTA Waka Kotahi, Wellington, Wellington, New Zealand, 2024

LCSIA Assessor, KiwiRail, Wellington, Wellington, New Zealand, 2024

MEMBERSHIPS

Member, Engineering New Zealand

PROJECT EXPERIENCE

TRAFFIC IMPACT ASSESSMENTS

Austin Street Transportation Assessment | 2024 | Senior Transport Planner

A transportation assessment was prepared by Niro to support a proposed residential development. Existing site access was constrained, so appropriate traffic analysis and design advice was provided to support a safe and efficient access arrangement.

Alanbrooke Place Transportation Assessment | 2024 | Senior Transport Planner

This project proposed a new residential subdivision to develop 88 new lots via a staged approach. Challenging topography had to be considered, and appropriate design mitigation provided to accessways. Niro was responsible for the preparation of a transportation assessment report to support this proposal.

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Juicy Fest Traffic Assessment | 2024 | Senior Transport Planner

Stantec were approached by Juicy Festival Limited to endorse the traffic assessment undertaken for the 2024 festival, which will then be included in the resource consent application for Juicy Fest 2025. Niro reviewed the previous traffic assessment, traffic data and traffic management feedback, to ensure proposed mitigation measures are still appropriate

Clifford Road Subdivision Transportation Assessment | 2024 | Senior Transport Planner

Stantec were commissioned to provide a transportation assessment to support rezoning of approximately 19 hectares of rural zoned land. This would enable development of around 200 lots, and the main access would be via Stage Highway 6. Niro developed traffic generation spreadsheets, SIDRA models and analysed both traffic and crash data to support this assessment.

Blue Mountains Road Peer Review | 2024 | Reviewer

Acting on behalf of Upper Hutt City Council, Niro provided a peer review of an applicant’s Section 92 responses relating to a proposed subdivision allowing for 29 lots.

Assemblies of God Integrated Transport Assessment | 2024 | Senior Transport Planner

Stantec has been commissioned by Greater Wellington Regional Council to assess the effects of the RiverLink project on parking arrangements for the Assemblies of God Hutt City Church. Niro was responsible for preparing this transport assessment, which included analysing existing travel patterns and parking survey data.

Project Harvest Masterplan, Greytown Due Diligence | 2023 | Senior Transport Planner

Niro was involved in undertaking a due diligence assessment to support a proposed residential masterplan.

Tākina Servicing and Visitor Management Plans | 2023 | Senior Transport Planner

Niro was responsible for the preparation of servicing and visitor management plans, which were required as a consent condition for the development of the Tākina convention and exhibition center. These plans required analysis of servicing and visitor arrangements, ensuring that acceptable practices are in place to manage these requirements.

Te Matapihi Wellington Central Library Stage 2 Traffic Assessment | 2022 | Transport Planner

Niro carried out a traffic assessment to support redevelopment of the Civic Square basement carpark, which is being investigated as part of the strengthening works for the Wellington Central Library building. This assessment required a particular focus on access and servicing arrangements, given the need for structural columns within the parking area.

Marsden Street Childcare Centre | 2021 | Transport Planner

Assisted in the preparation of a transportation assessment to support the relocation of an existing childcare centre. Niro also carried out a parking survey to assess existing parking demands and any potential future impacts associated with the RiverLink Project.

St Patrick's College Integrated Transport Assessment* | 2019-2020 | Transport Planner

Niro was involved in preparing an integrated transport assessment in support of obtaining a resource consent for a clean-fill site, in order to acquire the necessary fill to reach an acceptable flood resistant level.

TRAFFIC SAFETY

Various Level Crossing Safety Impact Assessments | 2023-2025

Reported on level crossing safety impact assessments throughout New Zealand. Niro became an accredited assessor in 2024.

TRAFFIC STUDIES

Harvey Norman Masterton, 2024 | 2024 | Senior Transport Planner

Stantec were commissioned to undertake traffic monitoring of the Harvey Norman building, to meet post-construction consent conditions. Niro was responsible for setting up camera surveys, analysis of traffic and crash data, and preparation of a monitoring report.

SH2 / Totara Park Advance Warning Signal Traffic Assessment | 2022 | Transport Planner

Niro carried out a traffic monitoring review of the advance warning traffic signals trialled on SH2.

INTEGRATED TRANSPORT PLANNING

State Highway 58 Stage 2B Transport Assessment | 2022 | Transport Planner

Assisted in preparing transport evidence, specifically involved with safety, traffic modelling and property access assessments. Analysed surveyed data and forecasted traffic demands from the North Wellington SATURN model to develop SIDRA traffic models to assess intersection layouts, and inform discussions on operational performance and safety.

Ōtaki to North of Levin (Ō2NL) Transport Assessment | 2022 | Transport Planner

Assisted in preparing transport evidence, specifically involving safety and traffic modelling assessments. Analysed forecasted traffic demands from the Ō2NL SATURN model to develop SIDRA traffic models to assess various intersection layouts, to inform discussions around operational performance and safety.

TRAFFIC SIMULATION & OPERATION

Wellington Ngauranga to Airport (N2A) Let's Get Wellington Moving (LGWM) | 2021 - 2024 | Traffic Modeller

The N2A Aimsun traffic model has been utilised by the Wellington Transport Analytics Unit and LGWM to test various projects and package options, to inform the overarching business cases. Niro has been involved in using this model to develop numerous scenarios and subnetworks to assist in informing the Mass Rapid Transit, Thorndon Quay/Hutt Road, Golden Mile, and City Streets Business Cases. The aforementioned business cases within the overall LGWM programme each had their own specific Aimsun model, and Niro has been involved in coding, optimising and extracting relevant outputs across all these projects.

Multi User Ferry Precinct Master Planning | 2021-2022 | Traffic Modeller

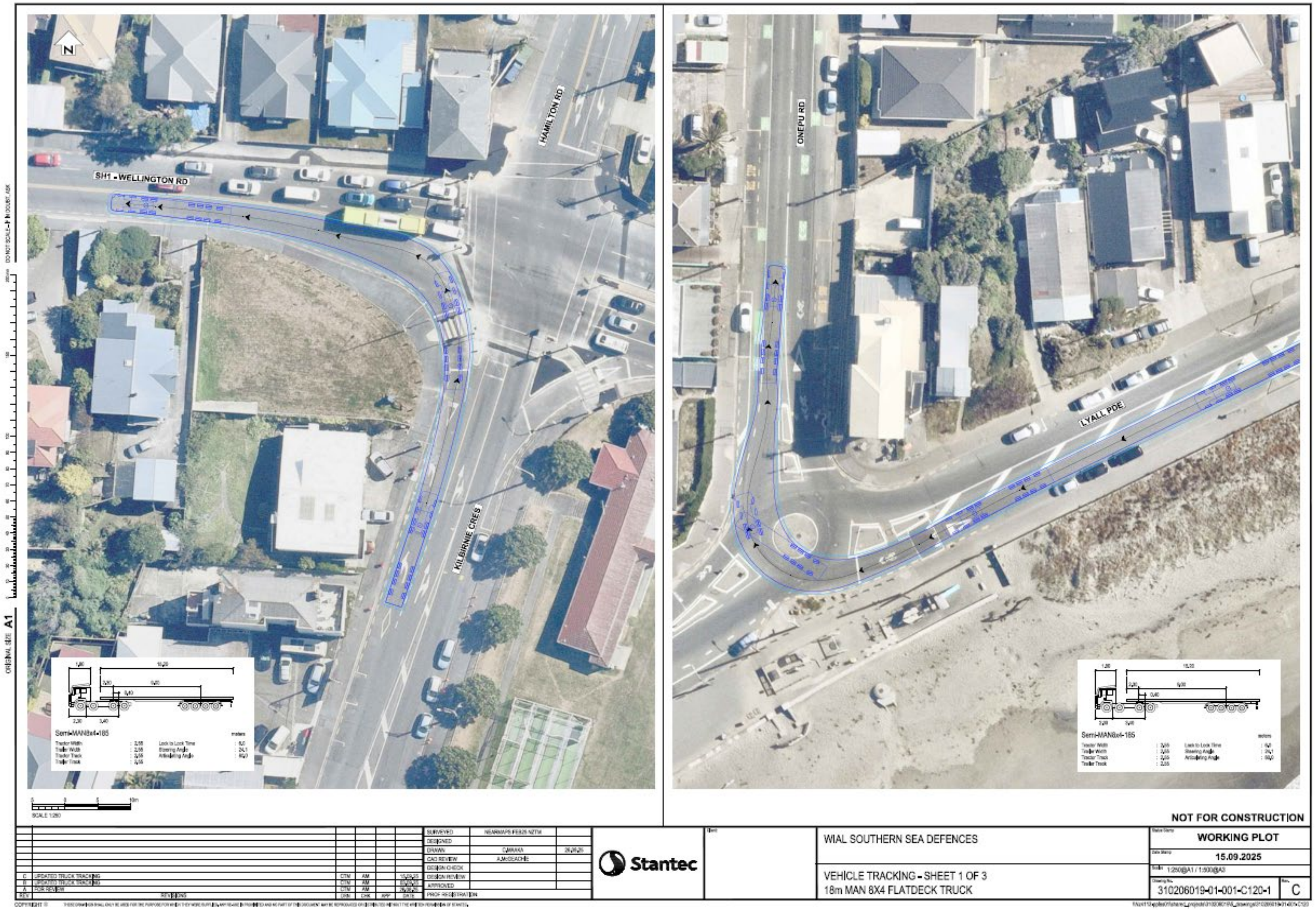
CentrePort Wellington commissioned Stantec to assist in the master planning exercise of the proposed multi-user ferry precinct at Kaiwharawhara. The development of this precinct has been driven by Kiwi Rail's iRex project, which seeks to improve capacity and efficiency of the Interislander ferries. Niro was involved in the coding, optimising and extraction of relevant modelled outputs.

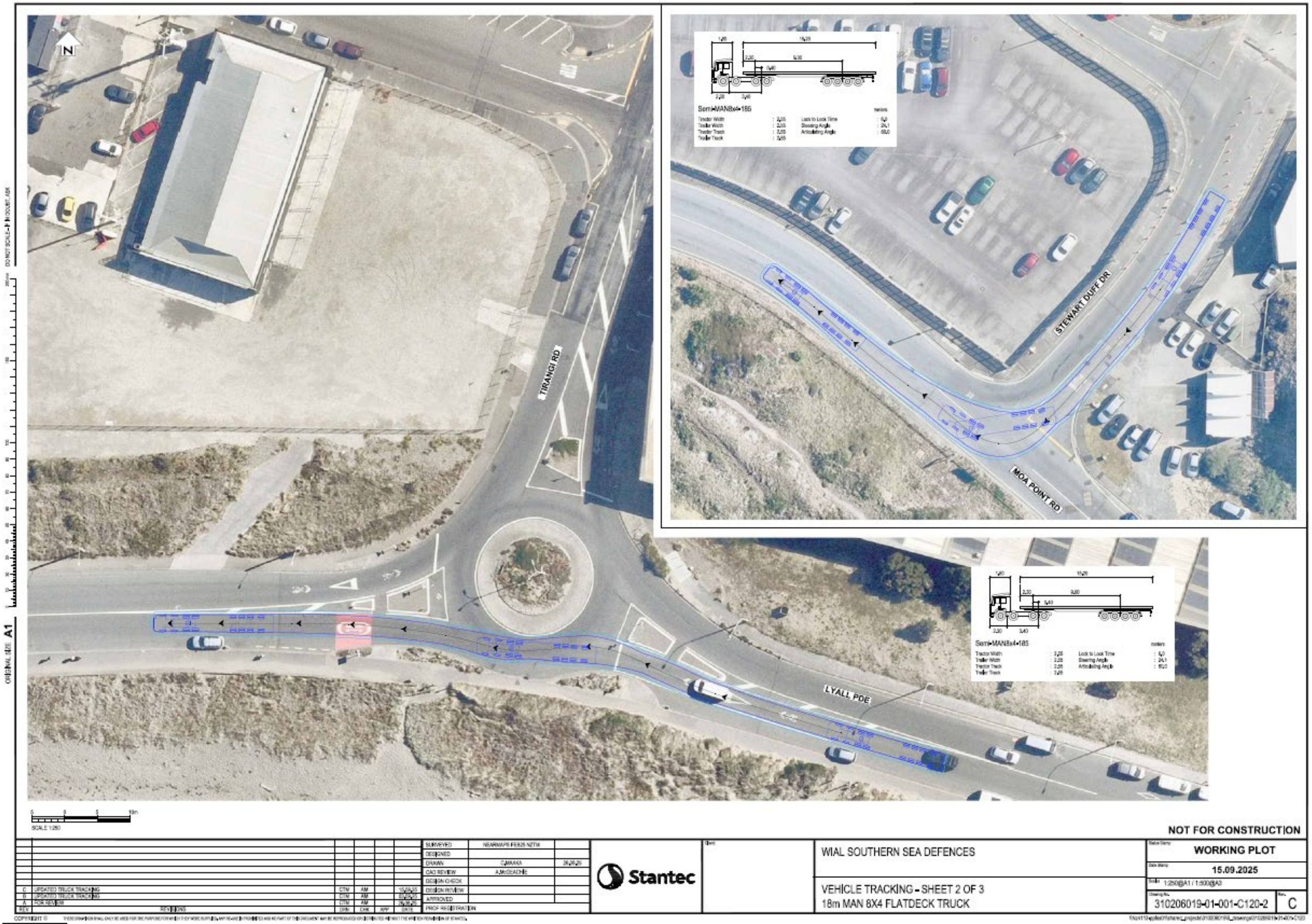
Transmission Gully Operational Readiness* | 2019-2020 | Transport Planner / Traffic Modeller

Niro was involved in providing technical advice to Waka Kotahi to ensure Transmission Gully will be operationally ready for opening. This included assessments using SIDRA and SCATS to help gauge potential impacts and subsequently advise on mitigation measures.

** denotes projects completed with other firms*

Appendix B Vehicle tracking


SH1 - WELLINGTON RD
HAMILTON RD
KILBIRNIE CRES
ONEPU RD
LYALL PDE
Semi-MAN8x4-185
NOT FOR CONSTRUCTION
Stantec
WIAL SOUTHERN SEA DEFENCES
VEHICLE TRACKING - SHEET 1 OF 3
18m MAN 8X4 FLATDECK TRUCK
WORKING PLOT
15.09.2025
310206019-01-001-C120-1
C
UPDATED TRUCK TRACKING
FOR REVIEW


TIRANGI RD
STEWART DUFF DR
MOA POINT RD
LYALL PDE
Semi-MAN8x4-185
Semi-MAN8x4-185
SCALE 1:250
NOT FOR CONSTRUCTION
Stantec
WIAL SOUTHERN SEA DEFENCES
VEHICLE TRACKING - SHEET 2 OF 3
18m MAN 8X4 FLATDECK TRUCK
WORKING PLOT
15.09.2025
1:250@A1 / 1:500@A3
310206019-01-001-C120-2
C
UPDATED TRUCK TRACKING
UPDATED TRUCK TRACKING
FOR REVIEW
REVISIONS
SURVEYED
DESIGNED
DRAWN
CAD REVIEW
DESIGN CHECK
DESIGN REVIEW
APPROVED
PROJ REGISTRATION


EVANS BAY PDE
KILBIRNIE CRES
BAYS RD
EVANS BAY PDE
TACY ST
RONGOTAI RD
ONEPU RD
Semi-MAN8x4-185
SCALE 1:250
NOT FOR CONSTRUCTION
SURVEYED
NEARMAPS FEB25 NZTM
DESIGNED
DRAWN
CAD REVIEW
DESIGN CHECK
DESIGN REVIEW
APPROVED
PROF REGISTRATION
C UPDATED TRUCK TRACKING
B UPDATED TRUCK TRACKING
A FOR REVIEW
REV REVISIONS
Stantec
WIAL SOUTHERN SEA DEFENCES
VEHICLE TRACKING - SHEET 3 OF 3
18m MAN 8X4 FLATDECK TRUCK
WORKING PLOT
15.09.2025
1:250@A1 / 1:500@A3
310206019-01-001-C120-3
C

With every community, we redefine what's possible.

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.