The Wellington Company

Shelly Bay Masterplan

Transportation Assessment Report

September 2016

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The Wellington Company

Shelly Bay Masterplan

Transportation Assessment Report

Quality Assurance Statement

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1. Introduction

TDG has been appointed by The Wellington Company to provide transport consultancy services in relation to a mixed use development proposal at the Shelly Bay site, a former Air Force Base, located on the Miramar peninsular.

The proposal plans provide for development of a new residential subdivision; an aged care centre; boutique hotel; commercial / retail; and cafés / restaurant / bars.

This transportation assessment forms part of the resource consent for the redevelopment of the site. It has been progressed with due regard to the policies and standards contained within the District Plan and NZS 4404:2010 'Land Development and Subdivision Infrastructure' ("NZS 4404:2010").

The Transportation Assessment Report has been prepared to assess and report on the transportation features and effects of the proposal, as follows:

- Section 2 Existing Transport Network Conditions – describes the site location in the context of the road and public transport networks, including traffic flows;
- Section 3 Development Proposal – details the proposal;
- Section 4 Site Access – describes the site access and internal roading arrangements;
- Section 5 Parking – evaluates the proposed parking arrangements, including in relation to the District Plan requirements;
- Section 6 Trip Generation – identifies the likely trip generation that would be expected at the site;
- Section 7 Traffic Effects Assessment – examines the effects of the development on the local transport network;
- Section 8 District Plan – summarises the relevant District Plan rules.

In summary, this report concludes that the development of this site to provide 273 residential dwellings, 120 aged care units and hospitality / commercial / retail activities, with associated vehicular and pedestrian facilities and connections, can be supported from a transportation perspective. It is noted that the provision of a ferry service between the development site and Queens Wharf, as proposed, will lead to a reduction in development site traffic in the form of less private vehicle trips, both for commuters and recreational visitors alike.

2. Existing Transport Network Conditions

2.1 Site Location

The proposal site comprises the former Shelly Bay Air Force Base, which is located on the western shore of the Miramar Peninsula, in Wellington. The site is located along Shelly Road.

Figure 1 shows the location of the site in the context of the surrounding road network, as defined by the District Plan. Land use in the vicinity of the site is zoned business.

2.2 Local Road Network

2.2.1 Road Hierarchy

The local road network in the immediate vicinity of the site includes Cobham Drive and Miramar Avenue. To the west, Cobham Drive is classified as an Arterial Road (and as State Highway 1), and Miramar Avenue is classified as a Principal Street. Towards the east of the site, Miramar Avenue links to various Collectors to distribute traffic towards Miramar.

The proposed Shelly Bay Development will utilise these needs as the main routes to access to and from the central city and beyond.

Shelly Bay Road itself is classified as a Local Road.

2.2.2 Access Roads

The primary access is from the South via Shelly Bay Road, which connects to the wider road network via Miramar Avenue and Cobham Drive.

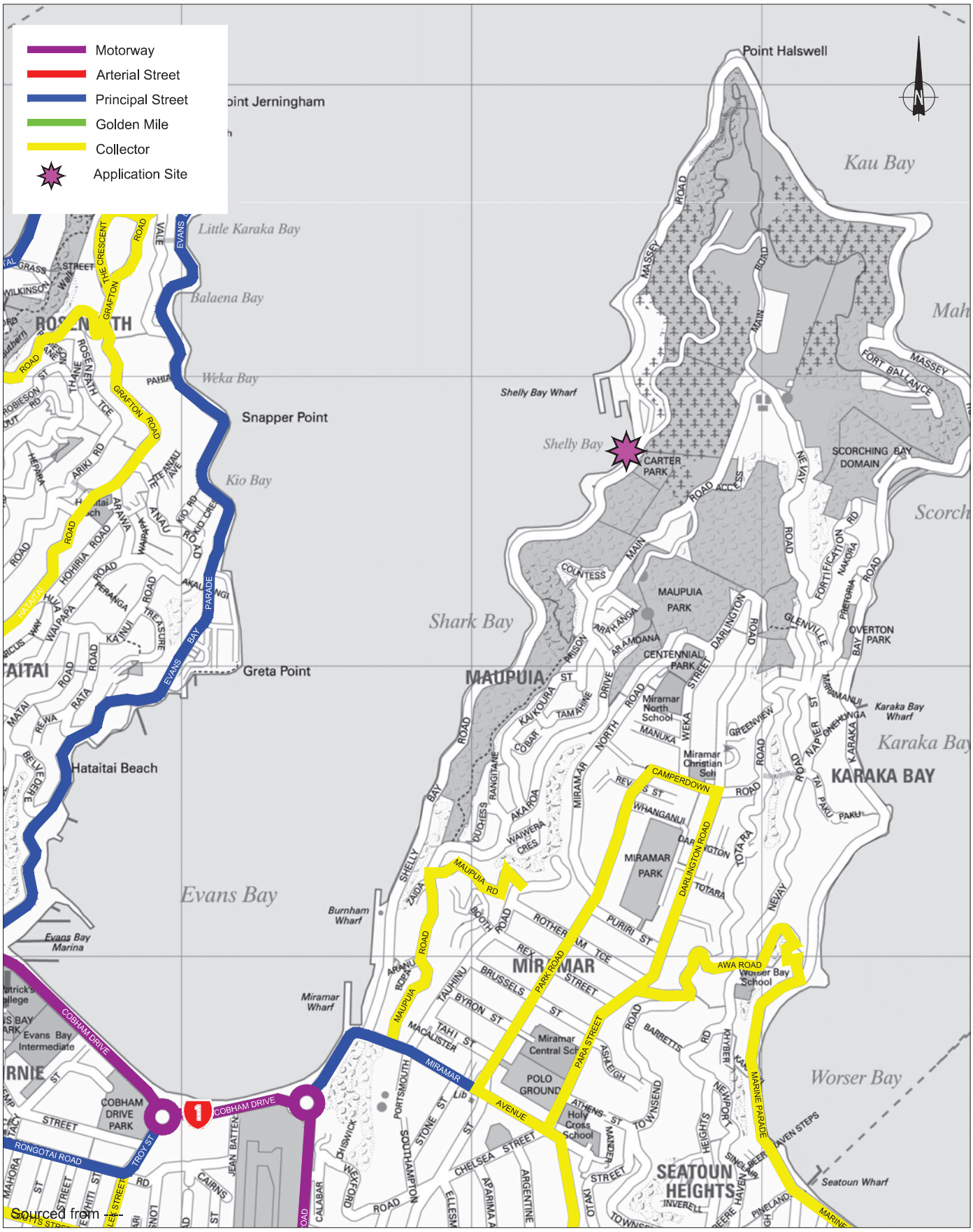
Access from the North is via Massey Road from Scorching Bay.

Possible pedestrian and bicycle access could be gained via Main Rd from Mount Crawford (Wellington Prison). No public vehicular access to Shelly Bay is permitted via this route at present.

2.3 Existing Traffic Patterns

On average Shelly Bay Road carries about 1,200vpd, but it does not have characteristic peak hour flows as a result of the current land use and occupation. At present it performs more as a recreational road with recreational or 'scenic drive' functions.

The current daily peak hour is between 1-2pm as indicated on **Figure 2**.



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Shelly Bay, Mixed Use Development, Miramar, Wellington

Road Hierarchy

TDG

1

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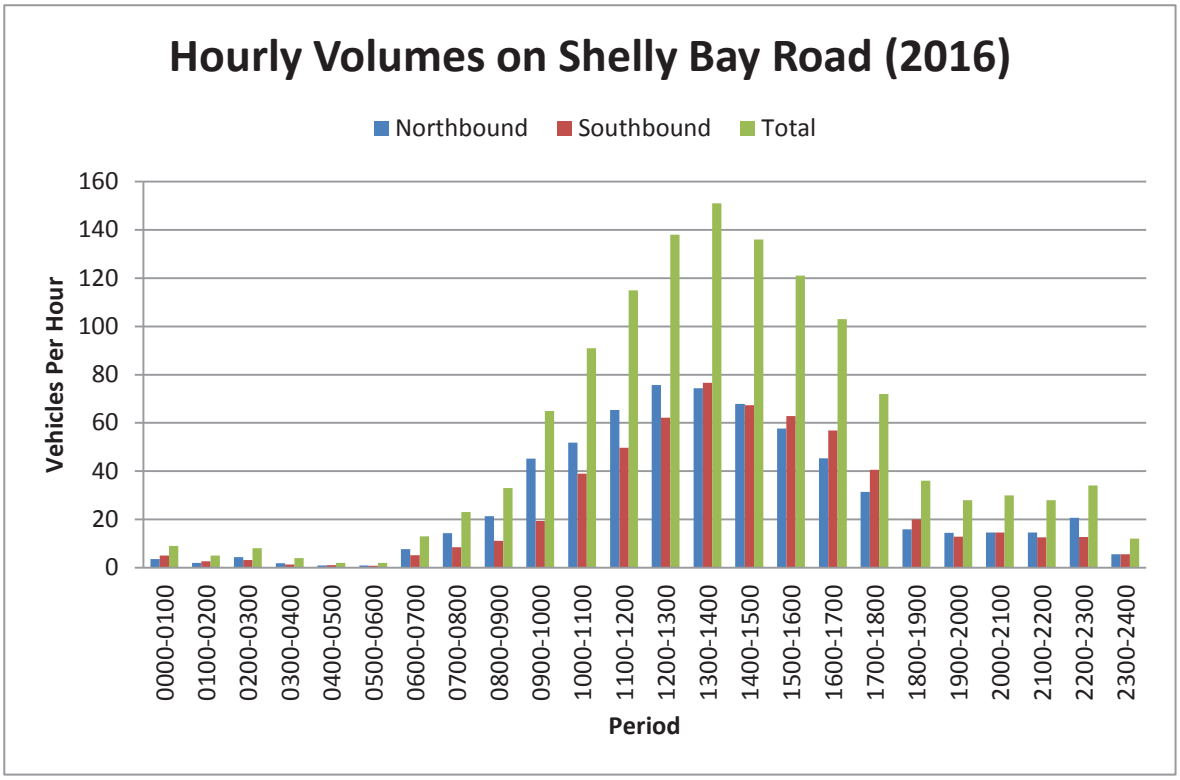

Figure 2: Shelly Bay Hourly Vehicle Volumes (2016)

These existing small hourly volumes reflect the limited access function currently served by Shelly Bay Road. In this way, the road has spare capacity to accommodate additional traffic.

2.4 Road Safety Record

The accident record for the roads surrounding the site has been obtained from the industry-available Crash Analysis System (CAS), for the latest complete five year period from 2011-2015 and the latest of 2016. The accident record is summarised in **Table 1** and in **Figure 3**.

Significantly, none of the recorded incidents within the search area, across the five year period, included any crashes that resulted in serious injuries or fatalities. Overall, there is nothing to suggest from these records that there are inherent safety issues that require attention in respect of this current proposal.

	Location of Accident	Year	Cause	Severity	Weather
1	Cobham Dr / Miramar Ave	2015	Car changing lanes hit car in blind spot	Non Injury	Dry / Bright
2	Cobham Dr / Miramar Ave	2015	Truck hit rear end of car slowing down for traffic	Non Injury	Wet / Overcast
3	Cobham Dr / Miramar Ave	2012	Cyclist on Cobham Dr hit car merging from left	Minor Injury	Dry / Bright
4	Cobham Dr / Shelly Bay Rd	2010	Motor Cycle on Cobham hit U-tuning Car	Minor Injury	Heavy Rain / Overcast
5	Miramar Ave / Shelly Bay Rd	2010	Car on Miramar Ave hit rear end of SUV going slow	Non Injury	Dry / Dark
6	Miramar Ave / Shelly Bay Rd	2012	Van on Miramar Ave hit Motor Cycle turning right	Minor Injury	Dry / Bright
7	Shelly Bay Rd / Miramar Ave	2012	Car on Shelly Bay Rd hit rear end of car going slow	Non Injury	Dry / Bright
8	Shelly Bay Rd / Miramar Ave	2011	Cyclist on Shelly Bay Rd lost control when overtaken by a truck	Minor Injury	Dry / Overcast

Table 1: CAS Summary of Accident Record

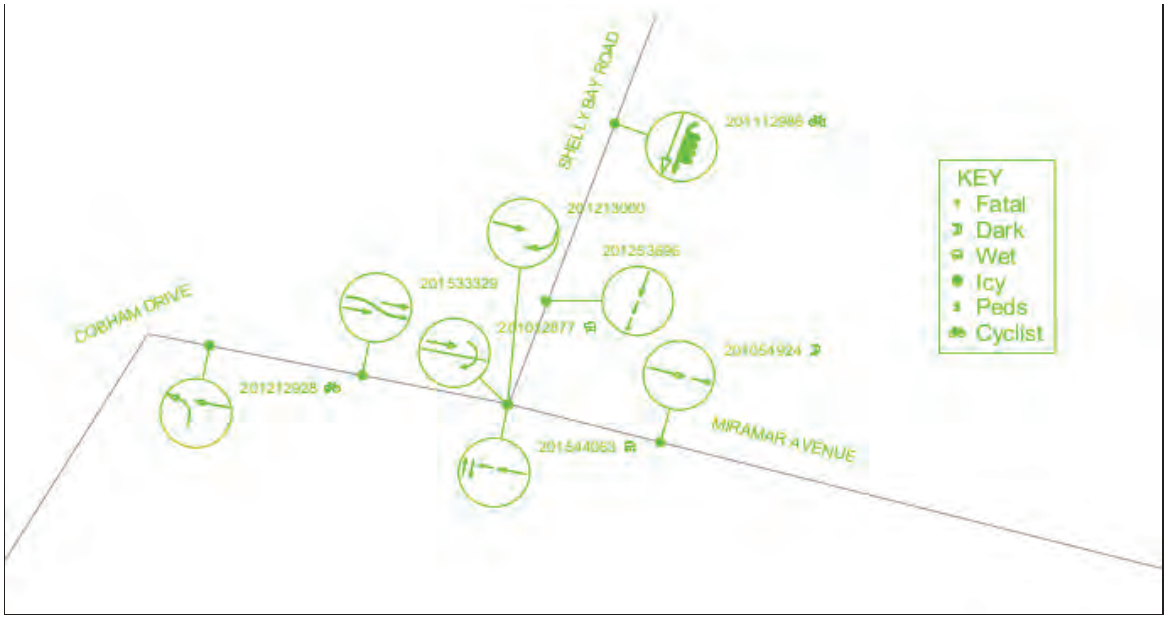

Figure 3: CAS Data between 2011 - 2016

2.5 Sustainable Transport Modes

Shelly Bay Road is currently used largely for recreational purposes, accommodating some cyclist and pedestrian demands, especially on weekends.

There are no dedicated pedestrian or bicycle facilities along Shelly Bay Road; instead the roadway is a shared between all modes of travel.

There are no public transport routes at present to Shelly Bay. The closest bus route is the #24 bus service that stops at Mt Crawford (Wellington Prison), on top of the escarpment. The Miramar Avenue 'Portsmouth Road stop' is approximately 2.6km from Shelly Bay, with access to the routes illustrated diagrammatically within **Figure 4**. A summary of the available bus connections in the vicinity of the site is provided within **Table 2**.

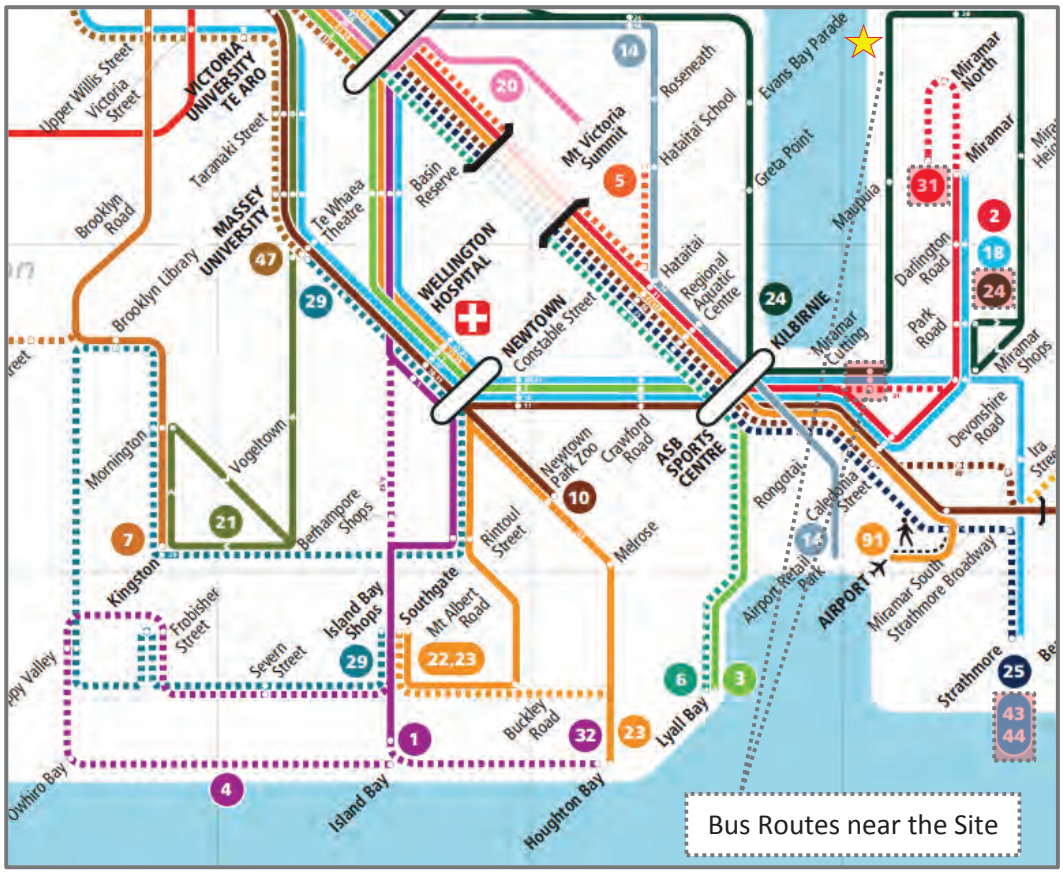

Figure 4: Wellington Bus Network

Bus Service	Bus Stop	Route	Frequency
24	Mt Crawford	Miramar Heights – Wellington	60 minutes (Mon-Fri) 30 minutes at peak times
31	Miramar Ave at Portsmouth Rd	Miramar North Express – Wellington	10-20 Minutes (Mon-Fri) at morning peak times
43	Miramar Ave at Portsmouth Rd	Strathmore – Wellington - Khandallah	60 minutes (Mon-Fri) 10-20 minutes at afternoon peak times
44	Miramar Ave at Portsmouth Rd	Strathmore – Wellington - Khandallah	60 minutes (Mon-Fri)

Table 2: Bus Services Accessible from the Site

At present then, direct accessibility by bus is limited, although the scale of the proposed development may warrant a review of the existing services.

2.6 Existing Commuting Travel Patterns

Data from the latest 2013 Census provides information on the travel to work mode share by census area. The census data for the 20-meshblocks in Miramar, which is in close proximity to the site, identifies a resident population of some 1,000 people that were over the age of 15 and employed on census day. The mode share of persons that travelled to work on census day is set out in **Table 3**.

Travel Mode for Commute to Work	Percentage
Drove a Vehicle	51%
Motorcycle / Scooter	2%
Passenger in a Vehicle	4%
Bus	16%
Walk or Jogged	8%
Worked at Home / Other	19%

Table 3: Existing Commuting Travel Patterns (2013 Census)

As shown, some 16% of commuting trips were made by bus, reflecting the high frequency and convenient service nearby. A further 8% of existing residents walk, cycle, or jog to work, whilst some 2% used a motorcycle as a means of travelling to work.

These existing commuter travel mode patterns of the surrounding residential areas demonstrate that it can be reasonably expected that a number of residents within the proposed development would undertake to commute by bus, if a convenient service was available. Otherwise, the development would generate more car trips and it is on this conservative basis that the subsequent traffic analyses have been made.

3. Development Proposal

3.1 Development Description

The site is zoned 'Business 1' within the District Plan, reflecting the prior use as an Air Force Base, as established back in the 1940's. Since the NZ Defence Force sold the land in 2009, the site has retained some residential use as well as accommodating various commercial activities, within existing buildings around the bay.

The Masterplan for the site provides for a mixed use development, including: residential, commercial and retail activities, within either renovated existing structures or new build development.

An overview of the particular activities proposed for the site is given in **Table 4** below.

Activity	GFA (m^2)	Residential Units
Residential Dwellings	-	273
Retirement Complex		
Self-contained units/Apartments	-	65
1-bed serviced apt	-	20
Care Suites	-	35
Boutique Hotel (50-bedrooms)	1,262	
Mixed use Commercial/Retail (low density)	2,180	
Hospitality (Café/restaurant/bars)	1,065	
Community (Public toilets/community Hall)	400	
Total	**4,907**	**393**

Table 4: Proposed Masterplan Development Activities

As shown, the predominant land use will be residential dwellings, comprising a range of development forms including stand-alone dwellings; terraced houses; apartment buildings; and retirement units / aged care facilities. A range of supporting and complementary activities are also proposed, including cafes; restaurants; a boutique hotel; commercial and retail space; and some community amenities.

Access and parking has been designed with consideration to policy standards within the District Plan and NZS4404 2010 'Land Development and Subdivision Infrastructure' ("NZS 4404"), as detailed below.

3.2 Access and Layout

The masterplan design guide includes details of the roading network proposed to serve the development. Each of the roading elements are described in detail below.

3.2.1 Shelly Bay Road

It is proposed that the current Shelly Bay Road alignment will be amended in the area of the development; to both facilitate the proposed development layout, and provide for improved vehicle tracking along the bay, as compared to what currently exists. This will require appropriate land swap negotiations with Council, particularly with regard to vesting the completed carriageway and road reserve following construction.

The proposed new road alignment will accommodate traffic within a 6.0m carriageway (with localised widening at bends), with 2 x 3.0m traffic lanes. The cross section (from east to west) generally provides for:

- 2.0m footpath;
- 3.0m southbound traffic lane;
- 3.0m northbound traffic lane;
- Minimum 3.5m shared pedestrian / cycle lane.

With respect to the adopted traffic lane widths of 3.0m, NZS4404 2010 provides guidance on lane dimensions in accordance with the adjacent land use activity, traffic volumes, and speed environment. Of note is the difference between two-way carriageway widths of 5.5-5.7m, and 8.4m (i.e. 2 lanes at 4.2m). The distinction between these two cross sections is linked to the provision (or not) for cyclists to be accommodated alongside vehicles within the traffic lane, which in turn is related to the target operating speed.

With the dedicated off-street cycle path provided on the seaward side of the development, the traffic lanes within the main carriageway will not need to accommodate cyclists alongside vehicles. Furthermore, whilst the current legal speed limit through the development site on Shelly Bay Road is 40km/h, the proposed active speed management measures of a narrower carriageway and raised pedestrian platforms, along with proposed 'slow zone' signage, mean the operational speed will be closer to 30km/h. Accordingly, if cyclists do choose to use the traffic lanes, they will more likely be recreational road cyclists, who will generally be travelling at similar speeds to vehicles, and therefore will be able to safely share the road space.

It is considered that in providing a wider carriageway width (to facilitate shared cycle manoeuvres within the carriageway rather than within an off-street provision) this would compromise the intended 'slow speed' environment of the design sought within the village. By maintaining a tighter carriageway width, and facilitating cyclists off-street, a better and more desirable outcome for vehicles, pedestrians and cyclists can be achieved.

In areas where 90-degree kerbside parking is provided adjacent to the 6m wide carriageway, a parking envelope width of 5.8m, measured from the edge of the northbound traffic lane to the kerb, will be provided. In taking account of the 0.6m overhang for vehicles parking at the kerb, the available 5.8m parking envelope will usefully provide a 'buffer strip' for vehicles manoeuvring between carparks and the traffic lane, similar to the existing arrangements on Oriental Parade.

The central section of Shelly Bay Road through the heart of the development has been designed as a shared space environment. Whilst there will still be nib kerbs delineating the footpaths from the carriageway in this area, surface treatment and two raised pedestrian

tables will serve to reinforce the presence of pedestrians, both crossing the traffic lanes and within the wharf area itself.

At the south end of the development, the cross sections have been designed to reflect the smaller pedestrian demand associated with the adjacent lower density townhouse form, with a 1.5m footpath on the landside of the carriageway, and a 3.0m shared cycle and pedestrian path that extends to the south point carpark on the seaward side.

3.2.2 Development 'Laneways'

Access to the site activities on the eastern of Shelly Bay Road, will be provided via a number of 'laneways'. These laneways have been designed to a width of some 7m, to enable two-way traffic flow alongside pedestrian movements, and to provide for access and turning to/from the 'parking mews', which run through the development parallel to Shelly Bay Road. These laneways have been designed to accommodate access by a fire appliance and equivalent trucks, including rubbish trucks.

With respect to sightline visibilities at these laneway intersections on Shelly Bay Road, the WCC Code of Practice for Land Development provides sight distance requirements based on speed; 40m for 50km/h roads and 20m for 30km/h roads. As described above, the operating speed for the development will be closer to 30km/h, and whilst specific sightlines at respective individual accesses cannot at this stage be confirmed, given the high level masterplan layout, there is no reason why a compliant arrangement cannot be achieved during the detailed design.

In addition, the detailed design of these laneways will need to be cognisant of achieving adequate pedestrian splays at the exit points to Shelly Bay Road, in accordance with the industry standards set down in AS/NZS2890.1 'Part 1: Off-street Car Parking' ("AS/NZS 2890.1") Figure 3.3. That is, they will be designed to meet the necessary pedestrian visibility splays requiring a minimum 2m line of sight either side of the driveway, at a distance of 2.5m back from the property boundary. It may be necessary to incorporate signage and textural surface changes on the laneway approaches to Shelly Bay Road, to manage exiting vehicle speeds ahead of the footpath edge, in order to prompt drivers of the potential presence of pedestrians.

It is intended that whilst these laneways would remain under the management of a residents association (i.e. not vested to Council), they would provide for public access (pedestrian and cycle) to the reserve land at the rear of the development.

3.2.3 Development 'Parking Mews'

Access between laneways will be achieved via internal 'parking mews', which provide internal circulation between adjacent blocks as well as on-site parking for residents. These parking mews have been designed to an overall width of 12m, comprising 90-degree parking spaces alongside a generally 6.6m aisle width.

The speed environment on these parking mews is intended to be low, and in a similar manner to the laneways will be based on a shared space design. Planting and landscaping will be used to reinforce the requirement for vehicles to negotiate these routes slowly, with

due regard for potential pedestrian presence, particularly at the points of intersect with the laneways.

These parking mews have been designed to accommodate emergency vehicle access, as well as occasional truck movements (such as for rubbish collections) that may need to circulate between adjacent laneways from time to time.

3.2.4 Access by Ferry

A ferry service connecting the development site with Queens Wharf will operate from the existing Shelly Bay Wharf, providing regular return journeys for residents (including commuter trips), visitors and recreational users. In the manner of the established Eastbourne ferry, this service will have the benefit of reducing reliance on private vehicle trips, and improving accessibility options for the development.

4. Site Access

There are two existing vehicle accesses to the site, via Shelly Bay Road and Massey Road. Massey Road will stay mainly a recreational route, so the focus of access to the Shelly Bay development will be via Shelly Bay Road.

4.1 Shelly Bay Road

The primary access is from the South via Shelly Bay Road which connects to the wider road network via Miramar Avenue. This t-intersection is give-way controlled, with priority given to vehicles on Miramar Avenue. North of this intersection, the current carriageway width on Shelly Bay Road is around 5.5m (edgeline to edgeline), with narrow shoulders. The first 500m has a footpath on the western side. The speed limit along Shelly Bay Road is 40km/h.

4.2 Public Transport

The Shelly Bay area is not directly served by bus at present. The closest bus route is the service #24 (Miramar Heights), which follows an Akaroa Drive / Main Road / Nevay Road route above the site, and operates at a low frequencies (every 60 minutes outside of the peak) on weekday daylight hours only. This route will be replaced by a new bus route in 2018, which will operate at similar frequencies to present, but will also run in the evenings and weekends.

Bus stops for the above route are located near 162 Akaroa Drive, approximately 1.6 km by foot from the site, and also at the intersection of Main Road and Nevay Road, some 2.0 km by foot from the site. The link between the site and this bus route would be significantly improved by the addition of a more-direct pedestrian connection to existing or new bus stops on Main Road that would be some 400m from the site.

In the longer term, another option may be to extend the #30 (Scorching Bay) route, which currently travels via Seatoun and Karaka Bay Road to a Massey Road terminus in Scorching Bay, and operates at peak times only. This route will be replaced by a new bus route in 2018, which will operate at slightly lower frequencies to present, but it may be able to be relatively easily extended around the peninsula by approximately 3.5 km to Shelly Bay, providing a direct (peak only) bus link to the site. Any such extension would be dependent on GWRC planning and funding processes. However, it may be prudent to make provision for a pair of bus stops at the site at the construction stage to facilitate this option in the future.

5. Parking

The proposal plans have been designed to ensure that adequate on-site parking is provided to fully meet the anticipated parking demand generated by the site's various activities. Accordingly, an assessment of the parking provision requirements under the District Plan, along with a demand based assessment using industry standards and data collected by TDG for like activities, is provided in detail below.

5.1 Parking Requirements

In consulting industry standard data sources with respect to typical parking demands generated for the range of land use activities included under the proposed masterplan, reference has been made to the NZ Transport Agency Research Report 453 'Trips and Parking Related to Land Use 2011' ("RR 453"), and the RTA Guide to 'Traffic Generating Developments 2002' ("RTA Guide"). In addition, surveyed parking demand data recorded by TDG at similar established activities has further supported these industry standard figures.

The parking requirements for the various activities included under the proposal plans, is set out in **Table 5**.

Activity	Proposed Unit	Industry Rates	Industry Provision
Residential[1]	273	1 per unit	273
Retirement Units[2]			
2-3 bed unit	65	1 per unit	65
1-bed serviced apt	20	0.3 - 1 per unit	7 - 20
Care Suites	35	2 parks per 3 staff	6
Visitors	(120 units total)	1 per 5 units	24
Hotel[3]	50-bedroom	1 per 5 rooms	10
Commercial[4]	1,540m² GFA	1.25-2.0 spaces per 100m² GFA (pro-rata for low density)	20 - 30
Retail[4]	640m² GFA	3.5 spaces per 100m² GFA (pro-rata for low density)	39
Hospitality[4]	100 seats	0.6 spaces per seat (Restaurant activity)	60
Overall Total			**504 - 527**

Table 5: Recommended Parking Provision Requirements

In assessing the peak parking demands generated by the individual component activities included in a mixed use development of this size, typical industry standards suggest a provision of between 504 and 527 parking spaces.

[1] Wellington City District Plan Permitted Activity requirement (in Residential Zones)
[2] TDG surveyed rates at retirement complexes in the Wellington Region
[3] RTA Guide
[4] RR 453

5.2 Proposed Parking Provision

The development masterplan makes provision for parking in various forms, from dedicated garages, parking garages with stackers, on street, to public car parks at either end of the Shelly Bay Development. The provided parking is as indicated on **Table 6**.

Component		Spaces Provided
Residential	In garages	165
	Uncovered	87
Aged Care	Uncovered	51
Hotel	Uncovered	8
Visitor / Public	Uncovered	128
Car Sacker		60
	Total	499

Table 6: Proposed Parking Provision and Allocation

Although the proposed parking provision is marginally less than the minimum industry suggested parking requirements, it is assessed that due to the mixed use nature of the development, the commercial; retail; restaurant / café and recreational demand will not occur concurrently / overlap, and therefore the provided parking capacity can be judged as sufficient, in the manner commensurate with the truly mixed used nature of the development.

6. Trip Generation

Trip generation rates for each of the site's component activities included within the proposal are set out below in turn, and have been derived from a combination of industry standards and survey data collected by TDG for like activities.

6.1 Residential Units

Surveys of households reported within RR 453 indicate daily trip generation rates for 'Outer Suburban' residential activities typically average around 8.2vpd per dwelling, with associated peak hour movements of 0.9vph. For comparison, the RTA Guide provides similar peak hour generation rates for residential 'Dwelling Houses' of 0.85vph per unit.

Even though the census data for surrounding residential areas indicate 24% public transport and non-motorised means of travel for commuting trips, the current lack of sustainable transport infrastructure currently serving Shelly Bay is such that the generation of trips have been assessed as per RR 453. That is, peak hour and daily traffic generation rates of 0.9vph and 8.2vpd per unit, respectively, have been applied to the proposed 273 dwellings, with the resultant traffic generation summarised in **Table 7**.

	Arrivals	Departures	Total
AM Peak*	49	197	246
PM Peak**	197	49	246
Daily	1119	1119	2,238

* AM Peak: 80% departures, 20% arrivals
** PM Peak: 80% arrivals, 20% departures

Table 7: Traffic Generation (273 dwellings)

Accordingly, around 240-250 vehicle movements are expected to be generated by the residential components of the proposed development during the morning and evening peak hours, which translates to a daily traffic generation of some 2,200 vehicle movements to / from the adjacent road network.

6.2 Aged Care

Data informing the RR 453 provides peak hour trip rates for a Retirement Complex at around 0.3vph per unit in the peak hours and 2.6vpd for the full day. It is envisaged that the proposed Aged Care facility of 120 units will follow a similar trend. That is, peak hour and daily traffic generation rates of 0.3vph and 2.6 vpd per unit, respectively, have been applied to the proposed 120 units, with the resultant traffic generation summarised in **Table 8**.

	Arrivals	Departures	Total
AM Peak*	29	7	36
PM Peak**	7	29	36
Daily	156	156	312

* AM Peak: 20% departures, 80% arrivals
** PM Peak: 20% arrivals, 80% departures

Table 8: Traffic Generation (120 retirement units)

6.3 Boutique Hotel

Data informing the RR 453 provides peak hour trip rates for a hotel at around 1.2vph per room in the peak hours, and 6.4vpd per room for the full day. It is noted that these industry standards typically relate to large centrally located hotels that often include on-site conference facilities or meeting rooms for hire, which themselves generate a proportion of vehicle trips to and from the site that are unrelated to the hotel accommodation. The proposed boutique hotel does not include any such conference facilities, with associated trip generation therefore comprising hotel staff and guest movements only. Accordingly, whilst the peak hour trip rate of 1.2vph is expected to reflect the likely trip generation patterns in this case, the daily rate will be much lower; a revised (50%) daily trip rate per room of 3.2vpd as therefore been adopted.

Applying these rates to the proposed 50 rooms, gives the resultant traffic generation as summarised in **Table 9**.

	Arrivals	Departures	Total
AM Peak*	24	36	60
PM Peak**	36	24	60
Daily	80	80	160

* AM Peak: 60% departures, 40% arrivals
** PM Peak: 60% arrivals, 40% departures

Table 9: Traffic Generation (hotel)

6.4 Commercial / Retail

It is noted that the type of commercial and retail activity proposed for the development is of a low density type, similar to that which exists in part at the site already, comprising artists' studios with associated galleries, providing the public with an opportunity to view and purchase the work. Such activities therefore will not generate the quantum of traffic associated with higher density office space more traditionally found within central or fringe areas of the city.

The RTA Guide notes that commercial activities typically generate a range of trip generation rates, depending on number of staff on-site, and provides guidance for peak hour trip rates at 2vph per 100m² GFA, with corresponding daily traffic generation of 10vpd per 100m²GFA.

For the purposes of determining the overall traffic generated by the proposed commercial and associated retail activities, these peak hour and daily traffic generation rates have been adopted and applied to the combined floor area of 2,180m^2, with the resultant traffic generation summarised in **Table 10**, noting that these forecasts are considered conservative.

	Arrivals	Departures	Total
AM Peak*	31	13	44
PM Peak**	13	31	44
Daily	109	109	218

* AM Peak: 30% departures, 70% arrivals
** PM Peak: 30% arrivals, 70% departures

Table 10: Traffic Generation (commercial / retail)

6.5 Restaurant / Café

Data informing the RR 453 provides peak hour trip rates for a Restaurant at around 0.5vph per seat in the peak hours and 6.1vpd per seat for the full day. Applying these rates to the proposed 1065m^2, which is estimated to be in the order of 100 seats, gives the resultant traffic generation summarised in **Table 11**.

	Arrivals	Departures	Total
AM Peak*	35	15	50
PM Peak**	15	35	50
Daily	305	305	610

* AM Peak: 30% departures, 70% arrivals
** PM Peak: 30% arrivals, 70% departures

Table 11: Traffic Generation (Restaurant)

6.6 Total Site Traffic Generation

Drawing from the above identified rates, **Table 12** below sets out the trip generation for the sites various activities included under the proposal plans.

	AM Peak Hour	PM Peak Hour	Daily
Residential	246	246	2,238
Aged Care	36	36	312
Hotel	60	60	160
Commercial / Retail	44	44	218
Restaurant / Café	50	50	610
Total	436	436	3,538

Table 12: Total Site Traffic Generation

It is noted that the assessment above has not taken into consideration the provision of a ferry service to and from Queens Wharf, which would provide for both commuters at the development and also a portion of the recreational trips to the site. This will have the result of removing a proportion of the associated vehicle trips set out above, such that vehicle movements will reduce commensurate to the volume of people utilising the convenience of the ferry service, which will at peak times in particular provide quicker access to / from the heart of Wellington city.

6.7 Development Traffic Distribution

It is anticipated that the majority of peak hour traffic to and from the site will route towards Wellington city centre via Miramar Avenue. Due to the proximity of local amenities, schools and possible work opportunities in Miramar, there will be a portion of the development generated trips that will travel east along Miramar Avenue. The existing traffic along Miramar Avenue has a 60:40 split with 60% travelling towards Wellington city centre and 40% travelling towards Miramar in the AM peak, with the reverse in the PM peak.

In order to analyse the performance of the Shelly Bay Road and Miramar Avenue intersection, the development traffic flows have been assigned to the road network according to the peak hour directional split.

7. Traffic Effect Assessment

This chapter sets out the adopted approach for assessing the impact of the development site traffic on the adjacent road network in terms of performance, at the key intersection of Shelly Bay Road and Miramar Avenue.

7.1 Intersection Performance

For the purposes of assessing performance, the intersection has been modelled using the industry-recognised modelling package SIDRA, using the latest version of the software (version 6.1).

Accordingly, the priority T- intersection of Shelly Bay Road and Miramar Road has been modelled using both the existing traffic flows (as recorded in May 2016) for the Weekday AM and PM peak hours. The predicted increase in traffic flow was added to this model and compared based on the Level of Service ("LoS") for each movement, by approach. The resulting LoS for each movement is set out in **Table 13** below.

APPROACH	MOVEMENT	EXISTING		WITH DEVELOPMENT TRAFFIC	
		LoS	Ave Delay (secs)	LoS	Ave Delay (secs)
AM Peak Hour					
Cobham Drive	Through	A	0	A	0
	Left	A	5.8	A	5.6
Shelly Bay Road	Left	C	15.0	D	28.3
	Right	B	14.9	D	28.3
Miramar East	Through	A	0	A	0
	Right	A	0.9	B	10.4
All Vehicles		N/A	0.3	N/A	3.9
PM Peak Hour					
Cobham Drive	Through	A	0	A	0.2
	Left	A	5.6	A	5.6
Shelly Bay Road	Left	C	16.4	D	34.0
	Right	C	16.2	D	33.9
Miramar East	Through	A	0	A	0
	Right	C	15.6	D	33.3
All Vehicles		N/A	0.7	N/A	5.1

Table 13: LOS by Approach

The intersection is currently shown to be operating at LoS C on the Shelly Bay Road approach movements, and for the right turn in movement from Miramar Avenue, during the PM peak hour.

With the addition of the forecast development traffic, the LoS for these movements from Shelly Bay Road, during both the AM and PM peaks, is reduced slightly to LoS D. The traffic turning out of Shelly Bay Road in the AM peak in each direction, experiences a LoS D. The LoS of the right turning traffic from Miramar has also dropped from LoS A to B. During the PM peak hour these three movements are operating at a LoS of D, with all other approaches remaining at LoS A.

The added delays occurring at the t-intersection as a result of the proposed development site trips are not surprising, given the level of added traffic, but are assessed to remain within acceptable peak performance standards of LoS D. Even then, and as set out next, intersection improvements that provide mitigation for the increased turning movements are suggested.

7.2 Intersection Upgrade

The Eastbound carriageway along Miramar Avenue is currently almost 6m wide in the area immediately beyond the Shelly Bay Road intersection. The Westbound carriageway is 3.5m wide, with a 3m right turn lane.

With minor road marking changes to the Shelly Bay Road and Miramar Avenue intersection, the right turn movement from Shelly Bay Road could be given additional width to 4.0m within the centre of Miramar Avenue, to facilitate more frequent two staged right turns. This would have a positive effect on the intersection performance, by shortening the gap acceptance of the right turning vehicles from Shelly Bay Road. **Figure 5** presents a possible indicative layout showing this revised arrangement.

0 20mm@A3

Monday, 22 August 2016 2:56:29 p.m.

REV	DATE	DRN	CHK	DESCRIPTION
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Shelly Bay, Mixed Use Development, Miramar, Wellington

Proposed Intersection Layout

DRAWN: AP	---	---
DATE: 22/08/16	STATUS: ---	
SCALE: 1:500@A3		
DWG NO:13725W1A		

TDG

5

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8. District Plan Provisions

As previously described, the development site is subject to a 'Business 1' zoning within the provisions of the District Plan. Rule 34.1.1 of the District Plan relates to the requirements for Permitted Activities in respect of parking, servicing and site access. The proposed masterplan design is assessed against each of the related Standards at Rule 34.6, in **Table 14** as follows:

Standards	Assessment of Compliance
	Vehicle Parking
34.6.1.6.1	*All parking shall be provided and maintained in accordance with sections 1, 2 and 5 of the joint Australian and New Zealand Standard 2890.1 – 2004, Parking Facilities, Part 1: Off-Street Car Parking* All on-site and on-street parking areas have been designed in accordance with these standards.
34.6.1.6.2	*Where carparking is located within a building, a minimum height clearance of no less than 2.2 metres is required* This minimum height clearance is able to be met by the areas of internal parking included within the proposal.
34.6.1.6.3	*The gradient for carparking circulation routes shall not be more than 1 in 8* No parking circulation routes have a gradient of more than 1 in 8.
	Servicing
34.6.1.6.5	*On each site in the Business Areas, at least one loading area shall be provided as follows:* *Where loading areas are located within a building, a minimum height clearance of 4.25 metres is required* No loading areas are proposed inside of any building. In some cases, adjacent lots may share access to a loading zone, in the manner of other established higher density activities around Wellington. Importantly, the site can provide adequate loading areas to accommodate the overall servicing demands generated by the proposed activities. The specific details of individual loading zone locations will be provided as part of the detailed design.
	For buildings serviced by lifts, all levels shall have access to a loading area by way of a lift No loading areas are proposed inside of any building.
	The loading area shall be located no further than 15 metres from a lift and there shall be access between them No loading areas are proposed inside of any building.
	Turning paths shall be based on the standard for a medium rigid truck as illustrated below (ref Pg. 34/31) No loading areas are proposed inside of any building.
34.6.1.6.6	*For loading areas located outdoors, the minimum width shall be 3 metres and the minimum length 9 metres* The masterplan incorporates adequate provision for such loading areas to be provided on-site, clear of the public street. In addition, the proposed access arrangements provide for a medium rigid truck to access the various activity components of the site, including adequate provision for these trucks to turn on-site and therefore to enter and exit the laneways in a forward direction, avoiding the need to reverse to and from the public street (Shelly Bay Road)

34.6.1.6.7	*For loading areas located within a building, the minimum width shall be 4 metres and the minimum length 9 metres* No loading areas are proposed inside of any building.
	Site Access for Vehicles
34.6.1.6.9	*Site access shall be provided and maintained in accordance with section 3 of the joint Australian and New Zealand Standard 2890.1 – 2004, Parking Facilities, Part 1: Off-Street Car Parking (or its successor)* As described in the preceding chapters, the site access arrangements have been designed to comply with these standards.
34.6.1.6.10	*Subject to standard 34.6.1.6.12 no vehicular access, shall be situated closer to an intersection than the following:* ▪ *Arterial and principal streets 20m* ▪ *Collector streets 15m* ▪ *Other streets 10m* The masterplan design shows the access arrangements proposed comply with these minimum separation distances
34.6.1.6.11	*No vehicle access is permitted to a site across any restricted road frontage identified on District Plan Maps 43-45* Shelly Bay Road is not identified as a restricted road frontage.
34.6.1.6.12	*There shall be a maximum of one vehicle access to any site except that sites with more than one frontage may have access across each frontage, unless once of the frontages is to a State Highway, in which case no access shall be to the State Highway* The masterplan scheme represents a subdivision which would split the land contained within the development site such that each title would not typically have more than one access
34.6.1.6.14	*The width of any vehicle crossing to a site shall not exceed 6 metres* The proposed laneways providing access to the landside development are shown as 7m wide. This has been done to enable truck manoeuvres to/from the site, and inbound/outbound vehicles to pass at the boundary. The minor deviation from the District plan standards will not have an impact on the safety of the proposed accessways, particularly given the required pedestrian visibility splays for vehicles exiting the site will be achieved (and confirmed during the detailed design).
34.6.1.6.15	*Where vehicular access can be provided from a service lane or right-of-way registered in favour of the site or other private road or private right-of-way, no vehicle access shall be from the street.* The shared access laneways will provide access to both the parking mews and the internal carparks, as well as for the occasional service vehicle visits (rubbish collection etc.). Access to development on the wharf will generally be achieved via identified vehicle routes through the shared space environment.
34.6.1.6.16	*All access to sites must be designed to permit free flow of traffic so that vehicles do not queue on the street.* The laneways arrangement, and associated connectivity within the site via the parking mews, will assist in distributing traffic across adjacent accessways, helping to mitigate any on-street queuing. It is noted that through traffic volumes on Shelly Bay Road are low, and therefore delays caused by traffic at the development driveways will be infrequent.

Table 14: Assessment against District Plan Standards

As shown, the masterplan scheme has been developed in a manner that is cognisant of the various rules and standards of the District Plan, in complying with the relevant design standards, or demonstrating that the intent of the standards can be met through the detailed design stages.

In addition to these standards set out above, Rule 34.1.1 states that a development is a Permitted Activity provided that it complies with the standards specified in section 34.6.1 (Activities), except:

"Any activity that provides more than 70 parking spaces"

Given the masterplan development provides more than 70 car parks, it requires assessment against the Discretionary Activity (Restricted) Rule 34.3.1, which states:

34.3.1 Any activity that provides more than 70 parking spaces is a Discretionary Activity (Restricted) in respect of:

34.3.1.1 the movement of vehicular traffic to and from the site

34.3.1.2 the impact on the roading network and the hierarchy of roads (see Map 33) from trip patterns, travel demand or vehicle use

34.3.1.3 the provision and location of facilities for multiple modes of transport

This report has included an assessment of the added traffic arising from the proposed development activities, including in respect of the capacity and operation of the Shelly Bay Road intersection with Miramar Avenue to the south. The analyses indicate that with proposed mitigation at the intersection, the development traffic can be accommodated without causing a significant reduction in level of service.

In respect of parking, and whilst the District Plan does not include a specific requirement for residential activities to provide parking within Business zone 1, the proposed development plans have been progressed on the basis of providing 1 space for every dwelling, in the manner of other suburban residential developments elsewhere in the city, and as required by a residential zoning.

In addition, the proposed public provision has been determined on the basis of industry guidance with respect to parking demand generation rates applied to the proposed activities, and assessed as adequately providing for development up to the proposed levels set out in Chapter 3.

In respect of access by other modes, it is noted that the development does not foreclose options for direct servicing by buses in the future, and indeed may facilitate a review by GWRC. Similarly, the development may prompt WCC to advance their earlier plans for a shared path along the seaward side of Shelly Bay Road, connecting between the existing path at Miramar Avenue and the new shared path to be introduced as part of the site works. Furthermore, and as described through earlier sections of this report, a ferry service connecting the development site with Queens Wharf in Wellington city, will usefully provide a convenient transport alternative to private vehicle trips, for residents and visitors alike.

9. Conclusion

In conclusion:

- the development access strategy has been developed in accordance with industry standards with regards to access and vehicle circulation routes;
- the increase in traffic won't adversely affect the capacity on Shelly Bay Road and Miramar Avenue intersection;
- possible solutions to public transport, and improved access by foot and by cycle could be investigated and would add to the accessibility of the proposed development;
- overall this assessment finds that the traffic-related impacts would be minor and that the level of use and activity can be properly and safely accommodated in this location.

Based on the assessment presented in this report, it is concluded that the proposed residential and retail, hospitality and commercial activities can be accommodated with little adverse effects on the surrounding transport network, and more particularly within a substantially improved Shelly Bay environment.

TDG

APPENDIX C SCHEMATIC ACCESS LAYOUTS – CALIBRE 709360 SHEETS C11 – C14

Merge with cycle lane proposal

2m wide path between low wall & kerb

>3m path trees - some & power poles

CONTINUATION BELOW

Cobham Dr

Miramar Ave

Shelly Bay Road

FOR REFER

3m wide footpath requiring significant sea-wall extension; potentially into MHWS

transition point

>3m path - some trees

≒1.5m wide path possible with limited physical works & vegetation impact

CONTINUATION ABOVE

CONTINUATION SHEET 2

Shelly Bay Road

FOR REFER

FOR REFER

N

SHEET LAYOUTS

PRELIMINARY ONLY
NOT FOR CONSTRUCTION

Revision		App	Date
Surveyed	-		-
Designed	SP		05/16
Drawn	JWM		05/16
Reviewed			
Approved			

Verify all dimensions on site before commencing work. Prioritise figured dimensions over scaling. Refer all discrepancies to Calibre.

Client

Absolutely Positively Wellington City Council

Me Heke Ki Pōneke

Project Title

SHELLY BAY
BULK INFRASTRUCTURE

Sheet Title

PLAN LAYOUT
SHEET 1

Level 13, Kordia House
109-125 Willis Street, Wellington 6011
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calibre CONSULTING

Scale (A3 Original) 1:1000

10 5 0 10 20 30 m

Project No	Sheet	Revision
709360	C11	-

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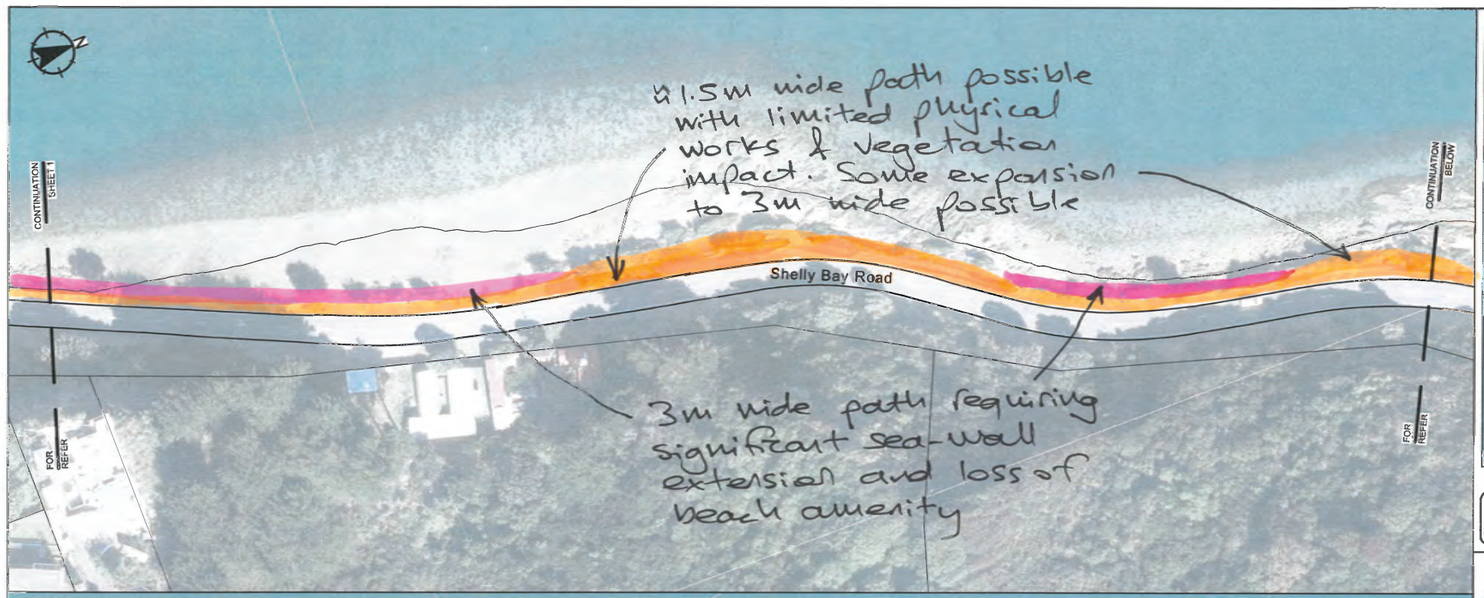

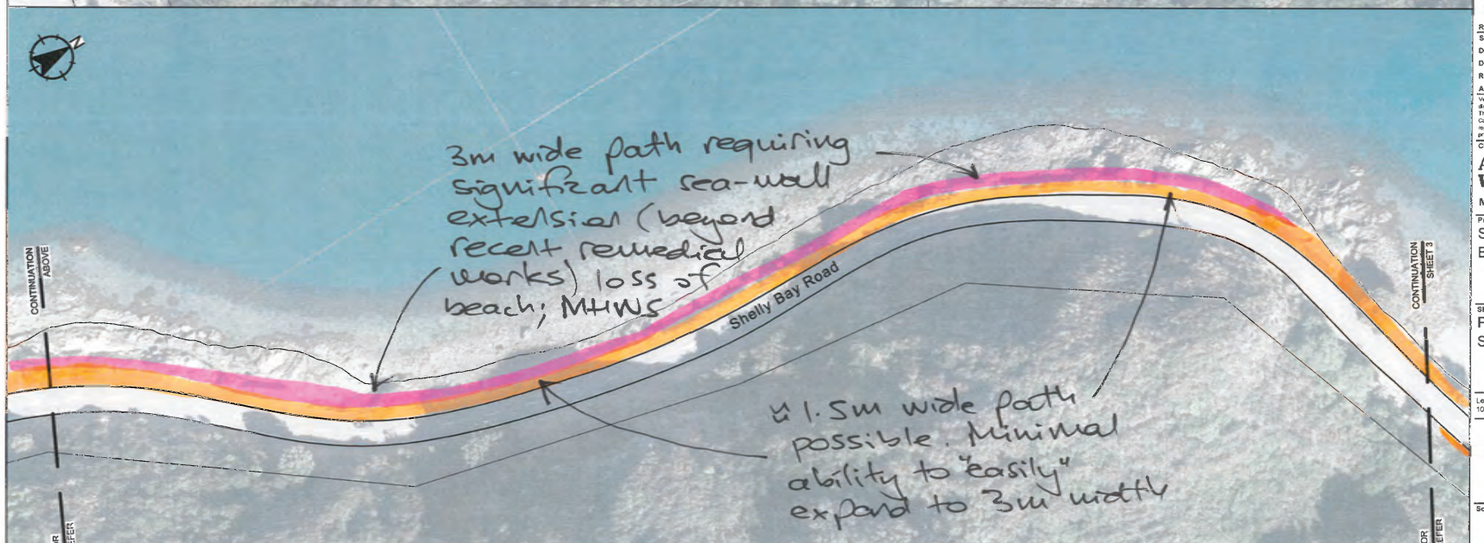

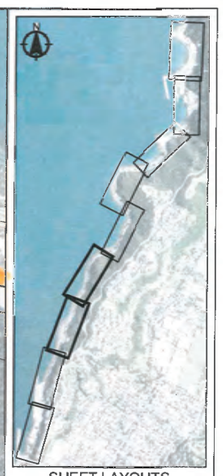

SHEET LAYOUTS

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Surveyed	-		
Designed	SP		05/16
Drawn	JWM		05/16
Reviewed			
Approved			

Verify all dimensions on site before commencing work. Provides figured dimensions over scaling. Refer all discrepancies to Calibre.

Client

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Me Heke Ki Pōneke

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SHELLY BAY
BULK INFRASTRUCTURE

Sheet Title
PLAN LAYOUT
SHEET 2

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Scale (A3 Original) 1:1000

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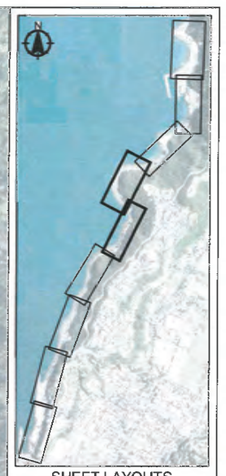

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Approved			

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Project Title

SHELLY BAY
BULK INFRASTRUCTURE

Sheet Title

PLAN LAYOUT
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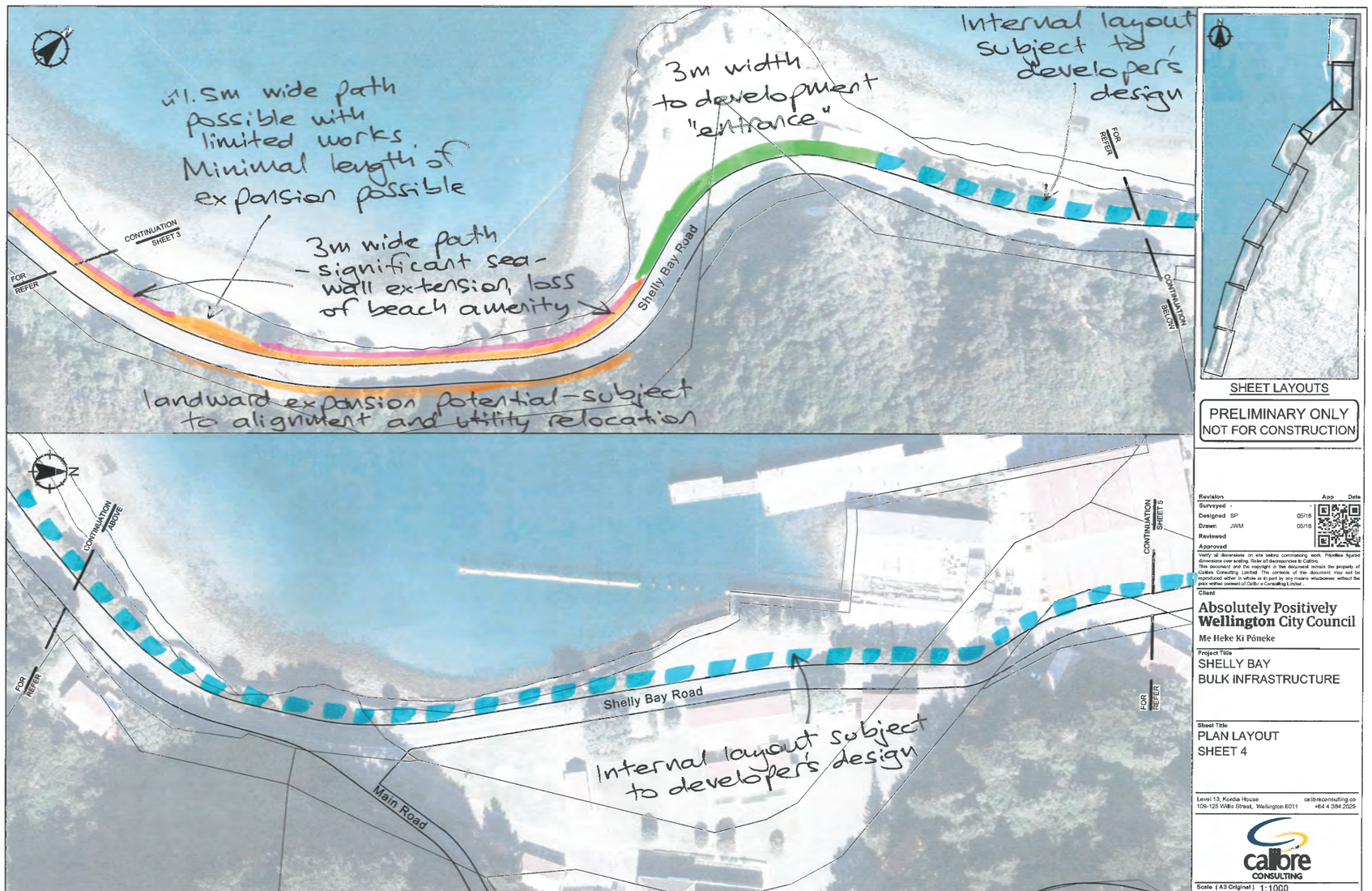

SHEET LAYOUTS

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