

Attachment 2: Integrated Transport Assessment

Gabites Block Plan Change Integrated Transport Assessment

PREPARED FOR: Maymorn Developments Ltd | October 2021

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1.0 INTRODUCTION

This Report has been prepared to provide an overview of the transportation investigations and traffic analyses undertaken to inform the proposed rezoning of land in Maymorn known as the Gabites Block (**Site**), from its current Rural Hill/Valley classification to one that enables low density residential and rural residential development.

The Site is included in the Council's current Plan Change 50 'Rural and Residential Chapter Review', which seeks to respond to the District's forecast population growth by enabling more land to be 'unlocked' for low density residential and rural residential development. This then signals an intent that low density residential and rural residential activity can be suitably achieved in this location.

A proposed Structure Plan has been developed for the Plan Change area which sets out a vision for the low density residential and rural residential subdivision development that will be enabled by the rezoning. It is envisaged that the Site could accommodate between 170-200 dwellings, which are likely to be developed over a number of years. Access to and from the development is proposed via Maymorn Road.

This report includes an assessment of the transport related elements of the proposed development, including details of the development plans, access to the wider network, expected traffic generation, and consideration of walking and cycling connectivity, including to the adjacent Maymorn rail station.

By way of summary, based on the assessment undertaken herewith it is concluded that the proposed rezoning to enable low density and rural residential activity in the manner envisaged by the proposed Structure Plan, will deliver an appropriate transportation outcome for development of the Site.

2.0 SITE CONTEXT AND LOCATION

The area of land subject to this Plan Change application is illustrated in **Figure 2-1**, and extends over two records of title (including Part section 299 Hutt District and Lot DP 356697). The Site currently comprises a mixture of pasture, scrub and wilding pines.

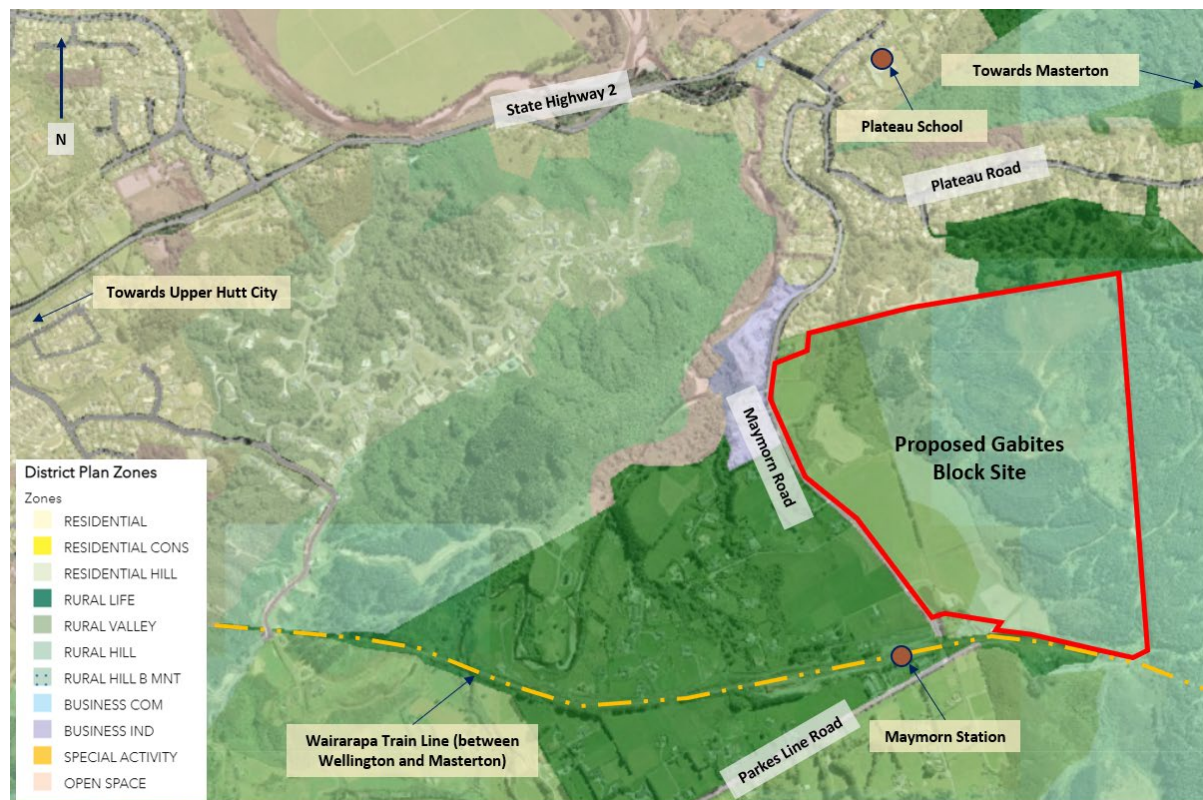


Figure 2-1: Site Location

The properties which form the Site, collectively referred to as the 'Gabites Block', encompass an area of approximately 75 hectares located at the eastern end of Maymorn, approximately 6km from Upper Hutt CBD. The Site is currently zoned a mixture of 'Rural Hill' and 'Rural Valley', as illustrated within the detail of Figure 2-1.

Land use in the vicinity includes the established residential area of Te Marua to the north, the Tunnel Gully recreational area to the east, rural residential and the Maymorn rail station to the south, and a mixture of rural residential and some industrial activity to the west.

3.0 EXISTING TRANSPORT ENVIRONMENT

Figure 3-1 shows the site location in the context of the surrounding road hierarchy, as defined by the Upper Hutt City Council District Plan (District Plan).

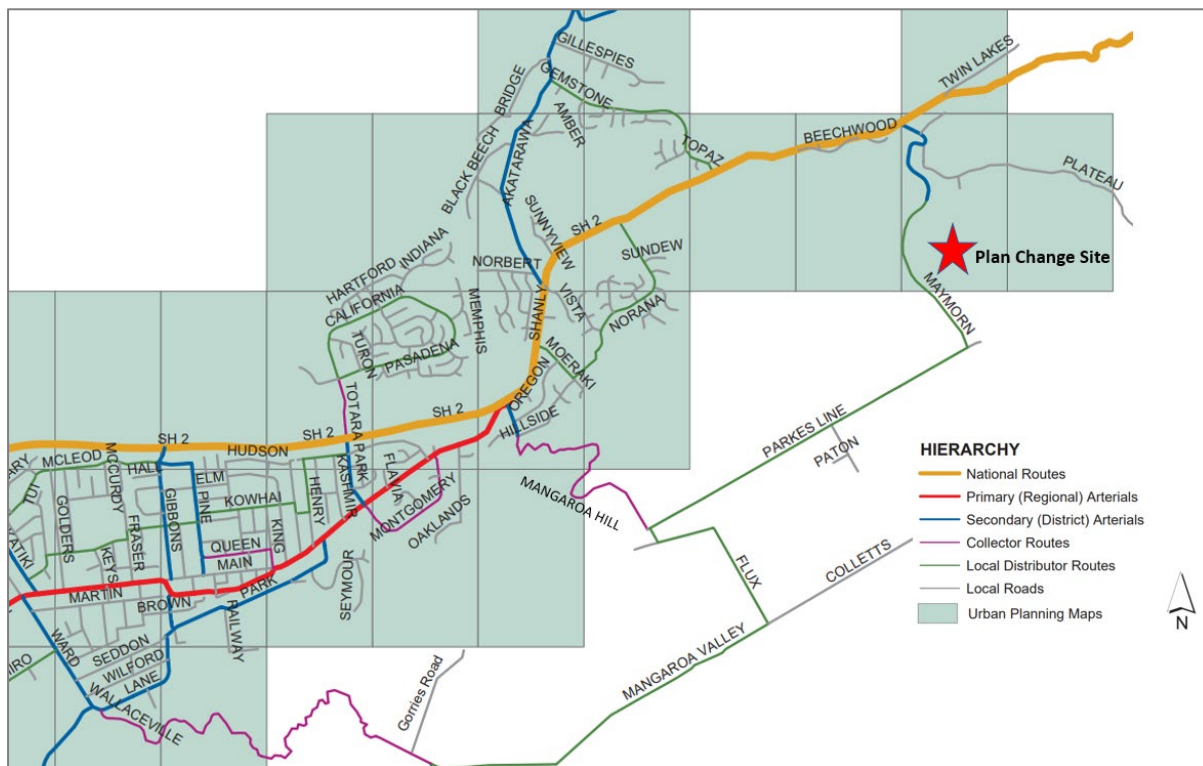


Figure 3-1: Road Hierarchy

As shown, the site has frontage to Maymorn Road, which forms its western boundary. Access to the primary road network is provided at State Highway 2 (SH2) to the north, via Plateau Road. Alternative routes to the central Upper Hutt area are provided by way of Parkes Line Road and Mangaroa Hill Road (which connects with the northern end of Fergusson Drive), or Mangaroa Valley Road (which connects with Ward Street at Wallaceville).

Maymorn Road adjacent to the site is classified as a Local Distributor Route (Rural) within the District Plan’s roading hierarchy, and as such has the predominant function of distributing traffic between local areas and forming a link between Collector and Local Roads. Maymorn Road is a two-lane road (single traffic lane in each direction) with a generally straight and level alignment across the southern section of the site frontage, before meandering through a number of bends as it runs north to join the existing Te Marua residential area. The carriageway typically comprises a 6.5m seal width and includes edge lines and a centreline, with narrow sealed shoulders and grass berms on either side of the road.

North of the Site, Maymorn Road becomes a Secondary Arterial, before intersecting with SH2 as Plateau Road. SH2 is classified as a National Route and provides a link to Wellington City to the south, and the Wairarapa region through the Remutaka hills to the north.

South of the site, Parkes Line Road and Mangaroa Road are also classified as Local Distributor Routes, and in turn connect with the Collector Routes of Mangaroa Hill Road and Wallaceville Road.

3.1 LOCAL TRAFFIC VOLUMES

Table 1 below summarises the latest available traffic count data recorded by Council for the roads in the vicinity of the site.

Table 1: Daily Traffic Volumes

ROAD	LOCATION	COUNT DATE	ADT ¹
Maymorn Road	(btwn Parkes Line and Plateau Rd)	2008	930
Plateau Road	(btwn SH2 and Molloys)	2021	2,700
Parkes Line Road	(btwn Maymorn Rd and Mangaroa Hill Rd)	2020	500
Mangaroa Hill Road	(btwn Mangaroa Hill Rd and Fergusson Dr)	2018	1,500
Mangaroa Valley Road	(btwn Flux Rd and Wallaceville Rd)	2020	600

As can be seen, traffic volumes on the road network adjacent to the Site are not large, with flows of 930 vehicles per day (**vpd**) on Maymorn Road sitting well within the typical volumes for a Local Distributor. Volumes across the wider network of Distributor and Local Routes to the south and west are also within the carriageway capacities for such roads.

To the north of the Site, count data indicates average weekday traffic volumes on Plateau Road just prior to the SH2 intersection of around 2,700 vehicles per day (**vpd**), with corresponding peak hour volumes of around 280 vehicles per hour (**vph**) and 240vph for the AM and PM peaks, respectively. These two-way volumes sit well within the capacity of the carriageway.

With the majority of traffic generated by any development within the proposed Plan Change Site likely to route via the primary road network of SH2 to the north, associated traffic volumes have been obtained from the Waka Kotahi NZ Transport Agency (**Waka Kotahi**) Traffic Monitoring System. Data for the nearest recording location on SH2 at Pakuratahi Bridge indicates daily flows of 8,000vpd.

The Plateau Road intersection with SH2 comprises a priority-controlled T-intersection, as illustrated in the aerial photograph included at **Figure 3-2** below.



Figure 3-2: State Highway 2 / Plateau Road Priority T-Intersection

As shown, the intersection has been developed to a good standard, and includes a dedicated right-turn bay (approximately 60m in length) for SH2 traffic entering Plateau Road. Additionally, there is a short acceleration lane of (approximately 30m in length) to allow left-turning traffic from Plateau Road to begin accelerating before

¹ ADT = Average Daily Traffic

merging with highway traffic. Site observations and more detailed traffic modelling analysis described in detail at Section 8.0 show the intersection currently performs well, with limited queuing and delays.

3.2 SPEED ENVIRONMENT

Maymorn Road has a posted speed limit of 50kph between Plateau Road and 100m north of the Site boundary, where it changes to open road (100kph) as land use becomes more rural, across the frontage of the Site and into Parkes Line Road. A traffic speed survey at two locations along Maymorn Road adjacent to the Site's proposed new access roads indicate 85th percentile 'operating speeds' of approximately 70kph. In this manner, it is apparent that operating speeds are lower than the current posted limit and, with the associated change in the nature of the function of the Maymorn Road in providing access to the development site, could be a trigger to implement a downward revision of the current limit.

The posted speed limit on Plateau Road is 50kph, with tube count traffic data indicating an 85th percentile 'operating speed' of approximately 52kph, suggesting the existing road environment aligns well with the urban 50kph limit.

SH2 has a posted speed of 80kph at the Plateau Road intersection which, as described later in Section 4.0, operates without any existing safety issues.

3.3 SUSTAINABLE TRANSPORT

Due to the current rural nature of the area in the vicinity of the Site, the adjacent section of Maymorn Road does not include footpaths. Further north, as Maymorn Road approaches Plateau Road and land use becomes more residential, footpaths are present on at least one side of the road.

Cyclists on Maymorn Road currently share the carriageway. To the north, access to the off-street Hutt River Trail can be achieved via Plateau Road, whilst to the southeast a number of off-street cycle routes including the Remutaka Cycle Trail can be accessed immediately adjacent to the Site, as illustrated in **Figure 3-3**.

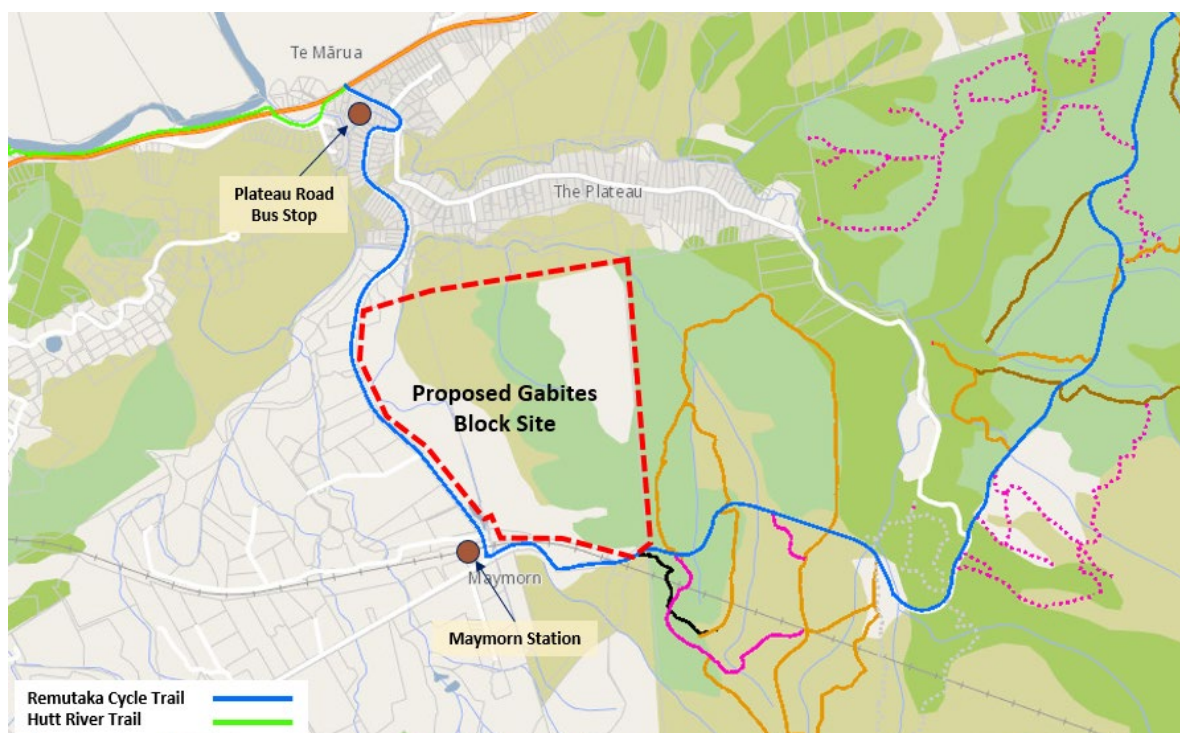


Figure 3-3: Cycle Network / Public Transport Nodes (sourced from GWRC Tracks Viewer)

As illustrated, Maymorn rail station is located within easy walking distance immediately south of the Site, on the opposite side of Maymorn Road. This station forms part of the Wairarapa Train Line, which runs daily services between Wellington and Masterton, and operates five services in both directions during the week (including three inbound / outbound services to Wellington in the AM and PM peaks, respectively), and two services in each direction on the weekends.

The nearest current bus stop to the Site is on Plateau Road, to the north. This bus stop serves the local Route #112 'Te Marua – Timberlea – Maoribank – Upper Hutt', which operates at a 20-minute frequency during the peaks and hourly in the off-peak. Additionally, a local school bus service currently routes between Plateau, Birchville and Trentham schools.

As described later in this report, the proposed Structure Plan identifies the potential for Council to provide a shared path on the eastern side of Maymorn Road along the entirety of the Site frontage, providing significantly improved amenity for both existing and site generated pedestrians and cyclists, including for access to the Maymorn rail station. The Structure Plan contributes to the shared path by requiring subdivision of the site to vest land to increase the width of the road reserve where required, to provide sufficient space for the shared path.

4.0 ROAD SAFETY

A search of the Waka Kotahi NZ Transport Agency (**Waka Kotahi**) 'Crash Analysis System' database has been undertaken for the purposes of reviewing the road safety in the vicinity of the site, for the most recent complete five-year period from 2016 to 2020, being the period typically adopted for such studies.

The search area is illustrated in **Figure 4-1** and included the length of Maymorn Road (between Plateau Road and Parkes Line Road) and Plateau Road (between SH2 and Maymorn Road), inclusive of the two associated intersections. This area was considered to be the relevant extent for which movements to/from the Site will be concentrated.



Figure 4-1: Crash Location Map (2016-2020)

A total of six crashes have been recorded within the search area between 2016 and 2020, as summarised in **Table 2**. Of these six crashes, one resulted in a minor injury with the balance being non-injury (i.e. damage only).

Table 2: Summary of Accident Record

Location	Date/Time	Severity	Description
Intersection of Main Road North (SH2) and Plateau Road	Friday 24 January 2020, 8:10pm	Minor injury	A vehicle turning right from Plateau Road to SH2 failed to give-way to a southbound vehicle on SH2. 'Alcohol suspected' and 'Did not check/ notice another party' recorded as causal factors.
	Sunday 13 May 2018, 8:50pm	Non-injury	Southbound vehicle on SH2 taken the corner into Plateau road too fast, lost control, and hit a parked car. Light rain

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			and wet road surface. 'Entering corner too fast' recorded as causal factor.
	Monday 23 May 2016, 4:15pm	Non-injury	Northbound vehicle on SH2 waiting to turn right on to Plateau Road hit by a vehicle turning left out of Plateau Road to SH2. 'Vehicle swung wide at intersection' recorded as the causal factor.
Plateau Road, 81m south of SH2	Sunday 16 February 2020, 11:12am	Non-injury	A vehicle parked in the southbound direction on Plateau Road failed to check side mirror and give-way to a southbound travelling vehicle. 'Did not check / notice another vehicle behind' recorded as causal factor.
Maymorn Road, 325m north of Parkes Line Road	Tuesday 21 January 2020, 9:05pm	Non-injury	A northbound travelling vehicle along Maymorn Road intentionally changed lanes and directly hit a police vehicle. Evading enforcement and intentionally collided recorded as causal factors.
SH2, 80m east of Plateau Road	Monday 12 February 2018, 10:30pm	Non-injury	Northbound vehicle on SH2 attempted to overtake a vehicle turning right off SH2 into a driveway, resulting in a collision. 'misjudged intentions of another party' recorded as causal factor.

Significantly, there is no record of any crashes having occurred involving vehicles turning to or from any of the existing vehicle crossings along either Maymorn Road or Plateau Road.

With the exception of one minor injury crash, the balance of recorded accidents have all been damage only (i.e. non-injury), and hence, it is assessed that there are no existing deficiencies with the current road network in the vicinity of the site that require attention in response to the proposed Plan Change. That aside, the location and design of the Site access points remains fundamental to ensuring the continued safety of this road environment, as set out at Section 9.0.

5.0 FUTURE NETWORK CHANGES

5.1 ROAD NETWORK

Council's 'Long Term Plan (2021-2031)' outlines what is planned in the 'Land Transport' space to ensure a well-maintained roading network, allowing travel to occur more freely, efficiently and safely throughout the District. Key identified projects include the arterial cycleway improvements / completion of the Hutt River Trail, and the rural roads high-priority safety project, which aims to deliver improvements to facilitate multi-modal users more safely on rural routes. Beyond this, continued roading infrastructure investment and upgrades including along Fergusson Drive and within the CBD, will continue to support future District growth.

Of these planned improvements, the arterial cycleways and rural roads high priority safety projects may entail upgrades near or in the immediate vicinity of the Plan Change Site. Whilst specific details of these projects are currently unavailable, it is noted that the provision of land that does not currently exist for a future off-road shared path along the full length of the Site's frontage to Maymorn Road, will support such initiatives as these to safely accommodate active mode use and connectivity to the nearby Maymorn rail station.

Otherwise, it is not anticipated that the proposed rezoning and subsequent development of the Site would foreclose the ability for these future projects to be realised.

5.2 RAIL NETWORK

Rail is a major component of the transport system in Wellington, and plays a key part in supporting and facilitating growth within the region.

Wairarapa Line train service levels are expected to significantly increase across all periods by 2029, and these services will be provided by new trains with higher capacity than the current trains on the line. Supporting infrastructure to enable the higher frequency is under construction, with the investment path signalled in various statutory and non-statutory transport planning documents (including the Regional Land Transport Plan). The Wellington Metro Upgrade Programme (**WMUP**) includes proposed infrastructure improvements to the Wairarapa Line, as summarised in **Figure 5-1**, including track and bridge renewals, and signalling improvements. Further improvement to other infrastructure such as stations is expected before the new trains arrive.

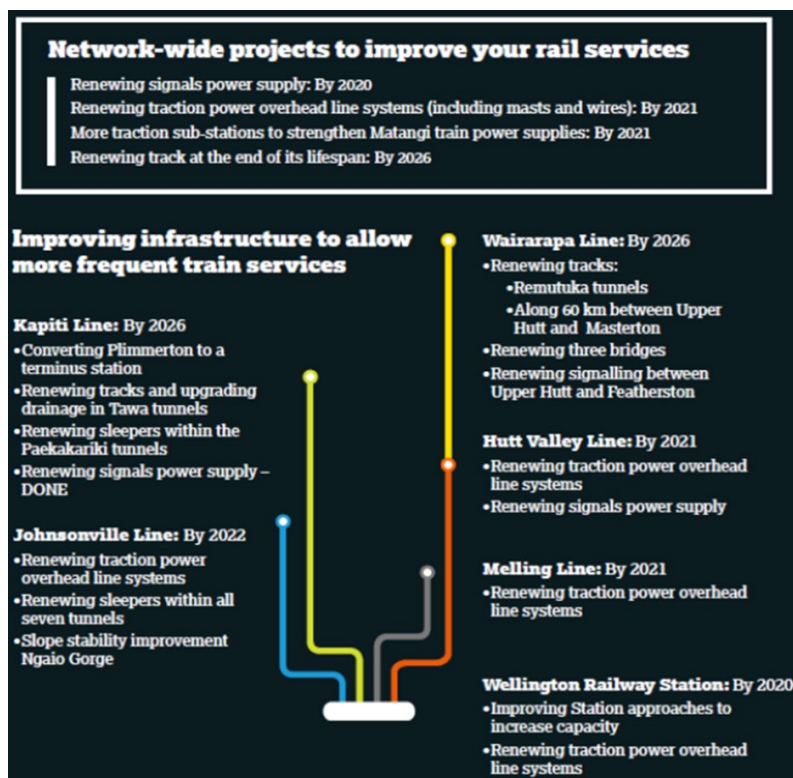


Figure 5-1: WMUP Summary (source: KiwiRail website)

The proposed rail network improvements to the Wairarapa Train Line are intended to increase public transport accessibility and efficiency, and with the near proximity of Maymorn Station to the Site, rural residential developments such as that proposed can make use of short active mode trips to the established station.

6.0 PLAN CHANGE PROPOSAL

The purpose of the proposed Plan Change is to rezone the Site to Settlement Zone with a Development Area overlay, enabling low density residential and rural residential development that is appropriate to the attributes and constraints of the sub-areas of the site. The Settlement Zone provides a transition from the established Te Marua residential activity to the north, to the wider rural area.

By way of providing a framework for development at the Site, a draft Development Area Structure Plan (included at **Appendix A**) has been prepared to show potential development areas, an indicative transport network and external roading connections, along with walking and cycling links to (and through) the Site. The design has been iteratively progressed to respond to the various site investigations, taking account of ecological, visual landscape, as well as transport matters.

The proposed access strategy for the Site includes three new intersections (where gates/access currently exist) onto Maymorn Road, with northern, central and southern access roads achieving an appropriate level of connectivity and permeability for vehicular and active mode trips. Individual lot access from Maymorn Road will be prohibited.

Whilst exact dwelling yields are yet to be confirmed, it is anticipated that between 170 and 200 dwellings could be developed within the Site. Accordingly, these two scenarios have been used to determine the associated transport impacts of the Plan Change on the adjacent road network.

6.1 ENGAGEMENT WITH KEY STAKEHOLDERS

Discussions have been held with Council to acquire feedback on the proposed rezoning and the emerging draft Structure Plan, and to ensure a collaborative approach can be achieved in developing an outcome for the Site. This liaison is expected to continue as more detailed design progresses.

7.0 SITE TRAFFIC GENERATION

In order to assess the potential effects of the change in zoning of the Site that would enable future residential development, associated trip generation rates have been sourced from relevant industry standards.

7.1 TRIP GENERATION

Surveys of households reported within the Transport Agency's Research Report 453 'Trips and Parking Related to Land Use' 2011 (RR453) indicates daily trip generation rates for 'Outer Suburban' residential activities typically average around 8.2vpd per dwelling, with associated peak hour movements of 0.9vph. By comparison, household trip rates recorded for other outer suburban residential catchments across the Upper Hutt District indicate peak hour trip generation of approximately 0.7vph per dwelling.

A review of the Council's strategic TRACKS traffic model, which has been used to assist in determining trip distribution and impacts on the wider network, shows existing residential catchments in the vicinity typically experience extended peaks of around 2-hours (given the increased travel distances to main centres of employment) and as a result involve somewhat lower 'peak hour' rates of 0.5vph and 0.6vph for the AM and PM peaks, respectively.

For the purpose of this assessment, and based on the various sources above, an average peak hour trip rate of 0.7vph has been adopted and applied to the two development yield scenarios of 170 and 200 dwellings. An equivalent 'daily' rate has been adopted from the RR453.

The resultant total traffic generated is summarised in **Table 3**.

Table 3: Forecast Traffic Generation

Activity	Yield	Peak Hour Movements		Daily
		AM Peak	PM Peak	
Scenario 1	170 dwellings	119	119	1,394
Scenario 2	200 dwellings	140	140	1,640

As shown, peak hour traffic additions generated by the proposed residential development are not large, with the equivalent of approximately 2 vehicles per minute added during peak hours.

7.2 TRAFFIC DISTRIBUTION

In reviewing the surrounding traffic flows and roading hierarchy described earlier in Section 3.0, it is expected that a significant proportion of trips generated at the site would route to and from the primary network at SH2 to the north. Accordingly, to appropriately determine the distribution of Site traffic on the adjacent network, the proposed Plan Change has been modelled using the Council's TRACKS strategic traffic model for the critical weekday peaks, using the trip generations from Table 3 above.

The distribution of traffic generated by the Site's proposed low density and rural residential development scenarios is summarised in **Table 4**.

Table 4: Traffic Distribution of Generated Traffic

Route	AM Peak		PM Peak	
	Scenario 1 (170 dwellings)	Scenario 2 (200 dwellings)	Scenario 1 (170 dwellings)	Scenario 2 (200 dwellings)
Maymorn Road -North	77%	77%	73%	72%
Maymorn Road - South	23%	23%	27%	28%

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Around 20-30% of generated trips are forecast to route south using Parkes Line Road via Wallaceville or Mangaroa Hill Road, with the balance routing north via SH2. An assessment of these traffic additions on the surrounding road network performance is provided in the following chapter.

8.0 DEVELOPMENT TRAFFIC IMPACTS

In assessing the impacts arising from the proposed Plan Change traffic additions, these have been modelled using the following:

- application of the Council's strategic (TRACKS) traffic model to determine wider network impacts; and
- detailed intersection performance analysis of the primary road network connection at Plateau Road / SH2.

Each of these analyses are described in turn, below.

8.1 WIDER NETWORK

The Council's strategic traffic model which uses the TRACKS platform, was originally developed in 2006 and has been iteratively updated since to inform a number of potential land use and roading infrastructure changes across the District. The model has a number of future year scenarios, including a 2028 forecast, which is based on 2018 census data; expected changes in network and land use; and an expected level of uptake at the proposed Wallaceville commercial employment area. This 2028 forecast year is considered to represent a reasonable horizon for the purposes of this assessment.

The model includes all roads and intersections within the Upper Hutt City area and models flows at a movement level of detail. Trips are generated using a household category model which estimates the number of households (HH) and cars in each zone (based on Census SA1 boundaries). Vehicle movements are generated at a zonal level by using trip purpose rates for each household, and then summed to create the total number of all-purpose trips travelling to/from each zone.

Application of the TRACKS model in this case has drawn on the development yield scenarios being added to the 2028 forecast, in order to understand how the generated trips are likely to distribute and affect performance across the wider network. In this manner, comparison between the 2028 'base' and 2028 'with development' traffic has been undertaken using the higher yield 200-dwelling scenario, and the associated trip generation and distribution described in Table 3 and Table 4. Level of Service² (LoS) plots for these respective scenarios are included at **Appendix B**.

The modelling results show that the 2028 Base network is approaching capacity at some locations along the SH2 corridor during AM and PM peaks, in both the northbound and southbound directions. At the small level of traffic generation estimated, the addition of traffic associated with full development of the Plan Change site does not amount to material changes in the network performance, noting that in reality network improvement works along this strategic route will address some of the current issues.

Beyond the State Highway strategic corridor, only minor changes to level of service are forecast to arise with the full development traffic added. Noting that in practice, the Site will be established over several years as lots are sold and developed, the infrastructure improvements programmed around the CBD for example, will provide improved capacity for traffic growth including that associated with the Plan Change Site.

8.2 ACCESS TO PRIMARY ROAD NETWORK (SH2)

For the purpose of assessing the critical access point onto the primary road network at the SH2 / Plateau Road intersection, it has been modelled using the industry-recognised modelling package SIDRA³ to quantify potential changes in performance arising from development trips generated at the Site. The following assumptions have been adopted for the assessment:

² Level of Service (LoS) is a six-level grading system for intersection performance (A to F), where Level A represents totally uncongested operation and minimal delays and queues, and Level F represents highly congested operation with long delays and extensive queuing.

³ Using the latest Version 9 of the SIDRA software

- current⁴ and future (using the TRACKS model 2028 forecast) background traffic volumes at the intersection have been tested;
- both the critical Weekday AM and PM commuter peaks have been modelled; and
- development trips have again been assigned based on the trip generations and distributions in Table 3 and Table 4, for both 170-dwelling and 200-dwellings development scenarios.

Table 5 below provides a summary of the LoS for the intersection, with and without the development traffic yield scenarios added.

Table 5: SH2/Plateau Road SIDRA Modelling Summary

Approach	Movement	Base 2021		Base + 170 HH		Base + 200 HH		Future 2028		Future + 170 HH		Future + 200 HH	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
SH2 (South)	Through	A	A	A	A	A	A	A	A	A	A	A	A
	Right	A	A	A	A	A	A	B	A	B	A	B	A
Plateau Rd (East)	Left	A	A	A	A	A	A	A	A	A	A	A	A
	Right	B	B	B	C	B	C	C	C	C	C	C	C
SH2 (North)	Left	A	A	A	A	A	A	A	A	A	A	A	A
	Through	A	A	A	A	A	A	A	A	A	A	A	A

The SIDRA analysis indicates the T-intersection is currently performing well, with very good LoS A and B for the SH2 movements, and LoS A and C respectively, for the left and right turn out of Plateau Road during the peaks, even with the full development traffic added to the future year scenario.

8.3 CONSTRUCTION TRAFFIC

The development will require some cut/fill as part of the enabling works and, whilst efforts will be made to re-use extracted material and therefore keep associated truck movements on the network to a minimum, some transport of roading aggregate to site will be required. Whilst construction traffic movements are therefore not expected to be significant, any associated effects will be appropriately managed through Construction Traffic Management Plans prepared and certified by Council prior to any works commencing.

8.4 SUMMARY

This initial assessment of traffic generation arising from the proposed Plan Change and its associated impacts on the local and wider roading network, demonstrates the rezoning of the Site to enable low density and rural residential subdivision in the manner proposed, will not trigger any fundamental network operational issues.

⁴ Surveyed AM and PM peak hour turn counts recorded in September 2021, with adjustments to account for pre-Covid-19 volumes.

9.0 SITE ACCESS

The proposed access strategy for the Plan Change Site has been developed in response to the Site's topography, ecological features, and to ensure an appropriate level of permeability can be achieved to serve the scale of residential development envisaged. In this manner, provision is made for three new roading connections to Maymorn Road.

Each of these connections will take the form of a standard priority-controlled T-intersection, with priority given to traffic on Maymorn Road. The indicative locations for these new intersections are shown in the Structure Plan.

A summary of the accesses is provided below:

- **Northern Access:** this access connects off Maymorn Road approximately 100m from the Site's northern boundary (and approximately 200m south of the point where the Maymorn Road speed limit transitions from urban 50kph to open road). The access will serve the Site's North-West Area comprising around 33 lots.
- **Central Access:** the proposed central access connects with Maymorn Road midway along the Site frontage, approximately 400m south of the 'northern access', and 300m north of the 'southern access'. This connection will provide a direct link to the northeastern portion of the main Site which extends over the ridgeline.
- **Southern Access:** the southern access connects onto Maymorn Road approximately 180m north of the rail overbridge, and will serve the southern 'valley floor' portion of the main Site.

The indicative access locations have been developed to ensure adequate intersection separation⁵ and sight distance can be achieved, in accordance with the Council's 'Code of Practice for Civil engineering Works' (**Code of Practice**). With regard to sight distance, the minimum sightline required for 100kph design speed roads is 170m noting that, as described earlier at Section 3.2, the actual operating speeds on Maymorn Road are closer to 70kph. As such, the minimum sight distance requirement is 95m, which is satisfied at all three of the proposed accessways.

It is noted that the Structure Plan has been developed on the basis of providing for all lots to be accessed internal of the Site, and that no direct lot access would be achieved off Maymorn Road. A specific provision has been included within the proposed Site-specific District Plan provisions to that effect.

It is anticipated that these new intersections would include localised widening to enable right turning vehicles on Maymorn Road to wait, clear of through traffic, with specific intersection designs worked through at the subsequent resource consent stage.

9.1 ACTIVE MODES

As identified earlier in Section 3.0, a number of existing walking and cycling tracks are located in the vicinity of the Site, including the Remutaka and Hutt River Trails. A portion of the Remutaka Cycle Trail runs along Maymorn Road, between SH2 and Parkes Line Road, with cyclists at present sharing the Maymorn Road carriageway before connecting with off-road tracks at the Site's southeast corner.

The Site's proposed Structure Plan identifies the potential for Council to provide a shared path (where there is insufficient land currently) that runs across the full Site frontage on the eastern side of Maymorn Road. The Structure Plan contributes to the shared path by requiring subdivision of the site to vest land to increase the width of the road reserve to provide sufficient space for the shared path. The path will accommodate active mode users clear of traffic and facilitate connectivity to the Maymorn rail station (via a demarcated crossing point on Maymorn Road), as well as the Remutaka Cycle trails (via internal shared path routes within the Site). This walking and cycling link will provide significant benefit not only for demands generated at the Site, but also for existing active mode trips.

⁵ The separation between any two roads intersecting a road of Local Distributor category or higher shall be a minimum distance of 150m centreline to centreline.

10.0 PROPOSED INTERNAL MOVEMENT NETWORK

The Council's Code of Practice specifies that roads shall be designed to 'Codes and Guidelines acceptable to Council at the time of the project', and that "Roads and associated facilities shall provide for safe, efficient use by all anticipated users".

In this manner, the proposed internal site movement network has been developed in accordance with guidance provided in the latest industry standard NZS4404:2010 'Land Development and Subdivision Infrastructure' (NZS4404), inclusive of appropriate provision for both vehicular and active mode users.

10.1 MOVEMENT NETWORK

In developing the internal movement network hierarchy and street typologies, consideration has been given to achieving the following key design outcomes for the Site:

- provide a legible and connected movement network to support all trip modes to/from and within the Site;
- provision of a range of roading typologies that align with 'place' and 'function', and which acknowledge the topography and visual amenity of the Site;
- ensure a high-quality streetscape that serves to constrain speeds through adoption of appropriate carriageway widths; and
- provision of good walking and cycling routes that support and encourage active mode choice and connectivity to the key public transport node of Maymorn rail station.

The proposed movement network that has been iteratively developed for the Site to take account of these outcomes is illustrated in Appendix A.

10.2 SITE ROAD TYPOLOGIES

The Site's roading typologies have been designed to align with NZS4404:2010 as far as practicable, with some bespoke provisions employed to appropriately respond to the topographical constraints which exist within the eastern portion of the site.

A total of six road typologies have been developed. The specific road typologies have been developed to be cognisant of the appropriate level of expected traffic, pedestrian and cyclist movements, parking demand, and operating speed, as summarised in **Table 6**. Diagrammatic representations of the road cross sections are included at **Appendix C**.

Table 6: Proposed Roading Typologies

Road Typology	Description	Total Road Width	Min. Carriageway Width	Active Mode Provision
Road 1	6m Road with Swales & 1.5m footpath (Grades 5% or Less)	17m	6.0m	Footpath on one side
Road 2	6m Road with Kerb & 1.5m footpath (Grades 5% or More)	15m	6.0m	Footpath on one side
Road 3	5.5m Road with Swales (Grades 5% or Less)	15.5m	5.5m	Within berm / share carriageway
Road 4	6m Road with Swales & 2.5m Shared Path (Grades 5% or Less)	18m	6.0m	Shared path on one side
Road 5	6m Road with Kerb & 2.5m Shared Path (Grades 5% or More)	16m	6.0m	Shared path on one side
Road 6	6m Road with Kerb & 2.5m Shared Path Hillside RHS (Grades 5% or More)	Varies	6.0m	Shared path on one side

As shown, all proposed internal road typologies allow for two-way traffic flow (i.e. one traffic lane in each direction), with road drainage accommodated either by way of kerb and channel, or swales, depending on the grade.

Consideration of active mode users is well catered for within the various road typologies, with footpaths and shared paths providing for good connectivity through the Site.

Overall, the proposed network of surface level connections identified in the proposed Structure Plan will provide an efficient movement system for all travel modes, which appropriately takes account of the current landscape environment to ensure the transport network fits within the existing surroundings, whilst providing a safe and efficient transport system capable of accommodating the generated demand.

11.0 PLANNING CONSIDERATIONS

This chapter of the report assesses how the proposed Plan Change aligns with the relevant transport principles, requirements, and policies of the District's various strategy and planning documents.

11.1 COUNCIL'S LONG TERM PLAN

The Upper Hutt City Council's 'Mahere Pae Tawhiti / Long Term Plan 2021-2031' (LTP) sets out the vision for the District over the coming decade, including in respect of residential growth. The most recent growth forecasts used to inform the LTP indicate that the population is expected to grow by more than 50% (25,000 people) in the next 30 years. To keep pace with such expansion, there is a need for new areas of residential activity to service this demand.

In this manner, the proposed Plan Change, which includes provision for development of around 170-200 dwellings over the next few years, aligns well with the targets for delivering new housing in the short to medium term, with minimal associated requirements for public roading infrastructure investment from the Council.

11.2 PLAN CHANGE 50

The Council's Plan Change 50 (PC50), which is due to be notified next year, provides a framework to facilitate a higher scale of growth, as anticipated under the LTP, and involves a review of the existing residential and rural chapters of the District Plan to identify where changes to activity density and sustainable development of existing rural areas, can be suitably achieved.

The proposed zoning for the Site under PC50 comprises mainly 'Settlement zone', with 'general residential' for the northwestern corner and 'general rural' across the west facing slopes, as illustrated in **Figure 11-1**.



Figure 11-1: PC50 Proposed Site Zoning (source: Council Website)

The proposed provisions within the 'Settlement zone' provide for typical residential activity with minimum lot sizes of between 1,000-2,000m², to achieve an appropriate lower density development form within the more rural setting. The proposed Structure Plan aligns with this vision.

11.3 DISTRICT PLAN

Since Plan Change 50 has no legal weight at present, it is considered appropriate to undertake an assessment of the proposed Plan Change against the operative District Plan. **Table 7** below provides a summary of the relevant policies included under the 'Transport and Parking' section of the District Plan, along with an assessment of the proposed Plan Change's alignment with these policies.

Table 7: District Plan Policy Assessment

Policy #	Requirement / Compliance
Policy TP-P1	<p><i>To promote the safe and efficient use and development of the transportation network.</i></p> <p>As described throughout the report, the proposed Plan Change traffic additions can be adequately accommodated on the wider roading network, without adversely impacting on its safety, function or capacity. The proposed new road typologies included in the Structure Plan have been developed to align with the industry best practice guidance for subdivision in NZS4404, to provide safe and adequate amenity for serve the demands anticipated at the Site.</p>
Policy TP-P2	<p><i>To promote accessibility within the City and between the City and neighbouring areas.</i></p> <p>With ready access to the primary roading network at SH2 to the north, the potential for walking and cycling connections to/through the Site, and proximity of Maymorn rail station to the south, the location of the Site will ensure that residents are afforded appropriate multi-modal travel choices.</p>
Policy TP-P3	<p><i>To ensure that the use and development of land is served by safe and adequate access from the roading network.</i></p> <p>As described at Chapter 9.0, the proposed access strategy has been developed to provide safe and efficient movement to and from the site for all modes including vehicles, pedestrians and cyclists, providing safe connections with the wider transport network.</p>
Policy TP-P4	<p><i>To promote a safe and efficient roading network which avoids, remedies or mitigates the adverse effects of road traffic on residential areas.</i></p> <p>The proposed Structure Plan's movement network includes internal road typologies which provide dedicated footpaths, shared paths or appropriate shared space low volume environments, which collectively provide for safe movement of the various modes within as well as to and from the subdivision Site. Further, by enabling provision of land that does not currently exist for the potential future development of a shared walking and cycleway along the Maymorn Road frontage to provide specific off-road improved amenity for existing and future users, this will serve to 'knit' the development into the neighbouring land use and provide connection to the nearby rail station.</p>
Policy TP-P5	<p><i>To promote a sustainable pattern of development that protects environmental values and systems, protects the potential of resources, and has regard for walking, cycling, public transport and transportation networks.</i></p> <p>As described throughout the various sections of the report, the proposed Plan Change Site is well located with respect to proximity with the Maymorn rail station, which provides an important commuter link to key employment areas as well as recreation and education sites across the Wider Hutt Valley to Wellington City. The associated Structure Plan has been specifically developed to be cognisant / respond to the Site's environmental values, including the density of the subdivision; provision of a suitable internal roading network that best provides for the demands of the site; safe and efficient connection to the wider network, including dedicated pedestrian and cycle connectivity; and the protection of landscape and natural areas.</p>

11.4 SUMMARY

As shown, the proposed Plan Change supports the outcomes sought through the District's LTP strategy for population growth, the associated PC50 vision for enabling new low density residential and rural residential growth within Maymorn and the Gabites Block Site, and aligns well with the intentions of the transportation related policies set out within the District Plan.

12.0 CONCLUSIONS

The proposed Plan Change Site is well located for residential development from a transportation perspective, being sited in close proximity to the key public transport node of Maymorn rail station. The Site has also been identified within the Council's proposed PC50 zoning for low density residential and rural residential growth as a Settlement Zone transition from the residential Te Marua suburb and the wider rural area.

The proposed access strategy and indicative location for Site connections to the external roading network are assessed as appropriate, with future consideration of detailed intersection layout and design ensuring that the anticipated demands can be suitably accommodated.

Access and circulation within the subdivision itself has been designed to deliver a high level of amenity for all transport modes, in the manner anticipated by the New Zealand Standard 4404. The proposed Structure Plan's movement network and road typologies purposefully include good quality active mode provision for internal trips and external connectivity to public transport at Maymorn rail station, which affords regular peak period connections to the Hutt Valley and Wellington City to the south. With service frequency set to increase further with the programmed improvements for this section of the regional rail corridor, the site is ideally placed to take advantage of this efficient and sustainable transport option.

An assessment of the likely traffic generation levels associated with the residential subdivision activity indicates modest additions on the network during the daily peak hours, with these trips predominantly routing to and from SH2 to the north. Analysis of the current SH2 / Plateau Road intersection performance shows this has sufficient spare capacity to accommodate the additional trips, whilst continuing to perform at entirely appropriate Levels of Service.

Overall, it is assessed that the proposed Plan Change to provide for development of the Site for low density and rural residential subdivision would not cause the function, safety or capacity of the surrounding road network to be compromised, and that an appropriate transportation outcome for all modes and users can be delivered.

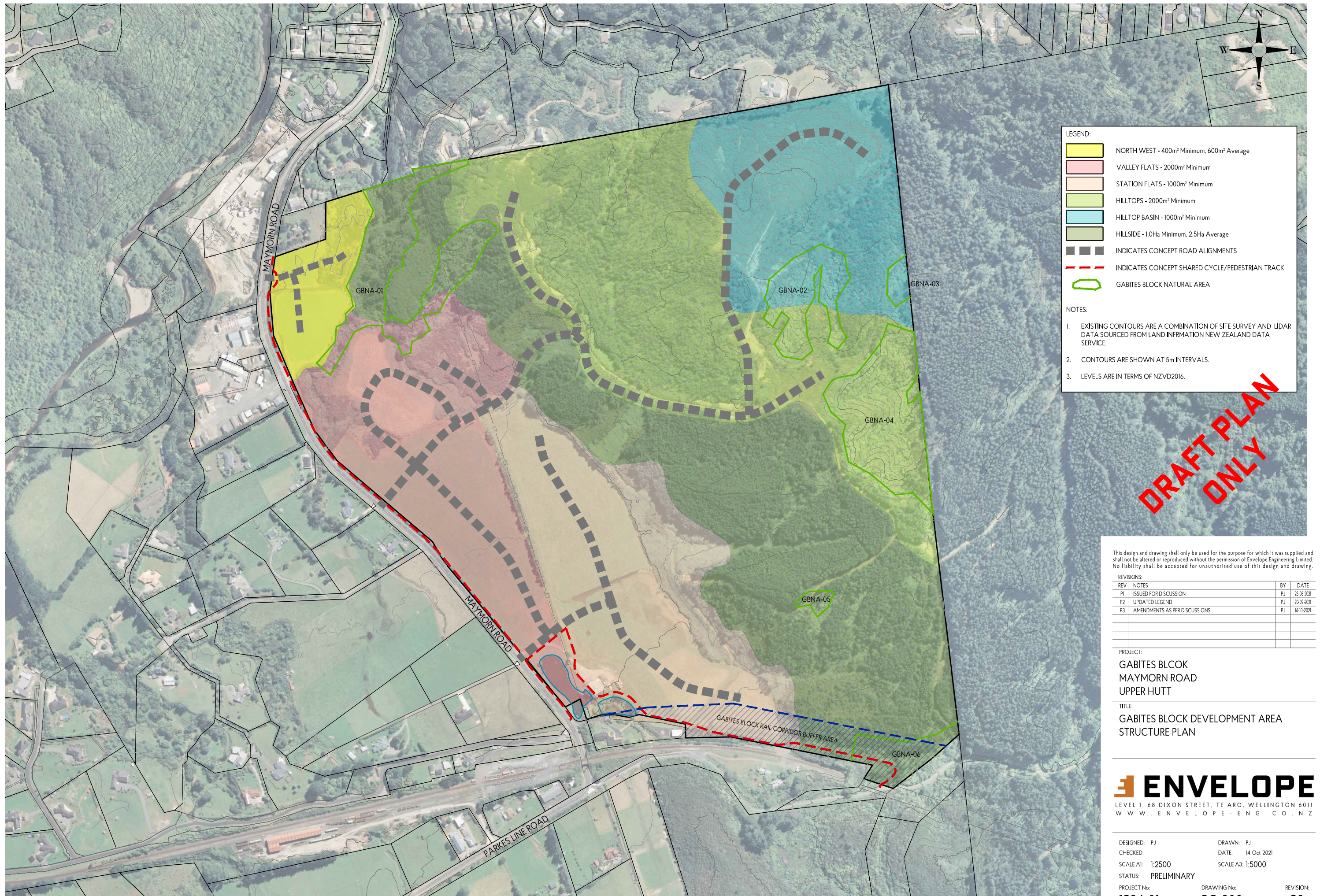
Appendices

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Appendix A PROPOSED STRUCTURE PLAN





LEGEND:

- NORTH WEST - 400m² Minimum, 600m² Average
- VALLEY FLATS - 2000m² Minimum
- STATION FLATS - 1000m² Minimum
- HILLTOPS - 2000m² Minimum
- HILLTOP BASIN - 1000m² Minimum
- HILLSIDE - 1.0Ha Minimum, 2.5Ha Average
- INDICATES CONCEPT ROAD ALIGNMENTS
- INDICATES CONCEPT SHARED CYCLE/PEDESTRIAN TRACK
- GABITES BLOCK NATURAL AREA

NOTES:

1. EXISTING CONTOURS ARE A COMBINATION OF SITE SURVEY AND LIDAR DATA SOURCED FROM LAND INFORMATION NEW ZEALAND DATA SERVICE.
2. CONTOURS ARE SHOWN AT 5m INTERVALS.
3. LEVELS ARE IN TERMS OF NZVD2016.

DRAFT PLAN
ONLY

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REVISIONS:

REV	NOTES	BY	DATE
P1	ISSUED FOR DISCUSSION	PJ	28-08-2021
P2	UPDATED LEGEND	PJ	20-09-2021
P3	AMENDMENTS AS PER DISCUSSIONS	PJ	14-10-2021

PROJECT:
 GABITES BLCOK
 MAYMORN ROAD
 UPPER HUTT

TITLE:
 GABITES BLOCK DEVELOPMENT AREA
 STRUCTURE PLAN



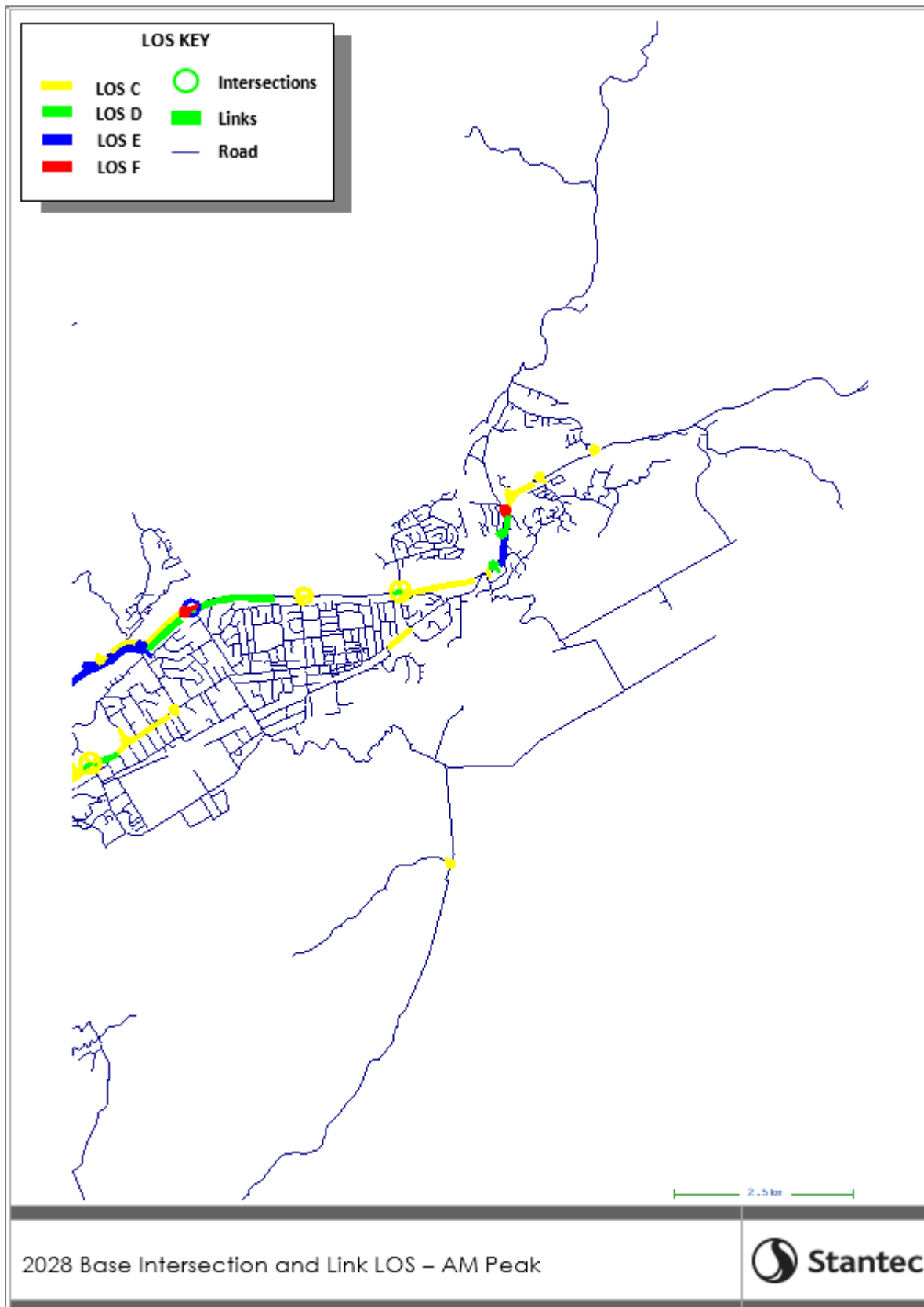
DESIGNED: PJ	DRAWN: PJ
CHECKED:	DATE: 14-Oct-2021
SCALE A1: 1:2500	SCALE A3: 1:5000
STATUS: PRELIMINARY	
PROJECT No: 1594-01	DRAWING No: PC-900
	REVISION: P3

Appendix B TRACKS MODEL LEVEL OF SERVICE PLOTS



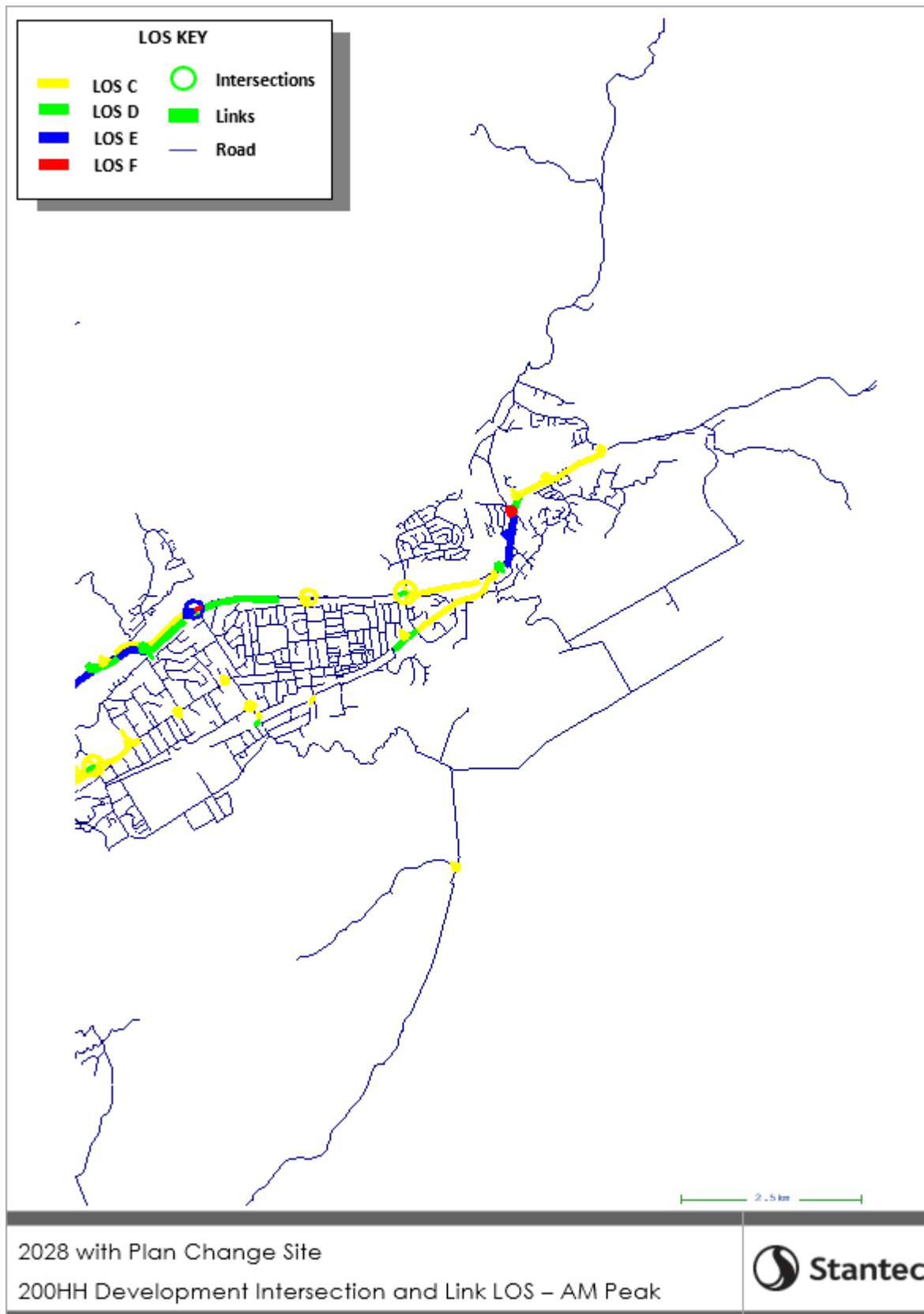
**MAYMORN DEVELOPMENTS LTD
GABITES BLOCK PLAN CHANGE**

Appendix B tracks model level of service plots



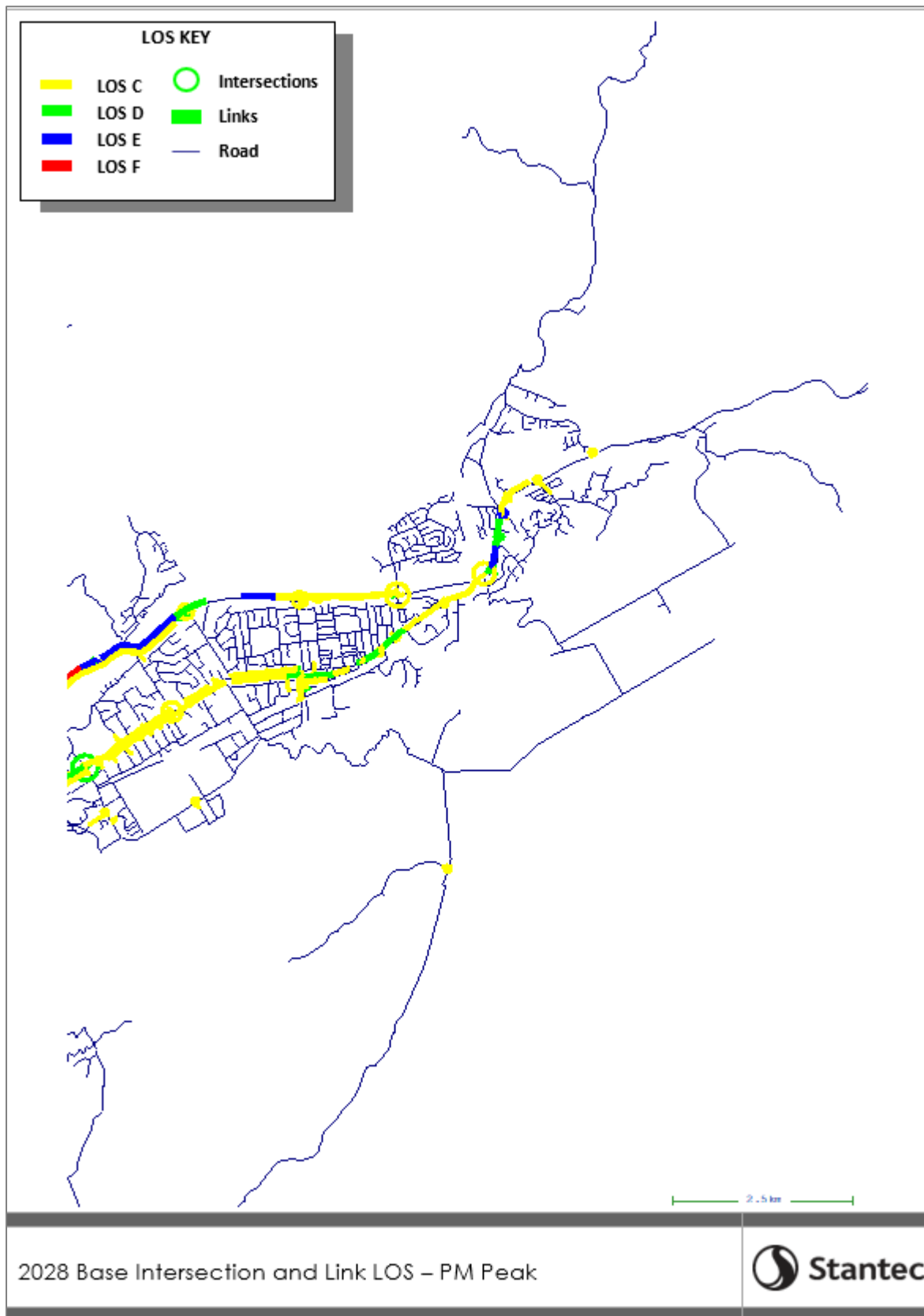
**MAYMORN DEVELOPMENTS LTD
GABITES BLOCK PLAN CHANGE**

Appendix B tracks model level of service plots



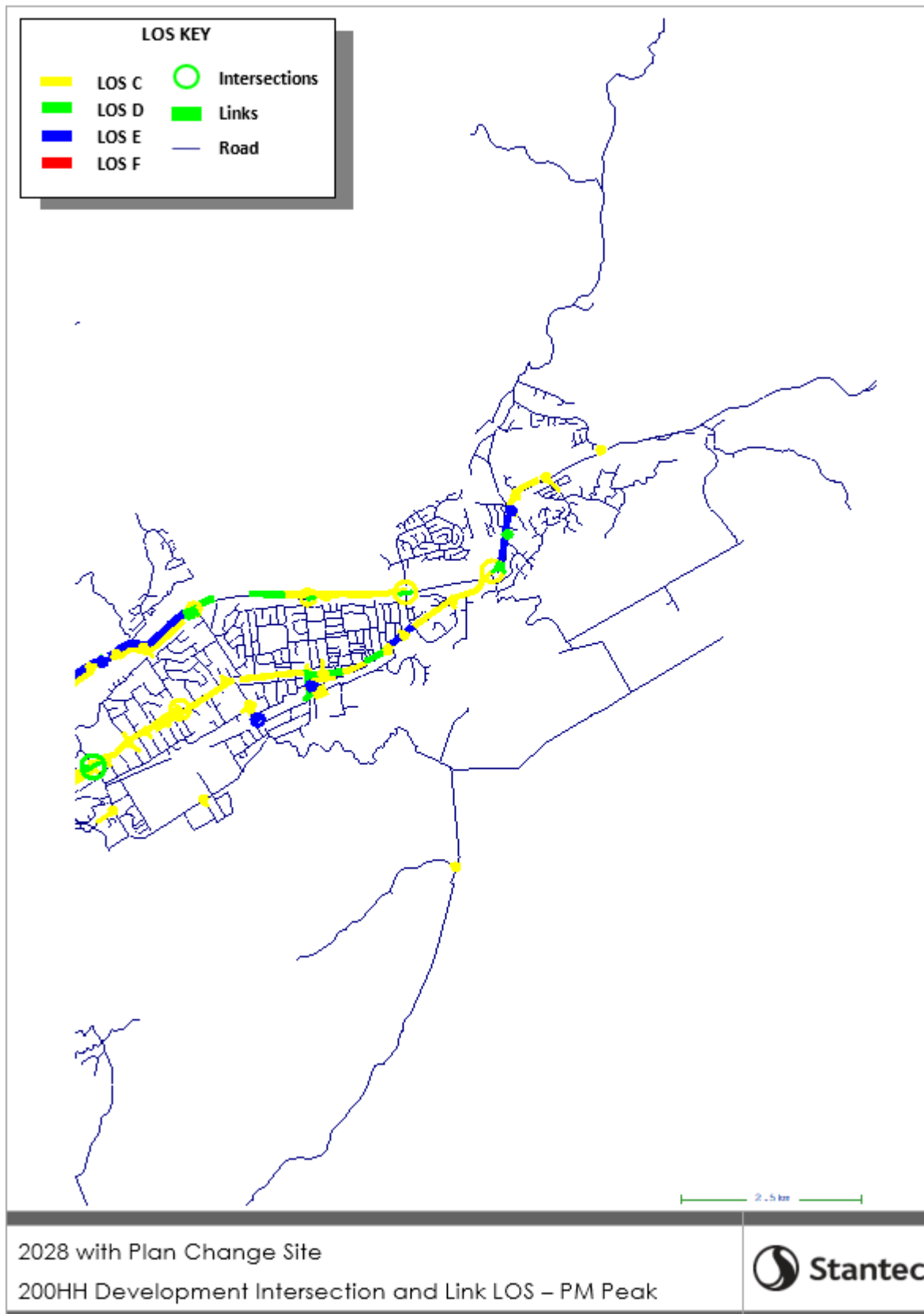
**MAYMORN DEVELOPMENTS LTD
GABITES BLOCK PLAN CHANGE**

Appendix B tracks model level of service plots

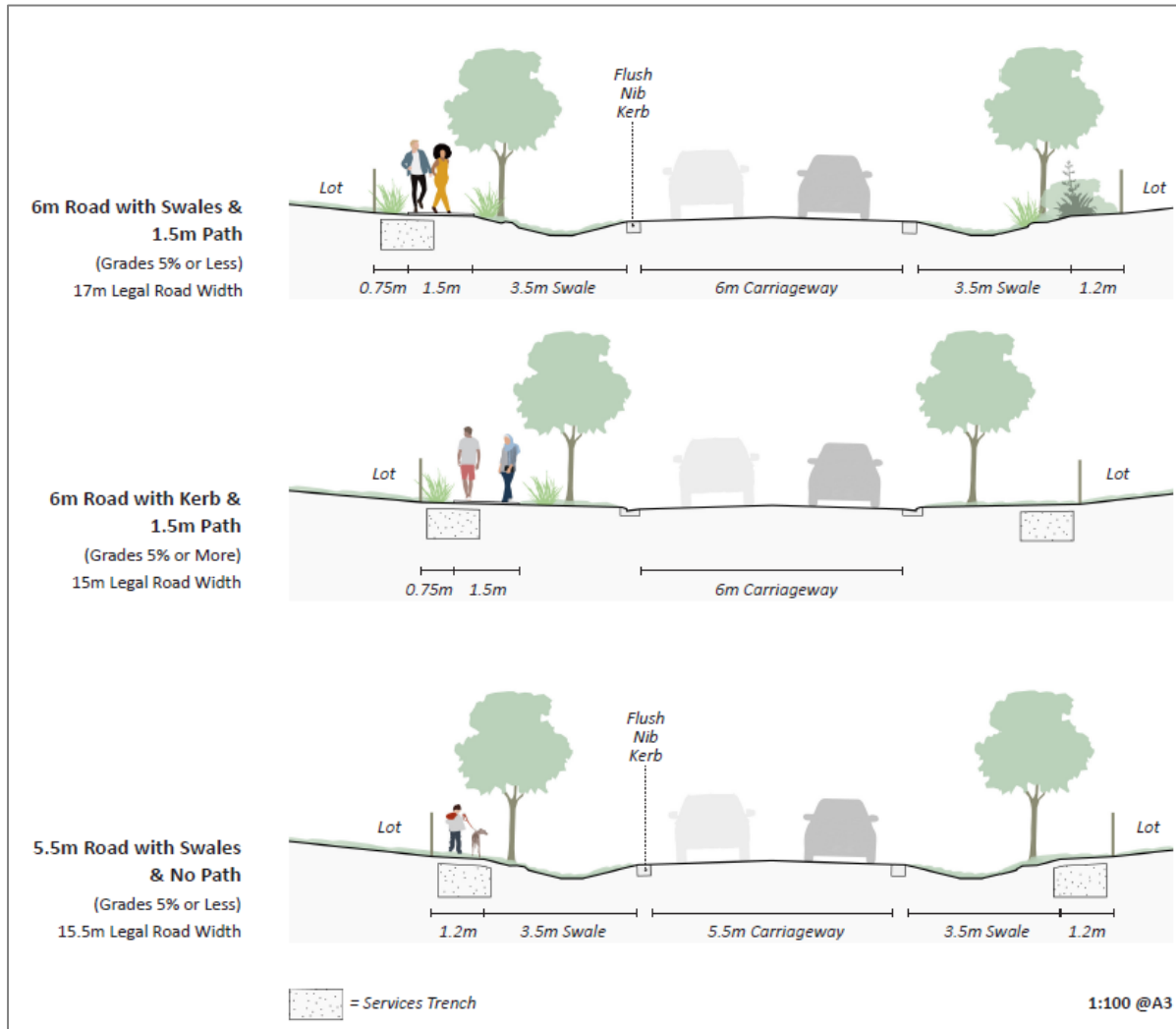


**MAYMORN DEVELOPMENTS LTD
GABITES BLOCK PLAN CHANGE**

Appendix B tracks model level of service plots

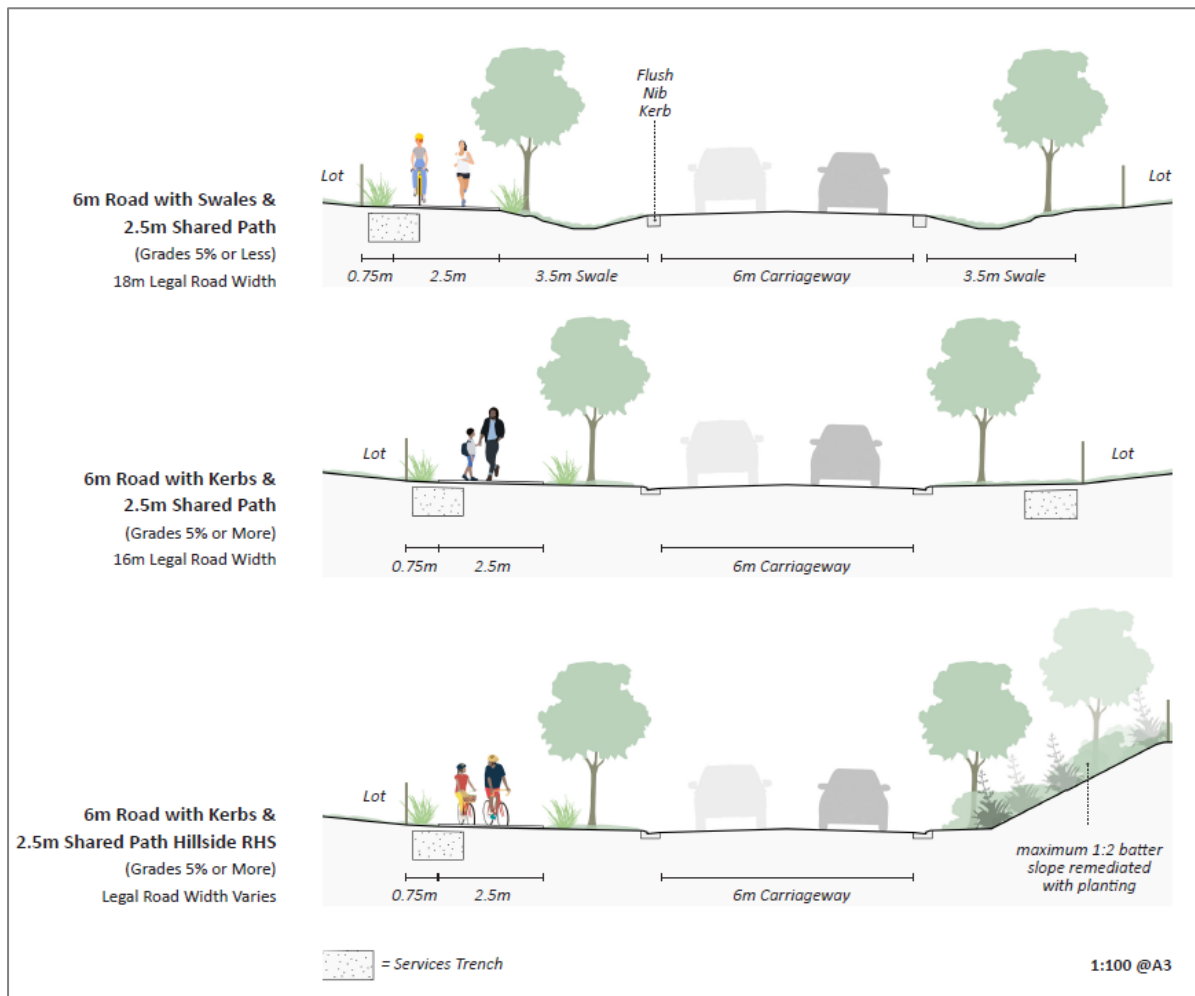


Appendix C PROPOSED ROAD TYPOLOGIES



**MAYMORN DEVELOPMENTS LTD
GABITES BLOCK PLAN CHANGE**

Appendix C proposed road typologies



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