53A & 53B Warriewood Road, Warriewood
Residential Subdivision
Transport Impact Assessment

Prepared by CTP Consult Pty Ltd
for Sekisui House Services (NSW) Pty Limited

53A & 53B Warriewood Road, Warriewood

Residential Subdivision

Transport Impact Assessment

Client	Job Number
Sekisui House Services (NSW) Pty Limited	22-003

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1. Introduction

1.1 Background

A Development Application (DA) is to be submitted to Northern Beaches Council for a proposed residential subdivision on land located at 53A and 53B Warriewood Road in Warriewood (hereafter referred to as the 'subject site').

The proposed development seeks consent for the five (5) lot Community Title Subdivision of the site, including the future public reserve, the extension of Lorikeet Grove, an internal road, stormwater works, associated landscaping and tree removal to facilitate the future residential development of the site. Three (3) super lots are proposed which will be further subdivided at a later date.

This development will be assessed under Part 4 of the EP & A act and primarily the following documents:

> Pittwater LEP 2014
> Pittwater 21 DCP
> Pittwater 21 DCP – Appendices.

This development does not proposed access from a classified road and is not of a size that requires referral to TfNSW (Roads and Maritime) under Schedule 3 of the State Environmental Planning Policy (Infrastructure) 2007.

As set out in Pittwater Local Environmental Plan 2014 - Reg 6.1, this development could potentially cater for 30 to 42 future residential dwellings. Based on the 2021 Census and an average of 2.9 people per dwelling[1], this equates to a total of approximately 87 to 122 residents.

CTP Consult was commissioned by Sekisui House Services (NSW) Pty Limited in July 2024 to undertake a transport impact assessment of the proposed development.

1.2 Scope and Objectives of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

1) the active transport requirements (pedestrians and cyclists)
2) the public transport in the vicinity of the subject site
3) the existing conditions surrounding the subject site
4) the suitability of the vehicle access for the subject site
5) the loading, service and emergency vehicle requirements
6) the transport generating characteristics of the proposed development
7) the transport impact of the proposal on the surrounding road network.

[1] https://abs.gov.au/census/find-census-data/quickstats/2021/SAL14191 - accessed 22/7/24

1.3 References

The following were referenced as part of the preparation of this report:

> Pittwater LEP 2014
> Pittwater 21 DCP
> Pittwater 21 DCP – Appendices
> Northern Beaches Council Waste Management Guidelines Chapter 3
> Austroads Guide to Traffic Management Part 5: Link Management, 2020
> plans for the proposed development prepared Enspire Solutions Pty Ltd (a selection of which, are provided in **Appendix A** of this report)
> Pre-lodgement Meeting Notes, PLM2022/0235, 9 February 2023 (*PLM Notes*)
> Australian Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
> Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2018
> Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
> Warriewood Valley Roads Masterplan 2018 (*Masterplan 2018*)
> Integrated Public Transport Service Planning Guidelines Sydney Metropolitan Area, December 2013
> State Transit Bus Infrastructure Guide July 2011
> Additional documents and data identified throughout the report.

2. Existing Conditions

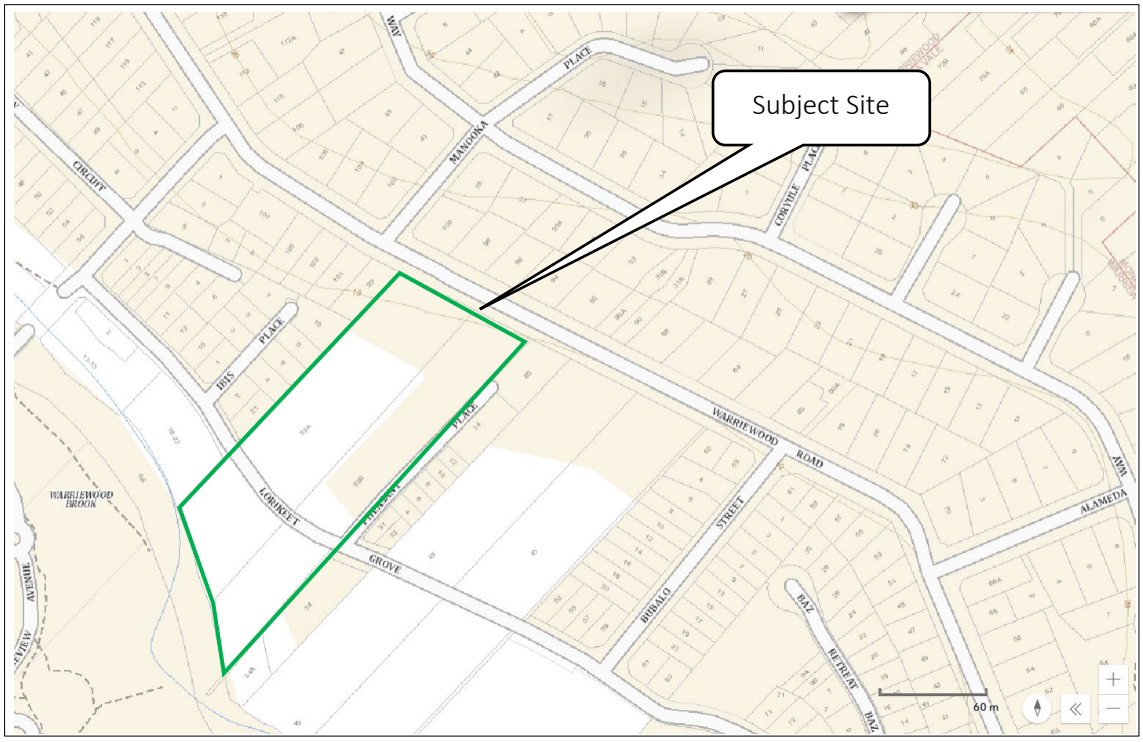
2.1 Site Location

The subject site is located at 53A and 53B Warriewood Road in Warriewood. The subject site has a frontage of approximately 81m to Warriewood Road and a total site area of approximately 15,500m^2. The subject site is currently zoned as R3 in the Pittwater Local Environmental Plan 2014 and is occupied by a single dwelling on each lot (total of 2 dwellings).

The surrounding properties predominantly include residential uses. To the south and west of the subject site on the opposite side of Narrabeen Creek is an aged care facility.

The location of the subject site and its surrounds is shown in Figure 2.1.

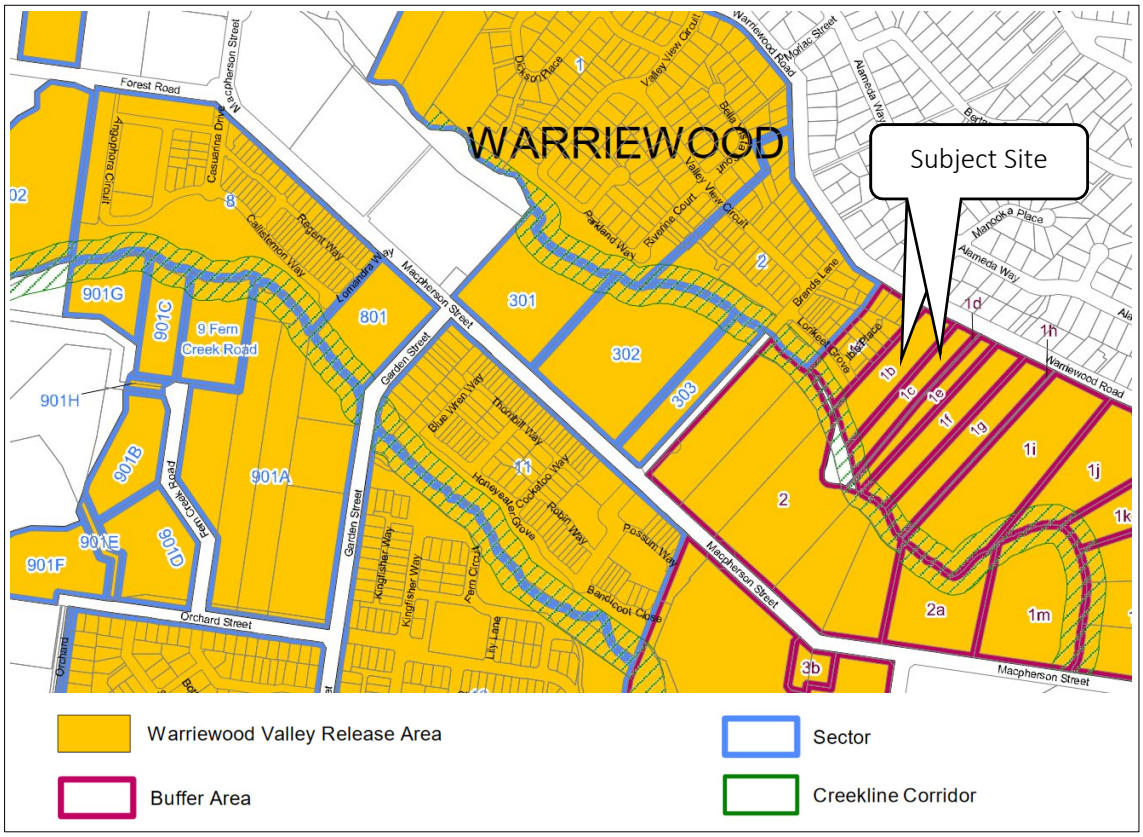
Figure 2.1: Subject Site and Its Surrounds



Base map source: https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address – Accessed 30/7/24

The subject site is located in the Warriewood Valley Release Area which is shown in Figure 2.2.

Figure 2.2: Pittwater LEP 2014 Urban Release Area Map



Base Map Source: https://eplanningdlprod.blob.core.windows.net/pdfmaps/6370_COM_URA_012_010_20150921.pdf - Accessed 22/7/24

Figure 2.2 indicates that the subject site is identified as Buffer Area 1b and 1c.

2.2 Local Area Travel Statistics

CTP Consult has reviewed the local area travel statistics from the 2021 census to understand how the people living in the new development could potentially travel to and from the subject site. The travel statistics are shown in Figure 2.3.

Figure 2.3: 2021 Warriewood Census Travel Statistics

Method of travel to work on the day of the Census, top responses *Employed people aged 15 years and over*	Warriewood	%	New South Wales	%	Australia	%
Car, as driver	1,589	38.4	1,587,613	43.1	6,347,498	52.7
Car, as passenger	115	2.8	117,143	3.2	466,904	3.9
Walked only	84	2.0	92,368	2.5	306,045	2.5
Bus	57	1.4	34,408	0.9	175,085	1.5
Bicycle	23	0.6	14,466	0.4	79,089	0.7
Did not go to work	547	13.2	487,646	13.2	1,417,449	11.8
Worked at home	1,610	38.9	1,141,467	31.0	2,531,262	21.0
People who travelled to work by public transport (a)	84	2.0	147,492	4.0	554,711	4.6
People who travelled to work by car as driver or passenger (b)	1,737	42.0	1,737,359	47.2	6,961,762	57.8

Note: *Respondents had the option to report up to three methods of travel to work on the day of the Census.*

(a) Includes people who used public transport (train, bus, ferry, tram/light rail), as at least one of their methods of travel to work on Census day.
(b) Includes people who travelled by car (as a driver, or as a passenger), as at least one of their methods of travel to work on Census day.

More information on Method of travel to work (MTWP)
Table based on place of usual residence

https://www.abs.gov.au/census/find-census-data/quickstats/2021/SAL14191 - Accessed 30/7/24

The 2021 census was affected by COVID-19 restrictions and a comparison has been made to the 2016 census data shown in Figure 2.4.

Figure 2.4: 2016 Warriewood Census Travel Statistics

Travel to work, top responses *Employed people aged 15 years and over*	Warriewood	%	New South Wales	%	Australia	%
Car, as driver	2,434	65.0	1,953,399	57.8	6,574,571	61.5
Bus	261	7.0	133,903	4.0	323,201	3.0
Worked at home	257	6.9	163,026	4.8	503,582	4.7
Car, as passenger	146	3.9	144,820	4.3	489,922	4.6
Walked only	89	2.4	130,957	3.9	370,427	3.5
People who travelled to work by public transport	353	9.4	540,215	16.0	1,225,668	11.5
People who travelled to work by car as driver or passenger	2,655	70.6	2,182,854	64.6	7,305,271	68.4

https://www.abs.gov.au/census/find-census-data/quickstats/2016/SSC14173 - Accessed 30/7/24

Figure 2.4 indicates that when compared to the New South Wales average, more people from Warriewood on average take the bus to work, more people work at home and more people drive to work.

2.3 Pedestrian Facilities

Pedestrian paths in the vicinity of the subject site are described as follows:

> There are currently no footpaths adjacent to the subject site on the northern side Warriewood Road.

> A shared path is currently being constructed on the southern side of Warriewood Road as properties adjacent to Warriewood Road are redeveloped.

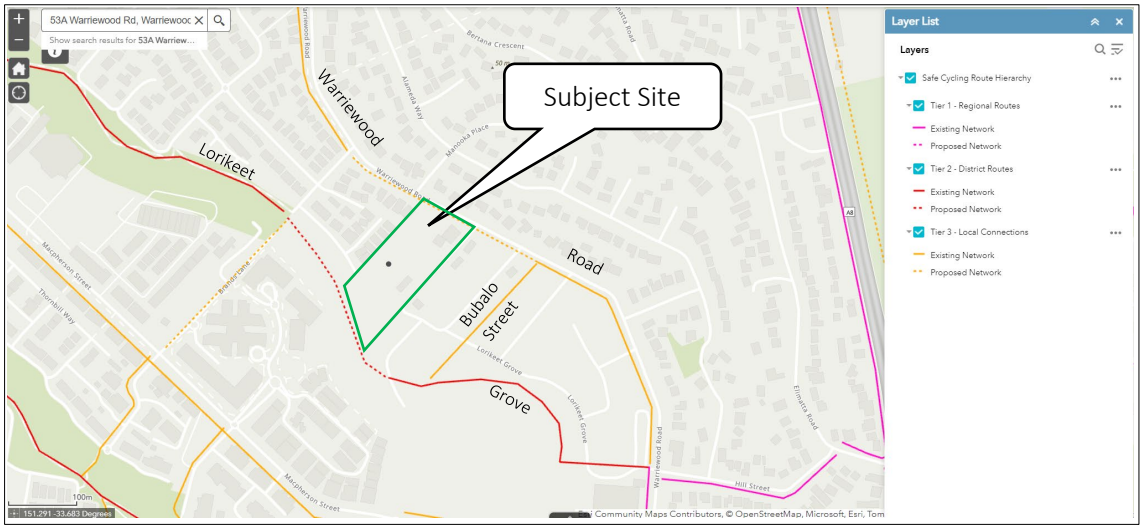
> A footpath on the northern side and a shared path on the southern side of Lorikeet Grove are currently being constructed as properties adjacent to Lorikeet Grove are redeveloped.

> There are no formal crossing points on Warriewood Road or Lorikeet Grove in the vicinity of the subject site.

2.4 Cycle Facilities

The existing cycle facilities in the vicinity of the subject site are shown in Figure 2.5.

Figure 2.5: Existing Cycle Network



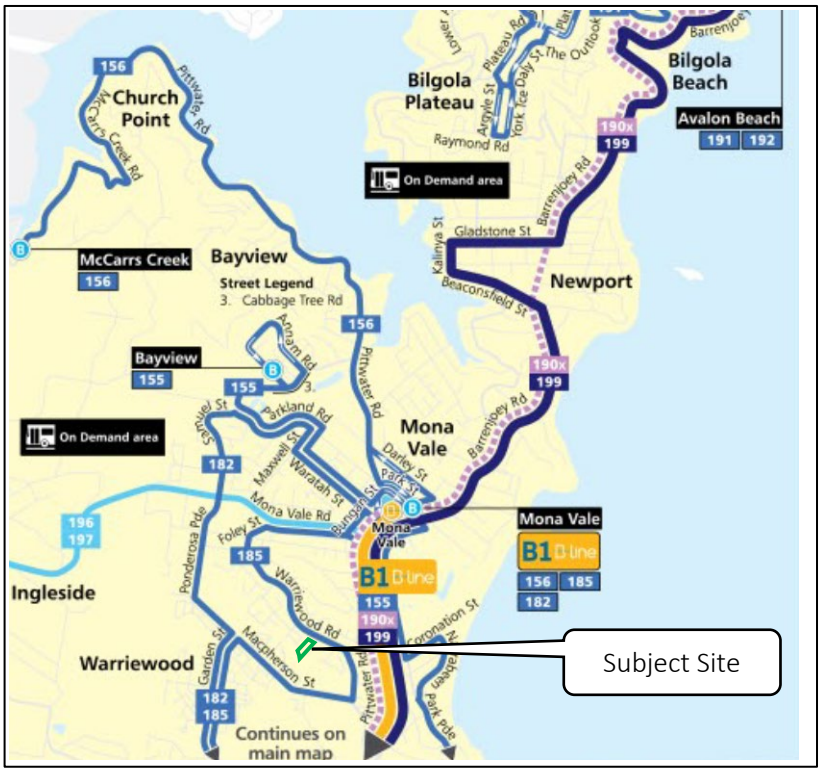
Basemap Source: https://northernbeaches.maps.arcgis.com/apps/webappviewer/index.html?id=abedc5db2afb4951a5596b64acc2641e – accessed 22/7/24

Figure 2.5 indicates that there are existing and proposed Tier 3 local connections along Warriewood Road and there is a Tier 2 District Route along Lorikeet Grove. There is also a Tier 2 local connection between Lorikeet Grove and Warriewood Road via Bubalo Street.

2.5 Public Transport

A review of the public transport available in the vicinity of the subject site is shown in Figure 2.6 and are summarised in Table 2.1.

Figure 2.6: Public Transport in the Vicinity of the Subject Site



Source: https://transportnsw.info/document/5202/1H2024-R8-network-map.pdf - Accessed 22/7/24

Table 2.1: Public Transport Provision

Mode	Route	Route Description	Location of Nearest Stop	Frequency On/Off peak
Bus	185	Mona Vale to Narrabeen via Warriewood Valley	Approximately 80m to 130m (1-2 minutes) to the east	10 minutes peak / 30 minutes off peak

2.6 Road Network

The road network in the vicinity of the subject site is described in the following sections.

2.6.1 Adjoining Roads

Details of the roads in close proximity to the subject site are provided in Table 2.1 as outlined in the *Masterplan 2018*.

Table 2.2 Summary of Adjoining Roads

Road Name	Classification	Orientation	Configuration	Approx. Carriageway Width	Target Daily Volume [1]	On-Street Restrictions
Warriewood Road (north of MacPherson Street)	Collector	East-West	1 lane in each direction	7.4m	5,000	Unrestricted car parking
Lorikeet Grove	Local Street	East-West	1 lane in each direction	5.5m to 7.5m	2,000	Unrestricted car parking
Pheasant Place	Access Street	North-South	1 lane in each direction	6m	<300	Unrestricted car parking on the eastern side of the street
Brands Lane	Access Street	North-South	1 lane in each direction	7.5m with a 5.5m wide threshold treatment near Warriewood Road	<300	Unrestricted car parking on the eastern side of the street
Bubalo Street	Access Street	North-South	1 lane in each direction	7.5m	<300	Unrestricted car parking

[1] As outlined in the *Masterplan 2018*

2.6.2 Surrounding Intersections

The existing intersections in the vicinity of the subject site are summarised in Table 2.3.

Table 2.3 Existing Major Intersections in the Vicinity of the Subject Site

Intersection	Intersection Control
Warriewood Road / Monooka Place	Priority Controlled T-Intersection
Warriewood Road / Hill Street	Roundabout
Warriewood Road / MacPherson Street	Roundabout

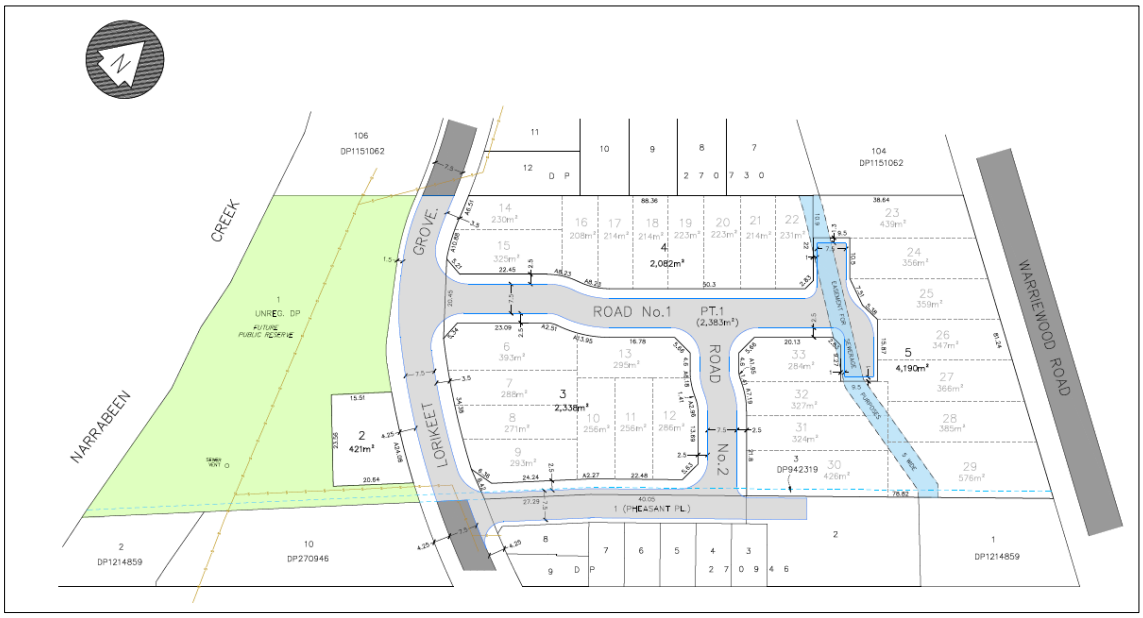
3. Proposed Development

3.1 Overview

The proposed development seeks consent for the five (5) lot Community Title Subdivision of the site, including the future public reserve, the extension of Lorikeet Grove, an internal road, stormwater works, associated landscaping and tree removal to facilitate the future residential development of the site. Three (3) super lots are proposed which will be further subdivided at a later date.

As set out in Pittwater Local Environmental Plan 2014 - Reg 6.1 and the *PLM Notes*, this development could potentially cater for 30 to 42 future residential dwellings. Based on the 2021 Census and an average of 2.9 people per dwelling[2], this equates to a total of approximately 87 to 122 residents. The proposed development shown in Figure 3.1.

Figure 3.1: Proposed Subdivison



3.2 Pedestrian and Bicycle Facilities

The proposed pedestrian and bicycle facilities are as follows:

> A 2.1m wide shared path is proposed on the southern side of Warriewood Road adjacent to the subject site.

> A 2.5m shared path is proposed on the southern side of the Lorikeet Drive within the future public reserve. This shared path will connect immediately east of Road No. 1 and continue along the northern side of Lorikeet Grove heading to the west.

[2] https://abs.gov.au/census/find-census-data/quickstats/2021/SAL14191 - accessed 22/7/24

> A 1.5m wide footpath is proposed on the northern side of Lorikeet Grove adjacent to the subject site from the eastern boundary until the connection with the shared path.
> 1.2m wide footpaths are proposed along both sides of Road No. 1 and Road No. 2 and Pheasant Place.

The suitability of the proposed pedestrian facilities is discussed in Section 4.1 of this report with the bicycle facilities discussed in Section 4.2.

3.3 Vehicle Access

Vehicle access to the properties within the subject site is proposed via Lorikeet Grove, Warriewood Road and Road No. 1, Road No. 2 and Pheasant Place.

The suitability of the proposed access arrangements is discussed in Section 6 of this report.

4. Sustainable Transport

4.1 People who Walk

Pedestrian access between the proposed development and surrounding network is provided by the following:

> A 2.1m wide shared path is proposed on the southern side of Warriewood Road adjacent to the subject site.

> A 2.5m shared path is proposed on the southern side of the Lorikeet Drive within the future public reserve. This shared path will connect immediately east of Road No. 1 and continue along the northern side of Lorikeet Grove heading to the west.

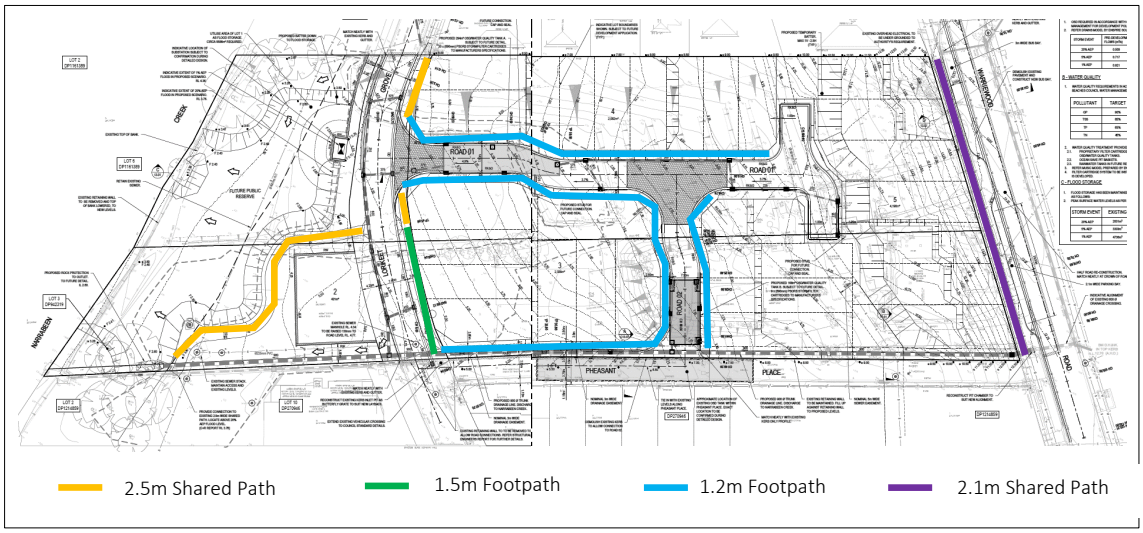
> A 1.5m wide footpath is proposed on the northern side of Lorikeet Grove adjacent to the subject site from the eastern boundary until the connection with the shared path.

> 1.2m wide footpaths are proposed along both sides of Road No. 1 and Road No. 2 and Pheasant Place.

As the adjoining properties are developed, the footpath network on Warriewood Road and Lorikeet Grove will be completed, providing formal access throughout the wider area.

Masterplan 2018 identifies that a footpath is required to be constructed on one side of the carriageway of an Access Street and a Local Street. For a Collector Street, a 2.1m shared path is required on both sides of the carriageway. As adjacent properties are redeveloped on the northern side of Warriewood Road, this will provide the ability to provide a shared path on the northern side of the carriageway. The proposed facilities for people who walk are shown in Figure 4.1.

Figure 4.1: Proposed Facilities for People Who Walk



Based on the requirements as outlined in Masterplan 2018, the proposed footpaths are considered satisfactory to cater for future residents of the subject site and provide connectivity to the wider area.

4.2 People who Ride a Bicycle

The provision of the 2.1m wide shared path adjacent to the subject site on Warriewood Road and the 2.5m wide share path on the northern and southern side of Lorikeet Grove supports the identified Northern Beaches Council bicycle safe cycling network as shown in Figure 2.5.

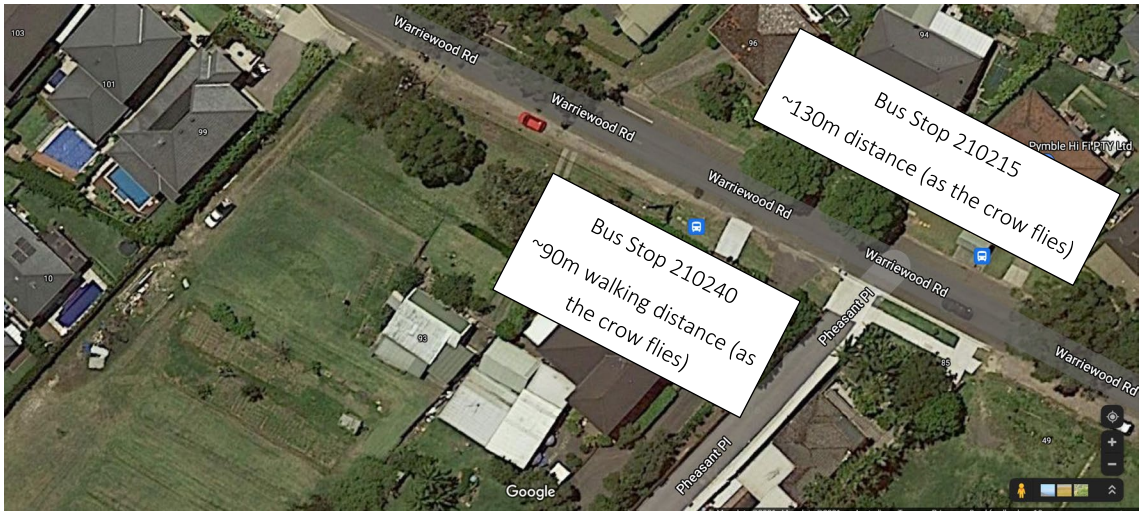
Accordingly, the proposed provision of cycle infrastructure is considered satisfactory.

4.3 People who take Public Transport

The Transport for NSW Integrated Public Transport Service Planning Guidelines – Sydney Metropolitan Area identify that 90% of households should be within 400m (as the crow flies) of a local bus stop.

The subject site is accessible by public transport with a bus stop within approximately 120m (as the crow flies) as shown in Figure 4.2.

Figure 4.2: Walking Distance to the Nearest Bus Stops



Information provided by Northern Beaches Council indicates that bus stop 210240 is proposed to be relocated adjacent to the subject site. Enspire has prepared a concept plan for the proposed bus stop relocation which is subject to detailed design and will have the following characteristics:

> 14.0m draw in
> 18.0m bus stop
> 8.0m draw out.

The above distances are consistent with the STA Bus Infrastructure Guide and the proposed driveway location is clear of the door opening locations identified in the STA Bus Infrastructure Guide for an articulated bus. Accordingly, the concept design is considered satisfactory.

Based on the 122 residents and assuming 66% are in the workforce (81), 7% taking buses to work (an additional 6 people in the peak hour) is not expected to result in additional peak bus capacity requirements.

5. Operational Impacts

5.1 Trip Generation

Traffic generation estimates for the proposed development have been sourced from the TfNSW Guide to Traffic Generating Developments Updated traffic surveys TDT 2013/04.

Estimates of peak hour and daily traffic volumes resulting from the proposal are set out in Table 5.1 assuming a maximum of 42 future dwellings.

Table 5.1: Traffic Generation Estimates

Period	Traffic Generation Rate (Movements/Dwelling)			Vehicle Movements		
	In	Out	Total	In	Out	Total
AM Peak	0.19	0.76	0.95	7.98 /hr	31.92 /hr	39.9 /hr
PM Peak	0.59	0.40	0.99	24.78 /hr	16.8 /hr	41.58 /hr
Daily	**5.35**	**5.35**	**10.7**	224.7 /day	224.7 /day	449.4 /day

Based on a maximum of 42 dwellings permitted by the Pittwater Local Environmental Plan 2014 - Reg 6.1 and the *PLM Notes*, Table 5.1 indicates that the subject site could potentially generate 42 vehicle movements in a peak hour with 450 vehicle movements over the entire day. A total of 42 vehicles per hour equates to approximately 1 vehicle every 1.4 minutes.

5.2 Transport Impact Assessment

Based on the proposed development ultimately proposing no more than 42 dwellings no additional road upgrades are proposed beyond those already envisaged and against existing traffic volumes in the vicinity of the subject site, the additional traffic generated by the proposed development is not expected to compromise the safety or function of the surrounding road network.

6. Proposed Road Design

6.1 Design Guidelines

Masterplan 2018 provides guidelines for the design of new roads within the Warriewood Valley. Further guidance is provided in the Pittwater Development Control Plan and the Northern Beaches Council Waste Management Guidelines.

The Warriewood Valley Roads Masterplan states the following:

"Vehicular connections are to be provided within the original or primary sectors/buffer areas in accordance with the original Roads Masterplan 1999 (for example Sectors 301, 302 and 303 are to have an internal network connecting all three sectors), or Pittwater 21 DCP e.g. Buffer Area 1a is to connect to Buffer Area 1b and 1c etc. but Sector 1 is not to connect to Sector 2."

It is noted that a number of roads have been constructed that connect sectors in the vicinity of the subject site. For example, Lorikeet Grove now connects Sector 2 to the subject site.

As outlined in the Pittwater DCP, the desired outcomes for transport and traffic management are *"safe and orderly traffic, pedestrian and cyclist access to and from all development via the surrounding road network and transport infrastructure."*

Based on the Warriewood Valley Roads Masterplan, Road No. 1 and Road No. 2 will function like laneway as they only provides access to the internal properties proposed within the subject site.

Based on advice of Northern Beaches Council, Road 1 is likely to be identified as an access street. The guidelines for an access street are as follows:

> "Two way traffic with on-street parking on one side of the street at any location along their length where it is legally permitted to do so.
> Cyclists are to share road pavement.
> A footpath is to be provided directly adjacent to the kerb on the same side as services.
> Services are to be contained within a combined services trench under the shared path.
> Driveways entering on the street are to be shared, and designed to have sufficient width that allows for safe entry and exit on to the Access Street."

The proposed design is described in more detail in the following sections.

6.2 Proposed Carriageway Width

The proposed Road 1 and Lorikeet Grove carriageway design is shown in Figure 6.1.

Figure 6.1: Proposed Carriageway Width

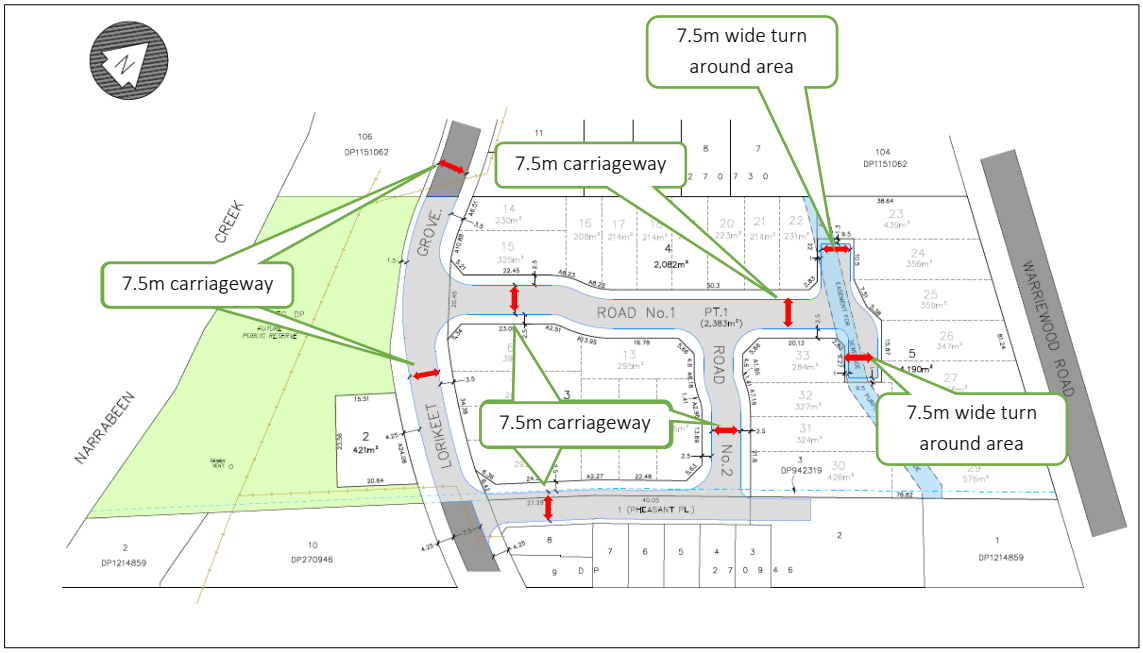


Figure 6.1 indicates that Lorikeet Grove has the following carriageway widths:

> 7.5m wide east of Road 1, which matches the carriageway width further to the east

> 7.5m wide west of Road 1, which matches the carriageway width further to the west.

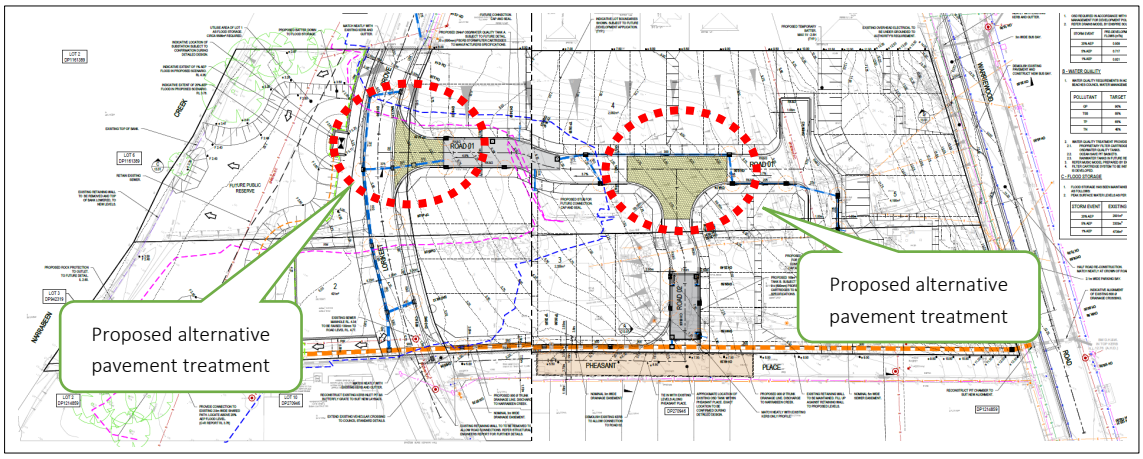
Figure 6.1 indicates that the Road No. 1, Road No. 2 and Pheasant Place and have 7.5m carriageway widths. The proposed 3.5m verge width matches Lorikeet Grove to the north-west and accordingly, is considered satisfactory to cater for the proposed active transport infrastructure and services.

6.3 Proposed Threshold Treatments

Based on Austroads Guide to Traffic Management Part 5: Link Management, Table 5.7 and Table 7.7, the threshold treatments at each end of the central accessway have been proposed to reduce vehicle speed and to provide a more attractive street environment as shown in Figure 6.2.

Proposed Road Design

Figure 6.2: Proposed Alternative Pavement Treatment



The proposed street design is considered to contribute positively in reducing vehicle speed and to increase the safety of people driving, crossing and people riding bicycles on the street.

As outlined in the Northern Beaches Road Safety Plan, "*Speed, alcohol and fatigue are the three biggest killers on NSW roads.*[3]" Out of the three biggest killers, speed is a contributing factor for the highest number of crashes in the Northern Beaches LGA (11%). Alcohol is a contributing factor in 9.1% of crashes and fatigue is a contributing factor in 6.9% of crashes.

Research published by NACTO has identified that "*There are clear and obvious benefits of slowing traffic on residential streets, primarily the improvement of pedestrian and bicyclist safety. Slower traffic reduces the severity of accidents, reduces noise, and generally improves the livability of residential streets.*"[4]

The Pittwater DCP 21 states that *"All roads in Warriewood Valley must be designed with traffic calming devices to lower vehicle speeds, which may incorporate pavement treatment and enhanced landscaping."*

The proposed alternative pavement treatments are designed to calm traffic speeds and based on the anticipated future volume and the passing opportunities created by the driveways along the road, the proposed road width is considered satisfactory and meets the desired outcomes of the Pittwater DCP 21.

6.4 Potential Driveway Locations

As per in the *PLM Notes*, the Pittwater DCP seeks to minimise the number of driveways along Warriewood Road. Although subject to a separate Development Application, CTP Consult has

[3] https://www.northernbeaches.nsw.gov.au/sites/default/files/documents/policies-register/road-safety-plan/road-safety-plan/road-safety-plan.pdf - Accessed 30/7/24

[4] https://nacto.org/docs/usdg/narrow_residential_streets_daisa.pdf - Accessed 30/7/24

reviewed the potential driveway locations for the lots within the subject site with the assessment indicating the following:

> Lot 28 and 29 provide access via Warriewood Road.
> Lot 27 proposes also access via Warriewood Road however if required, could provide access via the rear laneway.

CTP Consult has undertaken a review of driveway locations against AS2890.1:2004 and provided a number of recommended locations in **Appendix B**. All proposed driveway locations will be subject to a future assessment and will be designed to meet the location and sight distance requirements in AS2890.1:2004 and Pittwater DCP 21.

6.5 Visitor Car Parking

The Pittwater DCP B6.3 Table 1 identifies a visitor car parking rate of 1 space per 3 dwellings. While subject to a future Development Application, CTP Consult has reviewed the potential future visitor car parking locations and has identified a total of 10 on-street parking spaces. This is satisfactory to cater for up to 30 residential dwellings, with additional spaces on Pheasant Place and Lorikeet Grove, the quantum of on-street visitor parking is expected to be satisfactory to cater for the proposed dwellings.

Provided in **Appendix B**, CTP Consult has undertaken a swept path assessment which shows trucks can pass and turn around within the proposed Road 1 'hammerhead' clear of the visitor car parking spaces and accordingly, the proposed visitor car parking provision meets the requirements of the Pittwater DCP and is considered satisfactory.

6.6 Vehicle Swept Paths, Refuse Collection and Emergency Vehicles Access

As identified in the pre-DA minutes from Council:

Swept path analysis must be provided showing waste collection vehicles can negotiate all corners and turns within the property and the access to/from the public road.

CTP Consult has undertaken a swept path assessment of the proposed design which is provided in **Appendix B**. The assessment shows that an HRV can turn around within the Road No. 1 'hammerhead' turning area clear of parked cars and adjacent properties.

Refuse collection is proposed on-street by Council collection vehicles. The swept path assessment also demonstrates that refuse collection vehicles can enter and exit Road No. 1 from Lorikeet Grove satisfactorily and exit via Pheasant Place. As HRVs can access the proposed development via Road No. 1, access for emergency vehicles is also facilitated.

The proposal also benefits the Pheasant Place Community Association by providing direct access for refuse collection within Pheasant Place, reducing the need for residents to shift their bin to Warriewood Road for collection.

Based on the above, the proposed refuse vehicle access arrangements are considered satisfactory.

6.7 Sight Distance at the intersection of Road 1 / Lorkieet Grove

As outlined in Section 2.3 of the Warriewood Valley Roads Masterplan, Lorikeet Grove is considered to be a local street and has a design speed of 40km/h. Table 3.2 of the Austroads Guide to Road Design Part 4A identifies that for a 40km/h road and a reaction time of 2 seconds, a Safe Intersection Sight Distance of 73m is required. Figure 6.3 provides an estimate of the available sight distance at the proposed intersection of Road No. 1 / Lorikeet Grove and Pheasant Place / Lorikeet Grove.

Figure 6.3: Potential Sight Distance Available at Lorikeet Grove and Pheasant Place

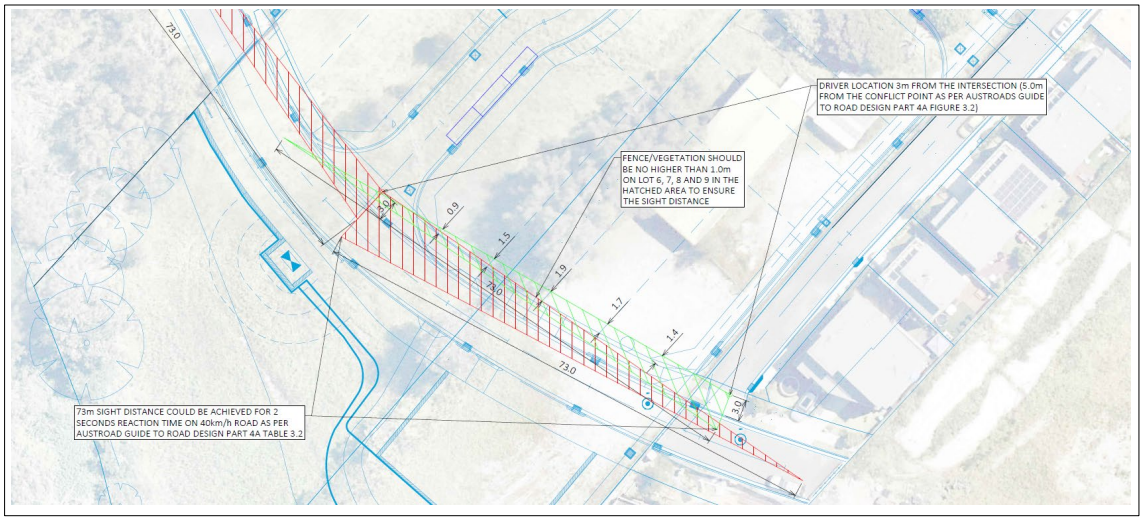


Figure 6.3 indicates that with a restriction on the fence height for the properties fronting Lorikeet Grove between Pheasant Place and Road No. 1, the location of the intersection provides the ability to see the required distance to the north-west for drivers exiting onto Lorikeet Grove.

The dimensions in Figure 6.3 between each property show the distance that a fence or vegetation must be below 1m to provide satisfactory sight distance.

As Lorikeet Grove isn't constructed to the south-east, and while there appears to be the ability to provide sufficient sight distance in both directions, this would have to be checked in more detail by others as part of the detailed design of Lorikeet Grove.

7. Conclusions

Based on the analysis and discussions presented within this report, the following conclusions are made:

1) While subject to a future Development Application, the proposed development has the potential to cater for a minimum of 30 residential dwellings and up to 42 residential dwellings.

2) Based on a maximum of 42 dwellings permitted by the Pittwater Local Environmental Plan 2014 - Reg 6.1 and the *PLM Notes*, the subject site could potentially generate 42 vehicle movements in a peak hour with 450 vehicle movements over the entire day.

3) Subject to the number of dwellings not exceeding the maximum of 42 dwellings identified in the Pittwater LEP, no additional road upgrades are proposed beyond those already envisaged and against existing traffic volumes in the vicinity of the subject site, the additional traffic generated by the proposed development is not expected to compromise the safety or function of the surrounding road network.

4) The Pittwater DCP B6.3 Table 1 identifies a visitor car parking rate of 1 space per 3 dwellings. While subject to a future Development Application, CTP Consult has reviewed the potential future visitor car parking locations and has identified a total of 10 on-street parking spaces. This is satisfactory to cater for up to 30 residential dwellings, with additional spaces on Pheasant Place and Lorikeet Grove, the quantum of on-street visitor parking is expected to be satisfactory to cater for the proposed dwellings.

5) CTP Consult has undertaken a swept path assessment of the proposed road design. The assessment shows that an HRV can turn into Road No. 1 from Lorikeet Grove, can pass parked vehicles with appropriate clearance and can turn around within the proposed 'hammerhead' and exit via Pheasant Place. The proposal also benefits the Pheasant Place Community Association by providing direct access for refuse collection within Pheasant Place, reducing the need for residents to shift their bin to Warriewood Road for collection. The swept path assessment is shown in **Appendix B** of this report.

6) Road No. 1, Road No. 2 and Pheasant Place and have 7.5m carriageway widths. The proposed 3.5m verge width matches Lorikeet Grove to the north-west and accordingly, is considered satisfactory to cater for the proposed active transport infrastructure and services.

Conclusions

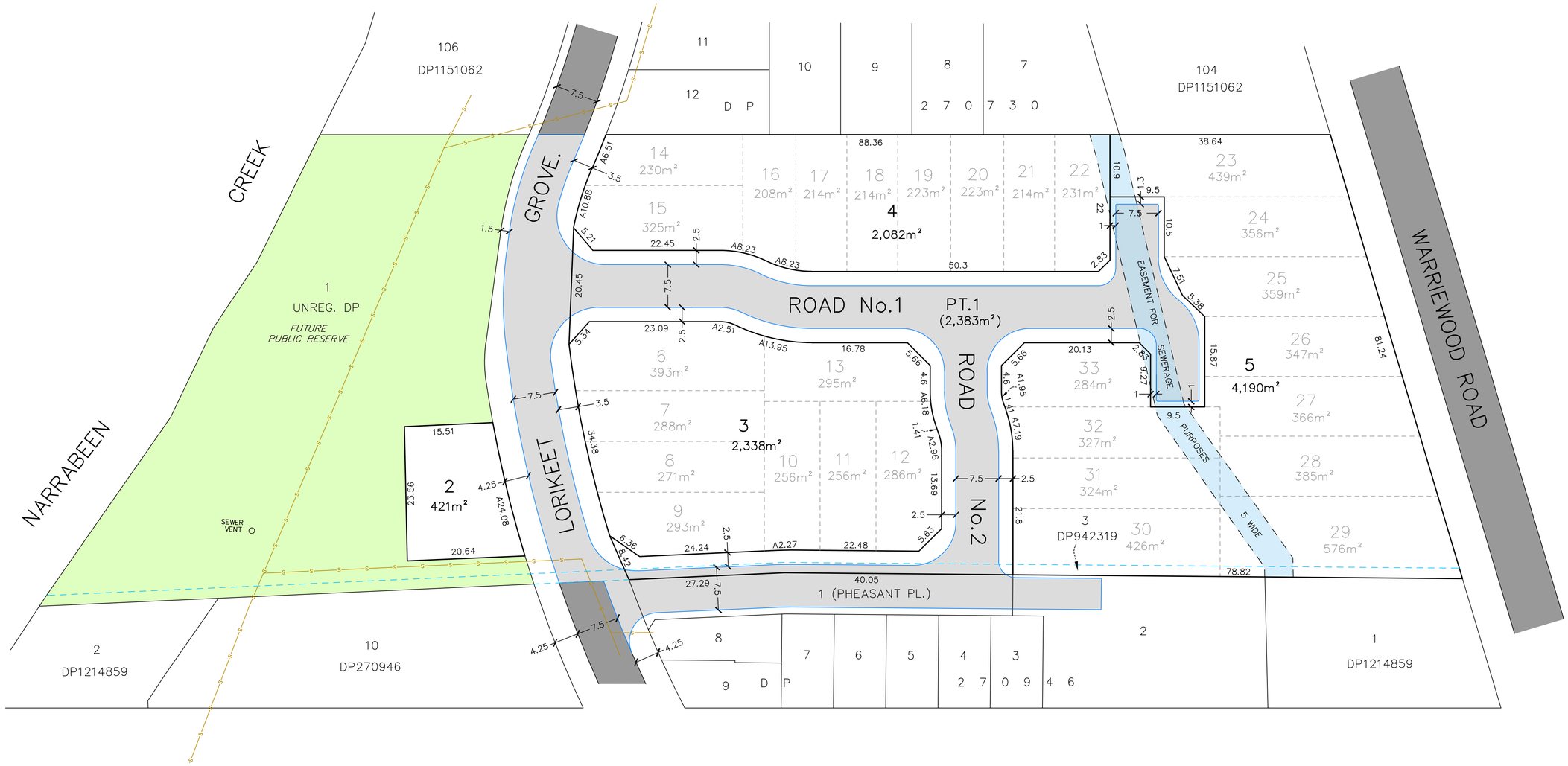
7) CTP Consult has undertaken a review of driveway locations against AS2890.1:2004 and provided a number of recommended locations in **Appendix B**. All proposed driveway locations will be subject to a future assessment and will be designed to meet the location and sight distance requirements in AS2890.1:2004 and Pittwater DCP 21.

8) The proposed bus stop is subject to detailed design and will be consistent with requirements of the STA Bus Infrastructure Guide. The relocation will be subject to detailed design and approval by Traffic Committee.

9) With a restriction on the fence height for the properties fronting Lorikeet Grove between Pheasant Place and Road No. 1, the location of the intersection provides the ability to see the required distance to the north-west for drivers exiting onto Lorikeet Grove. The dimensions in Figure 6.3 between each property show the distance that a fence or vegetation must be below 1m to provide satisfactory sight distance. As Lorikeet Grove isn't constructed to the south-east, and while there appears to be the ability to provide sufficient sight distance in both directions when exiting from the central accessway onto Lorikeet Grove, this would have to be checked in more detail by others as part of the future detailed design of Lorikeet Grove.

Appendix A

Assessed Plans



(A)–PROPOSED EASEMENT FOR SUPPORT & MAINTENANCE 0.9 WIDE (ZERO LOT LINE)
SUBJECT TO FINAL PLAN OF SUBDIVISION

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG
TM
DIAL BEFORE YOU DIG
SHOULD BE CONTACTED
PRIOR TO ANY EXCAVATION ON SITE

TM: trade mark of Association of Australian Dial Before You Dig Services Ltd; used under licence.

SCALE: – 1:400
0 5 10 15 20 25 50 75

DATE	REVISIONS	BY
27/7/24	LOT 3 IN DP942319 ADDED	VK
20/6/24	LOT 2 AMENDED	VK

YSCO GEOMATICS
LAND RESOURCE CONSULTANTS
SUITE 4, 114 HAMPDEN ROAD, ARTARMON, 2064
PH: (02) 94198222 FAX: (02) 94194762
Email : enquiries@yscogeomatics.com.au
Website : www.yscogeomatics.com.au
YOUDALE STRUDWICK & COMPANY PTY LTD A.C.N. 002 819 865

GEOMATIC ENGINEERING
LAND & ENGINEERING SURVEYING
PROJECT MANAGEMENT
SOIL AND WATER MANAGEMENT
ENVIRONMENTAL PLANNING & DESIGN

Liability limited by a scheme approved under Professional Standards Legislation

PLAN OF PROPOSED COMMUNITY SCHEME SUBDIVISION OF LOT 2 IN UNREG. DP. BEING 53A&B WARRIEWOOD RD. WARRIEWOOD. NORTHERN BEACHES LGA

DRAWN:	CHECKED:	SCALE:	DATUM:	REFERENCE:
17 APRIL 2024		1:400 @ A1		6321/15C

LEGEND

- SITE BOUNDARY
- 100.00 — CONTOUR
- BATTER
- RW — RETAINING WALL
- K&G — KERB AND GUTTER
- RK&G — ROLL KERB AND GUTTER
- B 100.00 — BULK EARTHWORKS PAD LEVEL
- e 100.00 — EXISTING LEVEL
- F 100.00 — FINISHED LEVEL
- IL 100.00 — INVERT LEVEL
- SWALE DRAIN
- TEMPORARY DRAINAGE CHANEL
- 375 — PIPE SIZE; STORMWATER DRAINAGE LINE (SUBDIVISION); FLOW DIRECTION
- TRUNK STORMWATER DRAINAGE LINE
- A01/01 — STORMWATER LINE/PIT NUMBER
- KERB INLET PIT
- SURFACE INLET PIT/JUNCTION PIT
- HEADWALL
- DRIVEWAY LOCATION (FUTURE)
- EXISTING SEWER PIPE
- EXISTING SEWER MAINTENANCE SHAFT & MANHOLE
- STAMPED AC, PORPHYRY PAVERS OR SIMILAR
- EXISTING 1% AEP FLOOD LINE (RL 4.361) REFER WATER MANAGEMENT REPORT BY CRAIG & RHODES
- EXISTING 20% AEP FLOOD LINE (RL 3.755) REFER WATER MANAGEMENT REPORT BY CRAIG & RHODES
- PROPOSED 1% AEP FLOOD LINE (RL 4.361)
- PROPOSED 20% AEP FLOOD LINE (RL 3.755)
- ELECTRICAL SUBSTATION
- OVERLAND FLOW
- SCOUR PROTECTION
- STORMWATER PIT INSERTS (OCEANGUARD)
- PAVEMENT INTERFACE DETAIL
- TfNSW STEEL RAIL SAFETY BARRIER TO MANUFACTURER SPECIFICATIONS

DESIGN SUMMARY:

CATCHMENT AREA = 1.654 ha
LGA = NORTHERN BEACHES COUNCIL
REGION = NORTHERN STORMWATER REGION 1.

A - WATER QUANTITY

1. OSD REQUIRED IN ACCORDANCE WITH COUNCIL'S WATER MANAGEMENT FOR DEVELOPMENT POLICY
2. REFER DRAINS MODEL BY ENSPIRE SOLUTIONS FOR DETAILS.

STORM EVENT	PRE-DEVELOPMENT FLOWS (m^3/s)	POST-DEVELOPMENT FLOWS (m^3/s)
20% AEP	0.509	0.487
5% AEP	0.717	0.631
1% AEP	0.921	0.777

B - WATER QUALITY

1. WATER QUALITY REQUIREMENTS IN ACCORDANCE WITH NORTHERN BEACHES COUNCIL WATER MANAGEMENT FOR DEVELOPMENT POLICY.

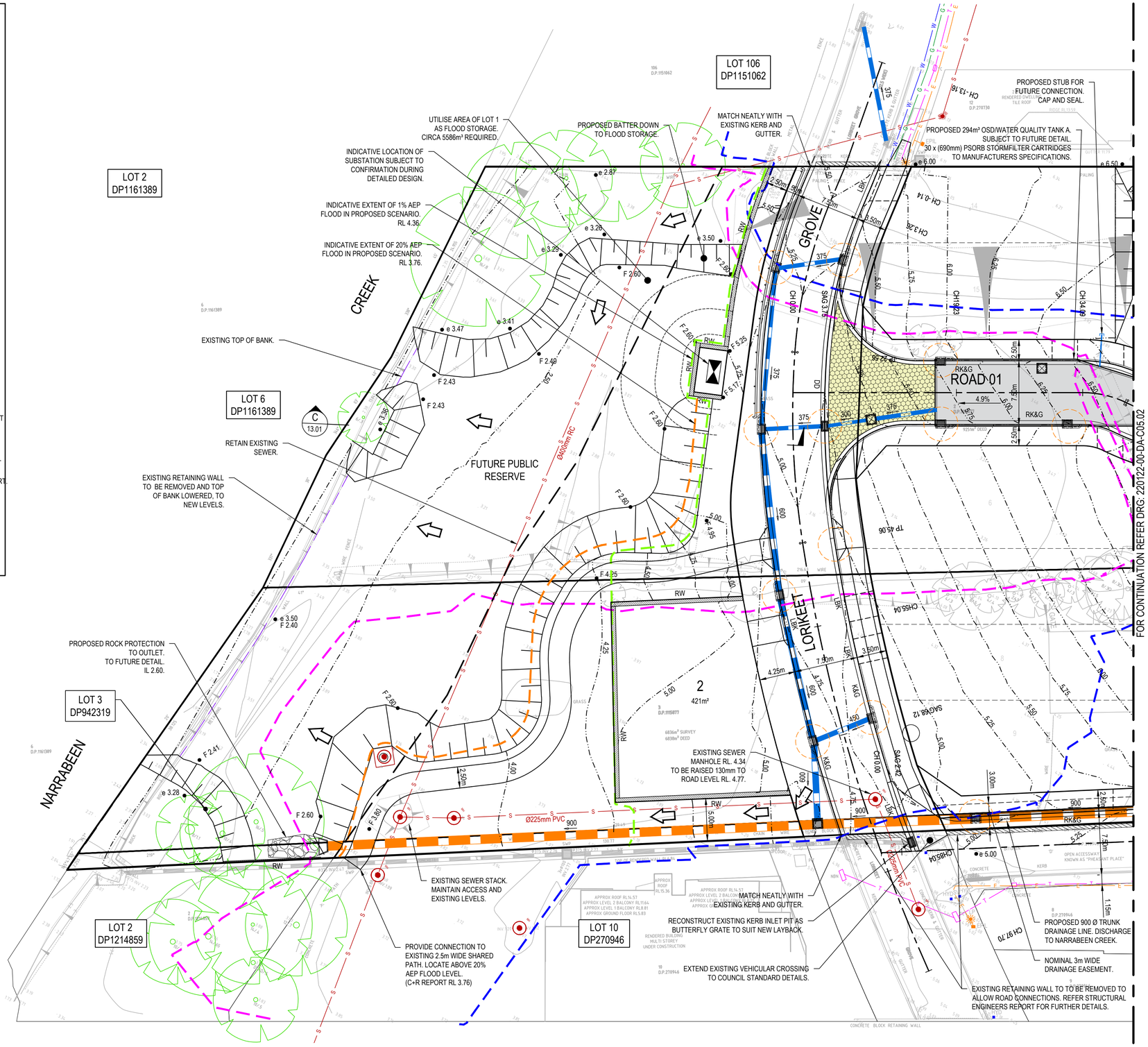
POLLUTANT	TARGET	REDUCTION
GP	90%	96%
TSS	85%	85%
TP	65%	65%
TN	45%	51.1%

2. WATER QUALITY TREATMENT PROVIDED BY:
   - 2.1. PROPRIETARY FILTER CARTRIDGES SYSTEM LOCATED WITHIN OSD/WATER QUALITY TANKS.
   - 2.2. OCEAN SAVE PIT BASKETS.
   - 2.3. RAINWATER TANKS IN FUTURE RESIDENTIAL LOTS.
3. REFER MUSIC MODEL PREPARED BY ENSPIRE SOLUTIONS FOR DETAILS.
4. FILTER CARTRIDGE SYSTEM TO BE INSTALLED AFTER 80% OF CATCHMENT IS DEVELOPED.

C - FLOOD STORAGE

1. FLOOD STORAGE HAS BEEN MAINTAINED AS PART OF THIS DEVELOPMENT AS FOLLOWS:
2. PEAK SURFACE WATER LEVELS AS PER C&R WATER MANAGEMENT REPORT.

STORM EVENT	EXISTING	PROPOSED
20% AEP	$2001m^3$	$3104m^3$
5% AEP	$3303m^3$	$3908m^3$
1% AEP	$4736m^3$	$4664m^3$



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2	12/06/2024	ISSUED FOR INFORMATION	SS	TPB	RL	MC
1	6/05/2024	ISSUED FOR INFORMATION	JS	TPB	RLE	MC

Client: SEKISUI HOUSE

Scale: 0 5 10 15 20 25m — SCALE 1:250 @A1

North

enspire
Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title: SITEWORKS AND STORMWATER MANAGEMENT PLAN
SHEET 01

Scale: 1:250
Date: 06/05/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-00-DA-C05.01
Revision: 3

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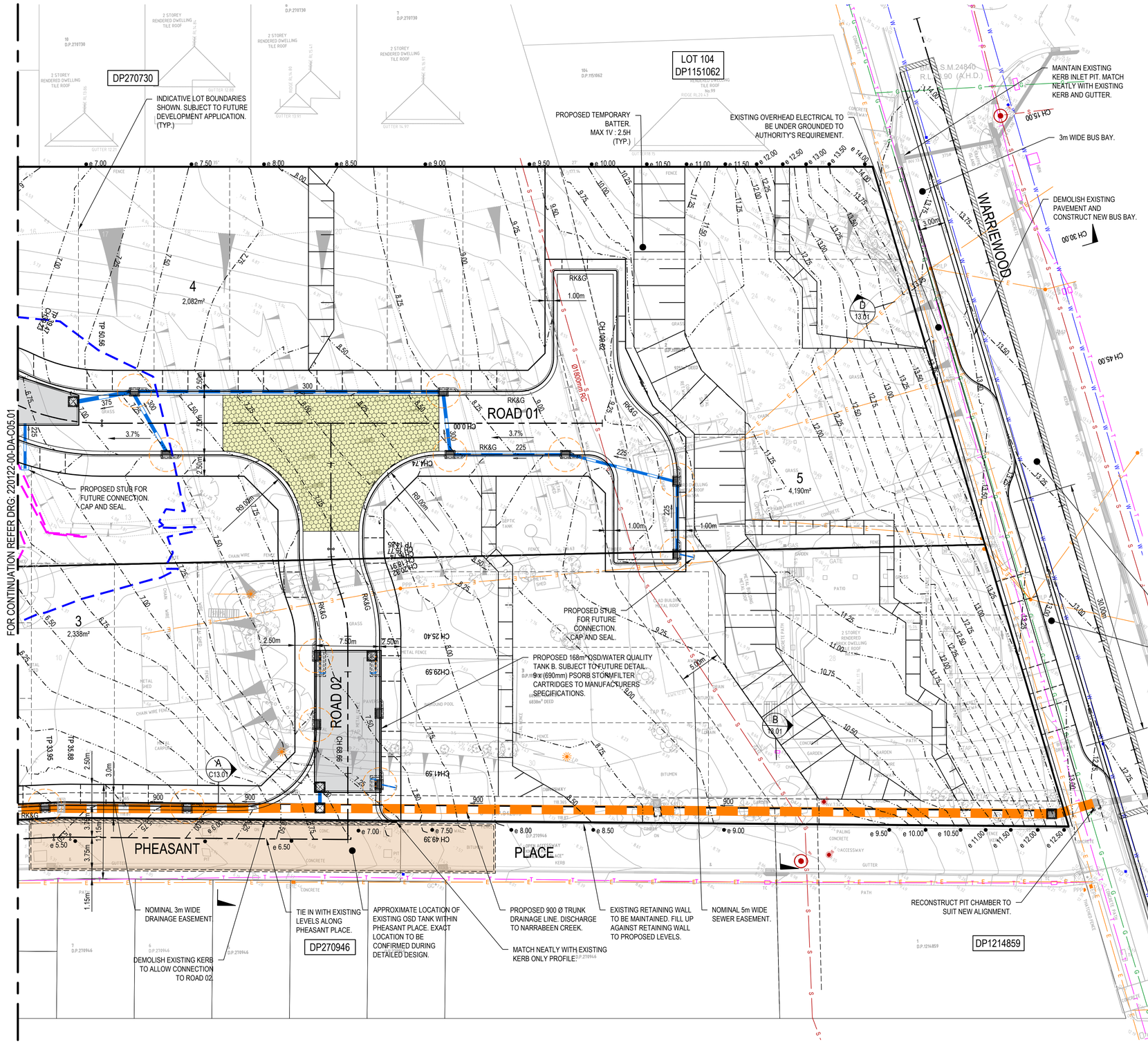
DATE PLOTTED: 1 July 2024 4:44 PM BY : SUDHA SHRESTHA



DESIGN SUMMARY:

CATCHMENT AREA = 1.654 ha
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5% AEP	$3303m^3$	$3908m^3$
1% AEP	$4736m^3$	$4664m^3$

LEGEND

- SITE BOUNDARY
- 100.00 — CONTOUR
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- RW — RETAINING WALL
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- RK&G — ROLL KERB AND GUTTER
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- e 100.00 — EXISTING LEVEL
- F 100.00 — FINISHED LEVEL
- IL 100.00 — INVERT LEVEL
- SWALE DRAIN
- TEMPORARY DRAINAGE CHANEL
- 375 — PIPE SIZE; STORMWATER DRAINAGE LINE (SUBDIVISION); FLOW DIRECTION
- TRUNK STORMWATER DRAINAGE LINE
- A01/01 — STORMWATER LINE/PIT NUMBER
- KERB INLET PIT
- SURFACE INLET PIT/JUNCTION PIT
- HEADWALL
- DRIVEWAY LOCATION (FUTURE)
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- TINSW STEEL RAIL SAFETY BARRIER TO MANUFACTURER SPECIFICATIONS

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
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2	12/06/2024	ISSUED FOR INFORMATION	SS	TPB	RL	MC
1	6/05/2024	ISSUED FOR INFORMATION	JS	TPB	RLE	MC

Client: SEKISUI HOUSE

Scale: 0 5 10 15 20 25m — SCALE 1:250 @A1

North

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Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title: SITEWORKS AND STORMWATER MANAGEMENT PLAN
SHEET 02

Scale: 1:250
Date: 06/05/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
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Revision: 3

DATE PLOTTED: 1 July 2024 4:45 PM BY : SUDHA SHRESTHA

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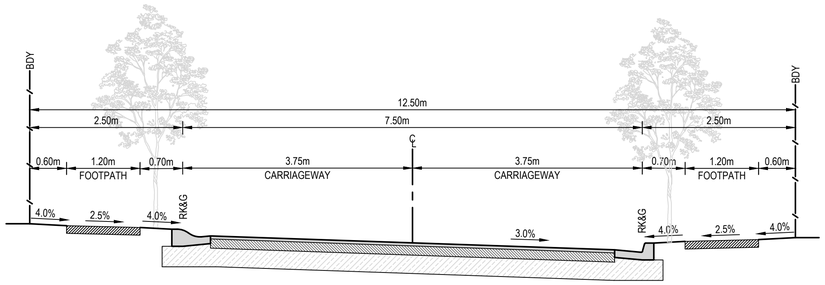

ROAD 01 & ROAD 02

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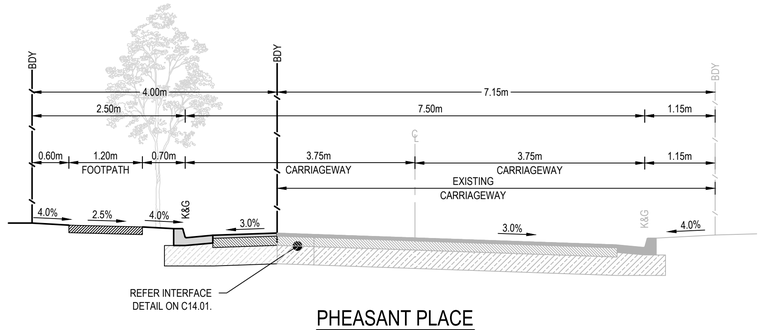

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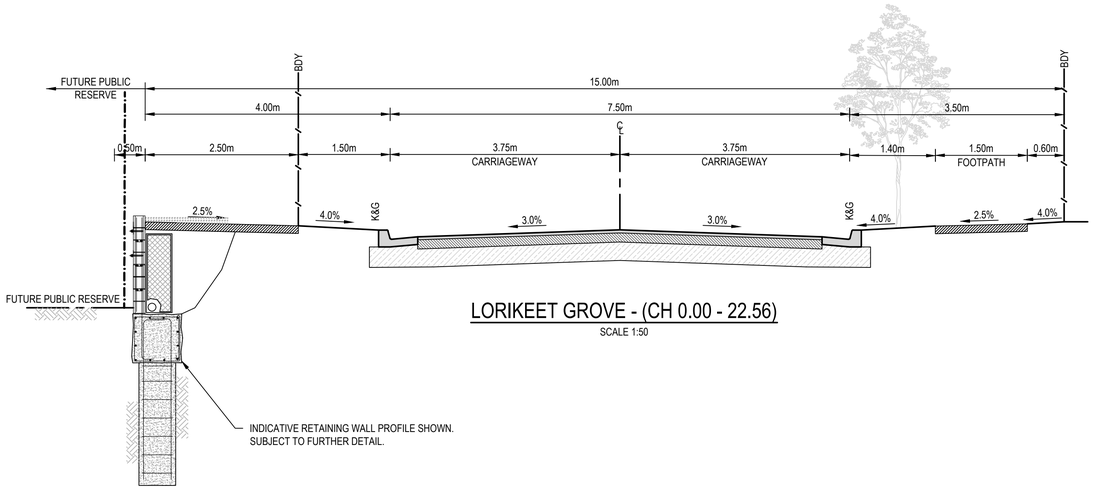

LORIKEET GROVE - (CH 0.00 - 22.56)

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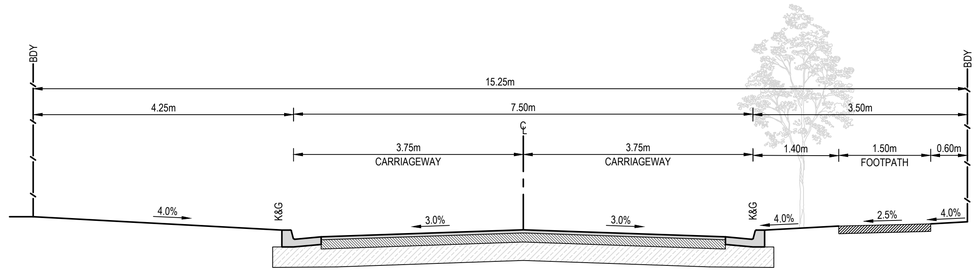

LORIKEET GROVE (CH 28.86 - 97.70)

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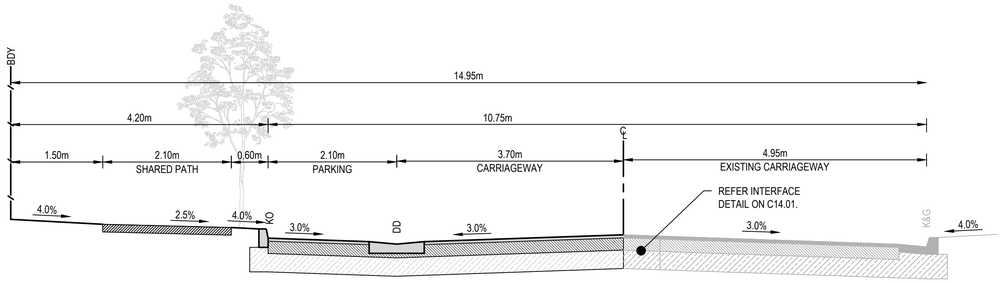

WARRIEWOOD ROAD

SCALE 1:50

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
1	1/07/2024	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB	RLE	MC

Client: SEKISUI HOUSE

Scale: 0 1 2 3 4 5m — SCALE 1:50 @A1

North

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Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title: ROAD TYPICAL CROSS SECTIONS

Scale: AS SHOWN
Date: 01/07/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-00-DA-C06.01

Revision: 1

DATE PLOTTED: 1 July 2024 4:44 PM BY : SUDHA SHRESTHA

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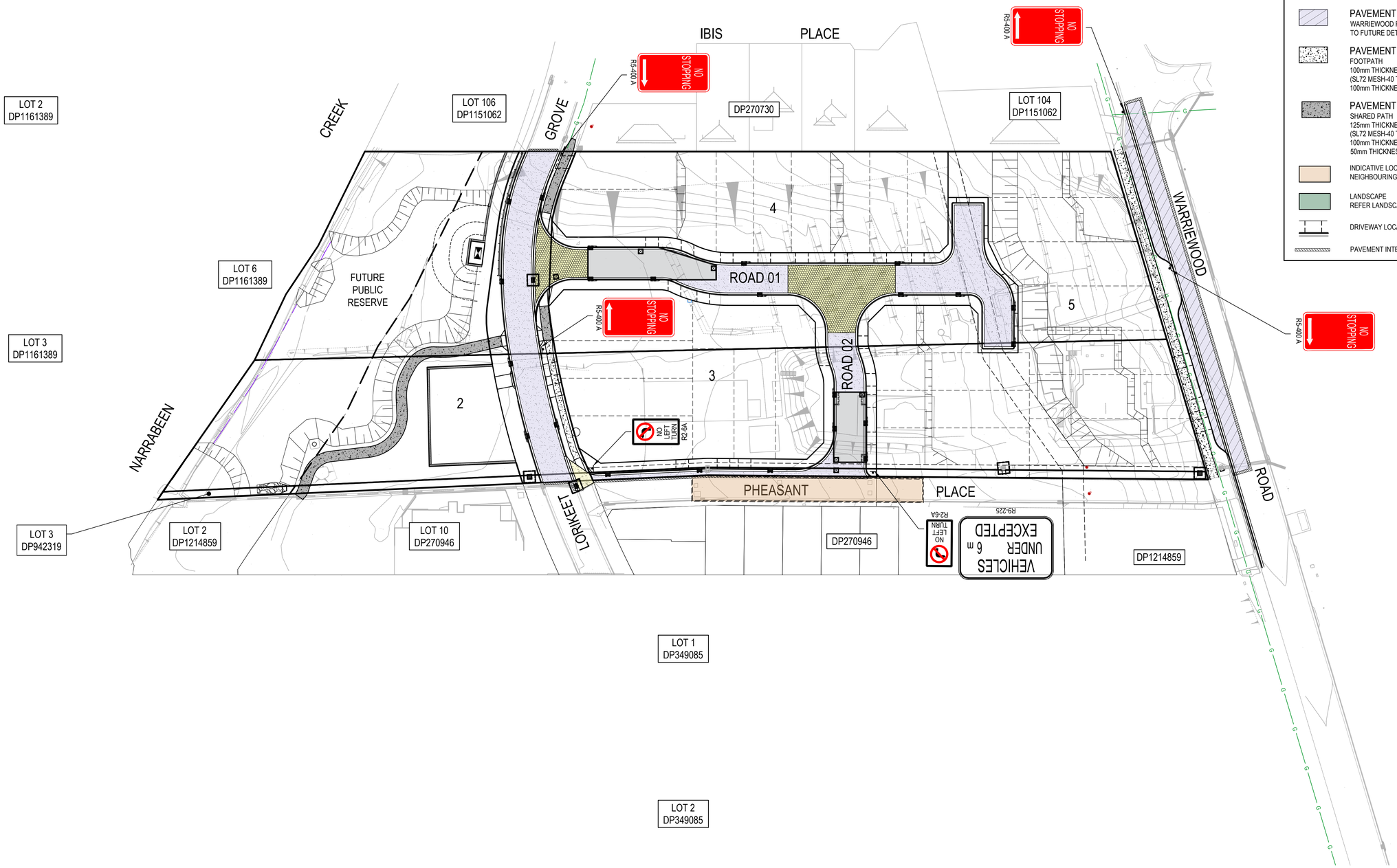

PAVEMENT LEGEND

- PAVEMENT TYPE 1
  LOCAL ROAD
  TO FUTURE DETAIL
- PAVEMENT TYPE 2
  OSD TANK
  TO FUTURE DETAIL
- PAVEMENT TYPE 3
  STAMPED AC ON LOCAL ROAD PAVEMENT
  STREET PRINT BRITISH COBBLE PATTERN,
  SANDSTONE COLOUR
  TO FUTURE DETAIL
- PAVEMENT TYPE 4
  WARRIEWOOD ROAD
  TO FUTURE DETAIL
- PAVEMENT TYPE 5
  FOOTPATH
  100mm THICKNESS CONCRETE
  (SL72 MESH-40 TOP COVER) ON
  100mm THICKNESS COMPACTED DGB 20
- PAVEMENT TYPE 6
  SHARED PATH
  125mm THICKNESS CONCRETE
  (SL72 MESH-40 TOP COVER) ON
  100mm THICKNESS COMPACTED DGB 20
  50mm THICKNESS GRANULAR BEDDING
- INDICATIVE LOCATION OF OSD TANK ON NEIGHBOURING DEVELOPMENT
- LANDSCAPE
  REFER LANDSCAPE DRAWINGS FOR DETAILS
- DRIVEWAY LOCATION (FUTURE)
- PAVEMENT INTERFACE DETAIL

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
1	1/07/2024	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB	RLE	MC

Client: SEKISUI HOUSE

Scale: 0 10 20 30 40 50m — SCALE 1:500 @A1

North

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title: PAVEMENT, SIGNAGE AND LINEMARKING PLAN

Scale: 1:500
Date: 01/07/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-00-DA-C11.01
Revision: 1

DATE PLOTTED: 1 July 2024 4:46 PM BY : SUDHA SHRESTHA

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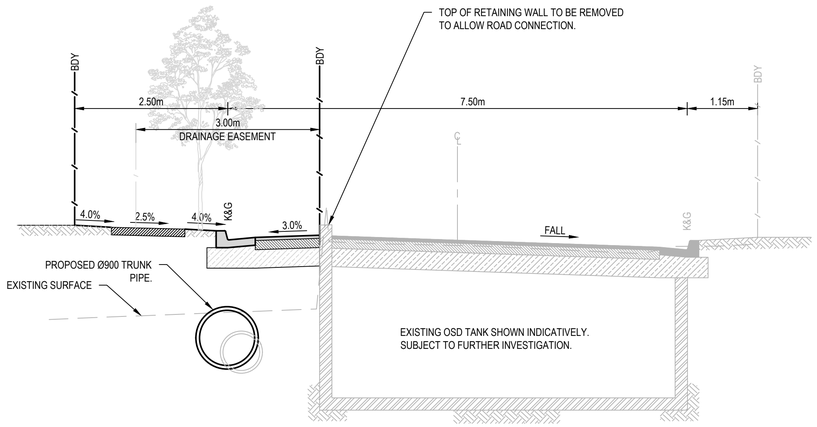

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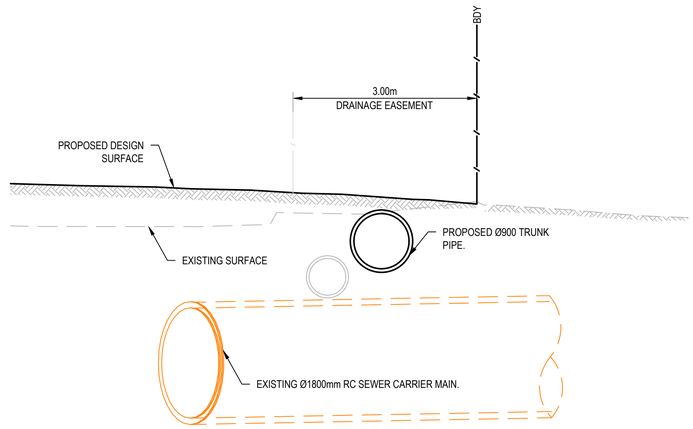

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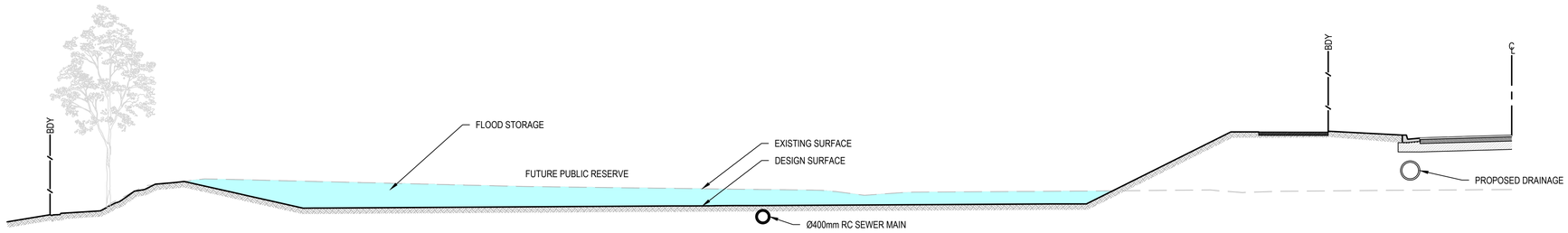

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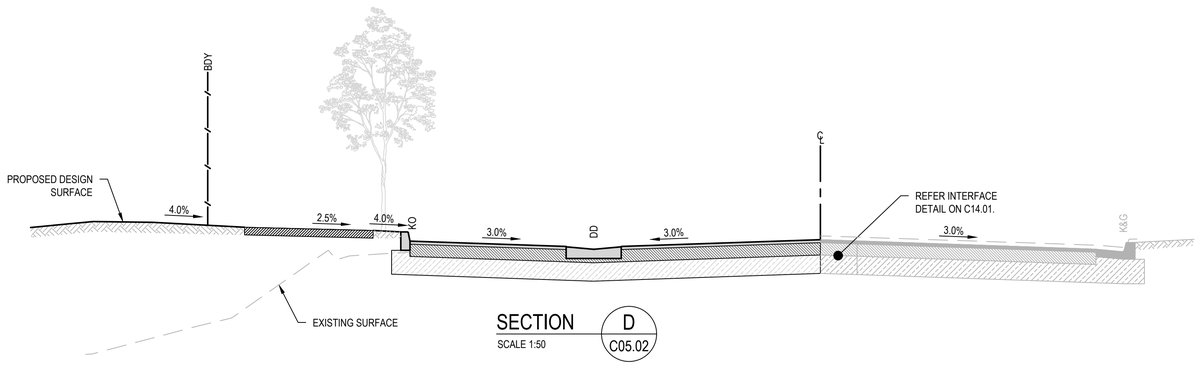

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REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
1	1/07/2024	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB	RLE	MC

Client: SEKISUI HOUSE

Scale: 0 1 2 3 4 5m — SCALE 1:50 @A1

North

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Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project: 53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title: SITE SECTIONS

Scale: AS SHOWN
Date: 01/07/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 220122-00-DA-C13.01

Revision: 1

DATE PLOTTED: 1 July 2024 4:46 PM BY : SUDHA SHRESTHA

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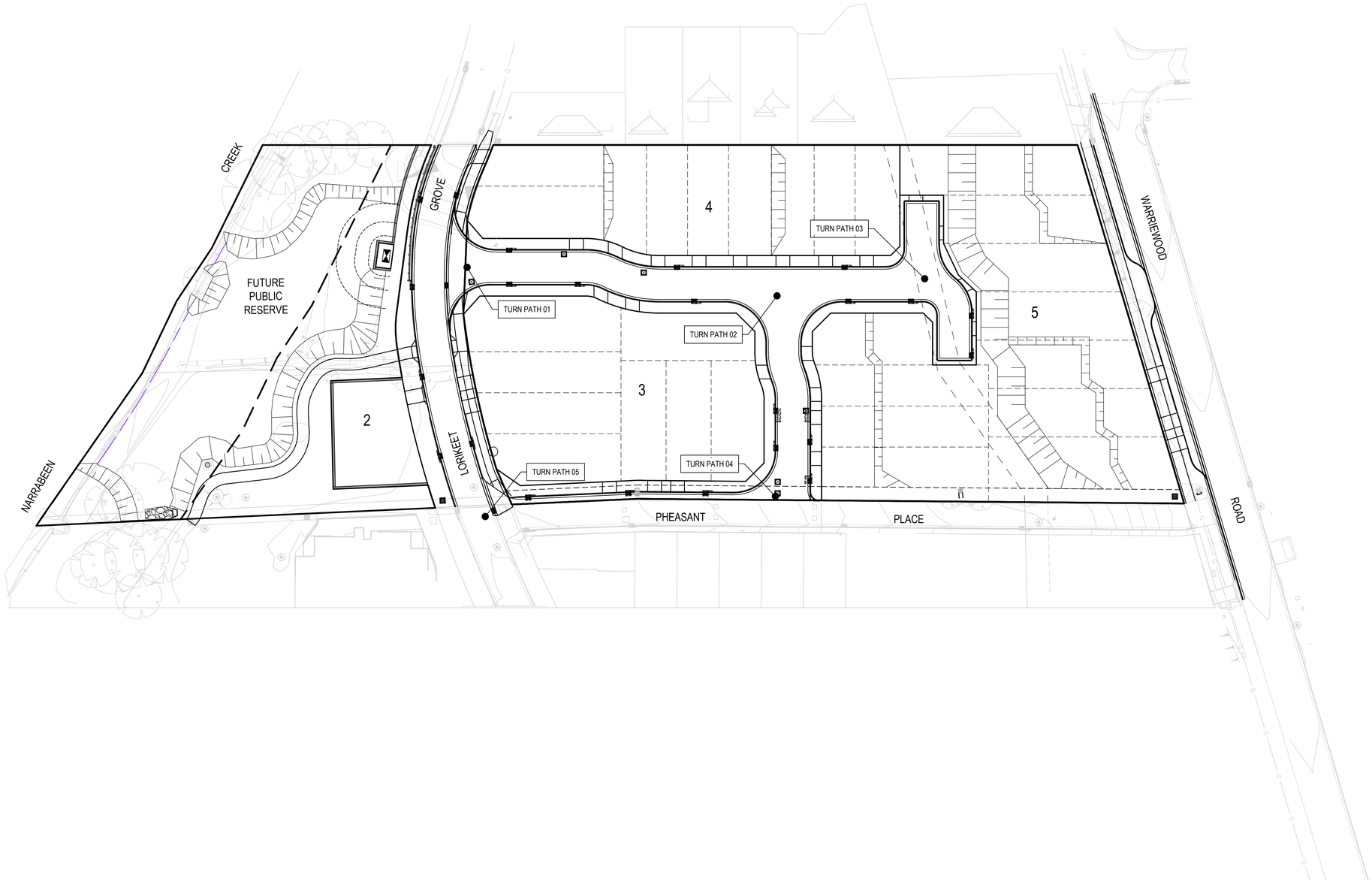


REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
1	1/07/2024	ISSUED FOR DEVELOPMENT APPLICATION	SS	TPB	RLE	MC

Client

SEKISUI HOUSE

Scale

0 10 20 30 40 50m

SCALE 1:500 @A1

North

enspire

Enspire Solutions Pty Ltd
Level 4, 153 Walker Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135

Project
53A & 53B WARRIEWOOD ROAD
WARRIEWOOD NSW 2102
CIVIL ENGINEERING WORKS

Title
TURNING PATH PLAN

SHEET 01

Scale 1:500

Date 01/07/2024

Size A1

Datum MGA2020

Status
FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number
220122-00-DA-C22.01

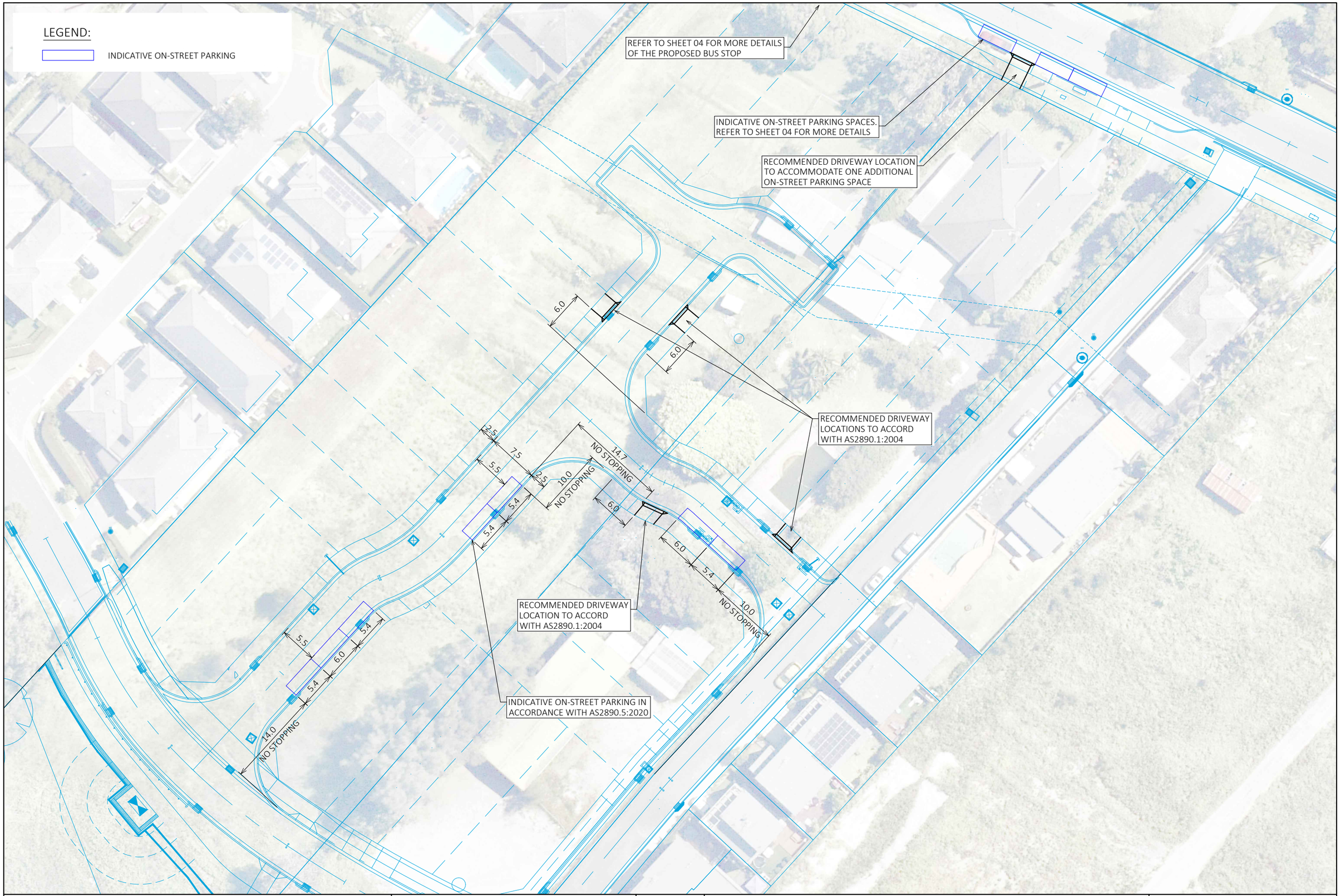
Revision 1

DATE PLOTTED: 1 July 2024 4:44 PM BY: SUDHA SHRESTHA

CAD File: P:\220122 WarriewoodRd\D-Civil\00-SiteWide\Drawings\6-DACC\1 - DA\220122-00-DA-C22.01 TURNING PATH PLAN.dwg

Appendix B

Swept Path Assessment



CTP Consult Pty Ltd
ABN: 68 649 792 709
M: 0439 064 432
E: info@checkthisproperty.com.au

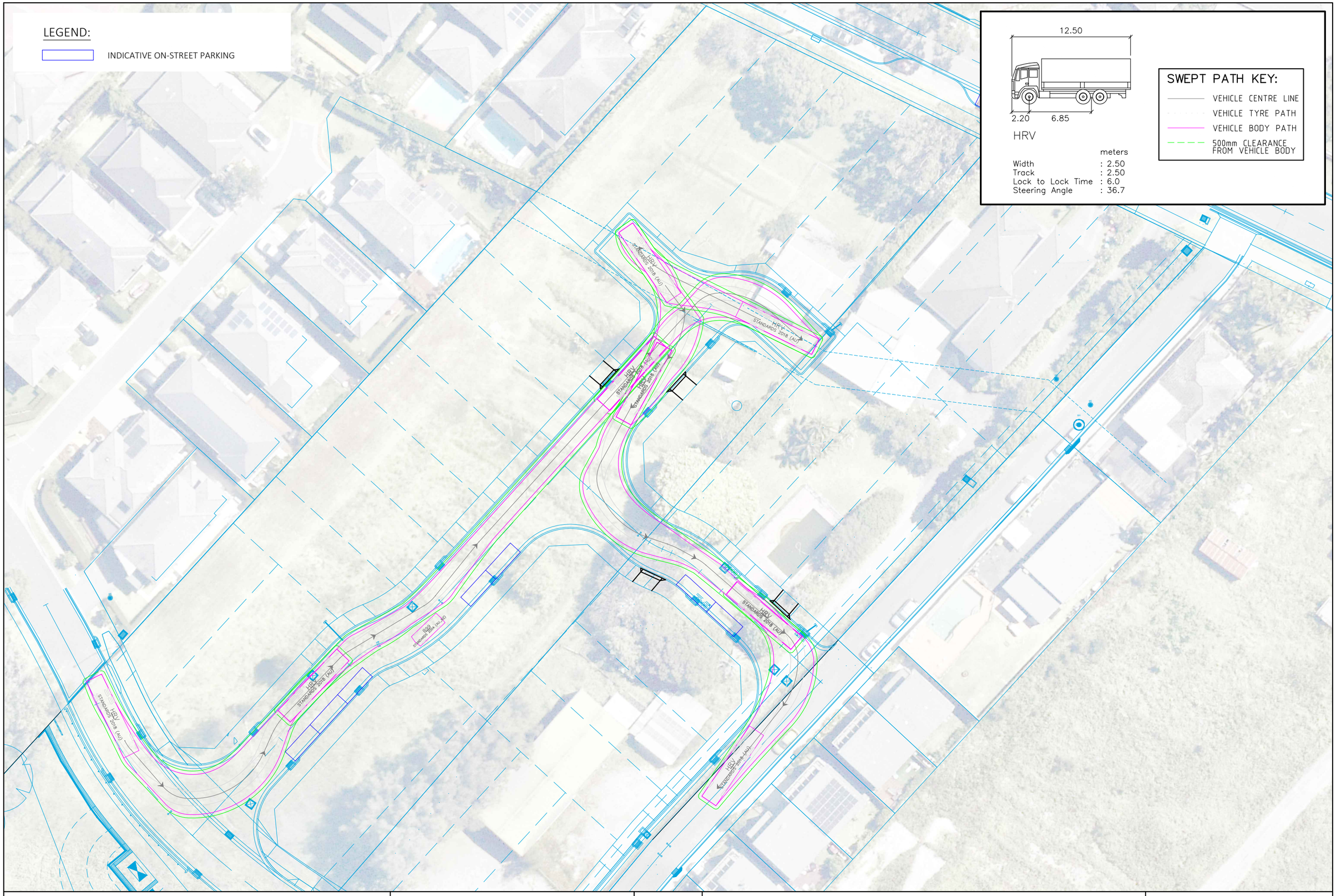
WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE VERIFIED ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

N

53A&53B WARRIEWOOD ROAD, WARRIEWOOD
SUBDIVISION ROAD LAYOUT COMPLIANCE REVIEW
CONCEPT LAYOUT

DRAWING NO. 21-003-05-V5
SHEET NO. 01 OF 05
ISSUE DATE 30 July 2024
SCALE 0 5.0 10.0 1:500 @ A3



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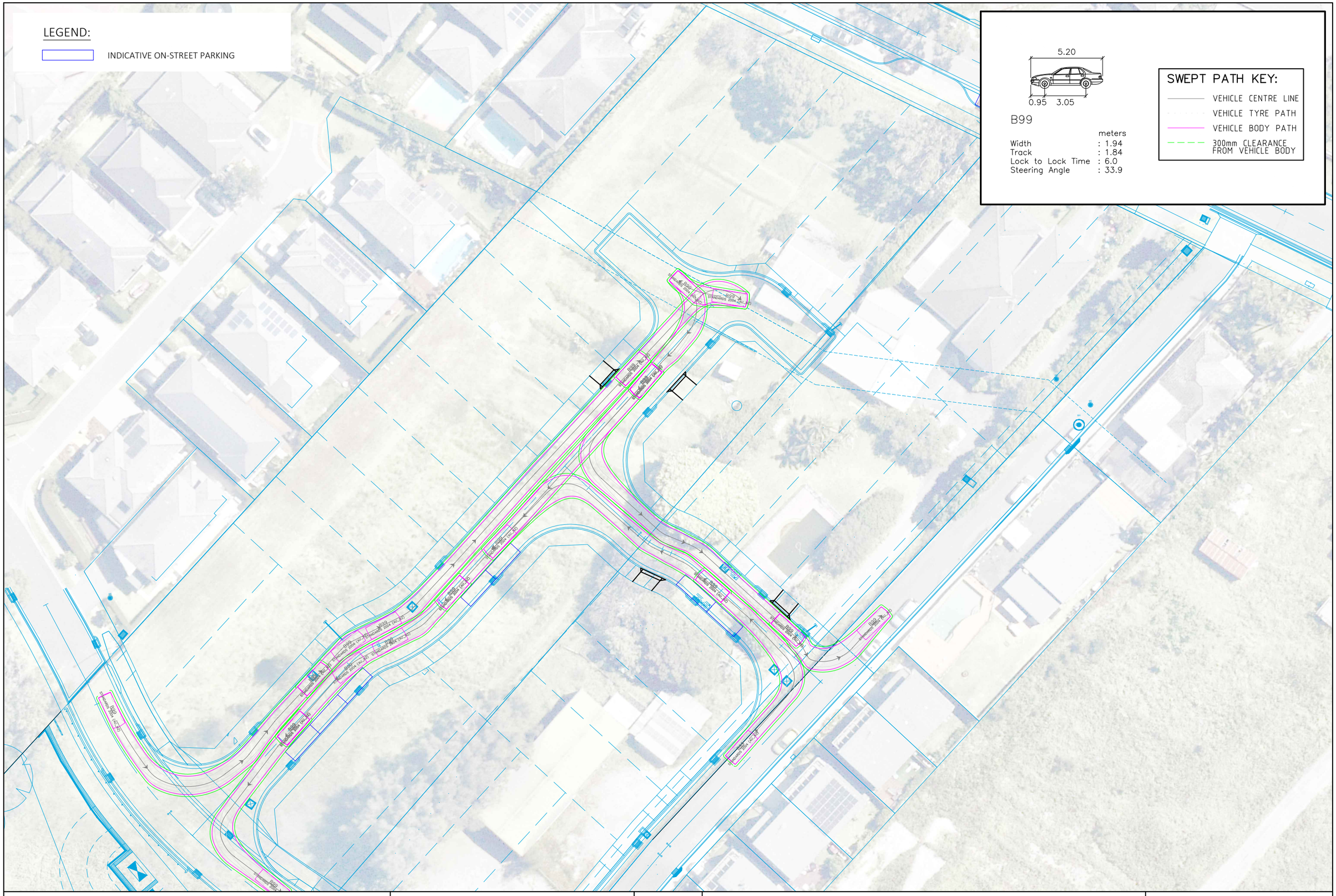
N

53A&53B WARRIEWOOD ROAD, WARRIEWOOD
SUBDIVISION ROAD LAYOUT COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT

DRAWING NO. 21-003-05-V5
SHEET NO. 02 OF 05
ISSUE DATE 30 July 2024
SCALE 0 5.0 10.0 1:500 @ A3



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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

N

53A&53B WARRIEWOOD ROAD, WARRIEWOOD
SUBDIVISION ROAD LAYOUT COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT

DRAWING NO. 21-003-05-V5
SHEET NO. 03 OF 05
ISSUE DATE 30 July 2024
SCALE 0 5.0 10.0 1:500 @ A3

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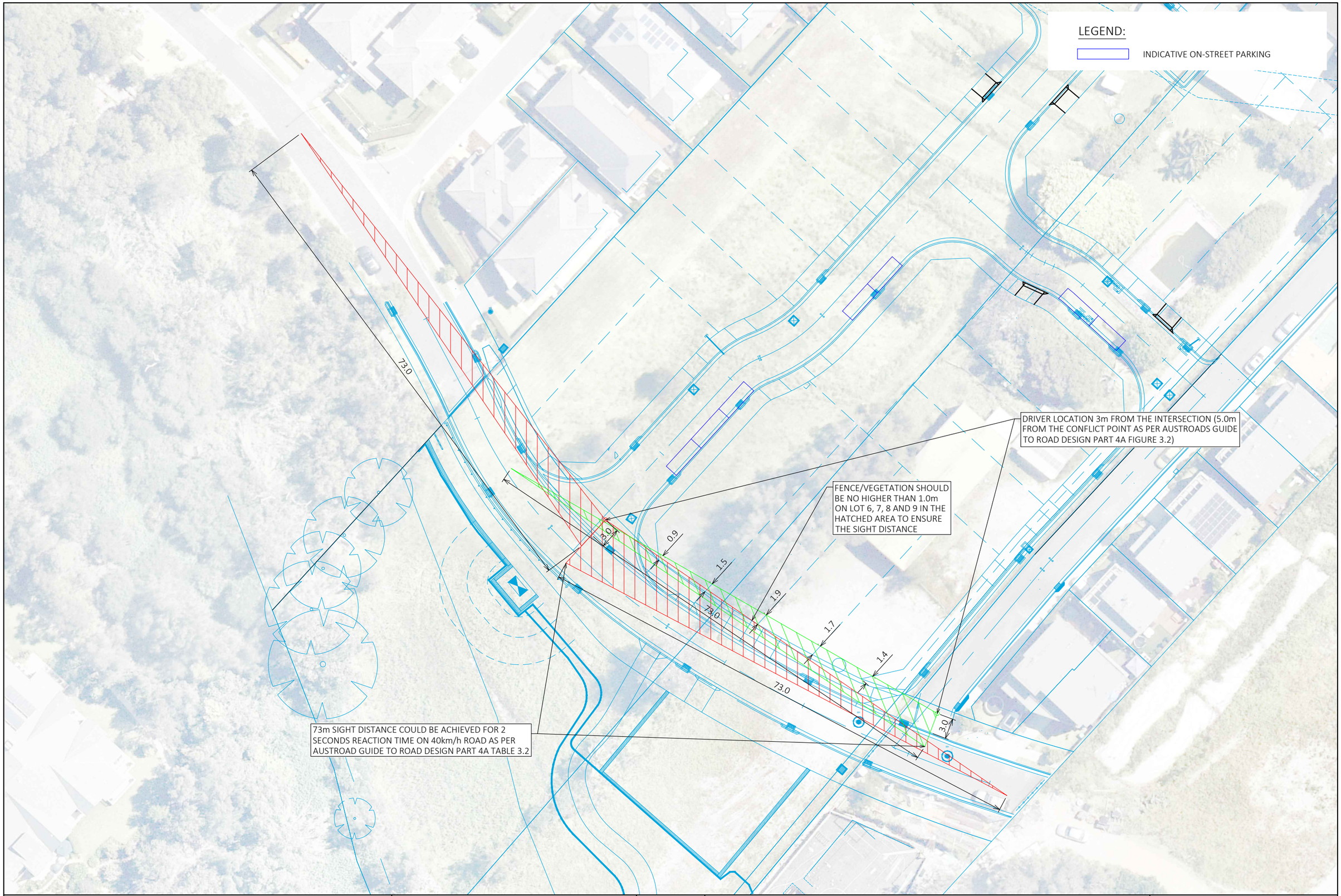
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

N

53A&53B WARRIEWOOD ROAD, WARRIEWOOD
WARRIEWOOD ROAD FRONTAGE
PROPOSED ON-STREET PARKING PLAN

DRAWING NO. 21-003-05-V5
SHEET NO. 04 OF 05
ISSUE DATE 30 July 2024
SCALE 0 2.5 5.0 1:250 @ A3



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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

N

53A&53B WARRIEWOOD ROAD, WARRIEWOOD
PROPOSED ACCESS ROAD
SIGHT DISTANCE ASSESSMENT

DRAWING NO. 21-003-05-V5
SHEET NO. 05 OF 05
ISSUE DATE 30 July 2024
SCALE 0 5.0 10.0 1:500 @ A3

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