ST GEORGE COMMUNITY HOUSING

TRAFFIC REPORT FOR PROPOSED COMMUNITY HOUSING DEVELOPMENT, 87 - 91 NUWARRA ROAD, MOOREBANK

JANUARY 2018

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1. INTRODUCTION

1.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by St George Community Housing to prepare a report examining the traffic implications of a proposed community housing development at 87 - 91 Nuwarra Road, Moorebank. The site location is shown in Figure 1.

1.2 The site is occupied by three detached dwellings with access from Nuwarra Road. The proposed development is a community housing development with 42 apartments, with vehicular access from Nuwarra Road. The application is being made under the State Environmental Planning Policy (Affordable Rental Housing) 2009.

1.3 The traffic and parking implications of the proposed development are assessed in the following chapter.

2. IMPLICATIONS OF PROPOSED DEVELOPMENT

2.1 The traffic and parking implications of the proposed development are assessed through the following sections:

- site location and road network;
- proposed development;
- public transport;
- parking provision;
- access, internal circulation and layout;
- traffic generation and effects;
- matters raised by council; and
- summary.

Site Location and Road Network

2.2 The site is on the western side of Nuwarra Road, as shown in Figure 1. It is occupied by three detached residential dwellings, which have access via driveways from Nuwarra Road. Surrounding land use is largely residential. There is a small retail centre south of the site on Nuwarra Road.

2.3 Nuwarra Road connects to Newbridge Road in the north and Heathcote Road in the south. It provides for one traffic lane and one parking lane in each direction, clear of intersections. In the vicinity of the site there is a pedestrian refuge, with associated no stopping restrictions. There is a right turn bay into Kalimna Street, adjacent to the site. Kalimna Street provides access to a residential precinct east of Nuwarra Road.

2.4 South of the site, Nuwarra Road intersects Maddecks Avenue at a signalized intersection. Maddecks Avenue provides access to a school, shopping centre and residential areas.

Proposed Development

2.5 The proposed development is a community housing development with 42 apartments, with vehicular access from Nuwarra Road. The application is being made under the State Environmental Planning Policy (Affordable Rental Housing) 2009.

Public Transport

2.6 Bus services operate north and south of the site, along Newbridge Road, Nuwarra Road and Maddecks Avenue. Local bus services are provided by Veolia.

2.7 There are bus stops within some 300 metres walking distance of the site. Route 902 connects Liverpool to Holsworthy via Moorebank and Hammondville. Services include a link to Liverpool and Holsworthy railway stations.

2.8 Services operate every hour in each direction, seven days per week. During weekday peak periods, services are more frequent.

2.9 Route M90 operates along Newbridge Road, north of the site. This service is a cross-regional service which connects Liverpool and Burwood via Moorebank, Milperra, Bankstown, Greenacre, Chullora and Strathfield. Services are every 15 minutes in each direction on weekdays and every 20 minutes in each direction on weekends.

2.10 The site is therefore close to bus services. The proposed development will increase residential densities close to existing bus services. Increasing residential densities on the site is consistent with government objectives and the planning principles of:

a) improving accessibility to housing by walking, cycling and public transport;

b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

c) moderating growth in the demand for travel and distances travelled, especially by car; and

d) supporting the efficient and viable operation of public transport services.

Parking Provision

2.11 Clause 14(2) of the Affordable Rental Housing SEPP indicates that where the application is being made by a social housing provider, and the site is in an accessible area, development can not be refused if at least the following car parking is provided:

- 0.4 spaces per one bedroom dwelling;
- 0.5 spaces per two bedroom dwelling;
- one space per three bedroom dwelling.

2.12 With nine one bedroom and 33 two bedroom dwellings proposed, the development would require 20 parking spaces. 22 spaces, including five disabled spaces, are proposed in accordance with the SEPP requirement.

2.13 Parking provision therefore satisfies the requirement of the SEPP, and is considered appropriate.

Access, Internal Circulation and Layout

2.14 Vehicular access to the development is proposed to be provided from Nuwarra Road. The proposed driveway will replace the three existing driveways to the site from Nuwarra Road. Vehicles will turn to and from the driveway across the line marking in Nuwarra Road, in accordance with Australian Road Rules.

2.15 The driveway and internal circulation aisle will be a minimum of 5.5 and six metres wide respectively, to cater for two-way traffic, in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004.

2.16 Small removal vehicles will be able to park on the driveway, within the site.

2.17 On-site parking will be provided in an undercroft level. Parking spaces will be a minimum of 2.4 metres wide by 5.4 metres long, with a 5.8 metre wide circulation aisle. Disabled parking spaces will be a minimum of 2.4 metres wide, with an adjacent 2.4 metre wide area for wheelchairs. Spaces adjacent to obstructions will be 300mm wider to appropriately provide for doors to open. Dead end aisles will have a one metre extension for appropriate accessibility to end spaces. Height clearance will be a minimum of 2.2 metres generally, with 2.5 metres above disabled parking spaces. These dimensions are considered appropriate, being in accordance with the Australian Standard for Parking Facilities (Part 1: Off-Street Car Parking and Part 6: Off-Street Parking for People with Disabilities), AS 2890.1:2004 and AS 2890.6:2009. They are also generally in accordance with the Liverpool Development Control Plan 2008, which refers to the Australian Standard and has similar requirements.

Traffic Generation and Effects

2.18 Traffic generated by the proposed development will have its greatest effects during weekday morning and afternoon peak periods when it combines with traffic on the surrounding road network.

2.19 In order to gauge traffic conditions, counts were undertaken during weekday morning and afternoon peak periods at the intersections of Nuwarra Road with Maddecks Avenue and Kalimna Street. The results of the surveys are shown in Figures 2 and 3, and summarized in Table 2.1.

Table 2.1: Existing two-way (sum of both directions) peak hour traffic flows

Road	Location	AM peak hour	PM peak hour
Nuwarra Road	North of Kalimna Street	1,355	1,430
	North of Maddecks Avenue	1,390	1,485
	South of Maddecks Avenue	1,510	1,395
Maddecks Avenue	East of Nuwarra Road	375	310
	West of Nuwarra Road	695	480
Kalimna Street	East of Nuwarra Road	135	115

2.20 Table 2.1 shows that Nuwarra Road carried some 1,355 to 1,510 vehicles per hour during the surveyed peak hours. Maddecks Avenue carried lower flows of some 310 to 695 vehicles per hour two-way. Kalimna Street carried some 115 to 135 vehicles per hour two-way.

2.21 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the SIDRA program.

2.22 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

2.23 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.24 The analysis found that the signalised intersection of Nuwarra Road with Maddecks Avenue is operating with average delays of less than 30 seconds per vehicle during peak periods. This represents level of service B/C, a satisfactory level of service.

2.25 The intersection of Nuwarra Road with Kalimna Street is operating with average delays for all movements of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of service.

2.26 Surveys undertaken by RMS found that residential development generates 0.1 to 0.2 vehicles per hour per dwelling. Based on 0.2 vehicles per hour per dwelling, the proposed development would have a traffic generation of some eight to nine vehicles per hour two-way at peak times. The existing three dwellings would generate two to three vehicles per hour at peak times. Therefore the increase in traffic generation would be five to seven vehicles per hour two-way.

2.27 This is very low generation, equivalent to an average of only one vehicle every nine to 12 minutes at peak times.

2.28 Such a low traffic generation would not have noticeable effects on the operation of the surrounding road network. Adjacent intersections would continue to operate at their existing good levels of service, with similar average delays per vehicle.

Matters Raised by Council

2.29 In pre-development application advice of 18 December 2017, council has raised a number of traffic and parking matters. These matters are discussed below.

- *A Traffic Impact Statement, prepared by a suitably qualified person, is to be submitted which addresses traffic generation, impacts on the surrounding road network and parking provision.*

2.30 Traffic generation and its effects on the surrounding road network are discussed in paragraphs 2.26 to 2.28. Parking provision is discussed in paragraphs 2.11 to 2.13.

- *The application must demonstrate that access, car parking and manoeuvring details comply with AS2890 Parts 1 & 6 and Council's Development Control Plan.*

2.31 These matters are addressed in paragraphs 2.14 to 2.17.

- *Swept path analysis for driveway access including channelization for ingressing and egressing traffic, and parking bays is to be submitted for assessment.*

- *The application shall be supported by turning paths in accordance with AS2890 clearly demonstrating satisfactory manoeuvring on site and forward entry and exit to and from the public road.*

2.32 Swept paths of vehicles entering and exiting the site from Nuwarra Road are shown in Figures 4 and 5. The swept paths include the line marking in Nuwarra Road. As noted in paragraph 2.14, vehicles will turn to and from the driveway across the line marking in Nuwarra Road, in accordance with the road rules.

2.33 AS 2890.1:2004 indicates that "*constant radius swept turning paths, based on the design vehicle's minimum turning circle are not suitable for determining the aisle width needed for manoeuvring into and out of parking spaces. Drivers can manoeuvre within smaller spaces than swept turning paths would suggest.*"

2.34 As noted in paragraph 2.17, the space and aisle widths of parking spaces in the proposed development will be provided in accordance with AS 2890.1:2004 and AS 2890.6:2009, for appropriate access to and from parking spaces.

- *The proposed development shall be designed to be serviced by a Medium Rigid Vehicle.*

2.35 We understand that council has advised that it is not necessary to provide for a medium rigid truck on the site. As noted in paragraph 2.16, the design provides for small removal vehicles to park on the driveway, within the site.

- *Clear delineation of driveway access and internal circulation.*
- *Footpath to be provided along the street frontage.*
- *On-street parking restrictions to be provided.*
- *Street lighting to Council's specifications.*

2.36 These matters are noted. It is not proposed to change, nor is there a requirement to, the existing no parking and no standing restrictions along the site frontage.

Summary

2.37 In summary, the main points relating to the traffic implications of the proposed development are:

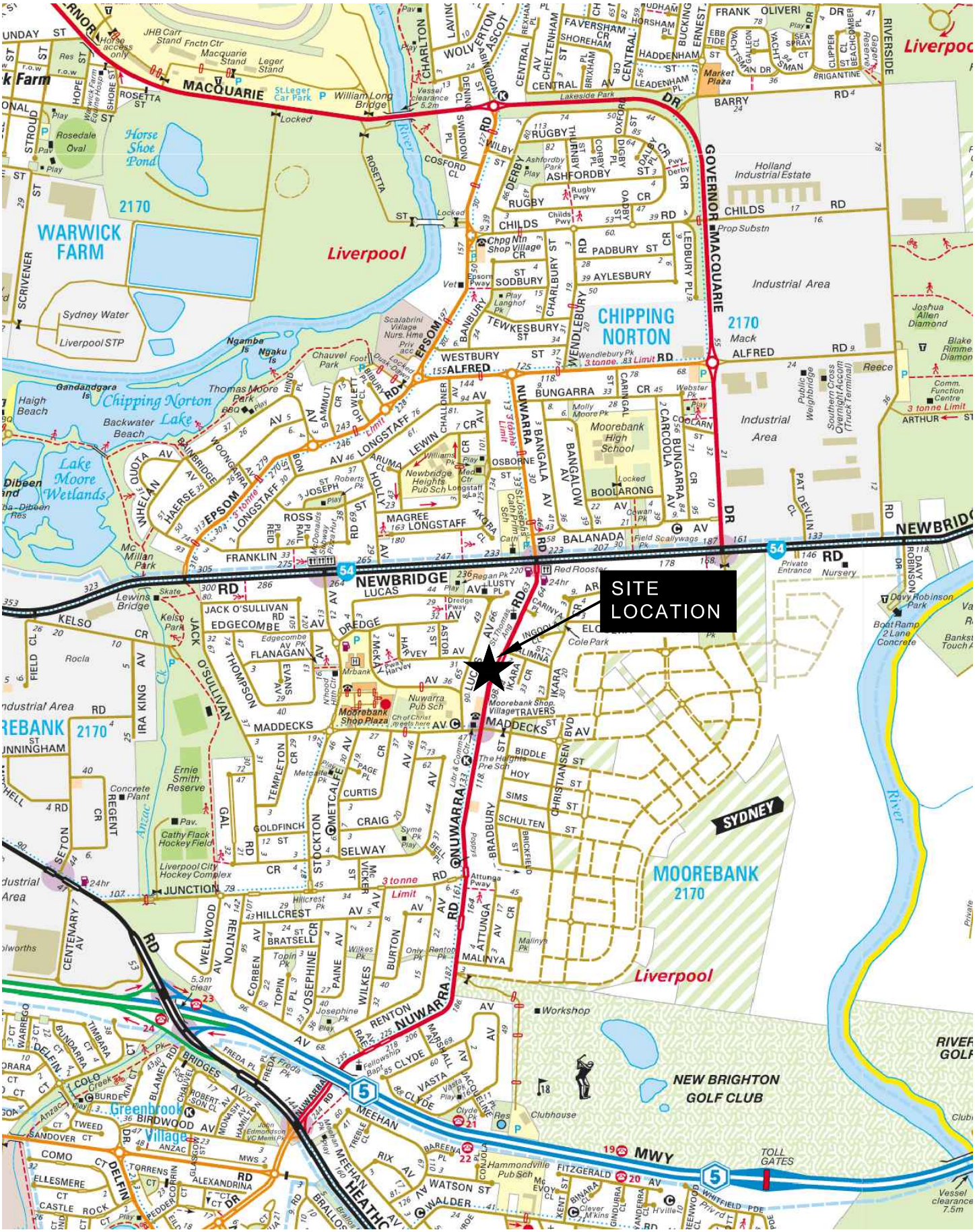
i) the proposed development would increase residential densities close to public transport services;

ii) the proposed parking provision is appropriate;

iii) access and internal layout will be provided in accordance with AS 2890.1:2004 and AS2890.6:2009;

iv) the proposed development would have a low traffic generation, and

v) such a low generation would not have noticeable effects on the operation of the surrounding road network.



Click: https://goo.gl/maps/3SMe347ub2m

Location Plan

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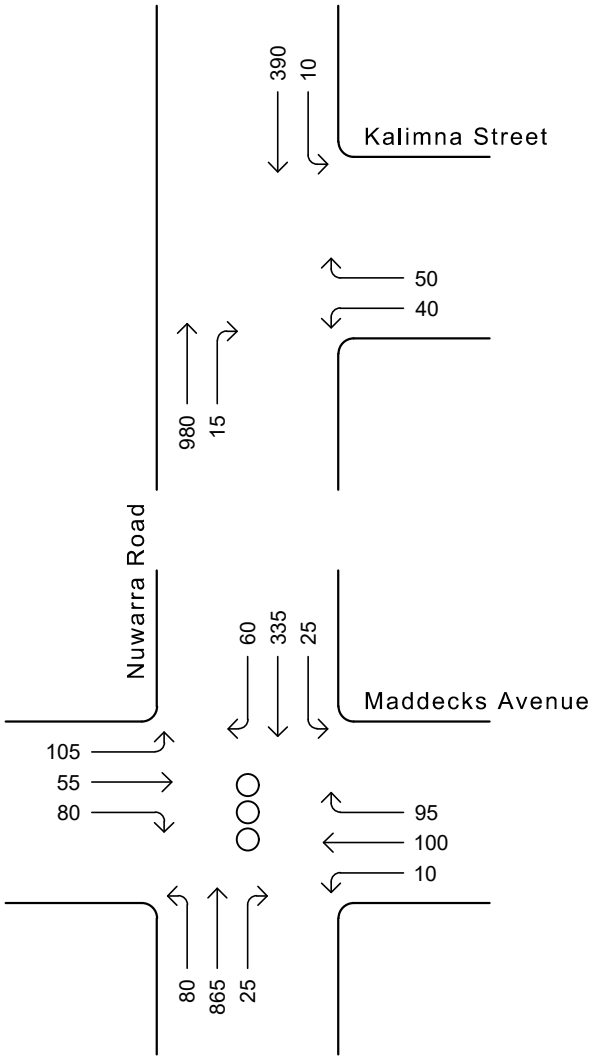
Figure 1

North



LEGEND

100 - Existing Peak Hour Traffic Flows

- Traffic Signals

Existing weekday morning peak hour traffic flows

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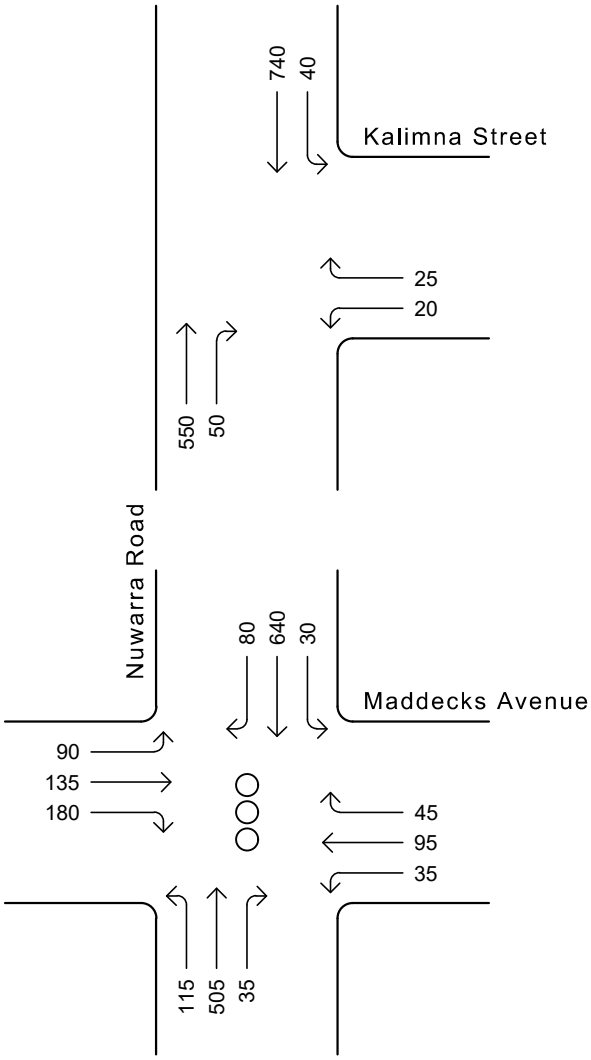
Figure 2

North



LEGEND

100 - Existing Peak Hour Traffic Flows

- Traffic Signals

Existing weekday afternoon peak hour traffic flows

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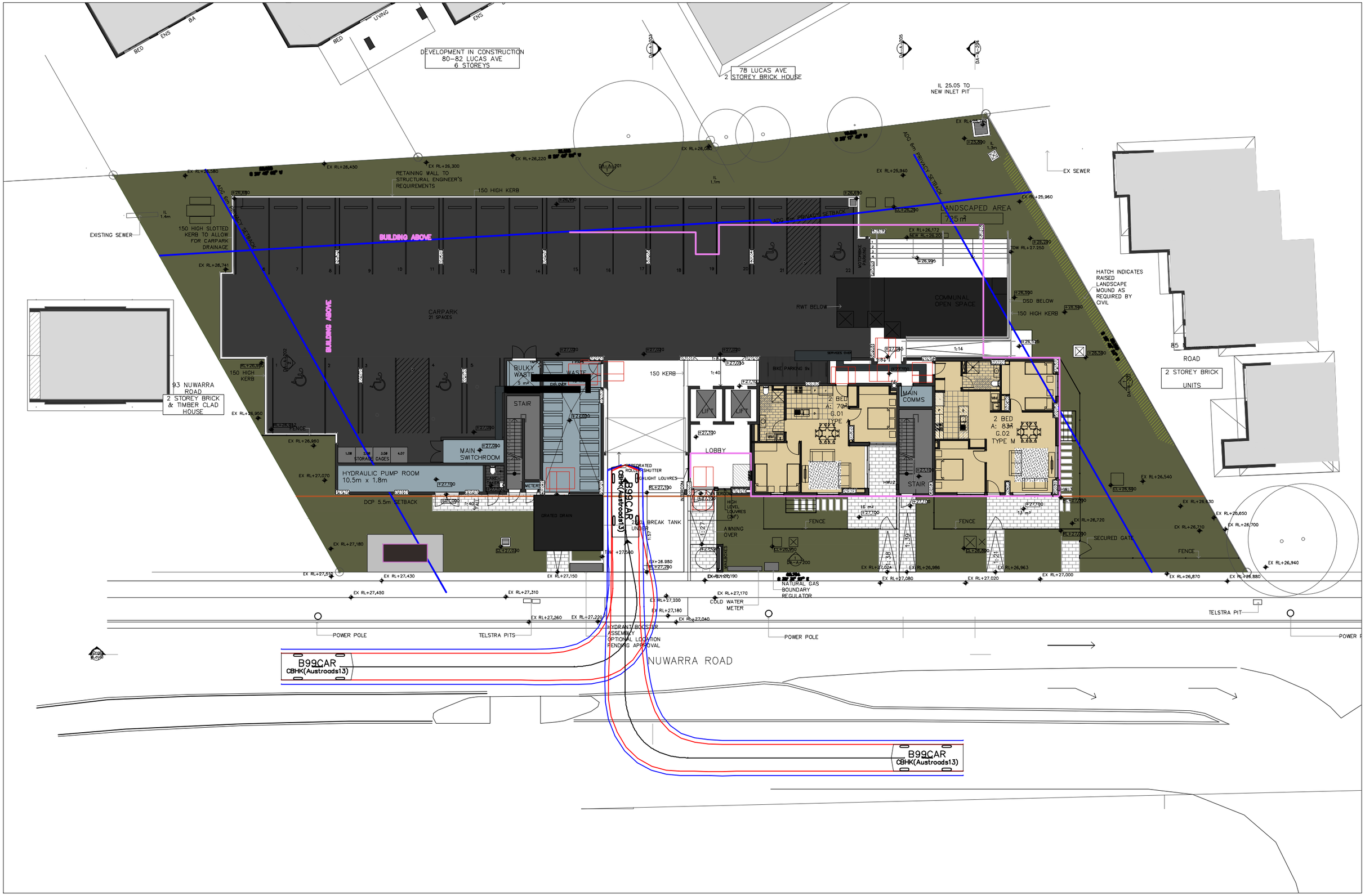
Figure 3



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Swept Path of Vehicle Body
Swept Path of Clearance to Vehicle Body

B99 VEHICLE SWEPT PATHS

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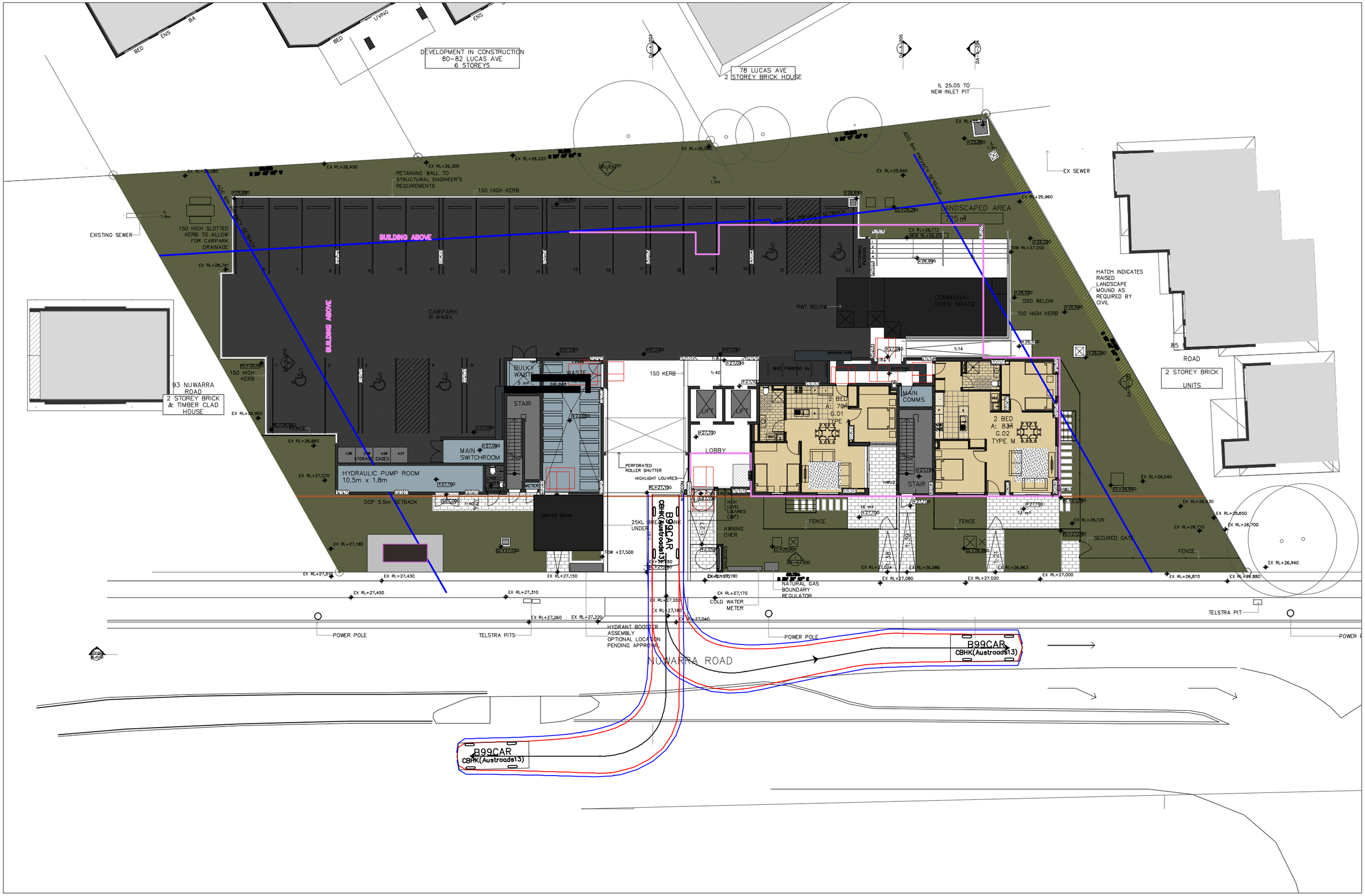

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