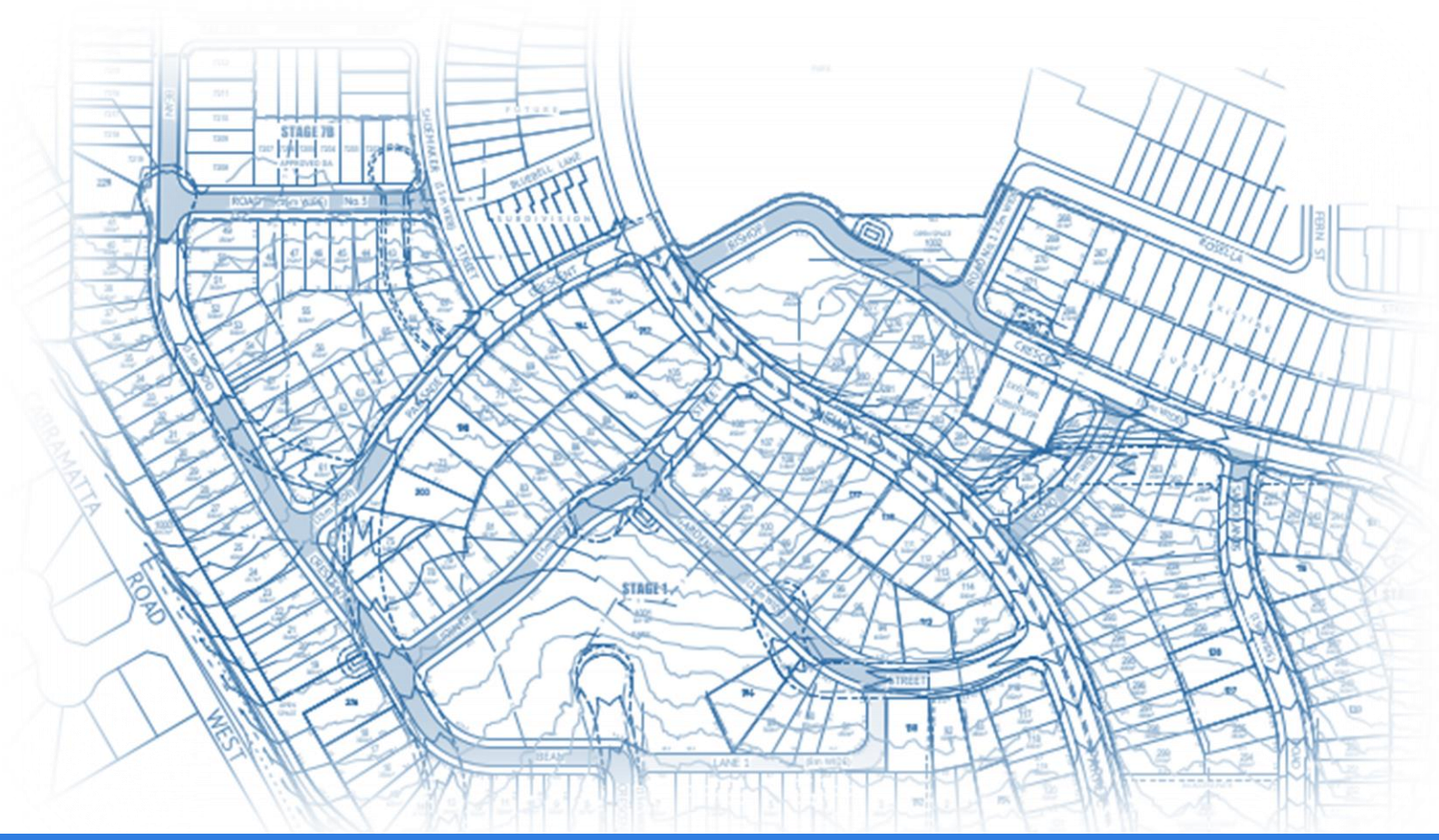


# Bonnyrigg Stage 8 to 11 Subdivision Traffic and Transport Assessment

Prepared for:

NSW Land and Housing Corporation

26 October 2021

The Transport Planning Partnership

# Bonnyrigg Stage 8 to 11 Subdivision Traffic and Transport Assessment

Client: NSW Land and Housing Corporation

Version: Issue V03

Date: 26 October 2021

TTPP Reference: 20234

**Quality Record**

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| Issue V02 | 26/10/2021 | Stephen Read | Stephen Read | Wayne Johnson | |

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# APPENDICES

# 1 Introduction

The Transport Planning Partnership (TTPP) has prepared this traffic assessment report on behalf of Land and Housing Corporation (LAHC) to support a Development Application (DA) for a 222 lot subdivision at Bonnyrigg to be submitted to Fairfield City Council (Council).

The proposal will change the alignment of existing roads within the site. Three existing access points off Humphries Road will be retained, those being Newleaf Parade, Sandilands Road and Bishop Crescent, to provide access to the proposed subdivision area while Palisade Crescent and Mason Place are proposed to be closed.

This purpose of this report is to present the findings of the traffic and transport assessment and identify potential impacts of the proposal on the transport network.

## 1.1 Background

In 2008 the Newleaf Bonnyrigg Project was proposed to provide additional dwellings under a 30-year Public Private Partnership (PPP) arrangement, as part of a renewal of an existing social housing estate of some 81 hectares located in Bonnyrigg. The proposed development initially planned for an increase in development intensity from 936 dwellings to 2,332 dwellings (including 833 social housing dwellings). As part of the DA process, a Transport Management & Accessibility Plan (TMAP) was prepared by Sinclair Knight Merz (SKM) in 2008.

In 2011, the concept plan for the development was further modified to include 2,500 dwellings. GTA Consultants (GTA) was commissioned by Newleaf Communities to provide an updated report in relation to the modified concept plan approval for Bonnyrigg.

In 2015, the PPP was dissolved and the land owner NSW Land and Housing Corporation (LAHC) continued the redevelopment program.

In November 2017, a further modification to the concept plan proposed an additional 500 dwellings, making it a total of 3,000 dwellings. GTA was commissioned by LAHC to update the previous traffic and transport study in relation to the latest concept plan for Bonnyrigg.

Department of Planning and Environment (DPE) issued Secretary's Environmental Assessment Requirements (SEARs) in March 2018. In response to the proposed additional dwelling yield and changes to the transport network, the SEARs required an update to the 2008 TMAP. GTA were commissioned by LAHC to update the TMAP and update the traffic modelling for the 3,000 dwellings now expected for the precinct. At the time of this report the TMAP was pending endorsement from TfNSW.

## 1.2 Reference

References have been made to the following documents in preparation of this report:

- Transport Management and Access Plan (TMAP) Bonnyrigg Living Centres (GTA Consultants, 2018).
- Fairfield City Wide Development Control Plan (DCP) 2013.
- Bonnyrigg Masterplan Part 5 Private Realm Guidelines (2012)

## 1.3 Report Structure

The report assesses the traffic implications associated with the proposed development and is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the subject site
- Chapter 3 provides a brief description of the proposed development
- Chapter 5 assesses the proposed on-site parking provision and internal layout
- Chapter 6 examines the traffic generation and resultant traffic implications arising from the proposed development
- Chapter 7 reviews the proposed road layout within the subdivision
- Chapter 8 presents the conclusions of the assessment.

# 2 Existing Conditions

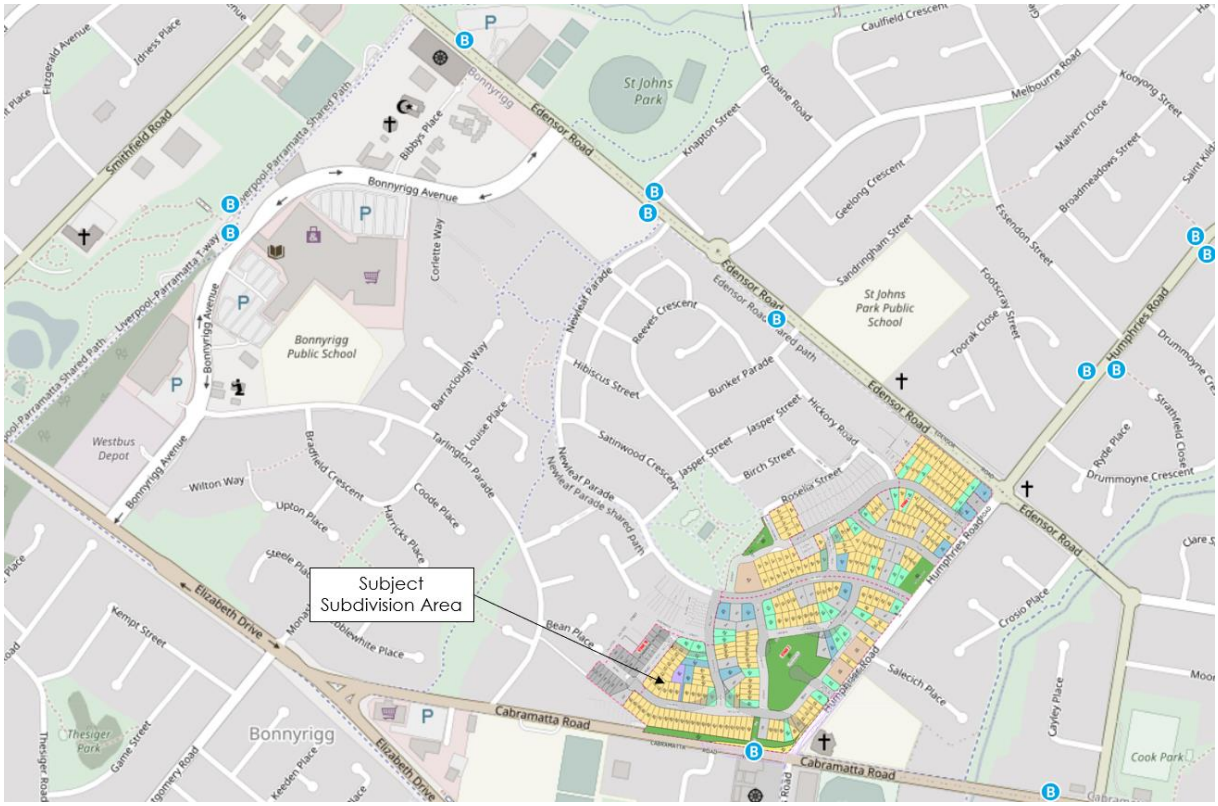
This section of the report describes the existing transport network in the context of the development.

## 2.1 Site Description

The subject site is located in the western Sydney suburb of Bonnyrigg and is located within the local government area of City of Fairfield Council (Council). The subject site is bounded by Cabramatta Road West to the south, Humphries Road to the southeast, Edensor Road to the northeast, existing residential subdivisions to the north and recently subdivided residential lots currently under construction to the west. The subject subdivision area which this report relates and its surrounds is shown in Figure 2.1.

The site is currently occupied by a number of existing social housing dwellings and private residential dwellings. It is understood there are 145 existing social housing dwellings and 21 private dwellings equating to a total of 167 existing dwellings within the proposed subdivision area. In addition to this, there are a number of existing internal roads within the site.

**Figure 2.1: Subject Subdivision Area Locality**




*Basemap source: Open Street Maps*
*Subdivision Concept Plan: Premise (plan dated 21/7/2020)*

Land uses surrounding the subject area comprise low density residential dwellings. Notably, there are also some retail/commercial uses (e.g. Bonnyrigg Plaza) and educational establishments (Bonnyrigg Public School) located towards the west, community facilities (Buddhist Temple and Our Lady of Mt Carmel's Catholic Church) located south of the site at the intersection of Cabramatta Road West – Humphries Road. Additionally, St Johns Park Public School, St John's Anglican Church and St Johns Park Baptist Church are located on the northern side of Edensor Road.

The future Western Sydney Airport – Badgerys Creek Aerotropolis will be located approximately 10km west of the subject area and the Western Sydney Employment Area located 6km to the north.

## 2.2 Abutting Road Network

The following describes the road network that services the proposed development.

### 2.2.1 Edensor Road

Edensor Road is a sub-arterial road that runs along the northern boundary of the subject area. The road is configured as a two-way road with one traffic lane and one kerbside parking lane in each direction. The road is aligned in a northwest – southeast direction. The subject site can be accessed from Edensor Road through intersections with local streets at Bunker Parade and Newleaf Parade.

Edensor Road has a posted speed limit of 60km/h. However, there is a 40km/h school zone operational during morning and afternoon school peak periods (adjacent to the St Johns Park Public School (i.e. 40km/h speed zone between 8:00am-9:30am and 2:30pm-4:00pm School Days).

### 2.2.2 Humphries Road

Humphries Road functions as a collector road and forms the eastern boundary of the subject site. It is aligned in a northeast – southwest direction and provides one traffic lane and one kerbside parking lane in each direction. The subject site can be accessed directly from Humphries Road at intersections with local streets.

Humphries Road has a posted speed limit of 60km/h. There is a 40km/h school zone adjacent to the Our Lady of Carmel Parish School operational during morning and afternoon school peak periods (i.e. 40km/h speed zone between 8:00am-9:30am and 2:30pm-4:00pm School Days).

### 2.2.3 Cabramatta Road West

Cabramatta Road West is an arterial road bounding the subject site along the southern boundary. It is aligned in an east-west direction and has two traffic lanes in both directions. No parking is permitted on either side of the road with clearway restrictions along both sides.

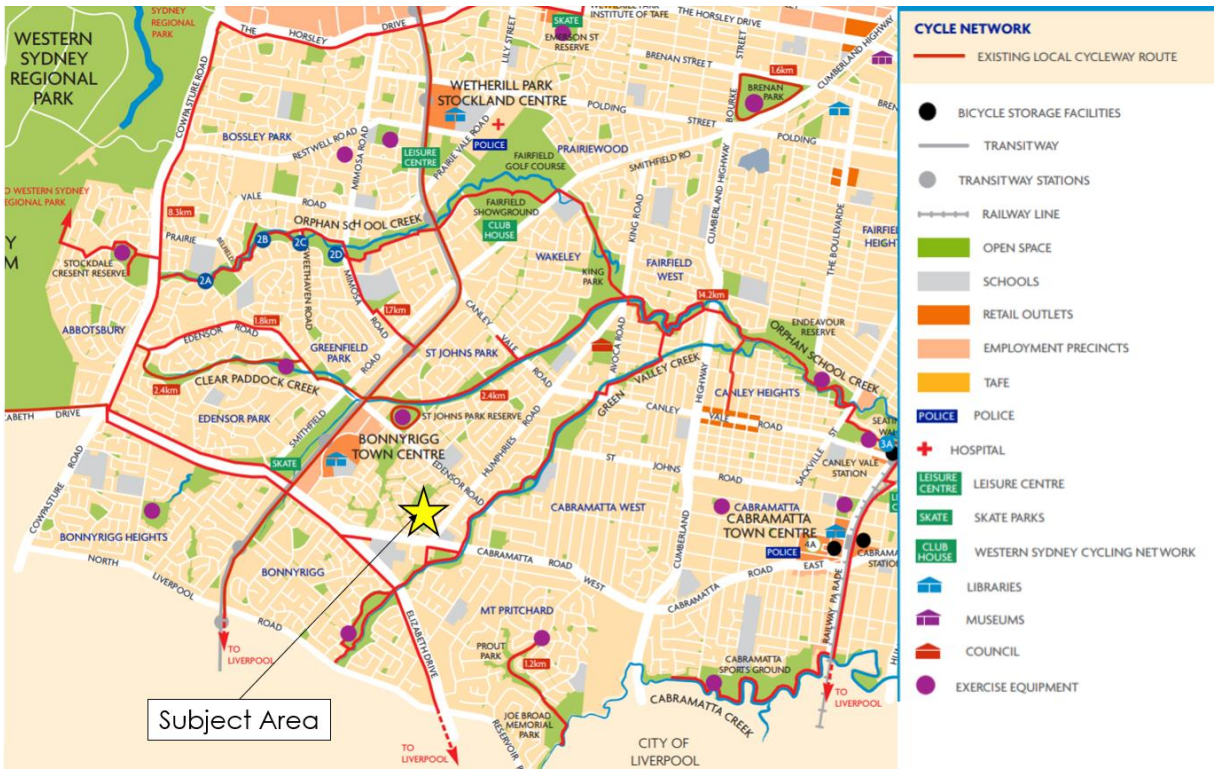
## 2.3 Pedestrian Infrastructure

Within the existing residential subdivision pedestrian footpaths are generally provided on one-side or both sides (for higher order roads). A signalised pedestrian crossing is provided on the north, east and south approach at the intersection of Cabramatta Road West – Humphries Road while a zebra crossing is provided across Humphries Road and Edensor Road within the vicinity of the schools.

## 2.4 Cycling Infrastructure

An extensive cycleway network is available in the vicinity of the site. The existing local cycleway routes provide connectivity to the wider cycleway networks towards Liverpool to the south and Blacktown to the north. These existing cycleway routes surrounding the site are shown in Figure 2.2.

**Figure 2.2: Existing Cycleway Network**

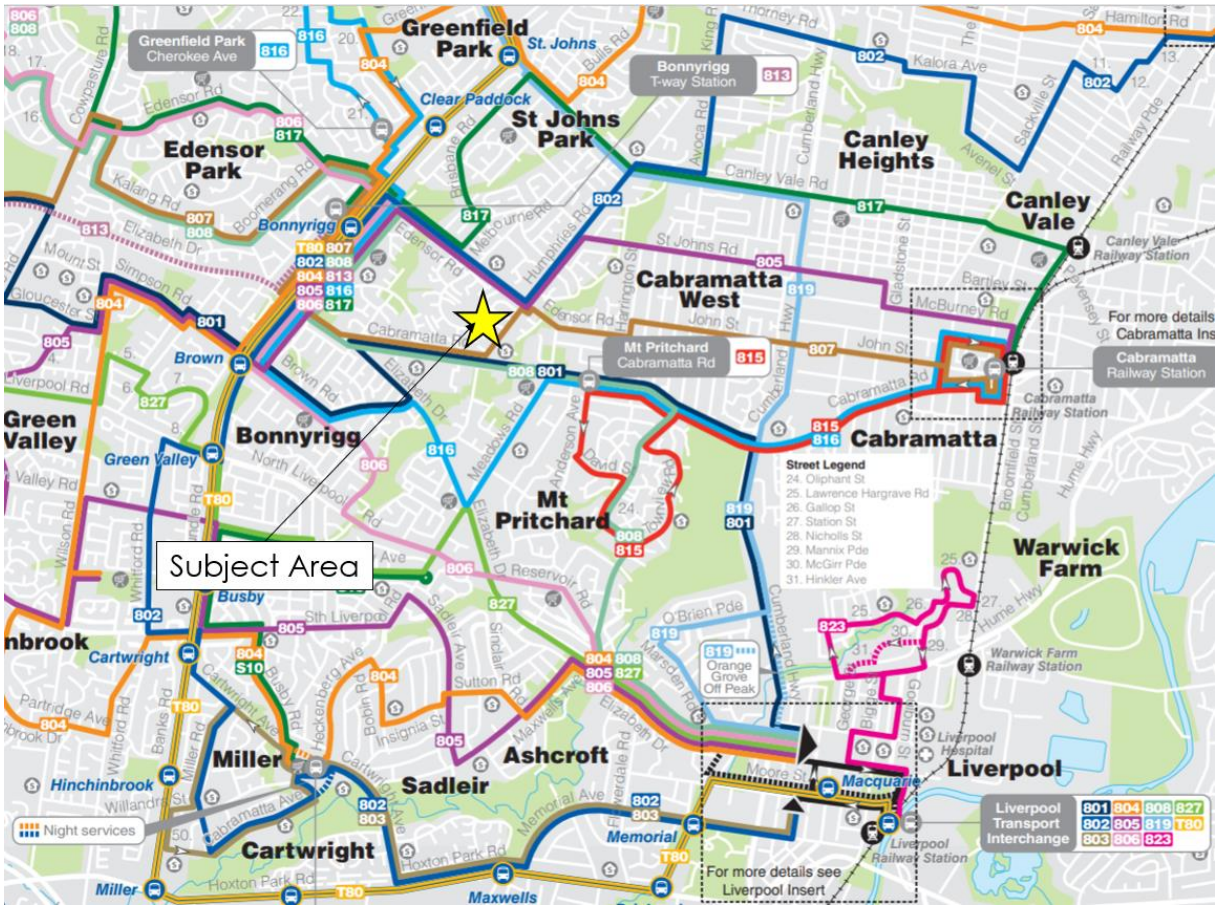



*Source: Fairfield City Cycleways 2019*

## 2.5 Public Transport Facilities

The nearest railway station being Cabramatta Station is located approximately 4.5km east of the subject area which is beyond the typical walking distance. However, the site is serviced by buses which feed into Cabramatta Station and the T-way that connects Parramatta to Liverpool. The whole site is within 400m walking distance of a bus stop with bus stops located along Edensor Road, Humphries Road and Cabramatta Road West. The surrounding public bus route network is shown in Figure 2.3.

**Figure 2.3: Existing Bus Network**




*Source: Transport for NSW*

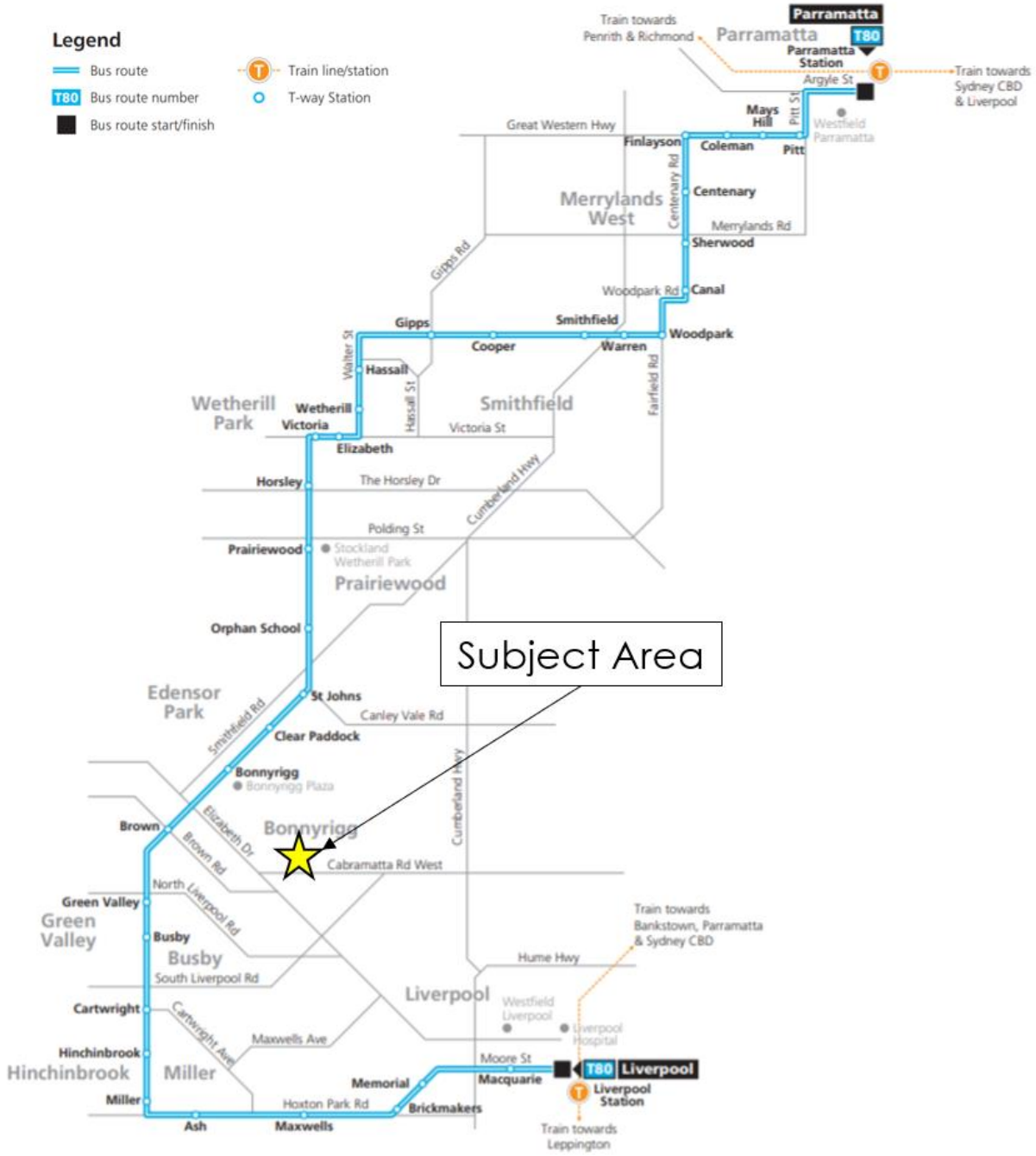
A summary of the public bus services and respective frequencies in proximity of the site is summarised in Table 2.1.

**Table 2.1: Public Bus Services**

| Bus Route | Route Description | Proximity from Site | Weekday Frequency | |
|---|---|---|---|---|
| | | | Peak | Off-peak |
| 801 | Badgerys Creek to Liverpool | Cabramatta Rd West | Limited services | |
| 802 | Liverpool to Parramatta via Green Valley | Bonnyrigg T-way Station | 30mins | 30mins |
| 804 | Parramatta to Liverpool | | 15mins | 30mins |
| 805 | Cabramatta to Liverpool | | 15mins | 30mins |
| 806 | Parramatta to Liverpool | | 30mins | 30mins |
| 807 | Cabramatta to Cecil Hills via Bonnyrigg | Humphries Rd and Cabramatta Rd West | 30mins | 30mins |
| 808 | Fairfield to Liverpool | Bonnyrigg T-way Station | 30mins | 30mins |
| 813 | Fairfield to Prairiewood | | Limited services | |
| 816 | Greenfield Park to Cabramatta | | 30mins | Hourly |
| 817 | Fairfield to Cabramatta | | 30mins | 30mins |
| T80 | Parramatta to Liverpool | | 10mins | 10mins |

The Liverpool-Parramatta T-way links Parramatta Station and Liverpool Station, connecting the suburbs of Hoxton Park, Bonnyrigg, Prairiewood, Wetherill Park, Smithfield, Guilford West and South Wentworthville. The T-way consists of a separated bus rapid transitway, bus lanes on general traffic roads and mixed traffic. The Liverpool-Parramatta T-way is illustrated in Figure 2.4.

**Figure 2.4: Liverpool – Parramatta Transitway**




*Source: Transport for NSW*

# 3 Strategic Context – Bonnyrigg Living Communities Development

The proposed Bonnyrigg Living Communities development will consist of 3,000 dwellings in a mix of both social (30%) and private housing (70%). The development is proposed to be delivered throughout 18 stages of works separated into three different phases for completion in different years with an ultimate completion year of 2027.

The initial phase of the Bonnyrigg development consists of Stage 1 to 3 with a total dwelling yield of 363 dwellings and open space areas completed in 2013. Subdivision of the next phase (Stage 4 and 5) was completed in 2017 with construction of a further 185 new dwellings nearing completion. Together with 161 new dwellings underway in Stages 6 and 7 it brings the total to 709 approved new dwellings. Stages 8 to 11 proposes 219 standard lots and 3 superlots.

The final phase of the development, Stage 12 to 18 will consist of the greatest dwelling yield with 2,038 dwellings with a total of some 3,000 dwellings within the Bonnyrigg Living Communities development.

# 4 Proposed Development

## 4.1 Proposal Description

The proposal involves the re-subdivision that would facilitate construction of residential dwellings south east of the Bonnyrigg town centre as part of Stage 8 to 11 of the Bonnyrigg redevelopment. The development area is currently zoned as R1 General Residential.

A total of 222 residential allotments are proposed which include three superlots. The superlots may yield up to 20 terrace lots which are to be subject to a future DA.

The proposal will involve the demolition of 145 existing dwellings within the subject area. It is noted that there are 21 existing private dwellings within the subject area that are not subject to this DA and would not be demolished.

As a result of this DA there will be a total of 236 new and original private dwellings and 3 superlots. If the superlots are later developed (in a separate DA) into 20 terraces the total becomes 256 dwellings (236 + 20).

The proposal will change the alignment of some existing internal roads. Three existing access points off Humphries Road will be retained at Newleaf Parade, Sandilands Road and Bishop Crescent, to provide access to the subdivision area while Palisade Crescent and Mason Place are proposed to be closed.

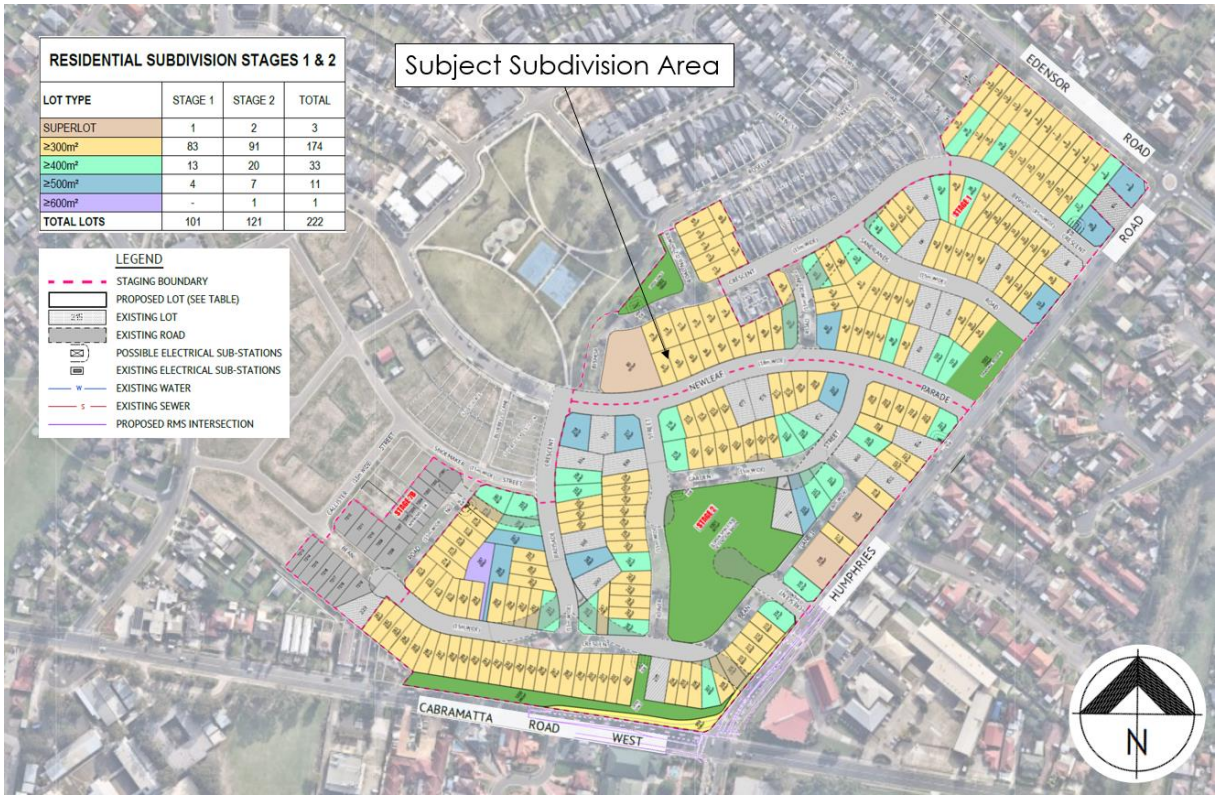
The proposed subdivision numbers are summarised in Table 4.1.

**Table 4.1: Residential Subdivision**

| Lot Type | Stage 1 | Stage 2 | Total |
|---|---|---|---|
| Superlot | 2 | 1 | 3 |
| Greater or equal to 300m² | 83 | 91 | 174 |
| Greater or equal to 400m² | 13 | 20 | 33 |
| Greater or equal to 500m² | 4 | 7 | 11 |
| Greater or equal to 600m² | - | 1 | 1 |
| **Total** | **101** | **121** | **222** |

The proposed development subdivision layout is shown in Figure 4.1. Full architectural layout plans are provided in Appendix A.

**Figure 4.1: Proposed Development Subdivision Layout**




*Basemap: Nearmap*
*Subdivision Concept Plan: Premise (plan dated 21/7/2020*

## 4.2 Internal Roads

Roads internal to the site are generally in a grid pattern with 15m wide road reserve and a carriageway width of 8m kerb to kerb. Note also the wider pavements within the 15m reserve around the park. The internal roads are undivided two-way roads that would allow some kerbside parking. Each dwelling will have its own driveway.

Based on the Fairfield City Wide Development Control Plan, for local roads serving greater than 10 dwellings a 13m (7m pavement and 2 x 3m footpaths) width is required. Additionally, for roads likely to be used for bus routes a 15m (8m pavement and 2 x 3.5m footpath) width is required. The proposed carriageway width complies with Council's requirements.

Swept path analysis has been undertaken on the proposed internal roads using an 11m Council garbage truck and B99 car. Full swept path analysis is provided in Appendix B and discussion of the future road network is provided in Section 6.

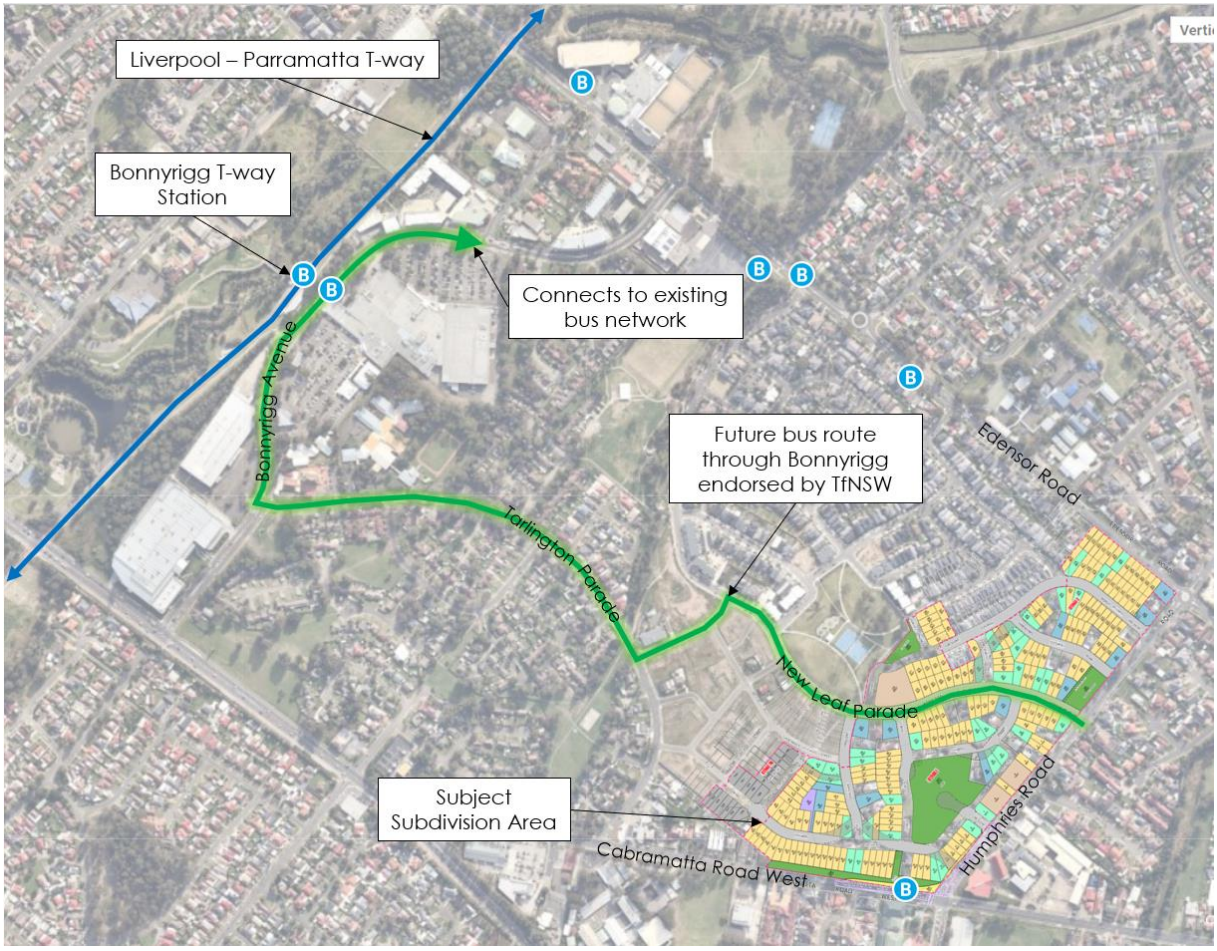
## 4.3 Pedestrian and Cycling Facilities

Pedestrian footpaths will be provided on both side of all internal roads.

## 4.4 Public Transport Facilities

It is understood that a proposed bus route through the Bonnyrigg subdivision is currently in negotiation with Transport for NSW. However, it is unknown at this stage when this route will come into effect. Notwithstanding, the future bus route through Bonnyrigg and the subject subdivision area is illustrated in Figure 4.2. The future bus route will connect existing bus routes between Humphries Road and Bonnyrigg Avenue.

**Figure 4.2: Future Bus Route through Bonnyrigg**




*Basemap: Nearmap*

## 4.5 On-Street Parking

Internal roads with a width of 8m between kerbs would allow some on-street parking on both sides of the road. Traffic demand is anticipated to be sufficiently low to enable two-way traffic flows, though motorists may occasionally need to stop to allow a vehicle travelling oin the opposing direction to pass. This scenario currently occurs along streets that have recently been redeveloped within the Bonnyrigg subdivision.

# 5 Parking Assessment

## 5.1 Car Parking

It is noted that the Fairfield City Wide DCP 2013 does not stipulate car parking rates for the Bonnyrigg Living Communities area. As such, car parking assessment for the Bonnyrigg Living Communities subdivision area has been assessed based on the recommended car parking rates outlined in Appendix D of the GTA TMAP (2018) and Bonnyrigg Masterplan Part 5 Private Realm Guidelines (2012).

### 5.1.1 Bonnyrigg TMAP Recommended Car Parking

The TMAP provides recommendations for car parking rates based on extensive parking surveys of comparable 'greenfield' residential developments within the Sydney Metropolitan area. The survey extent, together with the comparable site choice while also considering the strategic objectives of land use and transport planning were used as justification for the proposed parking rates as summarised in Table 5.1.

**Table 5.1: TMAP Proposed Parking Rates**

| Car Parking Use | Detached Housing | Medium Density | High Density |
|---|---|---|---|
| Resident Parking | 2 spaces/dwelling | 1 space/ dwelling (1 to 2-bed)<br>1.5 spaces/ dwelling (3+ bed) | 0.6 space/ apartment (1 bed)<br>0.9 space/ apartment (2 bed)<br>1.4 space/ apartment (3 bed) |
| Visitor Parking | On-street | On-street | 0.2 spaces/ apartment |

*Source: Appendix D GTA TMAP 2018*

Based on the TMAP 2018, a review of the Fairfield City Wide DCP 2013 was assessed and was considered inappropriate for the master planned Bonnyrigg development. It was concluded that application of the DCP rates would contribute to poor outcomes, as they:

- Encouraged the continued use of private motor vehicle as a primary means of transport
- Discouraged the use of alternative forms of transport, such as public transport, cycling and walking
- Created visual impacts of an over-supply of car parking

### 5.1.2 Bonnyrigg Masterplan Part 5 Private Realm Guidelines

Part 5 of the Bonnyrigg Masterplan (2012) provides car parking rate guidelines for detached and attached housing. The overall objective for the car parking guidelines offered in the Masterplan is to ensure car parking are appropriate for the Bonnyrigg Masterplan.

A summary of the car parking guidelines rates are described in Table 5.2.

**Table 5.2: Bonnyrigg Masterplan Part 5 Car Parking Guideline Rates**

| Car Parking Use | All housing Types | Detached Home | Attached Home |
|---|---|---|---|
| Resident Parking | Minimum 1 car space | 2 car spaces (which may be tandem) | • Minimum 1 space for 1-2 bedroom homes<br>• Minimum 1.5 car spaces for 3 bedroom home |
| Visitor Parking | | On-street | On-street |

### 5.1.3 Car Parking Summary

The Bonnyrigg subdivision (this report) will provide 222 detached residential lots. Based on the recommended car parking rates for detached housing, the proposal would provide a total of 444 off street car spaces.

## 5.2 Motorcycle and Bicycle Parking

The Fairfield City Wide DCP (2013) does not stipulate motorcycle or bicycle parking requirements for residential uses.

# 6 Road network

The proposed road layout is shown in Figure 6.1. The proposal would create a number of new streets and connections removing the existing cul-de-sacs. Road reserves would be 15m with 8m wide carriageways measured from kerb to kerb. Newleaf Parade would form the central collector road along its existing alignment.

**Figure 6.1: Proposed road layout**


Swept paths for cars have been undertaken at key intersections with the standard B99 vehicle. Swept paths at key intersections are shown in Figure 6.2 to Figure 6.7.

**Figure 6.2: Humphries Road and Bean Crescent**

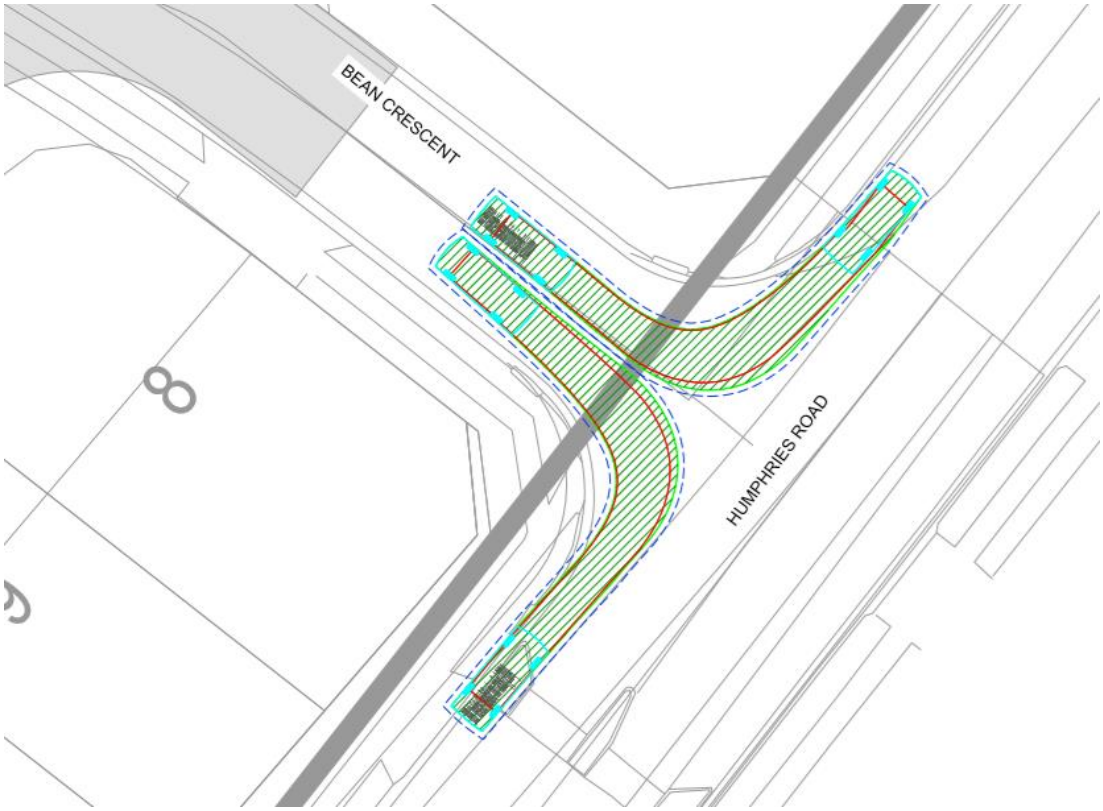



**Figure 6.3: Bean Crescent**

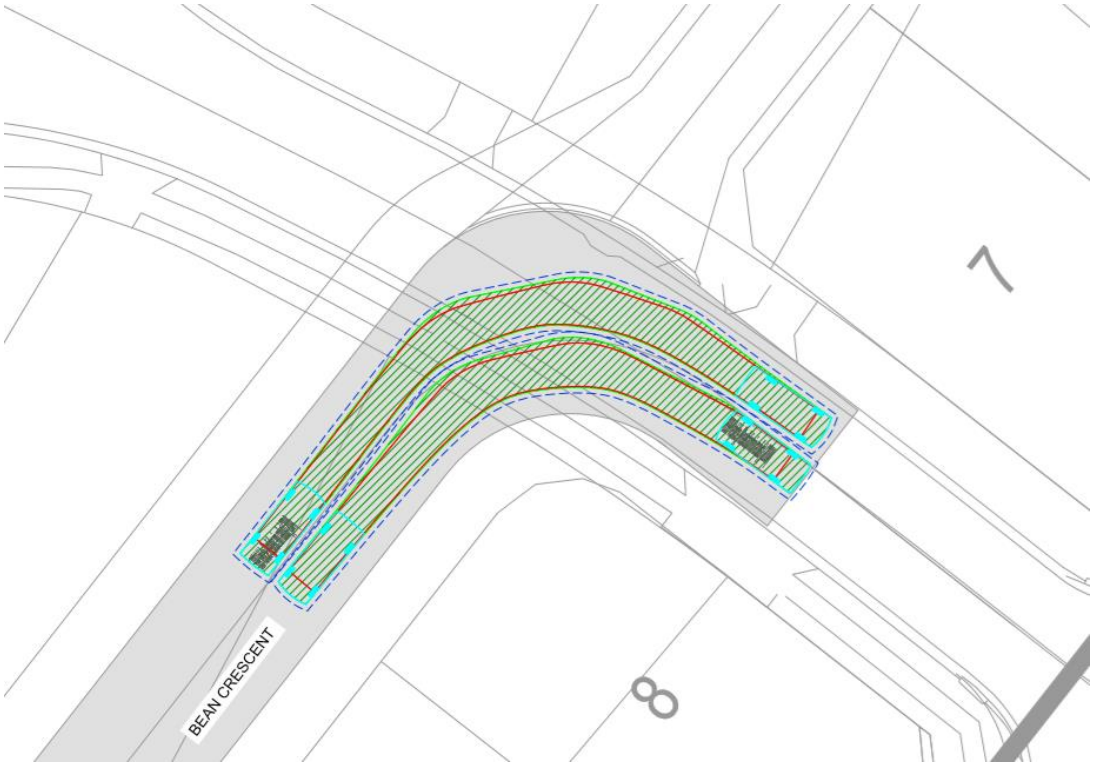


**Figure 6.4: Joiner Street and Garden Street**

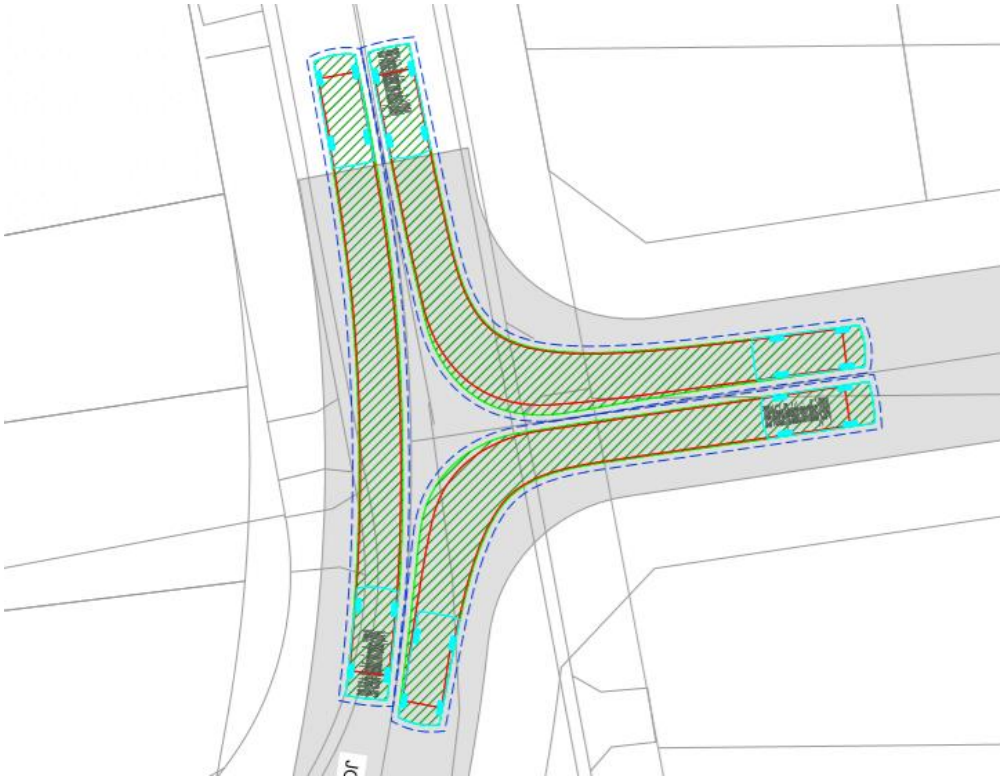


**Figure 6.5: Joiner Street and Bean Crescent**

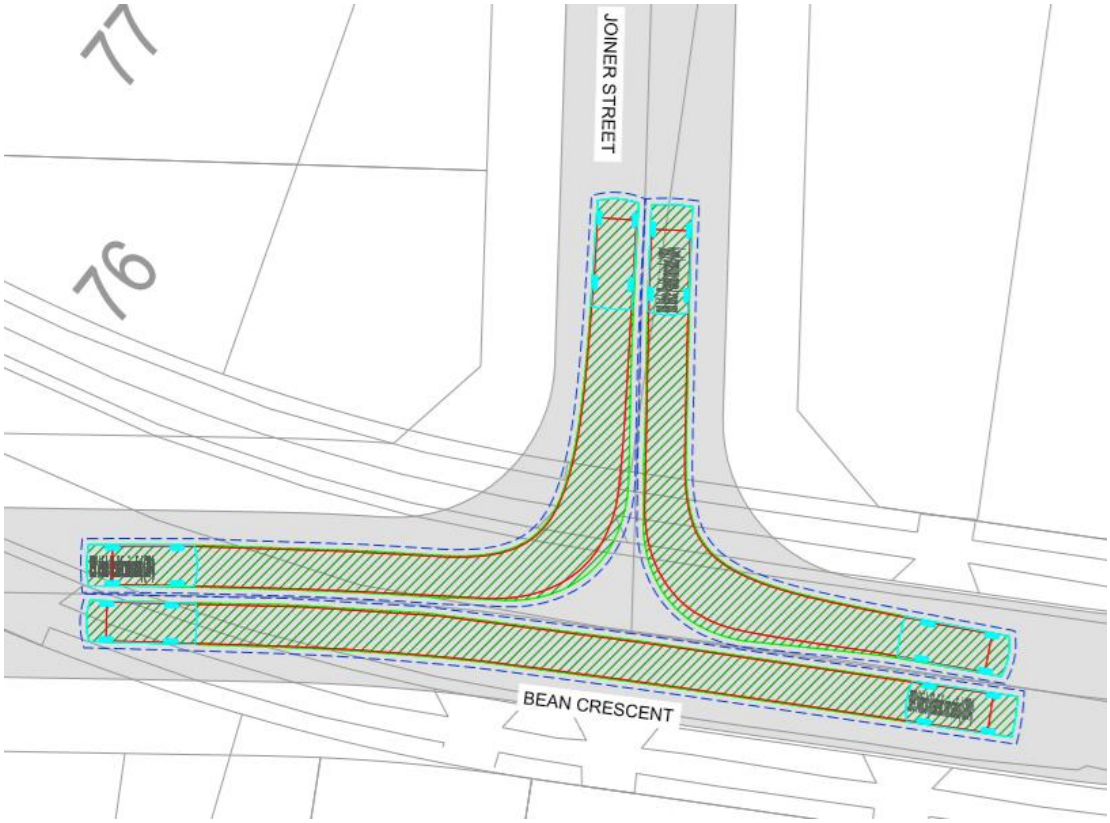


**Figure 6.6: Bean Crescent and Palisade Crescent**

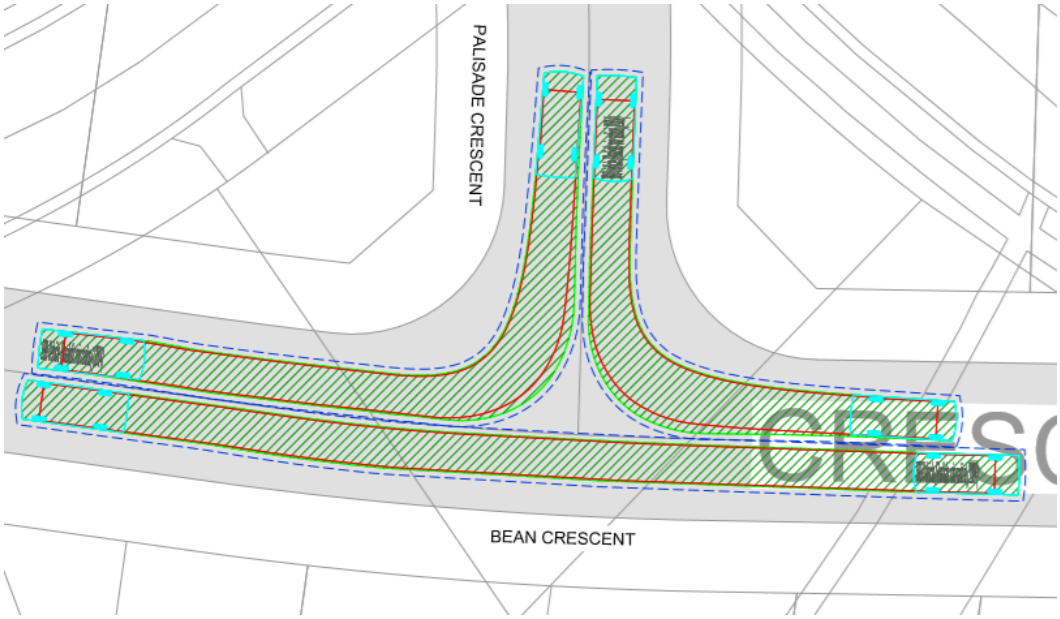
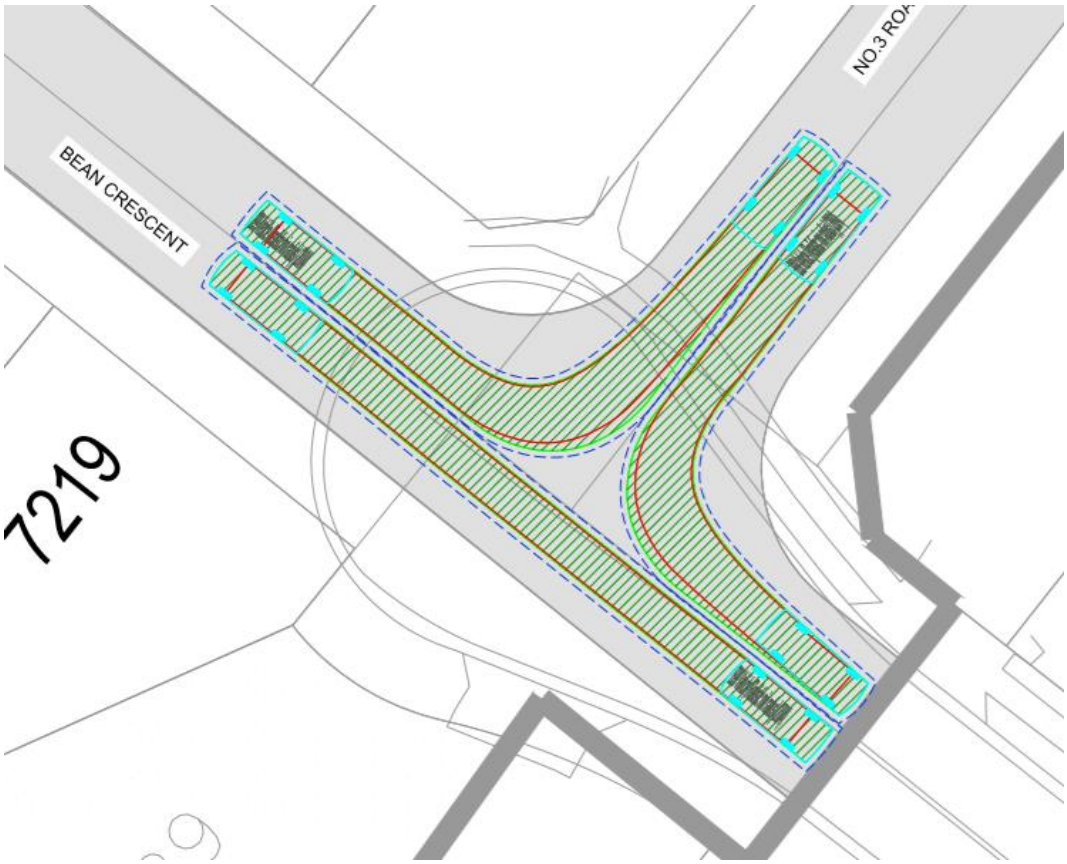
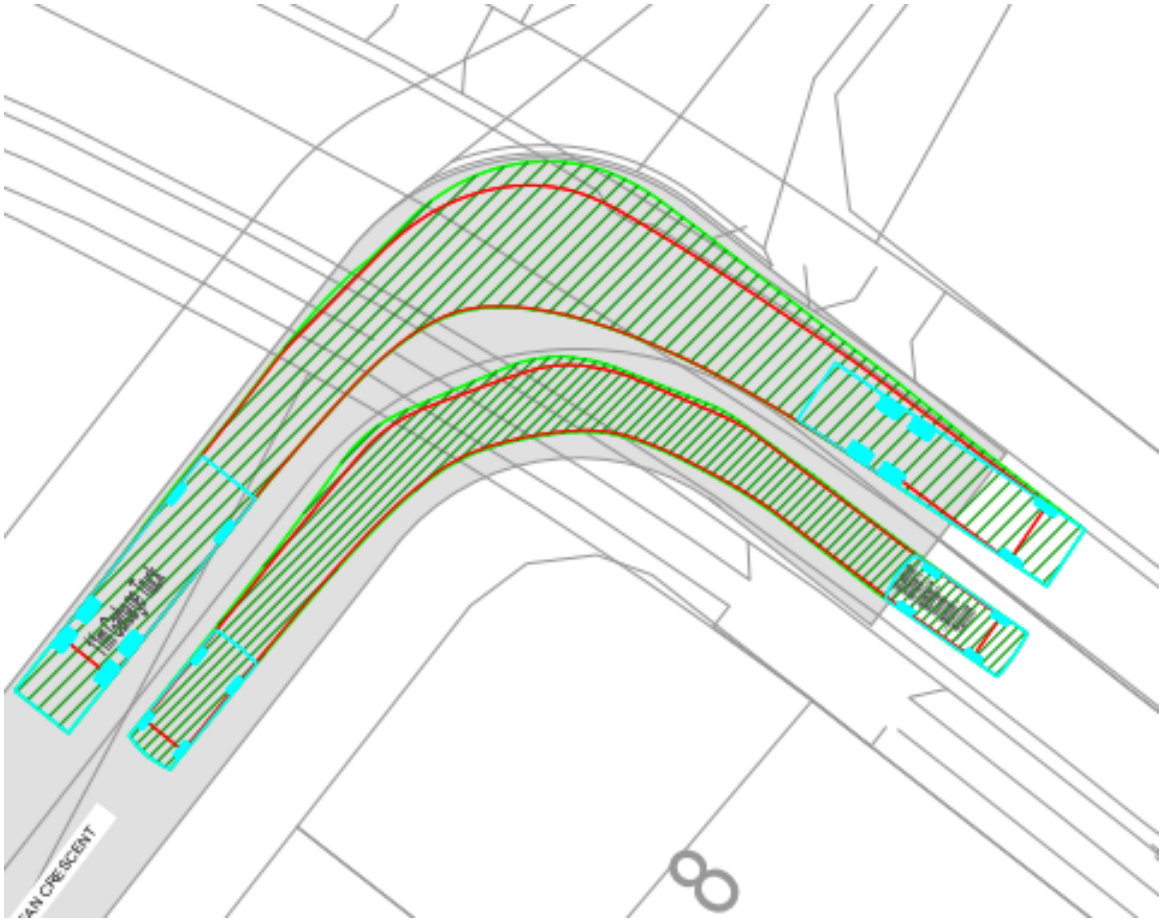



**Figure 6.7: Bean Crescent and No. 3 Road**




The swept paths show that that there would be adequate room at intersections for vehicles to manoeuvre. Swept paths were also tested for a 11m garbage truck and a B99 car at key locations. The swept path in Bean Crescent is shown in Figure 6.8

**Figure 6.8: Bean Crescent**



In Bean Crescent an 11m garbage truck would pass a B99 car travelling in the opposite direction..

# 7 Traffic Assessment

## 7.1 Overview

The traffic assessment has been based on the Transport Management and Accessibility Plan (TMAP) that has been prepared for the Bonnyrigg precinct and is to be endorsed by TfNSW. The TMAP assessed a number of scenarios to understand the existing intersection operation performances, future background traffic growth and various development scenarios. A summary of the modelled scenarios in the TMAP are provided in Table 7.1.

**Table 7.1: Modelled TIA Scenarios**

| Scenario Number | Scenario | Description |
|---|---|---|
| 1 | 2017 – Existing Conditions | Existing conditions based on 2017 survey results |
| 2 | 2027 – No Development | 2027 scenario without Bonnyrigg development. A 1.5% p.a. growth factor was sourced from historical Roads and Maritime Annual Average Daily Traffic (AADT) data along Elizabeth Drive south of the Bonnyrigg development. |
| 3 | 2027 – No Development with mitigation measures | 2027 future year with mitigation measures to improve operations and capacity at a number of intersections noted to fail under the previous scenario |
| 4 | 2027 – Approved Bonnyrigg development (2,500 dwellings) | 2027 future year with previously approved 2,500 dwellings on the site to understand the impact of previously approved development on intersections on the mitigation measures for the 2027 base year (Scenario 3). |
| 5 | 2027 – Approved Bonnyrigg development (2,500 dwellings) with mitigation measures | Mitigation measures modelled to allow key intersection to operate at acceptable levels of service and delay for a 2027 design year with 2,500 dwellings. |
| 6 | 2027 – Additional Bonnyrigg development (3,000 dwellings) | 2027 future year with 3,000 dwellings based on mitigation measures for 2,500 dwellings at select intersections to understand how the extra dwellings will impact the funding of the intersection upgrades. |
| 7 | 2027 – Additionally Bonnyrigg development (3,000 dwellings) with mitigation measures | Mitigation measures modelled previously identified to operate with unacceptable delay for 3,000 dwelling (Scenario 6) to operate at acceptable levels of service |

*Source: Bonnyrigg TMAP (GTA, 2018)*

The traffic modelling scenarios assessed a network of key intersections as follows:

- Smithfield Road / Edensor Road
- Elizabeth Drive / Smithfield Road
- Edensor Road / Bonnyrigg Avenue
- Bonnyrigg Avenue / Elizabeth Drive
- Tarlington Parade / Bonnyrigg Avenue
- Elizabeth Drive / Cabramatta Road

- Tarlington Parade / Cabramatta Road
- Humphries Road / Cabramatta Road
- Humphries Road / Edensor Road
- Elizabeth Drive / Meadows Road.

## 7.2 Level of Service Criteria

Transport for NSW uses the performance measure level of service to define how efficient an intersection is operating under given prevailing traffic conditions. Level of service is directly related to the delays experienced by traffic travelling the intersection. Level of service ranges from LoS A to LoS F. LoS A indicates the intersection is operating with spare capacity, while LoS F indicates the intersection is operating above capacity. LoS D is the long term desirable level of service.

At signalised intersections, the average delay is the volume weighted average of all movements. For roundabouts and priority (give way and stop sign) controlled intersections, the average delay relates to the worst movement.

Table 7.2 shows the criteria that has been adopted for the SIDRA Intersection assessment of level of service based the TfNSW definitions of level of service.

**Table 7.2: TfNSW Level of Service Criteria**

| Level of Service (LoS) | Average Delay per vehicle (secs/veh) | Traffic Signals, Roundabout | Give Way & Stop Sign |
|---|---|---|---|
| A | Less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study required |
| D | 43 to 56 | Near capacity | Near capacity, accident study required |
| E | 57 to 70 | At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode | At capacity, requires other control mode. |
| F | Greater than 70 | Unsatisfactory, requires additional capacity | Unsatisfactory, requires other control mode or major treatment |

## 7.3 Intersection Capacity Results

A summary of the intersection modelling results of key scenarios is summarised in Table 7.3.

**Table 7.3: Summary of Key Modelling Scenario Results**

| Intersection | Peak | Scenario 1 – Existing Conditions 2017 | | Scenario 2 – 2027 No Development | | Scenario 6 – 2027 with 3,000 dwelling development | | Scenario 7 – 2027 with 3,000 dwelling development + Mitigation Measures | |
|---|---|---|---|---|---|---|---|---|---|
| | | Average Delay (sec) | Level of Service | Average Delay (sec) | Level of Service | Average Delay (sec) | Level of Service | Average Delay (sec) | Level of Service |
| Smithfield Road / Edensor Road | AM | 64 | E | 78 | F | 50 | D | 51 | D |
| | PM | 78 | F | 135 | F | 50 | D | 50 | D |
| Elizabeth Drive / Smithfield Road | AM | 33 | C | 159 | F | 60 | E | 53 | D |
| | PM | 33 | C | 36 | C | 38 | C | 38 | C |
| Edensor Road / Bonnyrigg Avenue | AM | 35 | C | 52 | D | 34 | C | 35 | C |
| | PM | 33 | C | 67 | E | 53 | C | 35 | C |
| Bonnyrigg Avenue / Elizabeth Drive | AM | 27 | B | 63 | E | 73 | F | 55 | D |
| | PM | 24 | B | 26 | B | 29 | C | 29 | C |
| Tarlington Parade / Bonnyrigg Avenue [1] | AM | 14 | A | 16 | B | 24 | B | 24 | B |
| | PM | 10 | A | 17 | B | 16 | B | 15 | B |
| Elizabeth Drive / Cabramatta Road | AM | 40 | C | 51 | D | 42 | C | 35 | C |
| | PM | 40 | C | 46 | D | 54 | D | 50 | D |
| Tarlington Parade / Cabramatta Road | AM | 22 | B | 22 | B | 29 | C | 29 | C |
| | PM | 23 | B | 25 | B | 52 | D | 28 | B |
| Humphries Road / Cabramatta Road | AM | 29 | C | 32 | C | 30 | C | 30 | C |
| | PM | 71 | F | 159 | F | 36 | C | 36 | C |
| Humphries Road / Edensor Road [1] | AM | 18 | B | 31 | C | 27 | B | 27 | B |
| | PM | 23 | B | 86 | F | 31 | C | 31 | C |
| Elizabeth Drive / Meadows Road | AM | 46 | D | 48 | D | 66 | E | 55 | D |
| | PM | 62 | E | 69 | E | 44 | D | 44 | D |

*Source: Bonnyrigg TMAP (GTA, 2018)*
*[1] Worst movement reported for unsignalized intersection*

Intersection modelling for the base 2027 future year (Scenario 2) and ultimate development scenario (3,000 dwellings) (Scenario 6) indicated that some of the intersections would not operate at acceptable levels of service and could experience significant delay. To accommodate the future growth in overall traffic as well as traffic generated by the proposed development, a number of intersection upgrades were proposed in Scenario 7 and are discussed in section 7.5.

## 7.4 Required Intersection Upgrades

The required intersection upgrades for the Bonnyrigg development site with 3,000 dwellings as identified in the Bonnyrigg TMAP are summarised in Table 7.4.

**Table 7.4: Required Intersection Upgrades for the proposed Bonnyrigg Development (3,000 dwellings)**

| Intersection | Approach | Required Intersection Upgrades |
|---|---|---|
| Smithfield Road / Edensor Road | West | Additional through lane.<br>Additional exit lane<br>New left slip lane |
| | North-east | Additional exit lane on north-east approach |
| | South-east | Additional dedicated 150m long exit lane for slip lane from Smithfield Rd<br>Additional 150m long through lane<br>Lane shortening for shared left/through lane to 30m |
| | South-west | Additional through lane |
| Elizabeth Drive / Smithfield Road | West | Nil |
| | North | Widening to allow low angle 30m long left slip lane and separation from right turn lane |
| | East | Nil |
| Edensor Road / Bonnyrigg Avenue | North-west | Nil |
| | South-east | Additional 30m long exit lane |
| | South-west | Modify existing left turn lane into full length<br>Additional 130m long right turn lane<br>Modify exit lanes for two full lane exit lanes |
| Bonnyrigg Avenue / Elizabeth Drive | North-west | Nil |
| | North-east | Modification of exterior exit lane to full length lane<br>Modification of left turn lane to full length lane |
| | South-east | Additional 30m long right turn lane |
| Tarlington Parade / Bonnyrigg Avenue | West | Additional circulation lane |
| | North | Additional full-length exit lane<br>Full length left and through approach lane<br>Additional circulation lane |
| | East | Additional circulation lane |
| | South | Additional full-length exit lane<br>Full length left and through approach lane<br>Additional circulation lane |
| Elizabeth Drive / Cabramatta Road | North-west | Extension of left slip lane to 50m from 30m |
| | East | Additional 30m long exit lane for slip lane from north-west approach<br>Widening to allow low angle 30m long left slip lane and separation from right turn lane |
| | South-east | Additional 60m long right turn lane |

| | | |
|---|---|---|
| Tarlington Parade / Cabramatta Road | Nil | Nil |
| Humphries Road / Cabramatta Road | West | Creation of 100m long right turn lane and modification of shared through and right turn lane to through movement only |
| | North-east | Creation of 100m long right turn lane and modification of shared through and right turn lane to through movement only |
| | East | Nil |
| | South | Creation of 150m long right turn lane and modification of shared through and right turn lane to right turn only |
| Humphries Road / Edensor Road | North-west | Additional 30m long exit lane<br>Additional 30m long left turn lane |
| | North-east | Additional 30m long exit lane |
| | South-east | Nil |
| | South-west | Additional 30m long left turn lane |
| Elizabeth Drive / Meadows Road. | North-west | Additional 30m long left turn lane |
| | North | Nil |
| | South-east | Additional 50m long right turn lane |
| | South | Nil |

*Source: Bonnyrigg TMAP (GTA, 2018)*

In the TMAP LAHC acknowledges that the Bonnyrigg development (3,000 dwellings) will contribute to the overall traffic demand in 2027. However, it estimated this traffic would contribute only a small proportion of the future traffic demand as general future traffic volumes are forecast to increase significantly with local and regional developments including the Western Sydney Airport and Western Sydney Employment area.

The TMAP identified intersection upgrades at two intersections where the development has a clear nexus. Potential intersection upgrades include the intersection of Bonnyrigg Avenue and Elizabeth Drive with an additional right turn lane from Elizabeth Drive into Bonnyrigg Avenue and an extension of the left turn lane on Bonnyrigg Avenue into a full lane. Another identified opportunity is the roundabout intersection of Tarlington Parade and Bonnyrigg Avenue. The proposed roadwork improvements would include extra capacity at the roundabout and approaches on Bonnyrigg Avenue by including an additional full lane on the north and south approaches and an additional circulation lane in the roundabout.

The modelling results from the TMAP with the ultimate development (Scenario 7) with 3,000 dwellings and proposed mitigation measures indicates that the intersections identified for improvement works would operate at LoS D or better.

# 8 Conclusion

The Transport Planning Partnership (TTPP) has undertaken a traffic and transport assessment for the proposed re-subdivision of Bonnyrigg Stages 8 – 11. Based on discussions presented within this report, the following conclusions are made:

- A Development Application is to be lodged with Fairfield City Council for a 222 lot residential subdivision in Bonnyrigg.
- The subject site is anticipated to be developed to provide a total of 256 dwellings as part of Stages 8 to 11 of the Bonnyrigg Living Communities development which is to provide a total of 3,000 dwellings by Year 2027.
- A new bus route endorsed by TfNSW will service the Bonnyrigg area providing connectivity to the existing bus network surrounding the area.
- The new local streets would be 8m wide (kerb to kerb) in a 15m road reserve. Swept path analysis shows that B99 vehicles would be able to pass each other at new intersections. Garbage trucks may need to give way at some locations to allow vehicles to pass.
- On Street parking is to be allowed. The 8m carriageway is compliant with the DCP but may result in vehicles may need to stop to give way to oncoming vehicles.
- The TMAP for the Bonnyrigg development has identified road upgrades that would be required in the future including an upgrade of the intersection of Bonnyrigg Avenue and Elizabeth Drive with an additional right turn lane from Elizabeth Drive into Bonnyrigg Avenue and an extension of the left turn lane on Bonnyrigg Avenue into a full lane. Another identified opportunity is the roundabout intersection of Tarlington Parade and Bonnyrigg Avenue.

Overall, there would be no adverse traffic implications resulting from the proposed development based on the existing road capacity.

# Appendix A

## Architectural Layout Plan

## RESIDENTIAL SUBDIVISION STAGES 1 & 2

| LOT TYPE | STAGE 1 | STAGE 2 | TOTAL |
|---|---|---|---|
| SUPERLOT | 1 | 2 | 3 |
| ≥300m² | 83 | 90 | 173 |
| ≥400m² | 12 | 21 | 33 |
| ≥500m² | 5 | 7 | 12 |
| ≥600m² | - | 1 | 1 |
| TOTAL LOTS | 101 | 121 | 222 |

## RESIDENTIAL SUBDIVISION STAGE 7B (APPROVED DA)

| LOT TYPE | STAGE 7B |
|---|---|
| < 300m² | 12 |
| ≥300m² | 7 |
| ≥400m² | - |
| TOTAL LOTS | 19 |


LEGEND

- STAGING BOUNDARY
- PROPOSED LOT (SEE TABLE)
- EXISTING LOT
- EXISTING ROAD
- POSSIBLE ELECTRICAL SUB-STATIONS
- EXISTING ELECTRICAL SUB-STATIONS
- PROPOSED OPEN SPACE
- PROPOSED ROAD WIDENING

DISCLAIMER:

THIS PLAN WAS PREPARED FOR LAND & HOUSING CORPORATION FOR DEVELOPMENT CONCEPT PURPOSES ONLY.

DIMENSIONS AREAS AND TOTAL NUMBER OF LOTS SHOWN HEREON ARE APPROXIMATE ONLY AND SUBJECT TO FIELD SURVEY AND ALSO TO THE REQUIREMENTS OF COUNCIL AND OTHER AUTHORITIES WHICH MAY HAVE REQUIREMENTS UNDER ANY RELEVANT LEGISLATION.

NO RELIANCE SHOULD BE PLACED ON THE INFORMATION CONTAINED IN THIS PLAN FOR ANY FINANCIAL DEALING INVOLVING THE LAND. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN

# PRELIMINARY

| DATE | REV | DESCRIPTION | REC | APP |
|---|---|---|---|---|
| 17/08/20 | S | ISSUED - REVISED OPEN SPACE LOTS 1001 & 1003. EASEMENTS UPDATED | PS | WRS |
| 14/08/20 | R | ISSUED - REVISED LOTS 45-49, 80, 297-303, 1001, 1003. ADDED LOTS 79 & 81. UPDATED EASEMENT LOT NUMBERS & TABLE | PS | WRS |
| | | | | |
| 15/10/21 | V | ISSUED FOR APPROVAL - REVISED LOTS 10-19, 297-303, 307-309, 999, 1000. BIN PAD LOTS 17, 266-267 & REVISED EASEMENTS | PS | WRS |
| 30/03/21 | U | ISSUED FOR APPROVAL - RELOCATED LOTS 316 & 317 | PS | WRS |
| 11/11/20 | T | ISSUED FOR APPROVAL - RELOCATED ELECTRICAL SUB-STATIONS TO LOTS 303 & 1001. NOTED ROAD WIDENING | PS | WRS |

REVISIONS


Premise
ORAN PARK OFFICE
SUITE 301, LEVEL 3 ORAN PARK PODIUM
351 ORAN PARK DRIVE
ORAN PARK, NSW 2570
PH: (02) 4632 6500
WEB: www.premise.com.au


DESIGNED: PHETMALAY
CHECKED: PAUL HUME
PROJECT MANAGER: WARREN SAUNDERS
REGISTERED SURVEYOR

SCALE
0 20 40 60m
SCALE 1:1000 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: LAND & HOUSING CORPORATION
PROJECT: PROPOSED SUBDIVISION CONCEPT
LOCATION: HUMPHRIES ROAD BONNYRIGG
SHEET TITLE: PROPOSED SUBDIVISION CONCEPT - LOT MIX

JOB CODE: 320161_01
SHEET NUMBER: TP01
REV: V

## RESIDENTIAL SUBDIVISION STAGES 1 & 2

| LOT TYPE | STAGE 1 | STAGE 2 | TOTAL |
|---|---|---|---|
| SUPERLOT | 1 | 2 | 3 |
| ≥300m² | 83 | 90 | 173 |
| ≥400m² | 12 | 21 | 33 |
| ≥500m² | 5 | 7 | 12 |
| ≥600m² | - | 1 | 1 |
| TOTAL LOTS | 101 | 121 | 222 |

## RESIDENTIAL SUBDIVISION STAGE 7B (APPROVED DA)

| LOT TYPE | STAGE 7B |
|---|---|
| < 300m² | 12 |
| ≥300m² | 7 |
| ≥400m² | - |
| TOTAL LOTS | 19 |

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NO RELIANCE SHOULD BE PLACED ON THE INFORMATION CONTAINED IN THIS PLAN FOR ANY FINANCIAL DEALING INVOLVING THE LAND. THIS NOTE IS AN INTEGRAL PART OF THIS PLAN

LEGEND

- STAGING BOUNDARY
- PROPOSED LOT (SEE TABLE)
- EXISTING LOT
- PROPOSED NEW ROAD
- EXISTING ROAD TO BE DEMOLISHED
- POSSIBLE ELECTRICAL SUB-STATIONS
- EXISTING ELECTRICAL SUB-STATIONS
- EXISTING WATER
- EXISTING SEWER
- CONTOUR INTERVAL 0.5m
- BUS SHELTER
- BUS STOP/BUS ZONE

- (A) ~ EASEMENT TO DRAIN WATER 1.5 WIDE
- (B) ~ EASEMENT FOR SUPPORT & MAINTENANCE 0.9 WIDE
- (C) ~ EASEMENT FOR SUPPORT & MAINTENANCE 0.9 WIDE (DP 1172257)
- (D) ~ EASEMENT TO DRAIN WATER 1.0 WIDE (DP281523)
- (E) ~ EASEMENT FOR ELECTRICAL PURPOSES 1 WIDE (DP 262456) (Z91523)
- (F) ~ RIGHT OF ACCESS 3 WIDE
- (G) ~ BIN PAD 1 WIDE & 2 LONG
- (W)-(X) ~ RESTRICTION ON THE USE OF LAND (NO VEHICULAR ACCESS)
- (Y)-(Z) ~ RESTRICTION ON THE USE OF LAND (NO VEHICULAR ACCESS)

## PRELIMINARY

| DATE | REV | DESCRIPTION | REC | APP |
|---|---|---|---|---|
| 17/08/20 | S | ISSUED - REVISED OPEN SPACE LOTS 1001 & 1003. EASEMENTS UPDATED | PS | WRS |
| 14/08/20 | R | ISSUED - REVISED LOTS 45-49, 80, 297-303, 1001, 1003. ADDED LOTS 79 & 81. UPDATED EASEMENT LOT NUMBERS & TABLE | PS | WRS |
| 15/10/21 | V | ISSUED FOR APPROVAL - REVISED LOTS 10-19, 297-303, 307-309, 999, 1000. BIN PAD LOTS 17, 266-267 & REVISED EASEMENTS | PS | WRS |
| 30/03/21 | U | ISSUED FOR APPROVAL - RELOCATED LOTS 316 & 317 | PS | WRS |
| 11/11/20 | T | ISSUED FOR APPROVAL - RELOCATED ELECTRICAL SUB-STATIONS TO LOTS 303 & 1001. NOTED ROAD WIDENING | PS | WRS |

REVISIONS


Premise

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SUITE 301, LEVEL 3 ORAN PARK PODIUM
351 ORAN PARK DRIVE
ORAN PARK, NSW 2570
PH: (02) 4632 6500
WEB: www.premise.com.au


DESIGNED: PHETMALAY
CHECKED: PAUL HUME
PROJECT MANAGER: WARREN SAUNDERS
REGISTERED SURVEYOR: WRSaunders

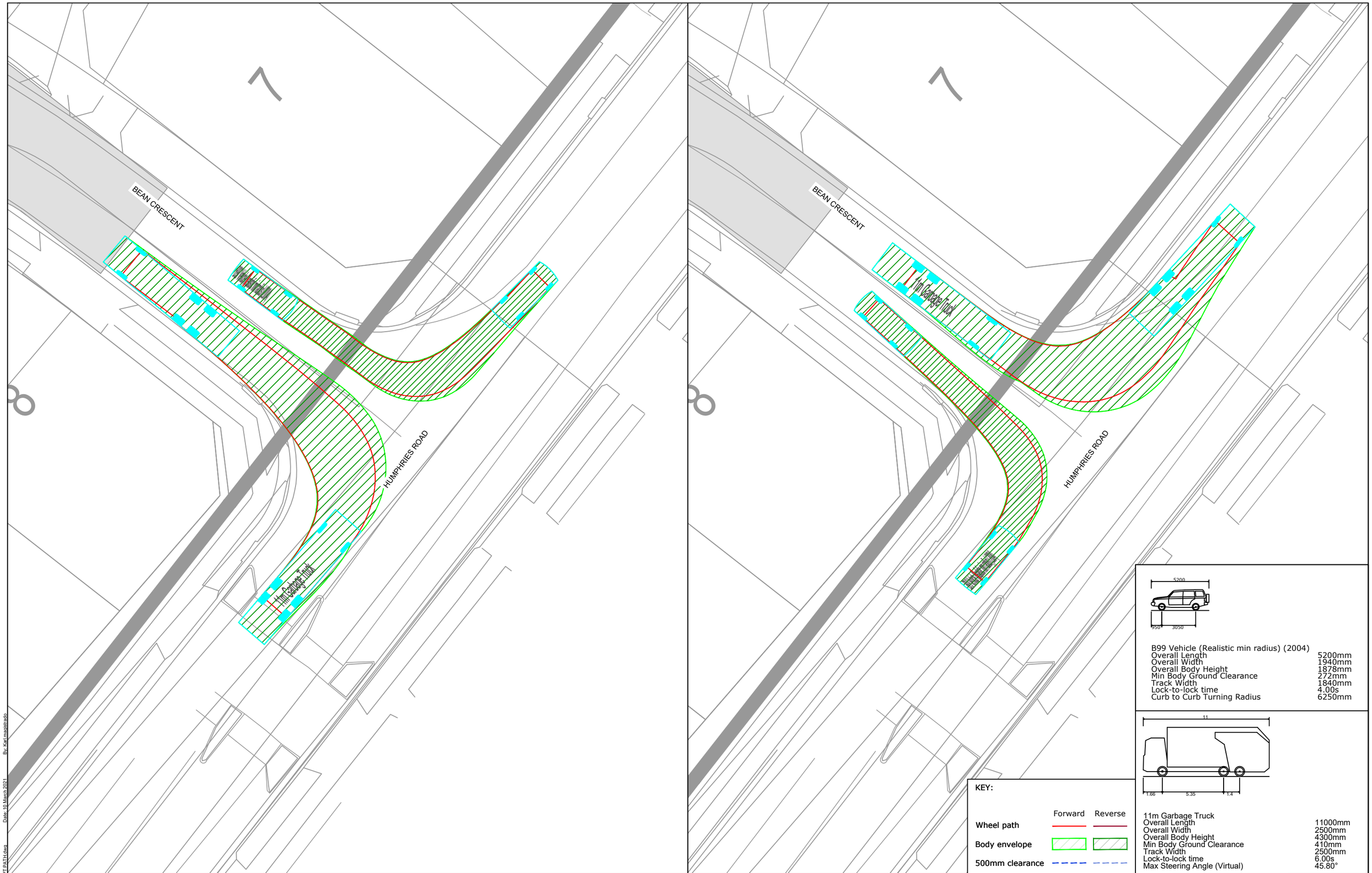
SCALE: 0 20 40 60m
SCALE 1:1000 (A1)
ORIGINAL SHEET SIZE A1

CLIENT: LAND & HOUSING CORPORATION
PROJECT: PROPOSED SUBDIVISION CONCEPT
LOCATION: HUMPHRIES ROAD BONNYRIGG
SHEET TITLE: PROPOSED SUBDIVISION CONCEPT - LOT LAYOUT PLAN

JOB CODE: 320161_01
SHEET NUMBER: TP02
REV: V

# Appendix B

## Swept Path Analysis







B99 Vehicle (Realistic min radius) (2004)

| | |
|---|---|
| Overall Length | 5200mm |
| Overall Width | 1940mm |
| Overall Body Height | 1878mm |
| Min Body Ground Clearance | 272mm |
| Track Width | 1840mm |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6250mm |




11m Garbage Truck

| | |
|---|---|
| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT

HUMPHRIES ROAD, BONNYRIGG

TITLE

SWEPT PATH ANALYSIS - HUMPHRIES ROAD TO BEAN CRESCENT
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003 FIGURE 1

DATE STAMP 10 MARCH 2021

| PROJECT No. | SCALE | REV. |
|---|---|---|
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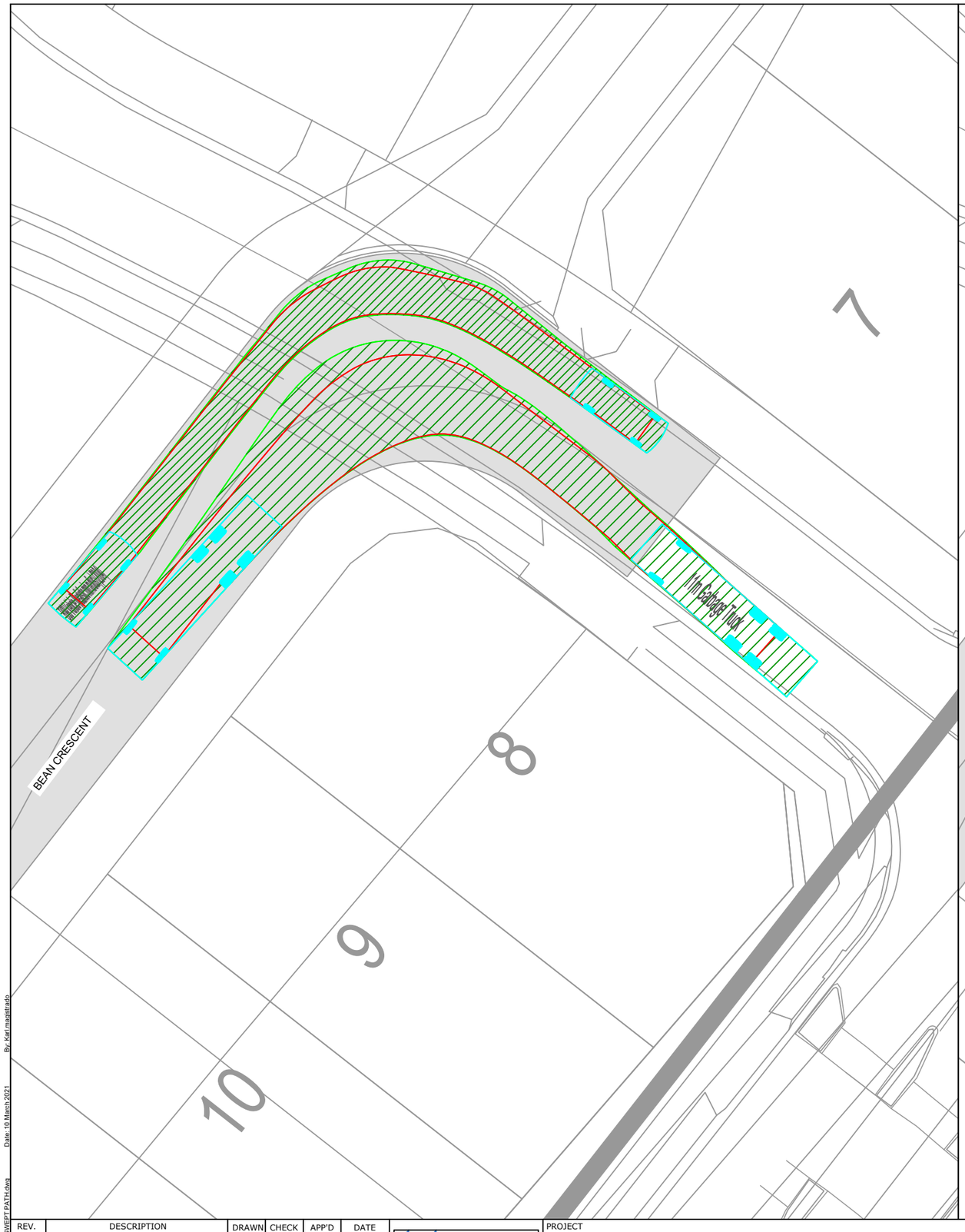
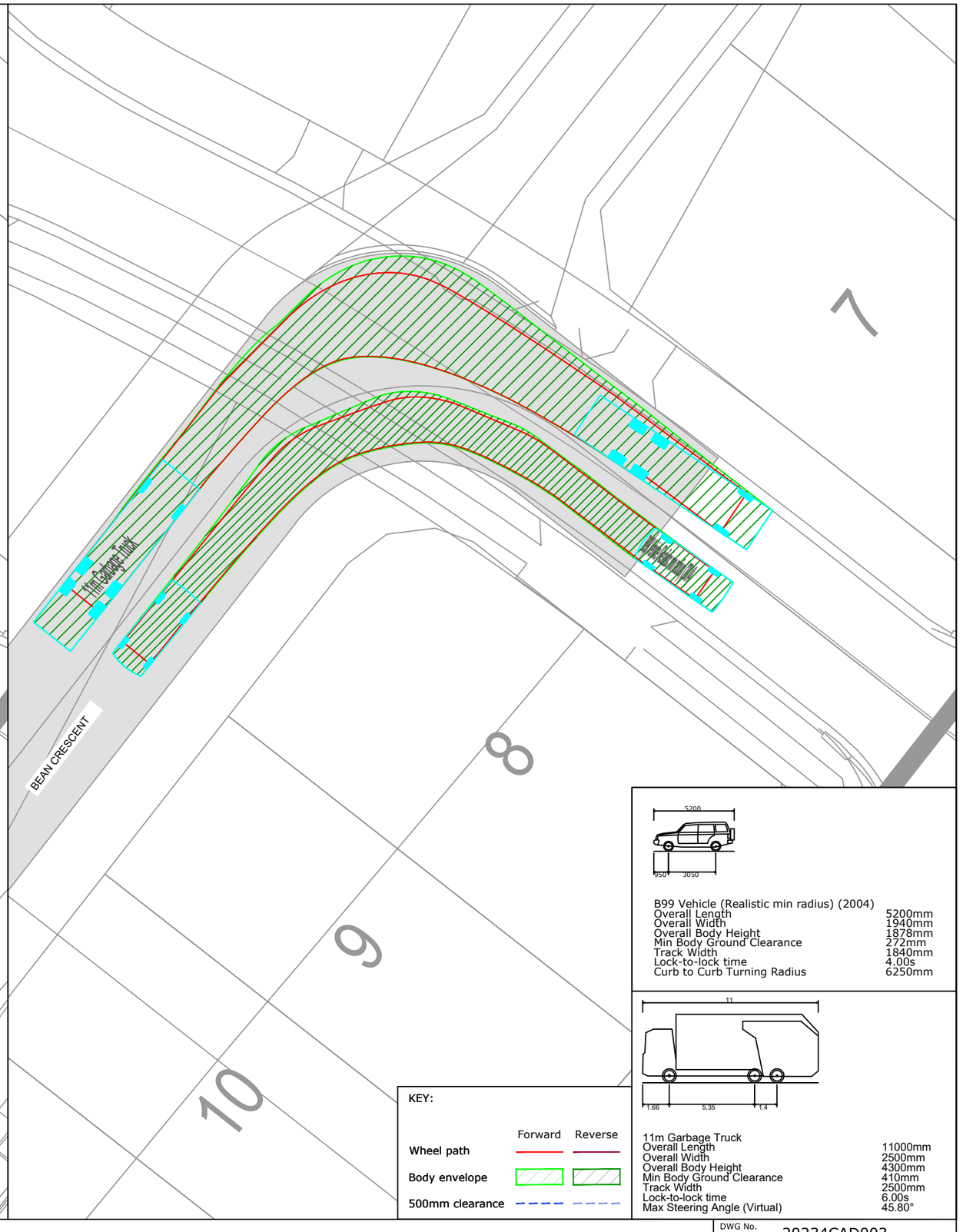
Filename: 20234CAD003-210310-SWEPT PATH.dwg
Date: 10 March 2021
By: Karl.magistrado







B99 Vehicle (Realistic min radius) (2004)

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|---|---|
| Overall Length | 5200mm |
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| Min Body Ground Clearance | 272mm |
| Track Width | 1840mm |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6250mm |




11m Garbage Truck

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|---|---|
| Overall Length | 11000mm |
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| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT: HUMPHRIES ROAD, BONNYRIGG

TITLE: SWEPT PATH ANALYSIS - BEAN CRESCENT
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003
FIGURE 2

DATE STAMP: 10 MARCH 2021

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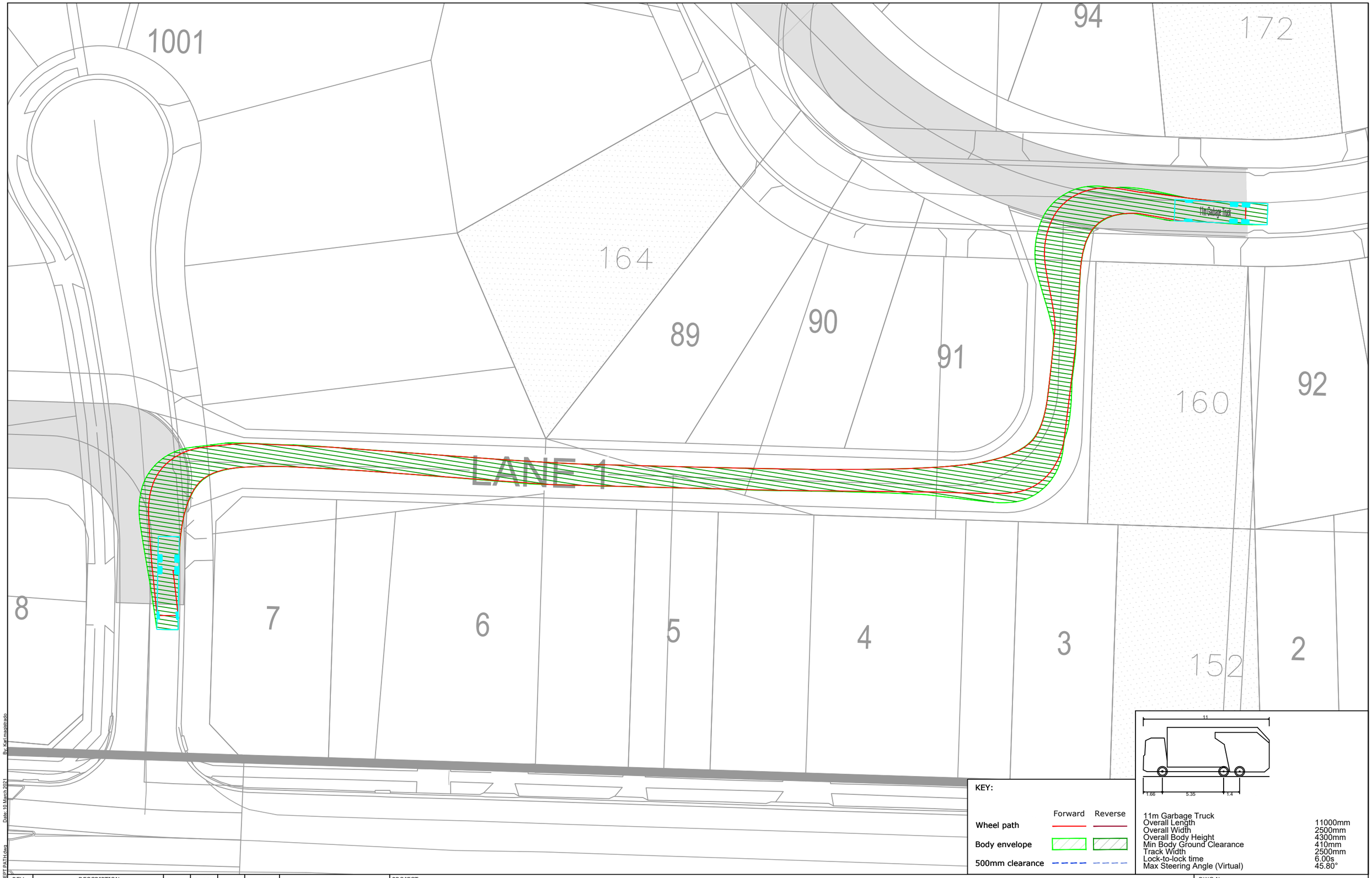
Filename: 20234CAD003-210310-SWEPT PATH.dwg
Date: 10 March 2021
By: Karl.mastrado




KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |




| 11m Garbage Truck | |
|---|---|
| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT: HUMPHRIES ROAD, BONNYRIGG

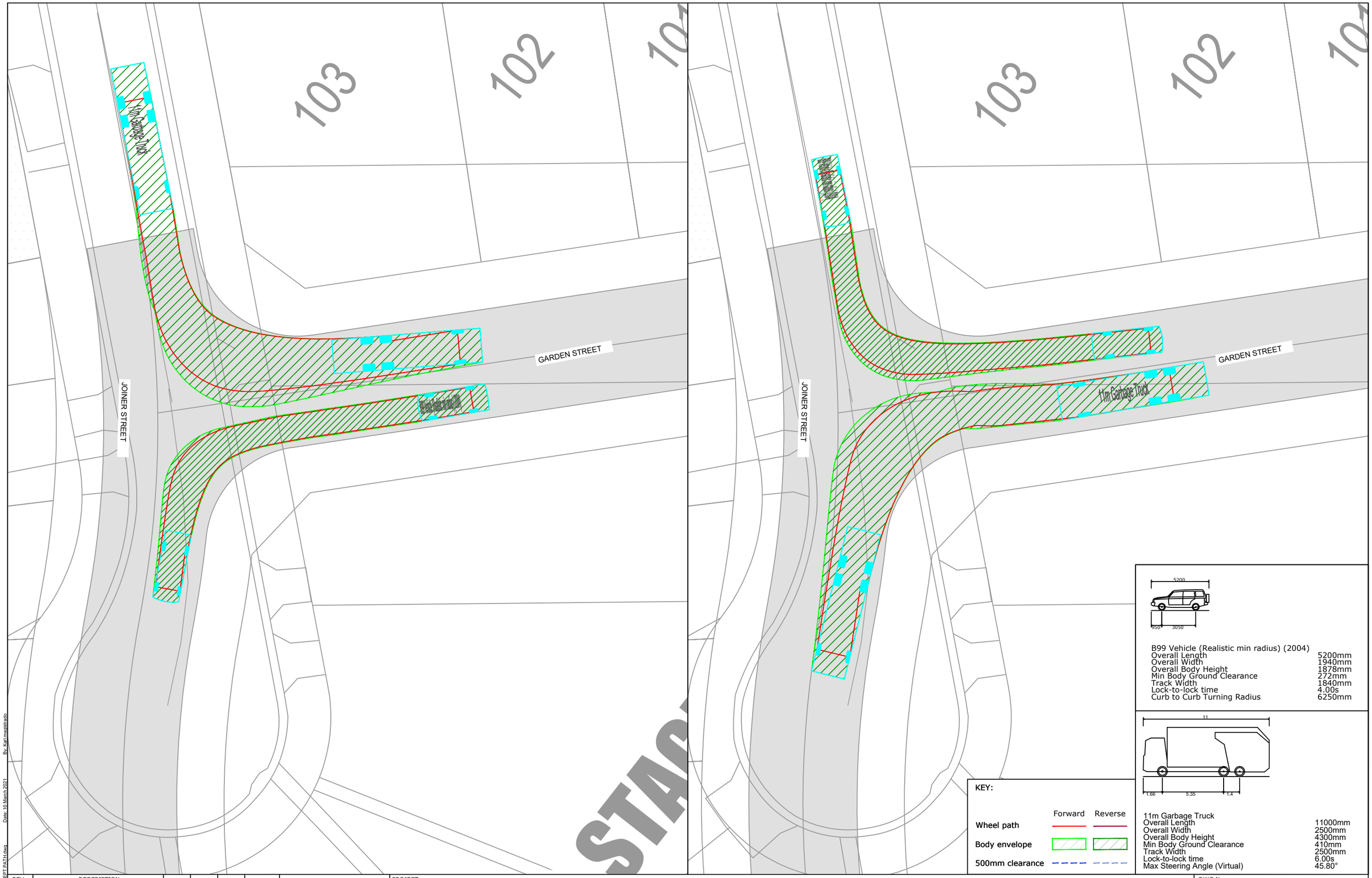
TITLE: SWEPT PATH ANALYSIS - LANE 1
11m WASTE TRUCK

DWG No. 20234CAD003 FIGURE 3

DATE STAMP: 10 MARCH 2021

PROJECT No. 20234 | SCALE 1:400 @A3 | REV. A

Filename: 20234CAD003-210310-SWEPT PATH.dwg
Date: 10 March 2021
By: Karl.magistrado




KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |




B99 Vehicle (Realistic min radius) (2004)

| | |
|---|---|
| Overall Length | 5200mm |
| Overall Width | 1940mm |
| Overall Body Height | 1878mm |
| Min Body Ground Clearance | 272mm |
| Track Width | 1840mm |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6250mm |




11m Garbage Truck

| | |
|---|---|
| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT: HUMPHRIES ROAD, BONNYRIGG

TITLE: SWEPT PATH ANALYSIS - JOINER STREET - GARDEN STREET
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003 FIGURE 4

DATE STAMP 10 MARCH 2021

| PROJECT No. | SCALE | REV. |
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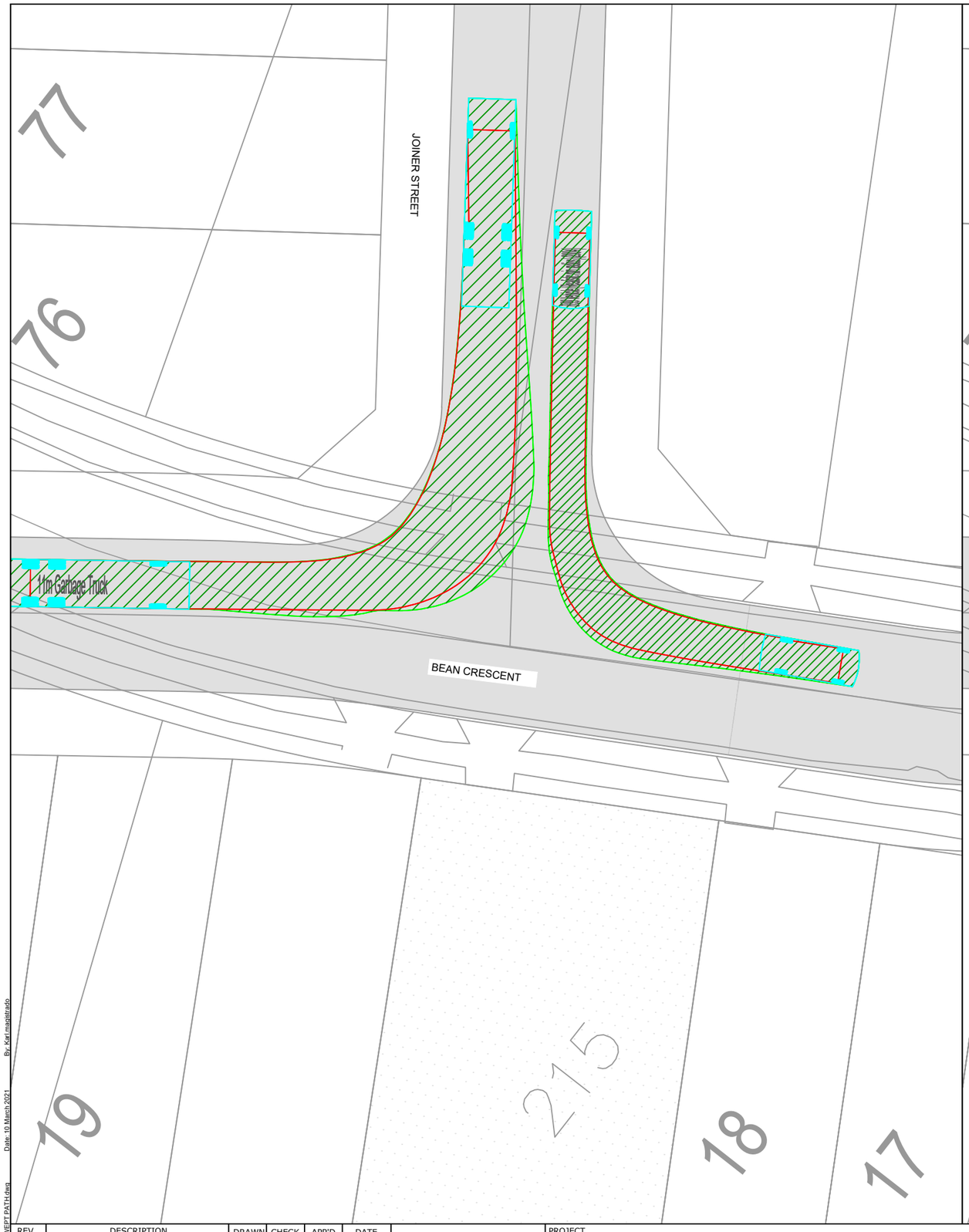
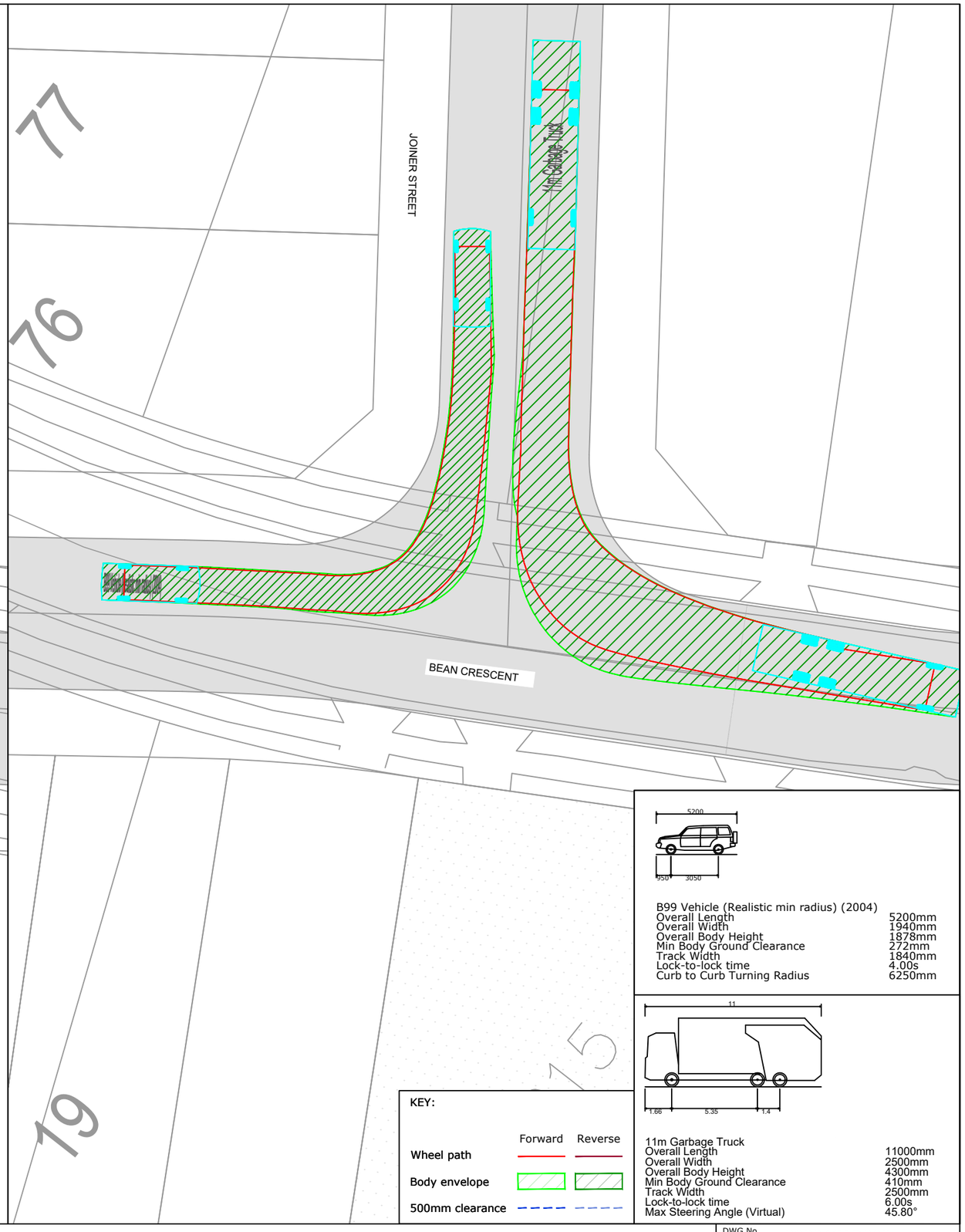
Filename: 20234CAD003-210310-SWEPT PATH.dwg Date: 10 March 2021 By: Karl maidstrado




KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |




B99 Vehicle (Realistic min radius) (2004)

| | |
|---|---|
| Overall Length | 5200mm |
| Overall Width | 1940mm |
| Overall Body Height | 1878mm |
| Min Body Ground Clearance | 272mm |
| Track Width | 1840mm |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6250mm |




11m Garbage Truck

| | |
|---|---|
| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT: HUMPHRIES ROAD, BONNYRIGG

TITLE: SWEPT PATH ANALYSIS - BEAN CRESCENT - JOINER STREET
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003
FIGURE 5

DATE STAMP: 10 MARCH 2021

| PROJECT No. | SCALE | REV. |
|---|---|---|
| 20234 | 1:250 @A3 | A |

Filename: 20234CAD003-210310-SWEPT PATH.dwg Date: 10 March 2021 By: Karl.magistrado

61

74

PALISADE CRESCENT

11m Garbage Truck

BEAN CRESCENT

CRESC

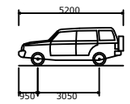
26

25

24

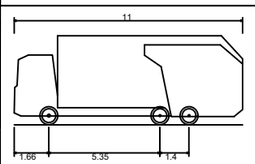
23

22




B99 Vehicle (Realistic min radius) (2004)

| | |
|---|---|
| Overall Length | 5200mm |
| Overall Width | 1940mm |
| Overall Body Height | 1878mm |
| Min Body Ground Clearance | 272mm |
| Track Width | 1840mm |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 6250mm |




11m Garbage Truck

| | |
|---|---|
| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT

HUMPHRIES ROAD, BONNYRIGG

TITLE

SWEPT PATH ANALYSIS - BEAN CRESCENT - PALISADE CRESCENT
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003
FIGURE 6

DATE STAMP 10 MARCH 2021

| PROJECT No. | SCALE | REV. |
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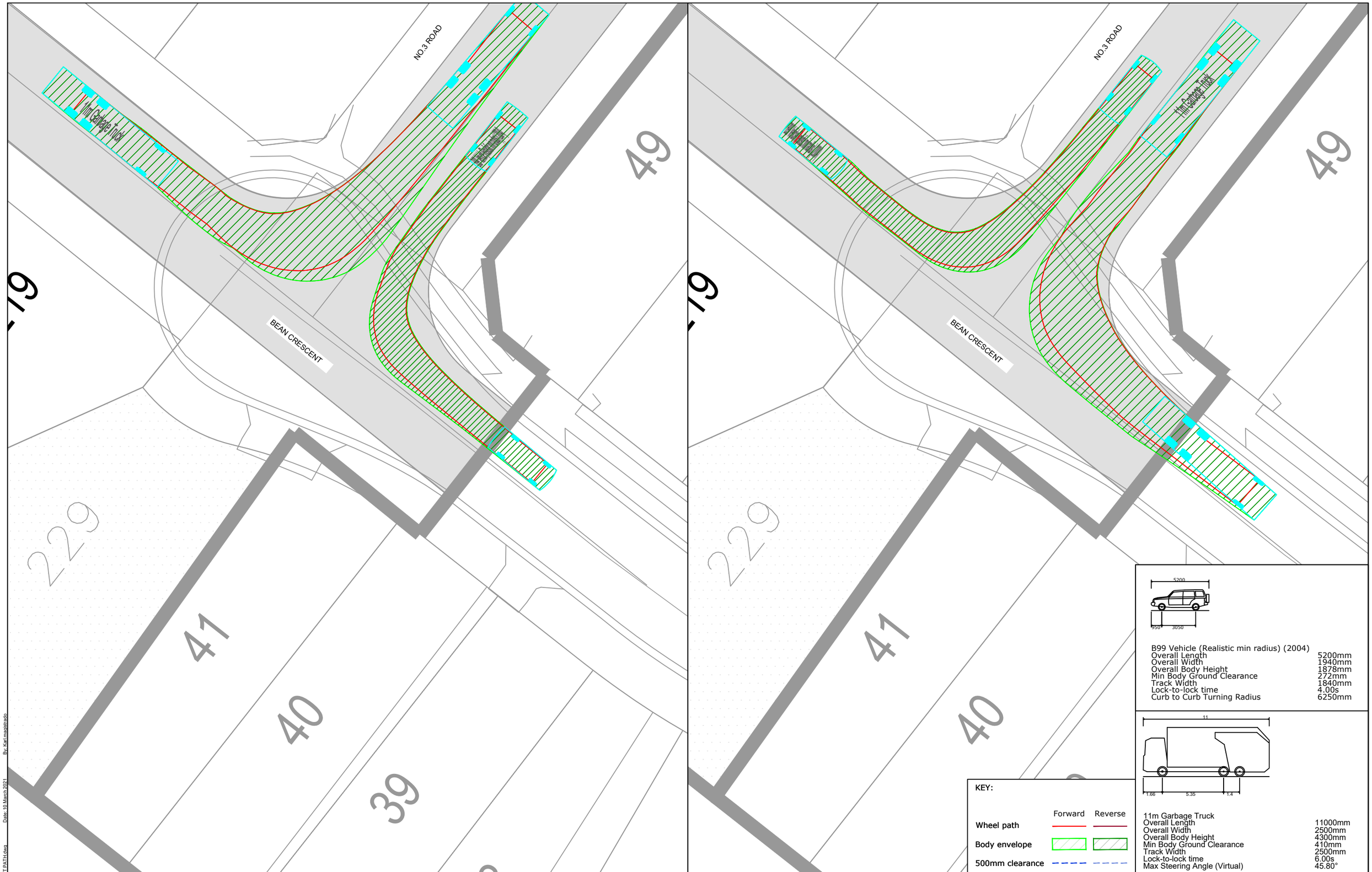
Filename: 20234CAD003-210310-SWEPT PATH.dwg Date: 10 March 2021 By: Karl.magdirado







B99 Vehicle (Realistic min radius) (2004)

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|---|---|
| Overall Length | 5200mm |
| Overall Width | 1940mm |
| Overall Body Height | 1878mm |
| Min Body Ground Clearance | 272mm |
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| Lock-to-lock time | 4.00s |
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11m Garbage Truck

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| Overall Length | 11000mm |
| Overall Width | 2500mm |
| Overall Body Height | 4300mm |
| Min Body Ground Clearance | 410mm |
| Track Width | 2500mm |
| Lock-to-lock time | 6.00s |
| Max Steering Angle (Virtual) | 45.80° |

KEY:

| | Forward | Reverse |
|---|---|---|
| Wheel path | | |
| Body envelope | | |
| 500mm clearance | | |

| REV. | DESCRIPTION | DRAWN | CHECK | APP'D | DATE |
|---|---|---|---|---|---|
| A | ISSUE FOR DISCUSSION | KM | SR | SR | 10/03/21 |

ttpp transport planning

PROJECT

HUMPHRIES ROAD, BONNYRIGG

TITLE

SWEPT PATH ANALYSIS - BEAN CRESCENT - NO.3 ROAD
11m WASTE TRUCK & AS2890.1 5.2m B99 VEHICLE

DWG No. 20234CAD003
FIGURE 7

DATE STAMP 10 MARCH 2021

| PROJECT No. | SCALE | REV. |
|---|---|---|
| 20234 | 1:250 @A3 | A |

Filename: 20234CAD003-210310-SWEPT PATH.dwg Date: 10 March 2021 By: Karl.magistrado

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