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Reference: 99 Derby Road - 'Clayworks'

It is understood that SMA are currently now pursuing an opportunity to provide the Central Apartments (Buildings B, C, and D) as affordable housing. This proposed change includes some 55 additional residential apartments and maintains the permit approved basement car parking layout and provision of 83 car parking spaces with an additional 10 bicycle spaces (total of 37 spaces).

A comparison between the permit approved and revised Central Apartments is presented in Table 1.

**Table 1: Car Parking Assessment**

| Location                       | Size         | Permit Approved Development |                       | Revised Development |                                 |                            |
|--------------------------------|--------------|-----------------------------|-----------------------|---------------------|---------------------------------|----------------------------|
|                                |              | Yield (dwellings)           | Car Parking Provision | Yield (dwellings)   | Car Parking Rate <sup>[1]</sup> | Required Parking Provision |
| Central Apartments (B + C + D) | One Bed      | 19                          |                       | 65                  | 0.6                             | 39                         |
|                                | Two Bed      | 58                          |                       | 61                  | 0.9                             | 55                         |
|                                | Three Bed    | 6                           |                       | 11                  | 1.3                             | 14                         |
|                                | <b>Total</b> | <b>83</b>                   | <b>83</b>             | <b>137</b>          | <b>-</b>                        | <b>108</b>                 |

[1] Applicable car parking rate as specified in Schedule 1 to Clause 45.09-3.

The assessment against the requirements of Clause 45.09 shows that the revised yield of 137 apartments results in a minimum car parking requirement of 108 parking spaces.

In this case, the proposed provision of 83 spaces represents a shortfall of 25 spaces.

The proposed provision is equivalent to an average car parking rate of 0.6 spaces per apartment, whilst the permit approved development provided car parking at a rate of 1.0 space per dwelling.

On the above basis, Stantec has been engaged to assess the suitability of the proposed car parking provision and the subsequent reduction in the car parking rate. This letter has been prepared to document this assessment.

## **2 Assessment Against Decision Guidelines**

### **2.1 Preamble**

As the proposed amendment requires a reduction to provide car parking below the rates specified in Schedule 1 to Clause 45.09 of the Brimbank Planning Scheme an assessment against the relevant decision guidelines is presented.

In addition to the decision guidelines, it is noted that the Sunshine Metropolitan Activity Centre Car Parking Plan (prepared by Stantec 2021) which was a supporting document to the Parking Overlay sets out the following with regard to the Overlay:

*"While a vision for significant change is being considered by Council for Sunshine through to the year 2050 this plan provides an eye to an ultimate future however is realistically targeted to realign the parking expectations for the coming 5 years."*

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*"In the context of Sunshine and the vision for growth to 2050 which would see Sunshine becoming an activity centre similar to the Melbourne CBD, similar maximum parking rate approaches (to the Melbourne CBD) could be reasonable for consideration."*

On the above basis, the future vision and intent of the Car Parking Plan and Overlay is to continue to reduce the car parking provision within the Activity Centre. As such, it is considered fair and reasonable that a reduction of car parking could be supported by the Overlay.

## 2.2 Transport Assessment

The decision guidelines in Clause 45.09 specifies a consideration to a transport assessment. A transport assessment (December 2021) was prepared as part of the approved planning application. The changes considered by the amendment does not materially alter the previously prepared transport assessment as there is no proposed change in car parking provision (i.e., no expected change in vehicle generation and impacts).

The discussions presented in this letter should be read as a supplement to the previous Transport Assessment.

The TIA has been included as an attachment for reference.

## 2.3 Characteristics and Empirical Evidence

Multiple decision guidelines in Clause 45.09 pertain to a reduction in parking provision being supported by empirical evidence or by characteristics of the proposed use which would require a lower car parking provision, which in this case is principally the affordable nature of the housing. These considerations are addressed below.

### 2.3.1 Clause 52.20

Victoria's Big Housing Build is a significant initiative aimed at addressing the housing crisis in the state. It is a \$5 billion investment in social and affordable housing, delivering 12,000 new dwellings and seeks to boost total social housing supply by 10%. To fast-track the delivery of these houses, in December 2023 the Victorian State Government introduced Clause 52.20 into the Planning Scheme. Clause 52.20-6.7 states that *"a minimum 0.6 car spaces should be provided to each dwelling. A minimum 1 car space should be provided to each 4 bedrooms of a residential building."*

While we understand that the development is not currently considered to be formally part of Victoria's Big Housing Build, the rate of 0.6 spaces per dwelling set a benchmark for car parking provision for social and affordable housing.

The proposed Central Apartments seek to deliver an affordable product to the market, like that considered in the Big Housing Build. In this regard, it is noted that the proposed car parking provision of 0.6 spaces for the Central Apartments aligns with the requirements of this Clause.

### 2.3.2 Average Car Ownership

An analysis of the 2021 Australian Bureau of Statistics (ABS) Census data for the Brimbank Local Government Area (LGA) reveals a strong correlation between total household income and car ownership. Households with lower incomes on average have a lower rate of car ownership (see Figure 2). As such,

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any affordable housing development should be designed with a reduced car parking provision to better reflect the likely car ownership rates.

It is noted that while the average car ownership remains above 0.6 for low-income, one-bedroom households in the analysed data for Brimbank. It is important to recognise that this data presents the average of the existing residential provisions within Brimbank, which is more heavily weighted to single dwellings on a lot. The proposed Central Apartments development is apartments, which typically also have lower car parking demands. In this regard the likely car parking demand is likely to be lower than the average presented in Brimbank. The data presented also covers the Brimbank LGA which has significant variance in the accessibility to alternative modes of transport, with the subject site being ideally located to support lower car ownership. Again, the presented average car ownership is likely higher than the demand at these apartments.

Analysis of other LGAs such Melbourne, Yarra, or Whitehorse which include higher proportions of apartments and higher accessibility to alternative transport modes, returns car ownership rates of less than 0.6 cars per dwelling.

Figure 2: Household Income and Car Ownership (by Dwelling Size)<sup>1</sup>



### 2.3.3 Ownership Rate of Zero Cars

According to the 2021 Census, 31% of one-bedroom households and 16% of two-bedroom households within Brimbank currently do not own a car. This is compared with 39% of one-bedroom households and 17% of two-bedroom households when considering Metropolitan Melbourne.

The Central Apartments will provide 40% of dwellings without a car parking space. While this is above the empirical percentages, when considering 99 Derby Road as a whole the provision of dwellings without a car parking space falls to 15%, this is below the empirical rate of between 16% and 31% for one- and two-bedroom dwellings

<sup>1</sup> Data sourced from Australia Bureau of Statistics 2021 Census Data. Data represents all of Brimbank Local Government Area. Household income based on the 'Total Household Income (weekly) (HIND)' definition, income brackets determined by Stantec. Excludes negative and nil household income. Excludes studio apartments.

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## 2.4 Sustainable Transport

There are multiple decision guidelines which outline assessment or consideration against factors such as the accessibility to alternative transport modes, the impacts of provision of reduced car parking rates on all modes and the degree to which the development support update of alternative modes of transport.

An assessment of the transport accessibility of the site is presented within the TIA, which highlights the following:

- The site is located within Sunshine Activity Centre, proximate to Sunshine Station, educational and retail land use. It is in an ideal location to achieve a lower private vehicle reliance in favour of alternative modes of transport (walking, cycling, and public transport)
- The development at 99 Derby includes the provision of new internal roadways, shared zones, and 'green links' (shared paths) which support and prioritise pedestrian and cycling accessibility to the site and permeability through the site.
- The Central Apartments provide 37 residential bicycle spaces within the basement car parking level. This exceeds the minimum requirements of 27 spaces specified by Clause 52.34 (against the yields considered by this proposed amendment and set out in Table 2.4.1 below). As the land use is residential, there is no requirement for end of trip facilities to be provided.
- A further 56 visitor bicycle spaces are provided around the development for visitors of the site. We note that while no additional visitor bicycle parks are provided under this application the provision of 56 parks is significantly above the minimum requirement of 13 parks required by Clause 52.34 for the Central Apartments, between Lane 2 and Lane 5. It is noted that 18 visitor bicycle parks are located proximate to the Central Apartments, between Lane 2 and Lane 5.
- As shown in Table 2.4.2, the bicycle parking provision substantially exceeds the statutory minimum and reflects a desire for a modal shift away from private vehicle use and towards sustainable modes of transport.
- A Green Travel Plan was prepared as part of the original planning application detailing how sustainable transport trips would be supported and prioritised throughout the development.

This proposal is provided to inform the development for visitor bicycle parks enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.

Table 2.4.1: Statutory Bicycle Parking Requirement

| Land Use                       | No. of Dwellings | Stat. Requirement Rate (Resident)                             | Statutory Requirement (Resident) | Stat. Requirement Rate (Visitor)                               | Statutory Requirement (Visitor) |
|--------------------------------|------------------|---|----------------------------------|--|---------------------------------|
| Thorpe Street SW (Building F)  | 12               | In development of four or more storeys, 1 to each 5 dwellings | 2                                | In development of four or more storeys, 1 to each 10 dwellings | 1                               |
| Derby Corner (Building E)      | 14               |   | 3                                |  | 1                               |
| Central (Buildings B, C and D) | 137              |   | 27                               |  | 13                              |
| <b>Total</b>                   | <b>163</b>       | --  | <b>32</b>                        | --   | <b>15</b>                       |

Table 2.4.2: Proposed Bicycle Parking Provision

| Land Use                                    | Proposed Resident Bicycle Parking | Proposed Visitor Bicycle Parking |
|---|-----------------------------------|----------------------------------|
| Thorpe Street SW (Building F)               | 9                                 | 56 across the development        |
| Derby Corner (Building E)                   | 13                                |                                  |
| Central – Apartments (Buildings B, C and D) | 37                                |                                  |
| <b>Total</b>                                | <b>59</b>                         | <b>56</b>                        |

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## 2.5 Impact of Reduced Parking Provision

The decision guidelines specify consideration to the effect of reduced car parking on other transport modes. In this regard it is noted that:

- The internal road network within 99 Derby Road has been designed to prevent parking on-street by residents. Visitor car parking is provided within the development at various locations.
- The surrounding residential streets are subject to mixed levels of parking control. Thorpe Street, approximately 50m west of the Central apartments has unrestricted parking on the eastern side. On site observations in 2019 suggested very low utilisation.
- Based on the empirical car ownership rates, it is not likely that the change proposed in this amendment will have any material impact on the reliance by the development on the existing car parking along Thorpe Street. Council can introduce time restriction along this section of road should this be desired.

## 2.6 Site size, access, design or other constraints

The decision guidelines provide for consideration to physical constraints and urban design constraints which could support a reduced car parking rate. In addition, it provides consideration as to whether the overall benefits of a development with a reduced car parking rate would outweigh a full car parking provision.

This amendment does not propose any change to the approved basement car park. As such there are no design considerations that need to be addressed as part of this amendment.

As it related to the overall benefits, it is noted that the reduction in car parking sought is required to support the affordability of the housing product. The provision of car parking at the minimum rates would require an additional 24 car parking spaces to be located within the basement. This would require a redesign and likely expansion of the basement car parking area. This increase in costs to deliver the required car parking would likely compromise the affordability of the housing. By maintaining the current provision of car parking the construction costs are not negatively impacted which allows the delivery of affordable housing.

## 3 Adequacy of Car Parking Provision

Based on the assessment against the decision guidelines, it is considered that a car parking rate of 0.6 spaces per dwelling is acceptable for the following reasons:

- The vision of the Sunshine Activity Centre Car Parking Overlay, as per the Sunshine Metropolitan Activity Centre Car Parking Plan, is for "significant change" in the context of car parking provision, with an eventual adoption of maximum car parking rates contemplated.
- The Central Apartments are proposed as affordable housing. This characteristic means that these lower income households:
  - are on average more likely to own less cars than higher income households.
  - are on average more likely to not own a car at all (within Brimbank 31% of households with one bedroom currently do not own a car).
- In 2023, Clause 52.20 was introduced into the Planning Scheme specific to the development of social and affordable homes within Victoria's Big Housing Build scheme. This Clause sets out a minimum car parking rate of 0.6 spaces per dwelling.
- The site is located within Sunshine Activity Centre, proximate to Sunshine Station, educational and retail land use. It is in an ideal location to achieve a lower private vehicle reliance in favour of alternative modes of transport (walking, cycling, and public transport)

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- The provision of resident bicycle parking exceeds the minimum requirement for residents and visitor, supporting adoption of alternative modes of transportation.
- The provision of additional car parking to meet the minimum rates set out by Clause 45.09 would likely lead to additional development costs which would undermine the affordability of the housing.

In addition to the above, we note that the challenge of minimum rates within the Planning Scheme or Overlays it that is reduces the flexibility to provide a broad dwelling product mix to the market (i.e., it is easier to provide developments at minimum or above-minimum car parking rates than to provide below minimum requirements). Minimum car parking requirements therefore lead to a smaller provision of dwellings with reduced car parking like those presented in the Central Apartments.

The development considered at 99 Derby Road includes some 224 townhouse and apartment type dwellings excluding the Central Apartments which have provided car parking at the rates of 1 space per one or two-bedroom dwelling and 1-2 spaces per three- or four-bedroom dwelling. All above the minimum requirements set out in Clause 45.09.

As such, this amendment seeks to reduce the car parking provision for only a portion of the total residential yield considered by the development. As such, the development now provides a wider product mix to the population such that there are several car park and bedroom combinations available to suit the various needs of the population.

Overall, we consider this proposed amendment to reduce car parking provision to be a positive step in the right direction in response to the introduction of Clause 45.09 of the Planning Scheme.

Please do not hesitate to contact the undersigned if you have any queries.

Yours sincerely

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Encl (Transport Impact Assessment, Stantec 2021)

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# Mixed Residential Development

99 Derby Road, Sunshine  
Transport Impact Assessment

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Prepared by: Stantec Australia Pty Ltd for SMA Projects

on 10/12/2021

Reference: 301401086

Issue #: A

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# Mixed Residential Development

99 Derby Road, Sunshine  
Transport Impact Assessment

Client: SMA Projects

on 10/12/2021

Reference: 301401086

Issue #: A

## Quality Record

| Issue | Date       | Description | Prepared By | Checked By      | Approved By  | Signed  |
|-------|------------|-------------|-------------|-----------------|--------------|---|
| A     | 10/12/2021 | Final       | Amin Sedigh | Mitch Henderson | Tim De Young |  |

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# CONTENTS

|   |           |
|---|-----------|
| <b>1. Introduction</b>                        | <b>4</b>  |
| 1.1. Background & Proposal                    | 4         |
| 1.2. Purpose & Structure of this Report       | 6         |
| 1.3. References                               | 6         |
| <b>2. Existing Conditions</b>                 | <b>7</b>  |
| 2.1. Location                                 | 7         |
| 2.2. Transport Network                        | 8         |
| 2.3. Existing Transport Usage                 | 12        |
| 2.4. Relevant Policy                          | 13        |
| 2.5. Summary                                  | 14        |
| <b>3. Site Layout</b>                         | <b>15</b> |
| 3.1. Pedestrian and Cycling                   | 15        |
| 3.2. Internal Road Network                    | 19        |
| <b>4. Waste Collection &amp; Loading</b>      | <b>22</b> |
| 4.1. Waste Collection                         | 22        |
| 4.2. Loading                                  | 23        |
| <b>5. Car Parking Assessment</b>              | <b>24</b> |
| 5.1. Statutory Requirements and Provision     | 24        |
| 5.2. Adequacy of Car Parking Provision        | 32        |
| 5.3. Adequacy of Garage Dimensions and Access | 33        |
| 5.4. Apartment Car Parking Layout and Access  | 34        |
| <b>6. Traffic Impact</b>                      | <b>36</b> |
| 6.1. Traffic Generation                       | 36        |
| 6.2. Traffic Distribution and Assignment      | 36        |
| 6.3. Traffic Impact                           | 37        |
| <b>7. Conclusion</b>                          | <b>38</b> |

## ADVERTISED PLAN

## Figures

|             |  |    |
|-------------|--|----|
| Figure 1.1: | Site Plan  | 5  |
| Figure 2.1: | Subject Site Surrounds and Environs  | 7  |
| Figure 2.2: | Land Zoning Map  | 8  |
| Figure 2.3: | Walking Catchment Departing 99 Derby Road  | 10 |
| Figure 2.4: | Public Transport Map   | 11 |
| Figure 2.5: | Public Transport Catchment Departing 99 Derby Road   | 12 |
| Figure 2.6: | Existing Mode of Travel to Work in Sunshine  | 13 |
| Figure 3.1: | Proposed Greenlink Layout (Render)   | 16 |
| Figure 3.2: | Proposed Pedestrian and Cycling Infrastructure   | 17 |
| Figure 3.3: | Road Hierarchy within Development  | 19 |
| Figure 3.4: | Proposed Movement Priorities   | 20 |
| Figure 4.1: | Proposed Waste Collection Arrangement  | 23 |
| Figure 5.1: | Melbourne Airport Rail Alignment (Source: Victoria's Big Build, edited by GTA now Stantec) | 27 |
| Figure 5.2: | Metro Tunnel, Sunbury Line highlighted (Source: Metro Tunnel Project, Victoria Government) | 27 |
| Figure 5.3: | Benchmarking Car Parking Control for Similar Sites   | 28 |
| Figure 5.4: | 2016 ABS Average Car Ownership Rates by Dwelling Type and Size                             | 30 |
| Figure 5.5: | 2016 ABS Analysis for Car Ownership by Dwelling Type and Size                              | 30 |
| Figure 5.6: | Example Car Park Shuffler  | 35 |
| Figure 5.7: | Example of Klaus TrendVario 6200 System  | 35 |

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## Tables

|            |   |    |
|------------|---|----|
| Table 1.1: | Comparison of Development Proposals                         | 4  |
| Table 2.1: | Road Network  | 9  |
| Table 2.2: | Public Transport Services Proximate to Subject Site         | 11 |
| Table 3.1: | Statutory Bicycle Parking Requirement                       | 18 |
| Table 3.2: | Proposed Bicycle Parking Provision                          | 18 |
| Table 4.1: | Waste Collection Arrangements                               | 22 |
| Table 5.1: | Statutory Car Parking Rates                                 | 24 |
| Table 5.2: | Statutory Parking Requirements and Provision for Townhouses | 24 |
| Table 5.3: | Empirical Car Parking Assessment                            | 31 |
| Table 6.1: | Peak Hour Traffic Generation                                | 37 |
| Table 6.2: | Anticipated Traffic Volume Impact (AM Peak)                 | 37 |

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# 1. INTRODUCTION

## 1.1. Background & Proposal

A planning permit is currently being sought for a mixed-use development of predominantly residential land use on the vacant land located at 99 Derby Road in Sunshine.

The development includes a total of 307 dwellings, including 198 two-, three- and four-bedroom townhouses and the balance provided as apartments accommodated within five separate apartment buildings. An internal road network is also to be provided which will be privately managed by the owner's corporation.

The planning permit application (No. P242/2020) was initially submitted to Brimbank City Council (Council) in May 2020. GTA now Stantec (then GTA Consultants) prepared accompanying Transport Impact Assessments and Green Travel Plans for the development. The development was ultimately not supported by Council and this new application seeks to respond to the concerns raised by Council and VCAT.

A comparison between the most recent application (to VCAT) and this application is set out in Table 1.1.

Table 1.1: Comparison of Development Proposals

| Type                          | Size             | Number of Dwellings         |                      |
|-------------------------------|------------------|-----------------------------|----------------------|
|                               |                  | Previous Application (VCAT) | This Application     |
| <b>Residential</b>            |                  |                             |                      |
| Townhouse                     | Two Bed          | 136                         | 136                  |
|                               | Three Bed        | 82                          | 47                   |
|                               | Four Bed         | 34                          | 15                   |
|                               | <b>Sub-Total</b> | <b>191</b>                  | <b>198</b>           |
| Thorpe Street SW (Building F) | Two Bed          | 4                           | 4                    |
|                               | Three Bed        | 8                           | 8                    |
|                               | <b>Sub-Total</b> | <b>12</b>                   | <b>12</b>            |
| Derby Corner (Building E)     | Two Bed          | 4                           | 0                    |
|                               | Three Bed        | 12                          | 14                   |
|                               | <b>Sub-Total</b> | <b>16</b>                   | <b>14</b>            |
| Central (Building B, C, D)    | One bed          | 10                          | 19                   |
|                               | Two Bed          | 30                          | 58                   |
|                               | Three Bed        | 18                          | 6                    |
|                               | <b>Sub-Total</b> | <b>58</b>                   | <b>83</b>            |
| Building A                    | One Bed          | 4                           | <b>REMOVED</b>       |
|                               | Two Bed          | 20                          |                      |
|                               | <b>Sub-Total</b> | <b>24</b>                   |                      |
| <b>Grand Total</b>            |                  | <b>309 dwellings</b>        | <b>307 dwellings</b> |

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# INTRODUCTION

| Type                                  | Size | Number of Dwellings         |                  |
|---------------------------------------|------|-----------------------------|------------------|
|                                       |      | Previous Application (VCAT) | This Application |
| <b>Non-Residential</b>                |      |                             |                  |
| <i>Food and Beverage (Building E)</i> |      | 90.7 sqm                    | 86.1 sqm         |

The proposed layout of the development is shown in Figure 1.1. Key features of the development include:

- North-south and east-west 'Green Links' to provide greater levels of amenity and pedestrian and cyclist permeability
- One primary circulation route, formed by Lanes 1, 3, 4, 5 and 8.
- A basement level car park to buildings B, C and D.
- High levels of bicycle parking provision

Figure 1.1: Site Plan

**Design Response**  
Diversity of Design

THE RANGE OF DWELLING TYPES PROVIDED RECOGNISES THAT A HEALTHY AND SUCCESSFUL COMMUNITY WILL BE SUPPORTED BY CATERING TO DIVERSE DEMOGRAPHIC AND SOCIO-ECONOMIC GROUPS.

DWELLINGS ARE PROVIDED WITHIN BOTH SMALL SCALE APARTMENT BUILDINGS OFFERING AFFORDABLE OPPORTUNITIES E.G. OPTIONS FOR SINGLE PERSON HOUSEHOLDS AND OLDER RESIDENTS THROUGH TO 3 AND 4 BEDROOM TOWN HOUSE MODELS WITH OPPORTUNITIES FOR FAMILY LIVING.

- TH TYPE 1
- TH TYPE 3
- TH TYPE 5
- TH TYPE 6
- TH TYPE 7
- TH TYPE 8
- TH TYPE 9
- TH TYPE 10
- TH TYPE 12
- TH TYPE 13
- UNIQUE
- APT BLOCKS



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Source: Hayball, Urban Context Report.

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## 1.2. Purpose & Structure of this Report

The report sets out an assessment of the transport impacts of the proposed development and how these are being addressed, including consideration of:

1. The existing conditions pursuant the transport network in the vicinity of the site and any relevant transport or planning policy relevant to the site – *refer to Section 2 of this report*
2. The details of the proposed transport response with respect to each relevant transport mode / consideration, such as: Proposed development and Site Layout – *refer to Section 3 of this report*
3. The details of the proposed loading and waste collection of the site – *refer to Section 4 of this report*
4. An assessment of the car parking requirements and provision (including access arrangements to garages) – *refer to Section 5 of this report*
5. The anticipated traffic impact as a result of this development – *refer to Section 6 of this report*

## 1.3. References

In preparing this report, reference has been made to the following:

- Brimbank Planning Scheme.
- Brimbank Cycling and Walking Strategy 2016.
- Australian New Zealand Standard, Parking Facilities (AS2890.1-2004).
- Australian Bureau of Statistics 2016 Census data – Method of Travel to Work by Place of Residence.
- Various technical data as referenced in this report.
- An inspection of the site and its surrounds.

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# 2. EXISTING CONDITIONS

## 2.1. Location

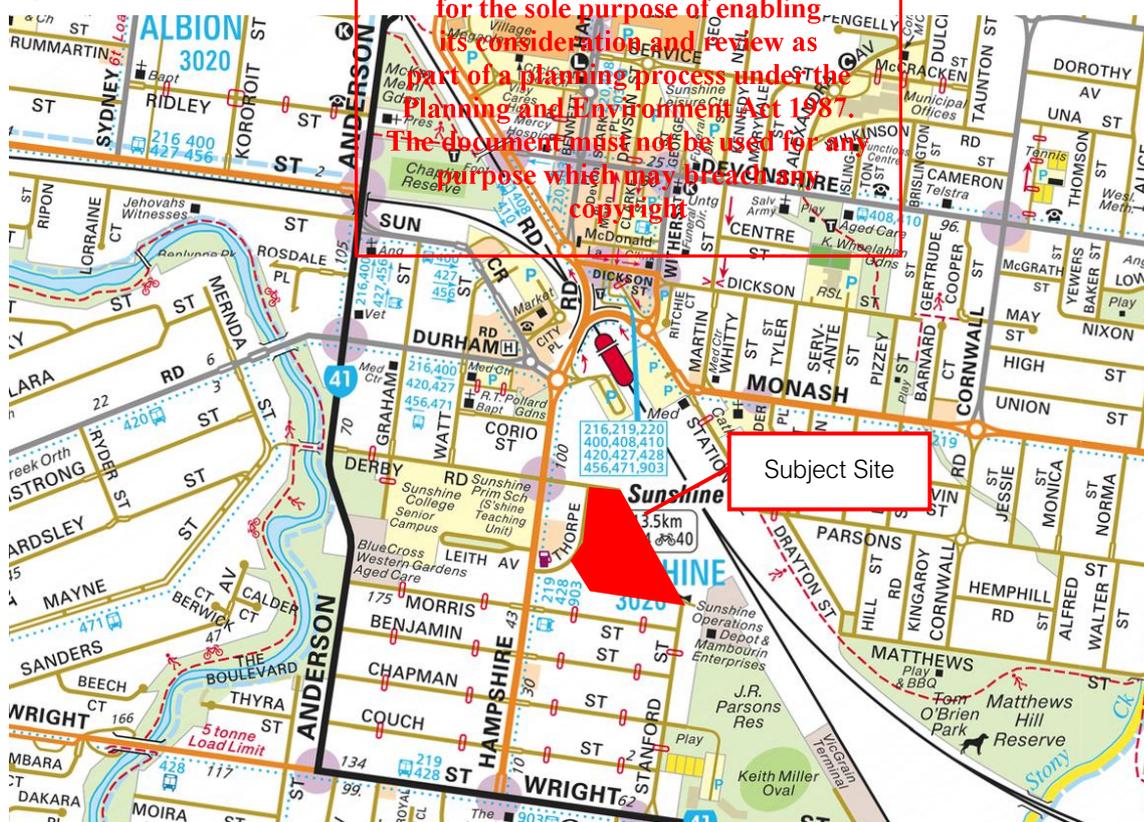
The subject site (the site) is located at 99 Derby Road, Sunshine.

The site is generally triangular in shape and has frontages to Thorpe Street on its western side and Derby Road on its northern side. In addition, the site will have an accessway via a newly constructed road to the south of the site which connects to the existing Stanford Street. The surrounding properties include a mixture of residential, commercial, educational, and industrial land uses. Notable nearby land uses include:

- Sunshine Primary School and Sunshine College on Derby Road west of the site.
- A 7-Eleven petrol station located to the west of the site at the Hampshire Road / Thorpe Street intersection
- Sunbury Rail Corridor reserve to the east of the site
- Predominately residential dwellings to the south of the site.

The site is located within an Activity Centre Zone 1 (ACZ 1) and is currently unoccupied. The location and zoning of the site and its surrounding environs is shown in Figure 2.1 and Figure 2.2.

Figure 2.1: Subject Site Surrounds and Environs



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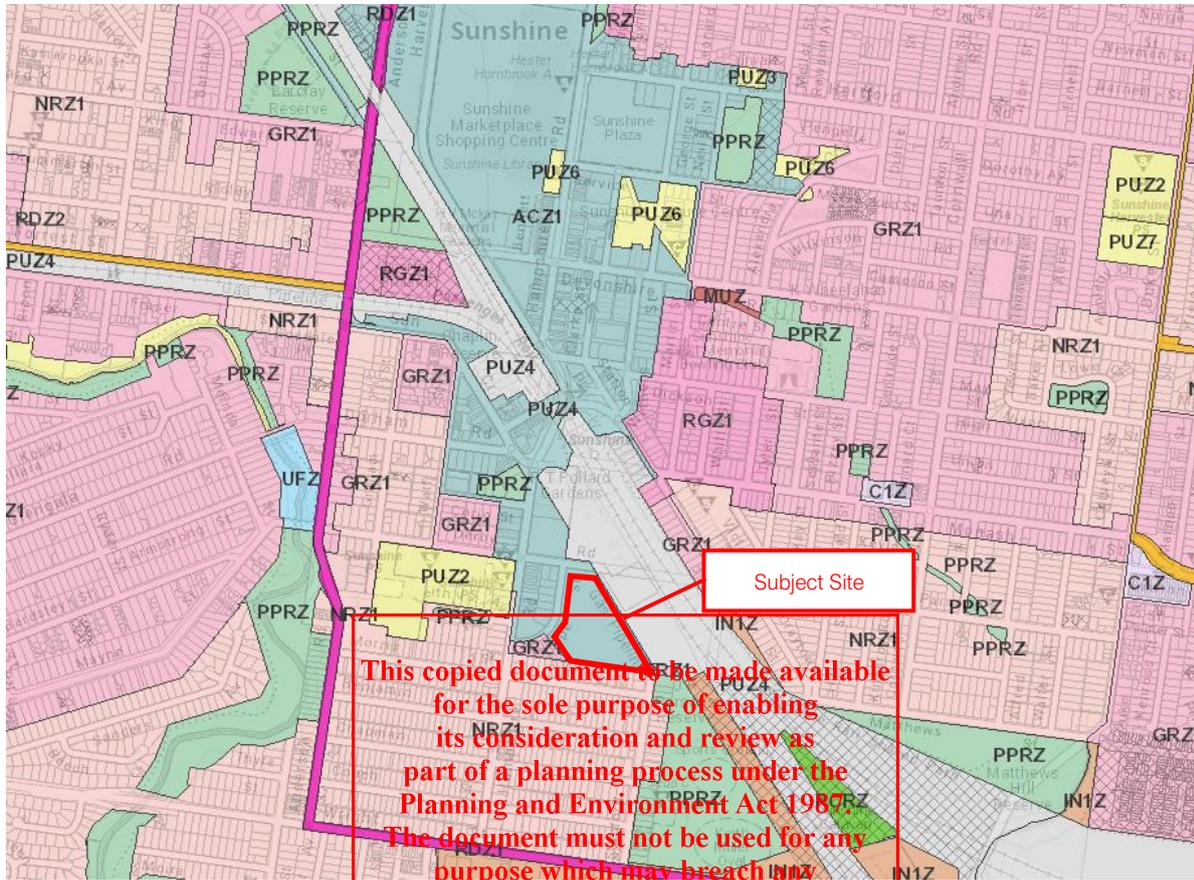
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Transport Impact Assessment // Issue: A

Mixed Residential Development, 99 Derby Road, Sunshine

Figure 2.2: Land Zoning Map



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## 2.2. Transport Network

### 2.2.1. Road Network

Key roads within the vicinity of the site include Hampshire Road, Derby Road, Thorpe Street and Stanford Street. Further detail regarding the characteristics of these roads is summarised in Table 2.1.

Traffic surveys conducted on behalf of GTA, now Stantec on 11 September 2019 indicated weekday AM and PM peak hour two-way volumes on Hampshire Road of approximately 1,100 and 1,400 vehicle movements, respectively. For Derby Road east of Hampshire Road, the same surveys indicated two-way traffic volumes of approximately 25 and 65 vehicle movements for each respective peak hour.

Site observations in 2019 and again in May 2021 indicate that the intersections in the vicinity of the site operate satisfactorily (including the Hampshire Road/Derby Road signalised intersection) with moderate vehicle queuing and delay. Notwithstanding this, it is understood that some congestion can occur adjacent the school when pick-up and drop-off movements are generated.

Observations during an AM peak hour weekday site inspection indicate that there are currently low traffic volumes on these roads and low parking utilisation, especially in the 2P parking zones.

Table 2.1: Road Network

| Road  | Classification                 | Alignment               | Configuration   | Parking   | Road Reserve Width (approx.) |
|---|--------------------------------|-------------------------|---|---|------------------------------|
| Hampshire Road                                      | Major Road                     | North-South             | One lane in each direction plus on-road bicycle lanes | Kerbside Parking (1P, 9am-6pm Mon-Fri and 9am-12noon Sat)   | 20m                          |
| Derby Road  | Local Road                     | East-West               | One lane in each direction                            | Kerbside parking (Unrestricted)   | 20m                          |
| Thorpe Street                                       | Local Road                     | North-South (generally) | One lane in each direction                            | Kerbside parking (Western side: 2P, 9am-6pm Mon-Fri and 9am-12noon Sat, eastern side: Unrestricted) | 15-16m                       |
| Laneway (between Thorpe Street and Stanford Street) | Carriageway Easement (unpaved) | East-West               | One lane  | No kerbside parking   | 3.5m                         |

2.2.2. Active Travel Network

The streets in the immediate vicinity of the site provide sealed footpaths on both sides, with the only exception being the northern side of Derby Road east of Thorpe Street.

The Sunshine Activity Centre also provides a network of pedestrian paths with the site located within a 5-minute walk of Sunshine Railway Station and adjacent bus services. The public transport accessibility of the site is discussed in Section 2.2.4.

It is noted that one commonly used measure to assess the walkability of a site is calculation of its 'Walk Score'<sup>1</sup>. In this instance, the site has a walk score of 80, which indicates that "most errands can be accomplished on foot". Further review of this score indicates that the site measures highly on its walkability to a range of services including 'dining and drinking', 'groceries', 'shopping', 'parks' and 'schools'.

Figure 2.3 shows that the bulk of day-to-day destinations are within walking distance of the site, including Sunshine Railway Station, Sunshine Plaza Shopping Centre, and nearby schools, Sunshine Primary School and Sunshine Secondary College.

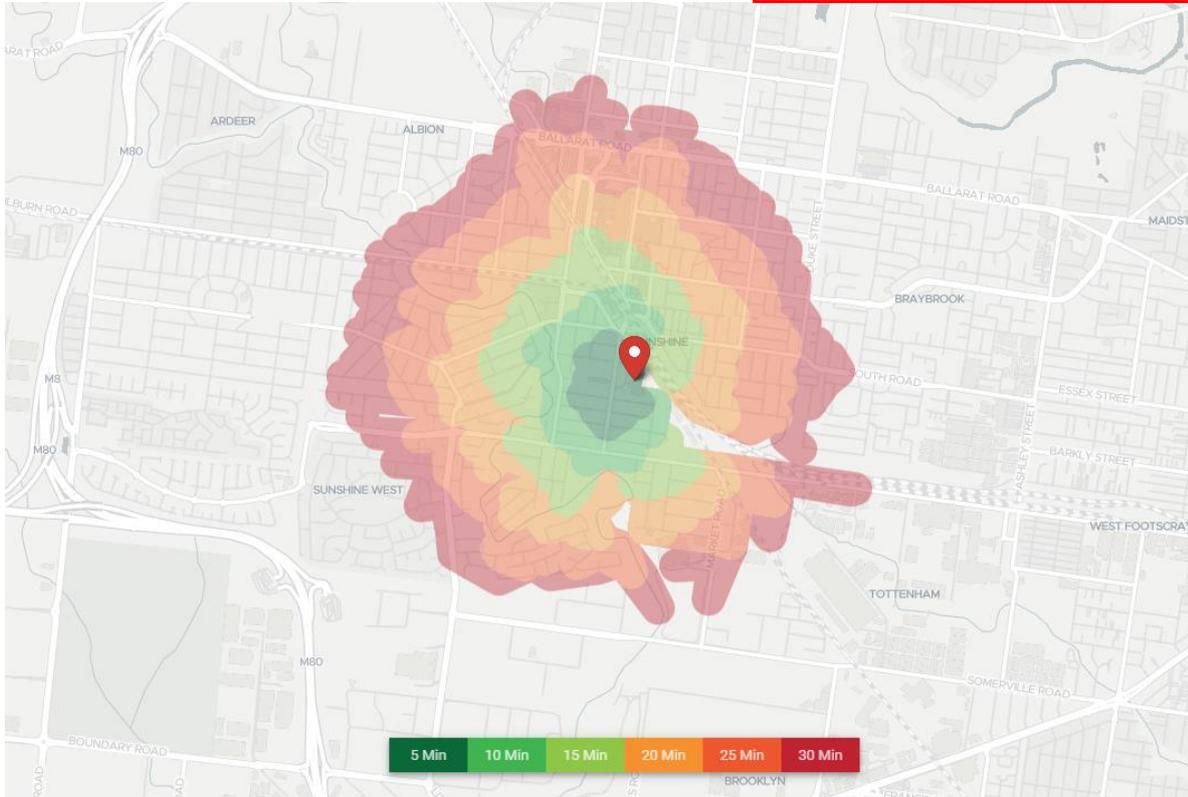
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<sup>1</sup> Reference to [www.walkscore.com](http://www.walkscore.com) notes: "Walk Score measures the walkability of any address using a patented system. For each address, Walk Score analyzes hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5-minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30-minute walk. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density."

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Figure 2.3: Walking Catchment Departing 99 Derby Road



(Reproduced from Targomo Website)

The site enjoys a very good level of access by foot, with daily errands (including shopping and to public transport) able to be completed comfortably by this mode. This accessibility should be leveraged to ultimately reduce the need for residents to own a vehicle or use that vehicle for many trips.

### 2.2.3. Cycle Network

On-road cyclist lanes are provided along Hampshire Road, with shared lane marking and coloured treatments provided at intersections.

The lanes form part of the Department of Transport’s Strategic Cycling Corridor and provide connections to Sunshine Metropolitan Activity Centre (and Sunshine Railway Station) to the north and the Kororoit Creek Trail, a primarily recreational shared use path, to the south.

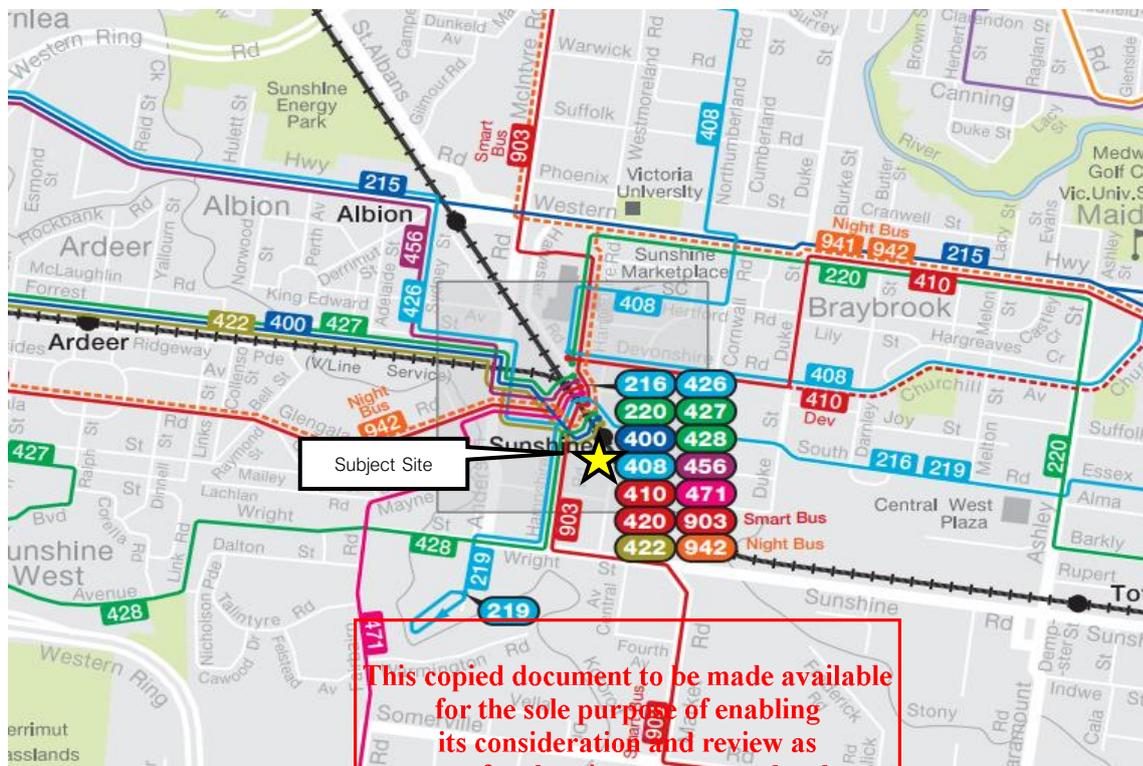
### 2.2.4. Public Transport

The site is located close to a range of public transport services, including Sunshine Railway Station located within a 5-minute walk of the site and bus routes running along Hampshire Road (with stops located near both Thorpe Street and Derby Road).

Figure 2.4 shows the site in relation to existing public transport routes within its vicinity and illustrates that the site is well serviced by such routes. The frequency of these public transport services is also shown in Table 2.2 which indicates that train services run at a 5-minute frequency in peak hours.

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Figure 2.4: Public Transport Map



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(Reproduced from Public Transport Victoria Website)

Table 2.2: Public Transport Services Proximate to Subject Site

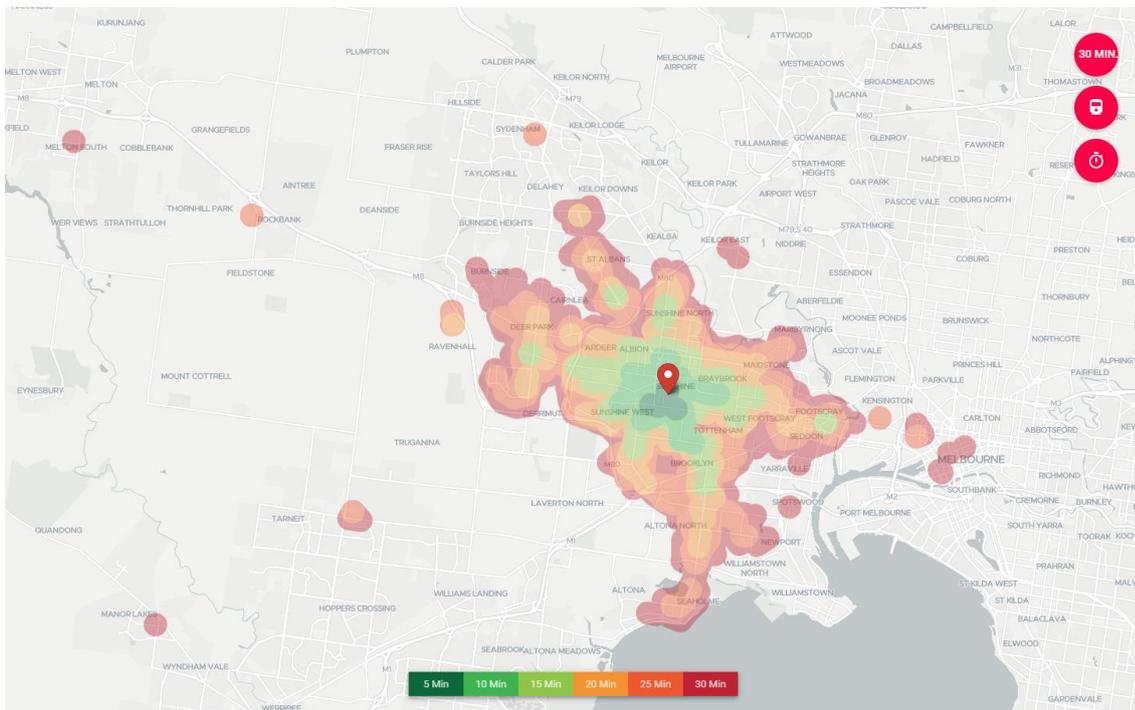
| Service | Route                            | Route Description  | Distance to Nearest Stop (m) | Frequency On/Off Peak |
|---------|----------------------------------|--|------------------------------|-----------------------|
| Train   | Sunbury and Regional Train Lines | Melbourne – Sunbury, Melbourne – Ararat, Melbourne – Ballarat, Melbourne – Geelong | 500m                         | 5 mins / 20 mins      |
| Bus     | 903                              | Altona – Mordialloc  | 200m                         | 15 mins / 15 mins     |
| Bus     | 219                              | Sunshine South – Gardenvale  | 200m                         | 30 mins / 30 mins     |
| Bus     | 428                              | Sunshine West – Sunshine Station   | 200m                         | 25 mins / 40 mins     |

It is noted that one commonly used measure to assess the accessibility of a site by public transport is calculation of its “Transit Score”<sup>2</sup>. With a score of 72, the site is considered to have “excellent transit” that is “convenient for most trips”.

Figure 2.5 shows that the majority of western Melbourne is accessible by public transport within 30 minutes of the site. Notably, Melbourne CBD is accessible within a 30-minute journey via public transport.

<sup>2</sup> The Transit Score of a site is calculated by determining the distance and “usefulness” of nearby public transit (whereby usefulness is defined as a combination of the frequency of services and the type of service (e.g., train, tram, bus)).

Figure 2.5: Public Transport Catchment Departing 99 Derby Road



(Reproduced from Targomo Website)

Further to the above, Sunshine Station has been selected by the Victorian Government as the preferred route for the Melbourne Airport Rail Link project, which will see Sunshine Station developed as a super hub providing rail access between fast regional lines, the airport & increased access to the CBD. Construction is expected to commence in July 2022, subject to the required approvals which will increase the public transport accessibility of this site.

## 2.3. Existing Transport Usage

### 2.3.1. Australian Bureau of Statistics (ABS) Method of Travel to Work

In order to estimate the likely transport usage characteristics for the site, guidance have been sought from the Australian Bureau of Statistics (ABS) 2016 Census 'Travel to Work' data for Sunshine, this information is summarised in Figure 2.6.

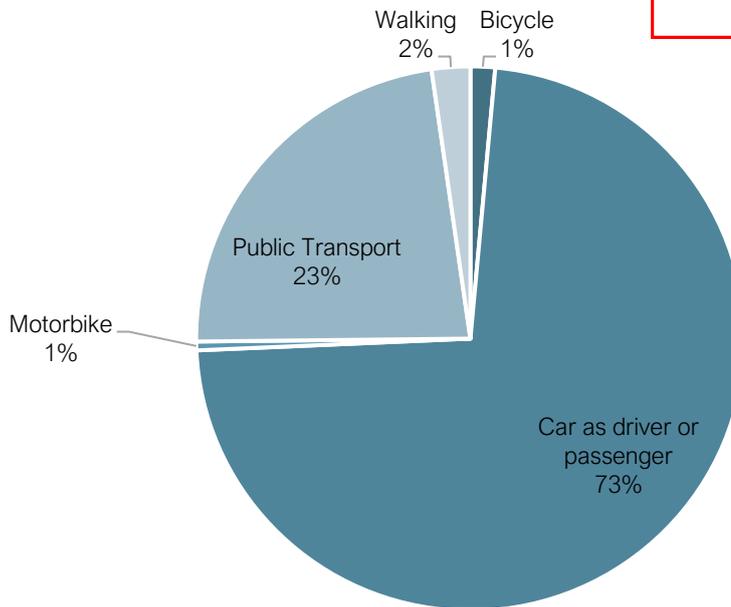
Figure 2.6 indicates that for those who currently reside in Sunshine tend to have a moderately high utilisation of private vehicles travel. Specifically, ABS data indicates that 73% of trips to work in Sunshine were undertaken via a private vehicle (either as driver or passenger). Approximately 25% of trips to work in Sunshine were via public transport and 3% were via active travel modes.

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Figure 2.6: Existing Mode of Travel to Work in Sunshine



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## 2.4. Relevant Policy

State and local government authorities (including Brimbank City Council) are implementing policies to reduce the impact of vehicle travel on the environment by encouraging walking, cycling and public modes of transport. This is in response to the Transport Integration Act (2010), which is Victoria's principal transport Act, bringing together the whole transport portfolio under one statute.

By way of example, Brimbank City Council has prepared a range of broad-level policy documents which set out similar goals and objectives aimed at improving and encouraging existing transport infrastructure and ultimately reducing the reliance on private vehicles. These policies are discussed further below.

### 2.4.1. Brimbank Cycling and Walking Strategy Update 2016

This policy provides a framework to “*help guide investment, improve safety and support of walking and cycling in Brimbank.*”

The last version of this document includes the development of innovative new guidelines for ‘local connector routes’, developing a plan of prioritised routes and a schedule to assist in developing this network and the implementation of guidelines and treatments for directions and wayfinding signage.

### 2.4.2. Brimbank Transport Priorities Paper 2018

This paper identifies issues with the transport network and considers infrastructure and solutions that will improve connectivity in and around Melbourne’s western suburbs. Brimbank has aligned itself with the Victorian Government’s planning strategy, Plan Melbourne, which aims for 20-minute neighbourhoods.

The paper outlines key transport priorities, a selection of which include:

- Urgent rail grade separations to improve capacity for all transport modes

- Increased train frequencies on the Melton and Sunbury lines
- A high frequency bus network that directly connects residential areas to town centres
- Better links between town centres in the western suburbs and priority for public transport.

Broadly this paper advocates for more public transport and active transport infrastructure to encourage walking and cycling and includes suggested road projects to improve congestion and traffic flow.

### 2.5. Summary

The site enjoys a high level of pedestrian access as a result of the site's location with many key destinations for residents, such as educational, shops and retail and public transport, located within comfortable walking distances.

The site is located within a 5-minute walk of Sunshine Railway Station and adjacent bus services enabling residents to complete work and other related trips comfortably by public transport, rather than having to rely on the private vehicle. The Sunshine Marketplace, a popular destination for residents in the west of Melbourne, is within a 14-minute walk vicinity of the site.

On-road cyclist lanes are also provided along Hampshire Road, with shared lane line marking and coloured treatments provided at intersections.

Policies and strategies that overlay this site encourage the use of alternative modes of transport and discourage a reliance on the private vehicle.

This level of accessibility and backing from policy and strategy should be leveraged to ultimately reduce the need for residents to own a vehicle or use that vehicle for many trips.

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## 3. SITE LAYOUT

### 3.1. Pedestrian and Cycling

#### 3.1.1. Pedestrian and Cycling Infrastructure

The internal roads within the development, are proposed to be a mix of shared zones and dedicated bike/pedestrian access.

The proposed urban design generally supports and promotes walking and cycling throughout the site through the provision of:

- 'Green Links' as pedestrian and cyclist only connections through the development. These typically have a 2.5m wide shared use path.
- Along the main circulation road (Lanes 1, 3, 4 and 5) footpaths of generally 1.4m are provided on one side of the road. This complies with the minimum requirements of the Australian Standards.
- A low-speed road environment through signage, kerbless design, horizontal roadway banding among other items aims to promote active travel modes.
- Shared road environment along Lanes 2 and 8 where footpaths have not been provided. This is currently shown as included horizontal roadway banding and is expected to be appropriately signed.
- Ability for pedestrians and cyclists to connect between Derby Road and Stanford Street via this development (and not for vehicles).
- Visitor bicycle parking throughout the development

The pedestrian and cycling network will link to the existing external pedestrian network at Derby Road (north), Thorpe Street (west) and Stanford Street (south-east).

The additional pedestrian and cyclist connection to the south-east of the development connecting to Stanford Street, will provide direct access to Parsons Reserve (to the south) and allow for onward travel along the existing Wright Street / Kororoit Creek shared path. Figure 3.1 provides a render of the one of the proposed 'Green Link' laneways.

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Figure 3.1: Proposed Greenlink Layout (Render)



Source: Hayball, Urban Context Report.

In addition to the formal pedestrian linkages, Lanes 2 and 8 have been purposefully designed as 'shared spaces'. These spaces will be a low-speed environments where vehicles, pedestrian and cyclists share the available width. The shared space streets design aims to improve the experience for those that use the streets:

- making it easier and safer to undertake local trips on foot and by bike
- enhance street amenity by providing more welcoming places for people to meet and play
- reduce the negative impacts of vehicles

Several thresholds' treatments are proposed within the site, including raised pedestrian crossings, pavement banding across roadways, and signage in order to deliver a traffic calmed environment. These treatments can provide the following benefits:

- Increased safety and/or perceptions of safety
- Promote motorist awareness of pedestrians and cyclists and their crossing points
- Reduced vehicle speeds at intersections
- Improved pedestrian and cycling amenity by providing an enhanced level pavement surface.

It is noted that the anticipated traffic volume on these streets is low, given Lane 2 provides access to only one of the undercroft townhouse blocks (totalling 36 dwellings) and Lane 8 provides circulation and access to a total of 16 dwellings. The VicRoads Supplement to Austroads Guide to Traffic Management Part 8: Local Area Traffic Managements specifies that "a shared zone in not appropriate on streets where the traffic volume in is excess of 200 vehicles per hour in peak periods, or over 1,000 vehicles between 7:00am and 7:00pm."

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The traffic generation of the proposed development (see Section 6) is not expected to meet this threshold (the peak hour volumes is expected to be less than 30 vehicles per hour on these lanes).

A summary of the key pedestrian and cycling features is shown in Figure 3.2.

Figure 3.2: Proposed Pedestrian and Cycling Infrastructure



### 3.1.2. Adequacy of Proposed Pedestrian Infrastructure

The proposed pedestrian network is considered appropriate for the scale of the development and traffic volumes and speeds expected on the internal road network.

Notwithstanding this, it is noted that 1.0m wide footpaths are provided for pedestrians in some locations, such as along Lane 2, portions of Lane 1 and at the Thorpe Street entrance. This is below Australian Standards minimum requirement of 1.2m. As such, it is recommended that as part of ongoing design that minimum 1.2m footpaths are achieved in accordance with the Australian Standards.

Aside from the above, the proposed pedestrian infrastructure as outlined above is considered to meet the relevant Australian Standards and objectives of the Planning Scheme and responds to the context of the site and its surrounds.

3.1.3. Bicycle Parking Statutory Requirements

Statutory bicycle parking rates applies to the three apartment buildings as outlined in Clause 52.34 of the Brimbank Planning Scheme.

Table 3.1: Statutory Bicycle Parking Requirement

| Land Use                       | No. of Dwellings | Stat. Requirement Rate (Resident)                             | Statutory Requirement (Resident) | Stat. Requirement Rate (Visitor)                               | Statutory Requirement (Visitor) |
|--------------------------------|------------------|---|----------------------------------|--|---------------------------------|
| Thorpe Street SW (Building F)  | 12               | In development of four or more storeys, 1 to each 5 dwellings | 2                                | In development of four or more storeys, 1 to each 10 dwellings | 1                               |
| Derby Corner (Building E)      | 14               |   | 3                                |  | 1                               |
| Central (Buildings B, C and D) | 83               |   | 17                               |  | 8                               |
| <b>Total</b>                   | <b>61</b>        | <b>--</b>   | <b>12</b>                        | <b>--</b>  | <b>6</b>                        |

Table 3.1 indicates that a total of 18 bicycle spaces (12 resident and 6 visitor) that must be provided across the apartment buildings as set out. ~~As the land use is residential, there is no requirement for end of trip facilities to be provided.~~

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3.1.4. Adequacy of Proposed Bicycle Parking

Table 3.2 summarises the proposed bicycle parking provision.

Table 3.2: Proposed Bicycle Parking Provision

| Land Use                                    | Proposed Resident Bicycle Parking | Proposed Visitor Bicycle Parking |
|---|-----------------------------------|----------------------------------|
| Thorpe Street SW (Building F)               | 9                                 | 56 across the development        |
| Derby Corner (Building E)                   | 13                                |                                  |
| Central – Apartments (Buildings B, C and D) | 27                                |                                  |
| <b>Total</b>                                | <b>49</b>                         | <b>56</b>                        |

A total of 49 bicycle parking spaces are proposed to be provided across the apartment buildings for resident use. This exceeds the statutory requirements for resident cycling parking. It is additionally noted that it is exceeded for each apartment building.

In addition, the following is noted:

- There are also provisions for one E bike charging space in each of Building E and F.
- A further 56 bicycle parks are proposed to be provided for visitors throughout the development provided as 28 hoops.
- A select number of townhouses have also been provided with space reserved within the garage for the provision of a bicycle rack.

Overall, the bicycle parking provision substantially exceeds the statutory minimum and reflects a desire for a modal shift away from private vehicle use and towards sustainable modes of transport.

## 3.2. Internal Road Network

### 3.2.1. Site Access

Three site access points are proposed for vehicles: Derby Road (north), Thorpe Street (south-west) and Stanford Road (to Lane 10 only). Crossovers to each road are to be designed in accordance with Planning Scheme requirements.

### 3.2.2. Proposed Road Hierarchy and Cross Sections

The primary circulation route is via lanes 1, 3, 4, 5 and 8 having vehicle entry points from Derby Road (north) and Thorpe Street (southwest). This circulation road provides access from the site's entry points to each dwelling or to a lane which provides access to garages (Lanes 2, 10 and 11).

The circulation roads have a width of 5.5m and have been designed to cater for an 8.8m Medium Rigid Vehicle (MRV). Visitor car parking has been provided in select locations along this circulation route (despite there being no statutory requirement for this form of parking).

Lanes 10 and 11 primarily provide access to garages, the road width has typically been governed by the required access to garages and is a minimum of 5.5m. Lane 2 provides garage access to the undercroft car parking spaces.

Garage/carpark access for the undercroft townhouses of type 12 is provided with shared driveway paths of width 6.4m in-between townhouses. Access to this space is restricted to residents of these townhouses.

The internal road network hierarchy and movement priorities are shown in Figure 3.3 and Figure 3.4.

Figure 3.3: Road Hierarchy within Development

**Design Response**  
Vehicle Access & Circulation

TWO MAIN ENTRY POINTS CONNECT THE INTERNAL NETWORK INTO THE BROADER PUBLIC ROAD LAYOUT FROM DERBY ROAD TO THE NORTH AND THORPE STREET TO THE SOUTH EAST.

A CENTRAL RING PROVIDES MAIN VEHICULAR ACCESS TO GARAGES AND CARPARKS UNDER A SHARED ZONE SETTING.

ALL THE INTERNAL CARPARK ACCESS - SHOWN IN ORANGE, ARE PROVIDED TO UNDERCROFT OF TOWNHOUSES BLOCKS SEPARATED FROM PEDESTRIAN AND BIKE ACCESS AIMING FOR A SAFER SETTING.

EASTERN AND SOUTHERN LANEWAYS PROVIDE SEPARATE VEHICULAR ACCESS TO REAR OF TOWNHOUSES ALONG LANE 3 AND LANE 11.

DEDICATED VISITOR CARPARKS ARE PROVIDED ACROSS THE SITE MAINLY OFF THE CENTRAL RING. THESE CARPARK AREAS WILL BE UTILISED FOR WASTE COLLECTION, DELIVERY AND LOADING/UNLOADING AS REQUIRED. THIS WILL BE MANAGED THROUGH OWNERS CORPORATION.

-  ENTRY POINT
-  PRIMARY ACCESS ROUTE
-  SHARED ZONE
-  GARAGE/CARPARK ACCESS
-  ONE WAY - EXIT ONLY CAR ACCESS
-  BASEMENT CARPARK PERIMETER
-  VISITOR & MULTI-PURPOSE PARKING SPACE



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Figure 3.4: Proposed Movement Priorities

**Design Response**  
Movement

CONNECTIONS INTO THE BROADER PUBLIC ROAD NETWORK IS LIMITED TO THE NORTHERN AND SOUTHERN ENDS OF THE SITE ENSURES SUFFICIENT SPACE WITHIN THE PUBLIC ROAD NETWORK FOR APPROPRIATE ACTIVATION OF THE PUBLIC REALM, PROVISION FOR ON-STREET CAR PARKING AND CANOPY STREET TREE PLANTING.

THE LAYOUT IS BASED ON A BLOCK PATTERN, ALLOWING FOR STRONG NORTH-SOUTH MOVEMENT CONNECTIONS THAT PRIORITISE DEDICATED PEDESTRIAN AND CYCLISTS ACCESS.

THE PROPOSAL CREATES A LOW SPEED SHARED ENVIRONMENT THROUGH THE USE OF GROUND TEXTURES, COLOUR VARIATION AND PLANTING TO CREATE AN ENVIRONMENT WHICH DOES NOT FAVOUR ONE OVER THE OTHER.

PEDESTRIAN ONLY ZONES ARE HIGHLIGHTED WITH A CHANGE IN TEXTURE AND / OR DEFINED BY A PLANTING ZONE.

THE DESIGN OF THE ACCESSWAYS FOR VEHICLES REMOVES THE TRADITIONAL KERB AND CHANNEL AND REPLACES IT WITH A PATTERNED AND TEXTURED GROUND PLANE.

-  ENTRY POINT
-  SHARED ZONE
-  BIKE ACCESS
-  VEHICULAR ACCESS
-  DEDICATED BIKE/ PEDESTRIAN ACCESS
-  FOOTPATH
-  OUTDOOR OPEN SPACE



Source: Hayball, Urban Context Report

### 3.2.3. Adequacy of Proposed Road Hierarchy and Cross Sections

The proposed cross-sections of the roadways are appropriate and can be expected to operate safely and efficiently and without detrimentally impacting pedestrian and cycling priority. It is also prudent to note that the typical road design requirements of Clause 56 of the Planning Scheme do not apply due to the zoning of the site and the fact that the proposed development is not a residential subdivision.

### 3.2.4. Sight Distance Splays

The current layout provides 3.0m x 3.0m splays to the title boundary at Derby Road and at the Thorpe Street entry. Additionally, structures, fencing, letter boxes and landscaping is expected to be located to ensure clear lines of sight for drivers at lane exits.

Dwelling/structures are to be generally set back at least 1.0m from the primary and secondary frontages and planting/fencing is to be a maximum height of 900mm if provided at these locations.

Within the development, 2.0m x 2.5m sight distance splays (at least 50% clear), as required by the Planning Scheme, are provided along the roadways where appropriate, to ensure sight lines are available between vehicles exiting the lane ways and pedestrians on the adjacent footpaths.

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Sight distance splays have not been provided at the exit from the security gates at any ground level car park (Building E or F) and at the shared accessways (servicing townhouses of type 12). These sight distance triangles are desirable but not considered to be critical given:

- Vehicle movements from the shared driveways and car parks will first need to activate a roller door to exit. This will provide a clear signal to pedestrians of the exiting vehicle movement.
- Pedestrian movements immediately abutting the crossovers are likely to be low as pedestrians will likely prefer to use the shared roadways or designated through site pedestrian links.
- The roller door will be visually permeable to provide some levels of pedestrian visibility.

Notwithstanding this, it is recommended that 'Watch for Pedestrians' and/or 'Give Way to Pedestrians' signage is installed at all exits.

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# 4. WASTE COLLECTION & LOADING

## 4.1. Waste Collection

The proposed waste storage, transfer and collection methods are documented in the Waste Management Plan prepared by others.

GTA now Stantec understands that waste collection will be undertaken by a private collector, with one arrangement for individual townhouses and separate arrangements for the apartment buildings. These arrangements are summarised in Table 4.1 with swept path assessments of the below design vehicles undertaking key movements, provided within Appendix A.

The swept path assessments demonstrate that the key areas of the development are able to be adequately serviced for waste collection.

Table 4.1: Waste Collection Arrangements

| Arrangement category | Waste Collection Vehicle   | Collection location   |
|----------------------|----------------------------|---|
| Town Houses          | 6.4-metre-long rear loader | Kerbside and communal bin holding areas.  |
| Apartments           | 6.4-metre-long rear loader | Kerbside adjacent to each communal bin room<br>Basement collection for Central Apartments |

Further to Table 4.1, the specific waste collection locations are summarised in Figure 4.1. A summary of the waste collections particulars is as follows:

- Waste collection will occur during off peak times between 10am and 3pm.
- Collection will occur on average three times per day on weekdays for specific routes (typically one waste, recycling and glass collection vehicle each day). Refer to the waste management plan for further details.

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Figure 4.1: Proposed Waste Collection Arrangement



Source: Waste Management Plan. Please refer to this report for further detail

## 4.2. Loading

The internal road network will also be used for occasional loading associated with deliveries and furniture removalist vehicles. As outlined earlier, vehicles up to 8.8m long Medium Rigid Vehicles will be able to access and circulate on this road network. It is recommended that such loading be managed via the preparation of a Loading Management Plan, to be prepared as a condition of the planning permit, to ensure loading occurs by vehicles up to this size and at locations which do not block vehicle or pedestrian access.

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## 5. CAR PARKING ASSESSMENT

### 5.1. Statutory Requirements and Provision

#### 5.1.1. Preamble

The statutory requirements for the provision of car parking are set out in Clause 52.06 of the Brimbank Planning Scheme. The purpose of this Clause is reproduced as follows:

- *“To ensure that car parking is provided in accordance with the Municipal Planning Strategy and the Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

As this site is within the Principal Public Transport Network Area, the rates in Column B of Table 1 of the Planning Scheme apply to this site. The relevant statutory car parking rates for dwellings on the site is outlined in Table 5.1.

Table 5.1: Statutory Car Parking Rates

| Land Use               | Type/Size         | Statutory Car Parking Rate                       |
|------------------------|-------------------|--|
| Residential (Dwelling) | One or two bed    | 1.0 space to each dwelling                       |
|                        | Three or more bed | 2.0 spaces to each dwelling                      |
| Food and Beverage      |                   | 3.5 spaces to each 100sqm of leasable floor area |

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#### 5.1.2. Statutory Car Parking Requirements

The statutory requirement and equivalent provision for the townhouses is summarised in Table 5.2.

Table 5.2: Statutory Parking Requirements and Provision for Townhouses

|  | Type                 | Size             | No.       | Stat. Rate | Stat Req. | Provision | Shortfall |
|--|----------------------|------------------|-----------|------------|-----------|-----------|-----------|
|  | Apartment Building B | One Bed          | 5         | 1          | 5         | 30        | 0         |
|  |                      | Two Bed          | 25        | 1          | 25        |           |           |
|  |                      | <b>Sub-Total</b> | <b>30</b> |            | <b>30</b> |           |           |
|  | Apartment Building C | One Bed          | 9         | 1          | 9         | 24        | -6        |
|  |                      | Two Bed          | 9         | 1          | 9         |           |           |
|  |                      | Three Bed        | 6         | 2          | 12        |           |           |
|  |                      | <b>Sub-Total</b> | <b>24</b> |            | <b>30</b> |           |           |

# CAR PARKING ASSESSMENT

|                               | Type                       | Size             | No.       | Stat. Rate | Stat Req.  | Provision  | Shortfall  |            |
|-------------------------------|----------------------------|------------------|-----------|------------|------------|------------|------------|------------|
|                               | Apartment Building D       | One Bed          | 5         | 1          | 5          | 29         | 0          |            |
|                               |                            | Two Bed          | 24        | 1          | 24         |            |            |            |
|                               |                            | <b>Sub-Total</b> | <b>29</b> |            | <b>29</b>  |            |            |            |
|                               | Apartment Building E       | Three Bed        | 14        | 2          | 28         | 14         | -14        |            |
|                               |                            | <b>Sub-Total</b> | <b>14</b> |            | <b>28</b>  |            |            |            |
|                               | Apartment Building F       | Two Bed          | 4         | 1          | 4          | 11         | -9         |            |
|                               |                            | Three Bed        | 8         | 2          | 16         |            |            |            |
|                               |                            | <b>Sub-Total</b> | <b>12</b> |            | <b>20</b>  |            |            |            |
|                               | <b>Apartment Sub-Total</b> |                  |           | <b>109</b> |            | <b>137</b> | <b>108</b> | <b>-29</b> |
|                               | Townhouse                  | Two Bed          | 136       | 1          | 136        | 136        | 0          |            |
| Three Bed                     |                            | 47               | 2         | 94         | 55         | -39        |            |            |
| Four Bed                      |                            | 15               | 2         | 30         | 29         | -1         |            |            |
| <b>Sub-Total</b>              |                            | <b>198</b>       |           | <b>260</b> | <b>220</b> | <b>-40</b> |            |            |
| Visitor                       |                            |                  | 307       | 0          | 0          | 14         | 0          |            |
| Food and Beverage             |                            | 90.7sqm          | 1         | 3.5        | 3          | 0          | -3         |            |
| <b>TOTAL (excl. visitors)</b> |                            |                  |           |            | <b>400</b> | <b>328</b> | <b>-72</b> |            |

Table 5.2 indicates:

- For the apartments:
  - Buildings B and D meet the Statutory Requirements
  - Shortfall in Buildings C, E and F of 29 car spaces (or 29% of the apartment yield)
  - All apartments are provided with at least one car space except for one apartment in Building F.
  - For all apartment buildings combined (apartment yield), the proposed provision equates to an average rate of 0.98 car spaces per apartment (compared to the statutory (weighted average) rate of 1.22 car spaces per apartment).
  - The extent of difference between the proposed provision and the statutory requirement differs in each apartment building (from no shortfall up to 14 for the apartment buildings).
- For the townhouses:
  - The Statutorily required rates are met for two-bed dwellings and not met for three- and four- bedroom dwellings.
  - For the three-bedroom townhouses, the proposed provision equates to an average rate of 1.17 car spaces per townhouse (compared to the statutory rate of 2 car spaces per townhouse). The net car parking difference in these rates in total is 39 car spaces.
  - For the four-bedroom townhouses, the proposed provision equates to an average rate of 1.93 car spaces per townhouse (compared to the statutory rate of 2 car spaces per townhouse). The net car parking difference in these rates in total is 1 car space (one four-bedroom dwelling (TH1C) is provided with one car space only).
- For food and beverage centre:
  - There is no proposed car park provision for the food and beverage centre.

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### 5.1.3. Adequacy of Car Parking Provision

As the provision of car parking is below that of the statutory rate a waiver is sought to reduce car parking below the statutory minimum requirements.

Clause 52.06 of the Brimbank Planning Scheme states that a Car Parking Demand Assessment is required for an application to reduce the car parking requirement below the statutory minimums. The Car Parking Demand Assessment must address the following matters, as appropriate:

- *The availability of public transport in the locality of the land*
- *The convenience of pedestrian and cyclist access to the land*
- *The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land*
- *The anticipated car ownership rates of likely or proposed visitors or occupants (residents or employees) to the land*
- *Any empirical assessment or case study*

The discussion regarding a Car Parking Demand Assessment is as follows.

#### Availability of Public Transport

As discussed in Section 2 of this report, the site is well serviced by frequent and proximate public transport services. It is located within comfortable walking distance to Sunshine Train Station and to bus stops located along Hampshire Road. Major destinations such as the Melbourne CBD are approximately a 30-minute journey from the site.

In the future, the accessibility to public transport to Sunshine, and as a result this site, will greatly increase with the construction of the Melbourne Airport Rail Line (MARL). It is proposed to connect Melbourne CBD to Sunshine and through to Melbourne Airport. Construction is set to begin on the MARL in 2022 and will be completed around 2030. For the development this will provide better rail services to the city and inner-city suburbs as well direct access to the airport via public transport. As part of this project, it is proposed to upgrade Sunshine Station into a 'transport superhub', which will approximately double the size of the existing station and include greater levels of accessibility and transport interchange<sup>3</sup>.

In addition to the MARL, another major rail project that will benefit Sunshine is the Metro Tunnel which is currently under construction and set to be completed in 2022. The Metro Tunnel will create greater capacity on the Sunbury rail line and create better connection with Melbourne's South East. It is expected that the Metro Tunnel will reduce the travel time to the inner metropolitan Melbourne (Parkville and St Kilda) by up to 20 minutes.<sup>4</sup>

These two major rail projects can only be expected to greatly increase the proportion of trips made by public transport to and from Sunshine. Residential developments of this nature should take into consideration the future benefits that Sunshine will experience from enhanced public transport.

<sup>3</sup> Victoria's Big Build, *Sunshine Station Transport Superhub*, available online at: <https://bigbuild.vic.gov.au/projects/melbourne-airport-rail/designs/sunshine-station>

<sup>4</sup> Metro Tunnel Project, Victorian Government, *Benefits for Your Train Line*, available at: <https://metrotunnel.vic.gov.au/about-the-project/benefits-for-your-train-line>

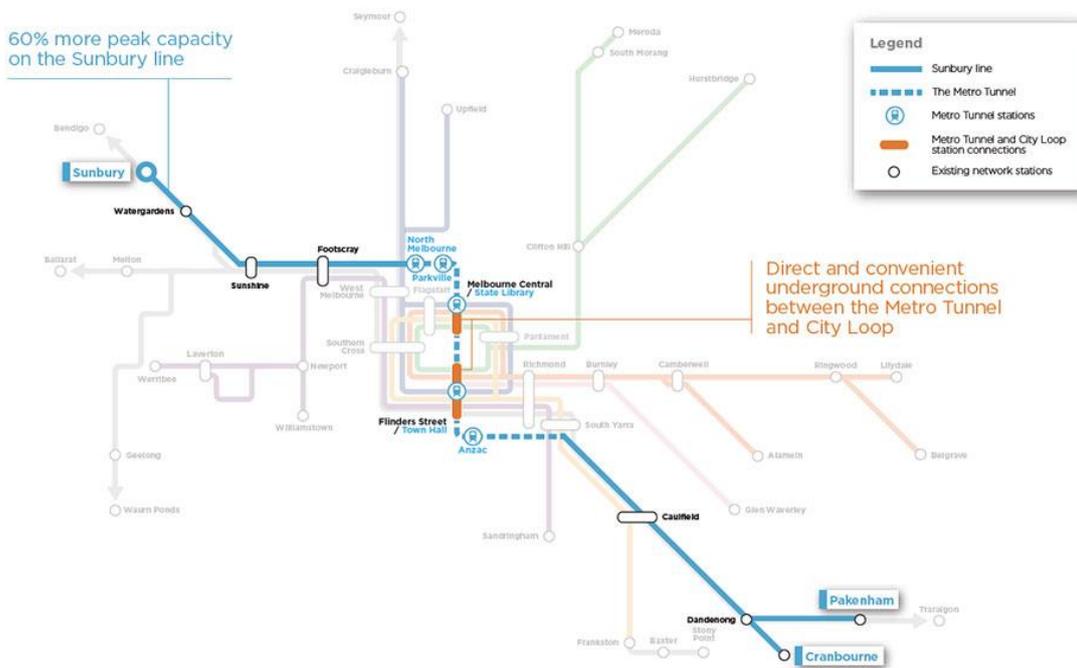
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Figure 5.1: Melbourne Airport Rail Alignment (Source: Victoria's Big Build, edited by GTA now Stantec)



Figure 5.2: Metro Tunnel, Sunbury Line highlighted (Source: Metro Tunnel Project, Victoria Government)



### Convenience of Pedestrian and Cyclist Access

As discussed in Section 2 of this report, the site exhibits a high 'Walk Score' which reflects those daily errands do not require the use of a private vehicle. The site is located within the Sunshine Activity Centre and is located within comfortable walking distance to the Sunshine Cluster including Sunshine Primary School, Sunshine College as well as a range of shopping and retail land uses. Bicycle connectivity to the site is provided via on-road bicycle lanes in both directions along Hampshire Road.

Provision Bicycle and End of Trip Facilities

Apartments are provided with secure bicycle parking in each complex above the statutory minimum requirements. Additionally, publicly available bicycle parking is provided throughout the development for visitors also above the Planning Scheme requirements. Select townhouses have been designed with adequate space for the storage of one bicycle. The high level of bicycle parking facilities supports a reduced car parking provision.

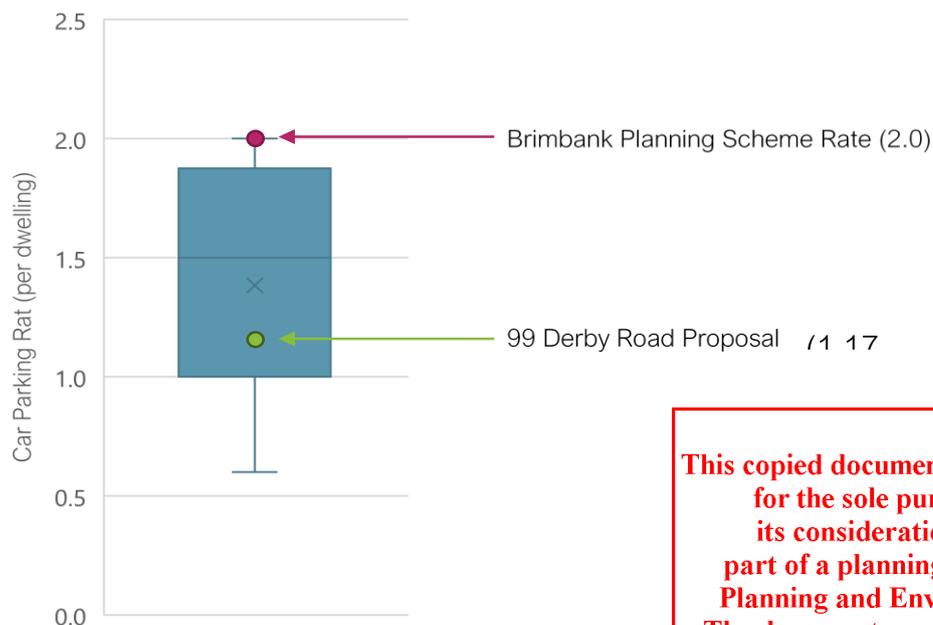
Policy Assessment and Benchmarking

The provision of car parking in Major Activity Centres have been the subject of numerous studies over the years, with notably lower car parking rates prescribed in parking overlays like Footscray and Box Hill. These areas of Melbourne use car parking as a lever to drive achievement of target mode shares and the vision and objectives of overarching policies.

For Sunshine, it is understood that this strategic body of works is yet to be completed (and therefore no alternate rates are contained in a parking overlay for the site). However, it is entirely reasonable to suggest that a similar approach to car parking will be required and likely implemented within the next (approx.) 5 years. It is expected that this strategic work would recognise that car parking rates for dwellings in locations such as Sunshine are well below statutory requirements, and are expected to fall as land use intensifies, parking management improves, and public transport services are enhanced.

GTA now Stantec has previously undertaken a benchmarking review of 12 car parking overlays throughout metropolitan Melbourne and have reproduced the car parking rates for these overlays specific to three-bedroom dwellings in Figure 5.3. This figure highlights that the upper requirement for three-bedroom dwellings is 2.0 spaces per dwelling and the lower requirement is 0.6 (noting that within this range, some overlays infer rates as maximums instead of minimums). The proposed rate of 1.17 car spaces for the three-bedroom townhouses is consistent with the approach commonly adopted for such activity centres.

Figure 5.3: Benchmarking Car Parking Control for Similar Sites



[1] Proposed development car parking provision (includes apartments).

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## Anticipated Car Ownership Rates

ABS data relating to townhouses has been sought from privately owned 'semi-detached, row or terrace house, and townhouses', with ABS data relating to apartments sought from privately owned 'flat, unit or apartment'. To maximise the size of the data, all dwellings in these classifications (i.e., data is not limited to two storeys or more for the townhouses or four or more storeys for apartments.)

For both data sets, data is excluded for townhouses and apartments with recorded car parking demands of 4+ cars (considered to be statistical outliers). Additionally, the results for 3-bedroom apartments as the total sample size was only 8 and therefore excluded (the data suggested an average rate for three-bedroom apartments of 0.5 car spaces per apartment).

The results of the analysis of this data are presented in Figure 5.4 and Figure 5.5 and indicate:

- There is no material difference between the rates for the townhouses only and apartments only. To maximise confidence in the data and resultant rates, both datasets have been combined.
- For the combined data set, the average car ownership rates are:
  - 0.77 car spaces per one-bedroom dwelling
  - 1.05 car spaces per two-bedroom dwelling
  - 1.37 car spaces per three-bedroom dwelling
  - 1.94 car spaces per four-bedroom dwelling.
- For the combined data set, there is a significant proportion of one- and two-bedroom dwellings where residents are unlikely to own a vehicle or require a car space. Specifically:
  - 31% (approx.) of residents of one-bedroom dwellings do not own a car
  - 17% (approx.) of residents of two-bedroom dwellings do not own a car.
- For the combined data set, 61% (approx.) of residents of three-bedroom dwellings own up to one car.

## Food and Beverage Car Parking Demand

This food and beverage tenancy cannot be expected to operate as a destination land use but instead is likely to rely on walk-up trade from the proposed residential dwellings (and previously approved hotel development and the surrounding area). In this context, it is unlikely to generate a customer parking demand.

Similarly, it is understood that staff will be advised that no on-site parking will be provided for their use, which can be expected to encourage the use of other transport modes to travel to the site.

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Figure 5.4: 2016 ABS Average Car Ownership Rates by Dwelling Type and Size

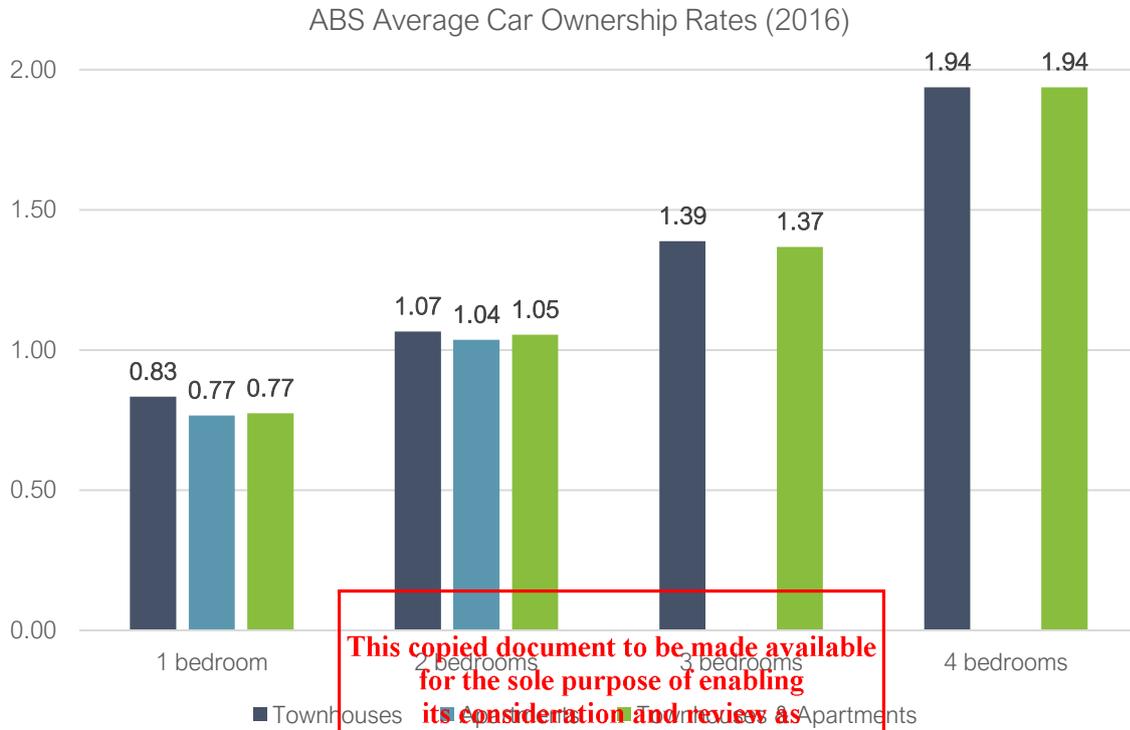


Figure 5.5: 2016 ABS Analysis for Car Ownership by Dwelling type and Size



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5.1.4. Anticipated Car Parking Demand

For the above reasons, the following rates have been adopted for this car parking demand assessment:

- Apartments:
  - 0.6 car spaces per one-bedroom dwelling
  - 0.9 car spaces per two-bedroom dwelling
  - 1.3 car spaces per three-bedroom dwelling.
- Townhouses<sup>5</sup>:
  - 70% of the three-bedroom townhouses require only one car space.
  - 30% of four-bedroom townhouses require only one car space.

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Application of the above rates to this development is set out in Table 5.3.

In summary, the table indicates:

- The proposed car parking provision is adequate for Buildings B, C and D
- There is a minor shortfall in Buildings E and F of four and two spaces respectively
- There is a minor shortfall for three-bedroom townhouses of six spaces

Table 5.3: Empirical Car Parking Assessment

|                            | Type                 | Size             | No.        | Emp. Rate | Emp. Req.  | Provision  | Shortfall |
|----------------------------|----------------------|------------------|------------|-----------|------------|------------|-----------|
| Residential                | Apartment Building B | One Bed          | 5          | 0.6       | 3          | 30         | -         |
|                            |                      | Two Bed          | 25         | 0.9       | 22         |            |           |
|                            |                      | <b>Sub-Total</b> | <b>30</b>  |           | <b>25</b>  |            |           |
|                            | Apartment Building C | One Bed          | 9          | 0.6       | 5          | 24         | -         |
|                            |                      | Two Bed          | 9          | 0.9       | 8          |            |           |
|                            |                      | Three Bed        | 6          | 1.3       | 7          |            |           |
|                            |                      | <b>Sub-Total</b> | <b>24</b>  |           | <b>20</b>  |            |           |
|                            | Apartment Building D | One Bed          | 5          | 0.6       | 3          | 29         | -         |
|                            |                      | Two Bed          | 24         | 0.9       | 21         |            |           |
|                            |                      | <b>Sub-Total</b> | <b>29</b>  |           | <b>24</b>  |            |           |
|                            | Apartment Building E | Three Bed        | 14         | 1.3       | 18         | 14         | -4        |
|                            |                      | <b>Sub-Total</b> | <b>14</b>  |           | <b>18</b>  |            |           |
|                            | Apartment Building F | Two Bed          | 4          | 0.9       | 3          | 11         | -2        |
|                            |                      | Three Bed        | 8          | 1.3       | 10         |            |           |
| <b>Sub-Total</b>           |                      | <b>12</b>        |            | <b>13</b> |            |            |           |
| <b>Apartment Sub-Total</b> |                      |                  | <b>109</b> |           | <b>100</b> | <b>108</b> | <b>-6</b> |
|                            | Townhouse            | Two Bed          | 136        | 1         | 136        | 136        | 0         |

<sup>5</sup> A different approach is adopted to the townhouses (than the apartments) as separate car spaces are to be provided for this dwelling type and therefore there are no opportunities to share car spaces provided in a communal area. Notwithstanding, this rate effectively equates to a rate of 1.3 car space per three-bedroom townhouse (i.e., (70% x 1) + (30% x 2)).

|                          | Type | Size             | No.        | Emp. Rate | Emp. Req.  | Provision  | Shortfall  |
|--------------------------|------|------------------|------------|-----------|------------|------------|------------|
|                          |      | Three Bed        | 47         | 1.3       | 61         | 55         | -6         |
|                          |      | Four Bed         | 15         | 1.6       | 24         | 29         | -          |
|                          |      | <b>Sub-Total</b> | <b>198</b> |           | <b>221</b> | <b>220</b> | <b>-6</b>  |
| Visitor                  |      |                  | <b>307</b> | 0         | 0          | 14         | 0          |
| Food and Beverage        |      |                  | 90.7 sqm   |           | 0          | 0          | -          |
| <b>TOTAL<sup>6</sup></b> |      |                  |            |           | <b>321</b> | <b>328</b> | <b>-12</b> |

## 5.2. Adequacy of Car Parking Provision

### 5.2.1. Resident Car Parking

The above assessment indicates that the proposed development is likely to generate a total parking demand that generally matches the proposed parking supply.

If a surplus in demand is to be generated (greater than the on-site car parking supply), it is expected that it would be up to a total of 12 car spaces (including 6 car spaces for the three-bedroom townhouses and 6 car spaces for the apartments in Buildings E and F).

Notwithstanding, the proposed car parking provision is considered to be acceptable for the following reasons:

1. The ABS assessment is conservative on the high side and likely overstates the shortfall (particularly in a future year condition) for the following reasons:
  - o The site is particularly well served by public transport and is highly walkable, and the data is based on 2016 demand characteristics that have likely altered since that time due to the increasing prevalence of mobility services.
  - o The site is located within a National Employment and Innovation Cluster which is expected to experience high levels of jobs growth over the coming decades. This will create opportunities for residents to live proximate to work and therefore reduce the need to own a private vehicle.
  - o The committed improvements to public transport services via infrastructure projects including the Melbourne Airport Rail Line and the Metro Tunnel Project will further improve public transport accessibility for the site and reduce demands for car ownership.
2. The provision of fewer car spaces will encourage the greater use of sustainable transport modes (to the car), which is consistent with one of the purposes of Clause 52.06.
3. The provision of car parking at rates lower than existing statutory requirements is consistent with the approach adopted in most Activity Centres across metropolitan Melbourne. GTA now Stantec understands that Council is currently undertaking a review of its car parking rates and considering the need for a car parking overlay for Sunshine.
4. The surrounding residential streets are subject to mixed levels of parking control. On Thorpe Street, there is unrestricted parking on the eastern side of the road and 2P parking on the western side of the road. For the streets to the south of the site, there are currently no restrictions as presumably car parking demands on these streets are manageable.

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<sup>6</sup> The total excludes provisions for visitor car parking.

However, as Sunshine continues to develop, it is expected there will need to be gradual change to parking restrictions to prevent long-term parking on residential streets (like the current arrangements on Thorpe Street). These restrictions will act to lessen any potential shortfall of car parking as residents would not be able to park in surrounding streets and would not be eligible for a car parking permit.

Overall, the proposed car parking provision is considered to be appropriate and consistent with the purpose of Clause 52.06, noting:

- It will provide an appropriate number of car spaces having regard to the likely demands, particularly considering the conservatism in using 2016 ABS data to predict future demands.
- It will support the use of sustainable transport alternatives to cars by effectively avoiding the over-supply of car parking for residents and staff to the food and beverage tenancy.
- It will promote the efficient use of car parking spaces in the apartment buildings via the consolidation and sharing of the available car spaces.
- It will help reduce adverse amenity impacts on the amenity of the locality by avoiding the over-supply of car parking and therefore higher car use and traffic generation.

### 5.2.2. Visitor Car Parking

With respect to on-street parking, guidance has been sought from Clause 52.06 of the Planning Scheme, which notes for residential developments that no visitor car parking is required (Column B rates apply as the site is within the PPTN area).

Notwithstanding this, experience shows that residential developments of this nature generally generate a visitor car parking demand in the order of 0.05-0.1 spaces per dwelling (15-30 spaces). In this regard, the development proposes to provide 14 on-street car parking spaces as mixed use for use by visitors (and move-in move-out time movements, under the coordination of the body corporate).

The balance of demand (up to 15 spaces) is expected to be adequately catered for on the immediately surrounding streets which have high levels of on-street car parking. It is noted that Derby Road provides 15 (approx.) unrestricted car parking spaces, Thorpe Street provides 20 unrestricted and 10 2P time restricted (approx.) on-street car parking along the site's frontage and Stanford Street provides 29 unrestricted car parking spaces in the vicinity of the site. On-site observations on a typical weekday morning indicate that the demand for time restricted car parking is low within the 2P zones and there is a moderate demand for unrestricted car parking.

### 5.3. Adequacy of Garage Dimensions and Access

Garage dimensions throughout the development generally meet the minimum requirements of the Brimbank Planning Scheme, being a minimum wall-to-wall width of 3.5m or 5.5m for single and double garages and a minimum wall-to-wall length of 6.0m. For single car parks (not enclosed garage) the minimum space width of 3.0m with a minimum space length of 5.4m, meets the minimum requirements of the Australian Standards.

Additional notes regarding these dimensions include:

- The second car space within tandem garages has a minimum wall-to-wall width of approximately 3.05m to 3.2m (rather than 3.5m) in some townhouses. The first car space in these tandem garages is at least 3.5m, per the Planning Scheme requirement. The reduced width of the second car space is acceptable noting:

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- There is no specific requirement for such car parking in the Planning Scheme.
- The width is compliant with the minimum width recommended in the Australian Standard for a car space enclosed on both sides (3.0m).
- o The car spaces to townhouses of type TH12 meet the minimum requirements of Brimbank Planning Scheme (width of 2.6m, length of 4.9m), however it does not meet with Australian Standard requirements.

Swept path assessment of a vehicle entering and exiting a sample of representative garages is shown in Appendix A. The swept path assessment shows the vehicle body and associated clearance lines clear of walls and structural elements. Appropriate apron widths for garage access have been achieved in accordance with Section 5.4 of Australian Standards AS2890.1.

## 5.4. Apartment Car Parking Layout and Access

### 5.4.1. Building B, C & D

The ramp to the basement level car park has been designed in accordance with the Design Standard 3 of the Planning Scheme, providing a 1 in 10 ramp grade for the first 5m and a maximum ramp grade of 1 in 4 with appropriate grade transitions. The ramp has also been designed to facilitate concurrent movements.

A car parking 'shuffler' is proposed for the Central Apartments as shown in Figure 5.6. This is a mechanism that laterally shifts parked vehicles to increase the car parking yield. The manufacturer of this system has advised that the time required for a vehicle to park in this system as proposed in this building is 20 seconds. This does not include the time for a person to walk to and from the operation panel. In this regard, it is expected that the critical time that it would take for a car to park in one of the car spaces is approximately 1-minute.

With a car parking supply of 83 spaces in the basement and assuming a peak hour generation of 0.5 per space, it is expected that the basement could generate in the order of 41 vehicle movements in a peak hour. This equates one vehicle every 1.5 minutes. Not all car parking spaces are provided in the 'shuffler' system and there will be three independent systems within the basement. In this regard, it is not expected that queuing would extend from this system and impact the operation of Lane 5.

Access to these spaces provided are consistent with Planning Scheme requirements for standard car parking bays and have been treated as tandem car parking spaces, whereby a 500mm extension between vehicle has been provided. Additionally, the parking bays are designed in accordance with the chosen manufacturer's specification and data sheets<sup>7</sup>.

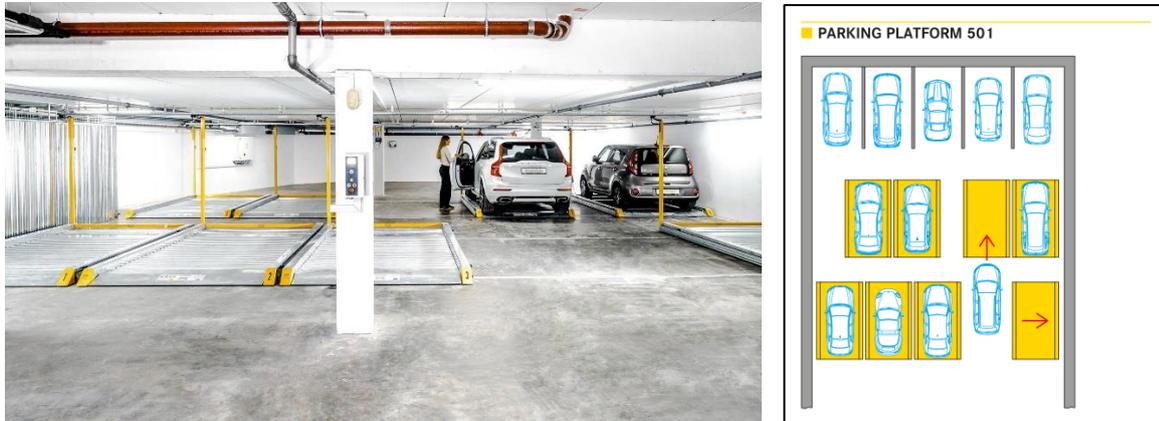
The design of the car spaces complies with Design Standard 4 (Mechanical Parking) of Clause 52.06 of the Brimbank Planning Scheme.

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<sup>7</sup> WOHR 501 – refer to Appendix B

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Figure 5.6: Example Car Park Shuffler



### 5.4.2. Building E

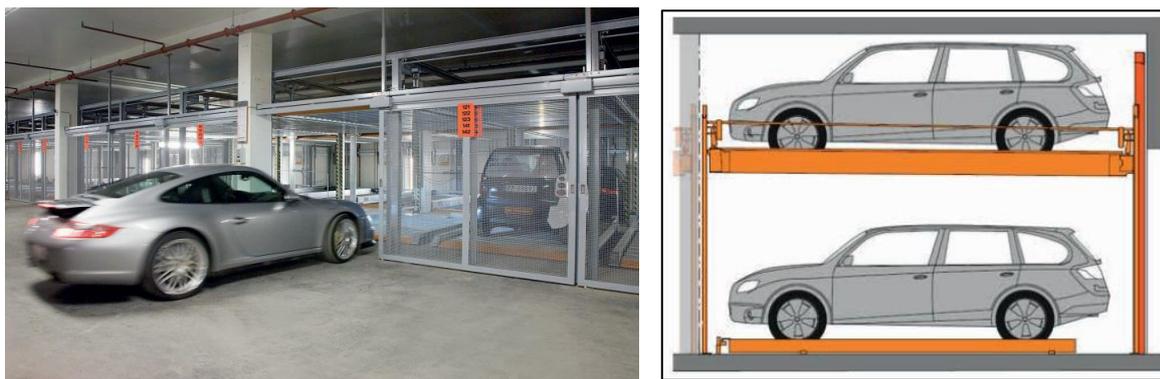
In Building E, it is proposed that 14 spaces will be provided via the Klaus TrendVario 6200 (as proposed in Building F, refer Figure 5.7) which has a 1.8m clearance to the bottom row and a 1.5m clearance to the top row. This system will have an overall height of 3.6m or similar. The design of the car spaces complies with Design Standard 4 (Mechanical Parking) of Clause 52.06 of the Brimbank Planning Scheme.

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### 5.4.3. Building F

In Building F, it is proposed that 11 spaces will be provided via a Klaus TrendVario 6200 system. This system will have an overall height of 3.6m and allow vehicles of heights up to 1.8m clearance to the bottom row and a 1.5m clearance to the top row. The design of the car spaces complies with Design Standard 4 (Mechanical Parking) of Clause 52.06 of the Brimbank Planning Scheme.

Figure 5.7: Example of Klaus TrendVario 6200 System



### 5.4.4. On-Street Parking Layout

The development proposes to provide 14 on-street car parking spaces as mixed use for use by visitors and booked move-in move-out movements, under the coordination of the owners corporation and building management. These spaces have been designed to be 6.7m long and 2.3m wide in accordance with the appropriate Standards and swept paths indicating adequate access are contained in Appendix A.

## 6. TRAFFIC IMPACT

### 6.1. Traffic Generation

#### 6.1.1. Townhouse Traffic Generation Rates

A single house on a standard lot in outer metropolitan area will typically generate up to one trip in the peak hour and eight to 10 per day. Medium density dwellings generally exhibit a lower traffic generation rate. In the outer metropolitan areas, where public transport accessibility is relatively low, the rate for medium density units is typically in the order of six to eight trips per day. Closer to Melbourne CBD the rate reduced to be in the order of three to six trips per day depending on several factors including, dwelling size, car parking provision and accessibility to public transport and local amenity, amongst others.

By way of comparison, it is noted that the Victorian Integrates Survey of Travel and Activity 2012-2013 (VISTA12) nominates a daily traffic generation rate of 5.0 vehicle movements per dwelling for household in the Brimbank local government area, with a peak generation rate of 0.5 vehicle movements per dwelling calculated on the basis of a 10% peak-to-daily ratio.

For the purposes of this assessment, a peak hour traffic generation rate of 0.5 vehicle movements per dwelling is considered appropriate for adoption initially, along with a daily traffic generation rate of 5 vehicle movements per dwelling. These rates reflect the proximity of the subject site to schools, shops and Sunshine Station.

Application of the above rates to the proposed 307 dwellings results in 153 peak hour vehicle movements and up to approximately 1,535 daily vehicle movements.

#### 6.1.2. Food and Beverage Traffic Generation Rates

Given the small nature of the food and beverage land use, it has been assumed it will primarily service residents in the immediate vicinity and also adjacent businesses. In this regard, it is not considered to generate any material levels of traffic.

### 6.2. Traffic Distribution and Assignment

The directional distribution and assignment of traffic generated by the site will be influenced by several factors, including the:

- Configuration of the arterial road network in the immediate vicinity of the site
- Existing operation of intersections providing access between the local and arterial road network
- Surrounding employment centres, retail centres and schools in relation to the site
- Configuration of access points to the site.

The proposed development will have one vehicle access point to Derby Road, one to Thorpe Street and one to Stanford Street (which services Lane 10 only).

It is assumed that the following distributions are observed in each peak period:

- AM Peak: 25% in / 75% out
- PM Peak: 60% in / 40% out.

6.3. Traffic Impact

In this instance, the 'post development' scenario is defined as a full development and occupation of the 307 dwellings, it is assumed that there are no changes to the existing road network.

6.3.1. Peak Hour Assessments (Intersections)

Table 6.1 sets out a summary of peak hour traffic generation estimates for both peak hour and daily periods.

Table 6.1: Peak Hour Traffic Generation

| Site Access Point | Size          | Traffic Generation Rates         | Traffic Generation | AM Peak      |              | PM Peak      |              |
|-------------------|---------------|----------------------------------|--------------------|--------------|--------------|--------------|--------------|
|                   |               |                                  |                    | In           | Out          | In           | Out          |
| Derby Road        | 137 dwellings | 0.5 vehicle movements / dwelling | 69 vph             | 17 vph (25%) | 52 vph (75%) | 41 vph (60%) | 28 vph (40%) |
| Thorpe Street     | 137 dwellings |                                  | 69 vph             | 17 vph (25%) | 52 vph (75%) | 41 vph (60%) | 28 vph (40%) |
| Laneway 10        | 33 dwellings  |                                  | 17 vph             | 4 (25%)      | 13 (75%)     | 10 (60%)     | 7 (40%)      |

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From Table 6.1 is concluded that the critical time period will be the AM peak period, normally between 8:00am and 9:00am for a residential development. Turning movement counts were collected on behalf of GTA at Derby Road / Hampshire Road on Wednesday 11 September 2019. The results showed low traffic volumes along Derby Road as detailed in Table 6.2.

Table 6.2: Anticipated Traffic Volume Impact (AM Peak)

| Street        | Mid Block Existing Volume In (Out) | Theoretical capacity | Mid Block Development Traffic Generation In (Out) | Mid Block Post Development In (Out) |
|---------------|------------------------------------|----------------------|---|-------------------------------------|
| Derby Road    | 10 (34) vph                        | 100-200vph [1]       | +17 (+52) vph                                     | <30 (<100) vph                      |
| Thorpe Street | <50 (<50) vph [2]                  | 100-200vph [1]       | +17 (+52) vph                                     | <70 (<100) vph                      |
| Laneway 10    | <10 (<10) vph [2]                  | 30vph [3]            | +4 (+13) vph                                      | <15 (<30) vph                       |

[1] Assuming road is classified as Access Road - Level 1 and a peak to daily ratio of 10%

[2] Assumed.

[3] Assuming road is classified as Access Lane and a peak to daily ratio of 10%

It is assumed that traffic will distribute across the Thorpe Street / Hampshire Road and Derby Road / Hampshire Road intersections dependant on trip purpose, in general it is assumed that city-bound traffic will utilise Thorpe Street / Hampshire Road intersection and trips for daily errands are more likely to use Derby Road / Hampshire Road intersection.

Based on the above mid block assessment the level of additional traffic generated by the development could not be expected to compromise the performance or safety of the surrounding network.

## 7. CONCLUSION

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

- The site is located within Sunshine Activity Centre, proximate to Sunshine Station, educational and retail land use. It is in an ideal location to achieve a lower reliance on the private vehicle in favour of alternative modes of transport (walking, cycling and public transport)
- Pedestrian and cyclist access through the site have been prioritised through provision of shared zones, incorporating 'Greenlinks' and landscaping.
- The statutory requirements bicycle parking for apartments has been exceeded, in addition bicycle parking has been provided throughout the development in support of a mode shift away from private vehicles.
- The proposed road network will be privately owned and managed. Adequate vehicle access and circulation has been provided and has been designed in accordance with relevant Austroads Standards.
- The proposed road network is capable of being serviced by the relevant waste collection vehicle.
- The likely traffic volumes on the internal road network are consistent with the road capacities having regard to Clause 56 of the Brimbank Planning Scheme.
- A waiver to reduce the car parking provision below the statutory requirements is considered acceptable having regard for state and local government policy, availability of public transport, proximity to employment and other uses and car ownership rates.
- The design of garages and car parking areas has generally been in accordance with the Brimbank Planning Scheme.
- The traffic generated by the development is not expected to compromise the safety or function of the surrounding road network.

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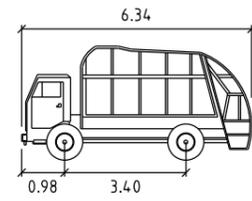
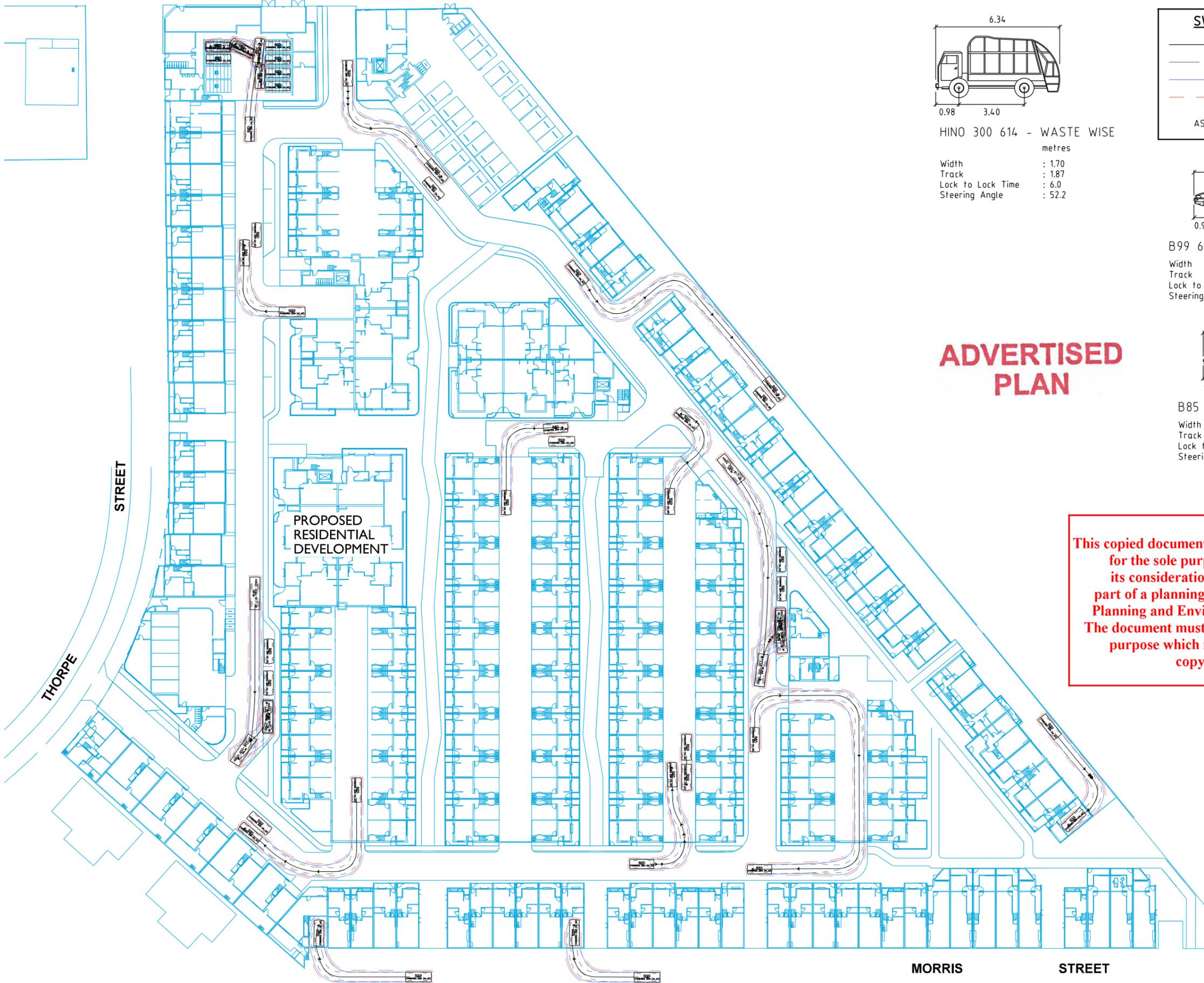
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# A. SWEEP PATH ANALYSIS

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**A**



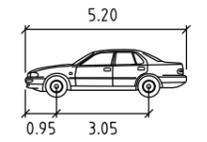
HINO 300 614 - WASTE WISE

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.70 |
| Track             | : 1.87 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 52.2 |

**SWEPT PATH KEY**

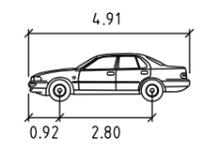
- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



B99 6.3mR

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.94 |
| Track             | : 1.77 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 34.0 |



B85

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.87 |
| Track             | : 1.77 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 34.0 |

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S. CREATI

APPROVED BY  
T. DE YOUNG

DESIGN CHECK  
D. HUYNH

DATE ISSUED  
7 DECEMBER 2021

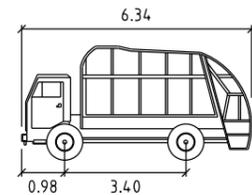
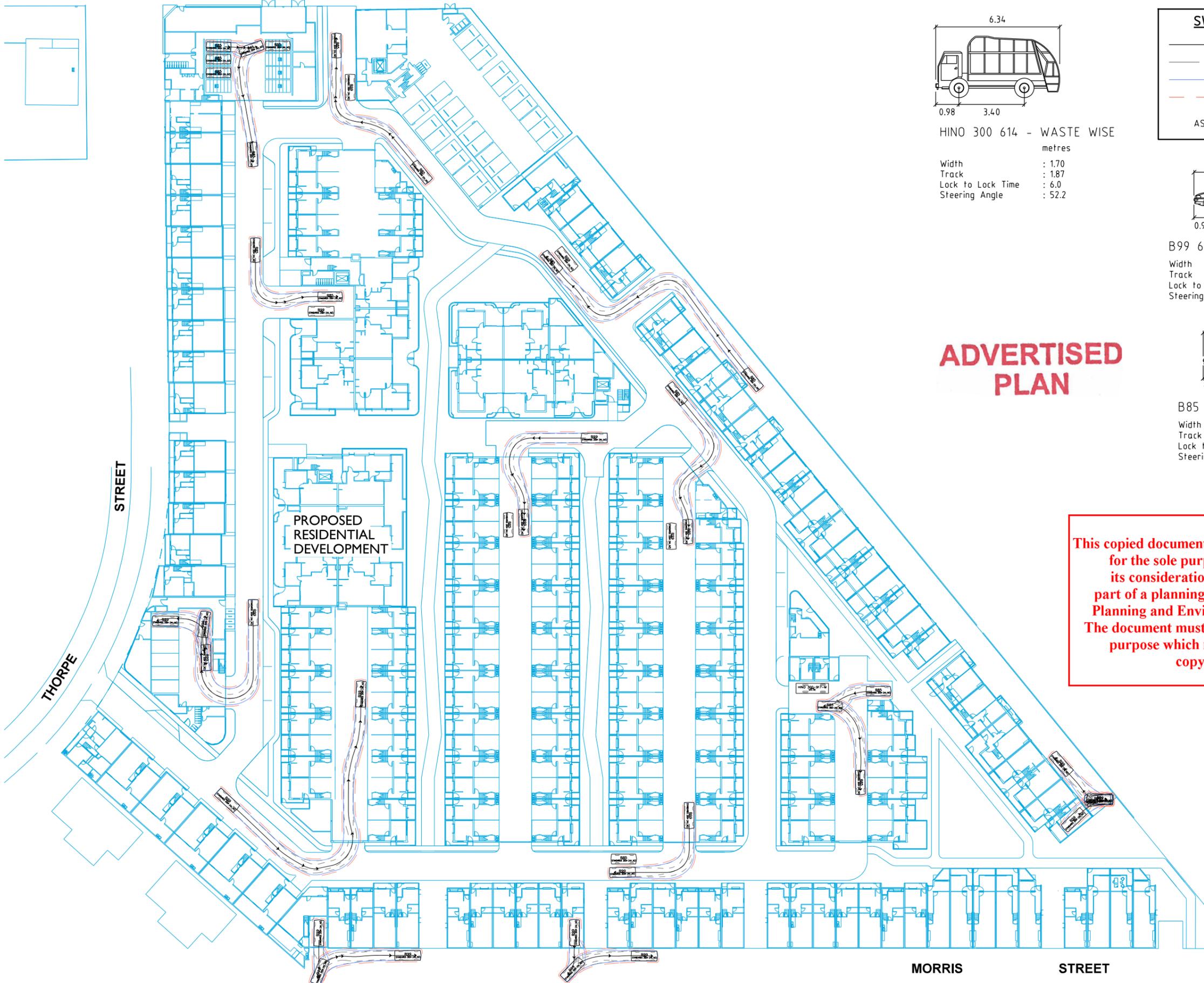
SCALE  
A3 CUSTOM 750

CAD FILE NO.  
301401086-AT03-P1.dgn

PROPOSED RESIDENTIAL DEVELOPMENT  
99 DERBY ROAD, SUNSHINE

SWEPT PATH ASSESSMENT  
DRAWING NO. 301401086-AT03-01

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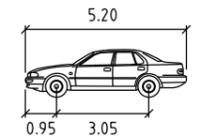


HINO 300 614 - WASTE WISE  
 metres  
 Width : 1.70  
 Track : 1.87  
 Lock to Lock Time : 6.0  
 Steering Angle : 52.2

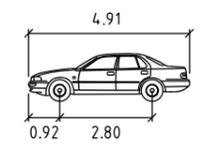
**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



B99 6.3mR metres  
 Width : 1.94  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



B85 metres  
 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0

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PROPOSED RESIDENTIAL DEVELOPMENT  
 99 DERBY ROAD, SUNSHINE  
 SWEPT PATH ASSESSMENT  
 DRAWING NO. 301401086-AT03-02

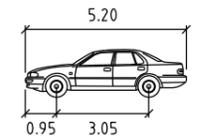


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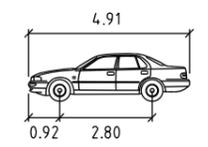
**SWEPT PATH KEY**

|  |                                   |
|--|-----------------------------------|
|  | VEHICLE CENTRE LINE               |
|  | VEHICLE TYRE PATH                 |
|  | VEHICLE BODY PATH                 |
|  | 300mm CLEARANCE FROM VEHICLE BODY |

ASSUMED SPEED 5km/h

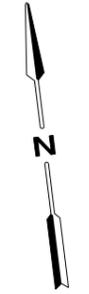
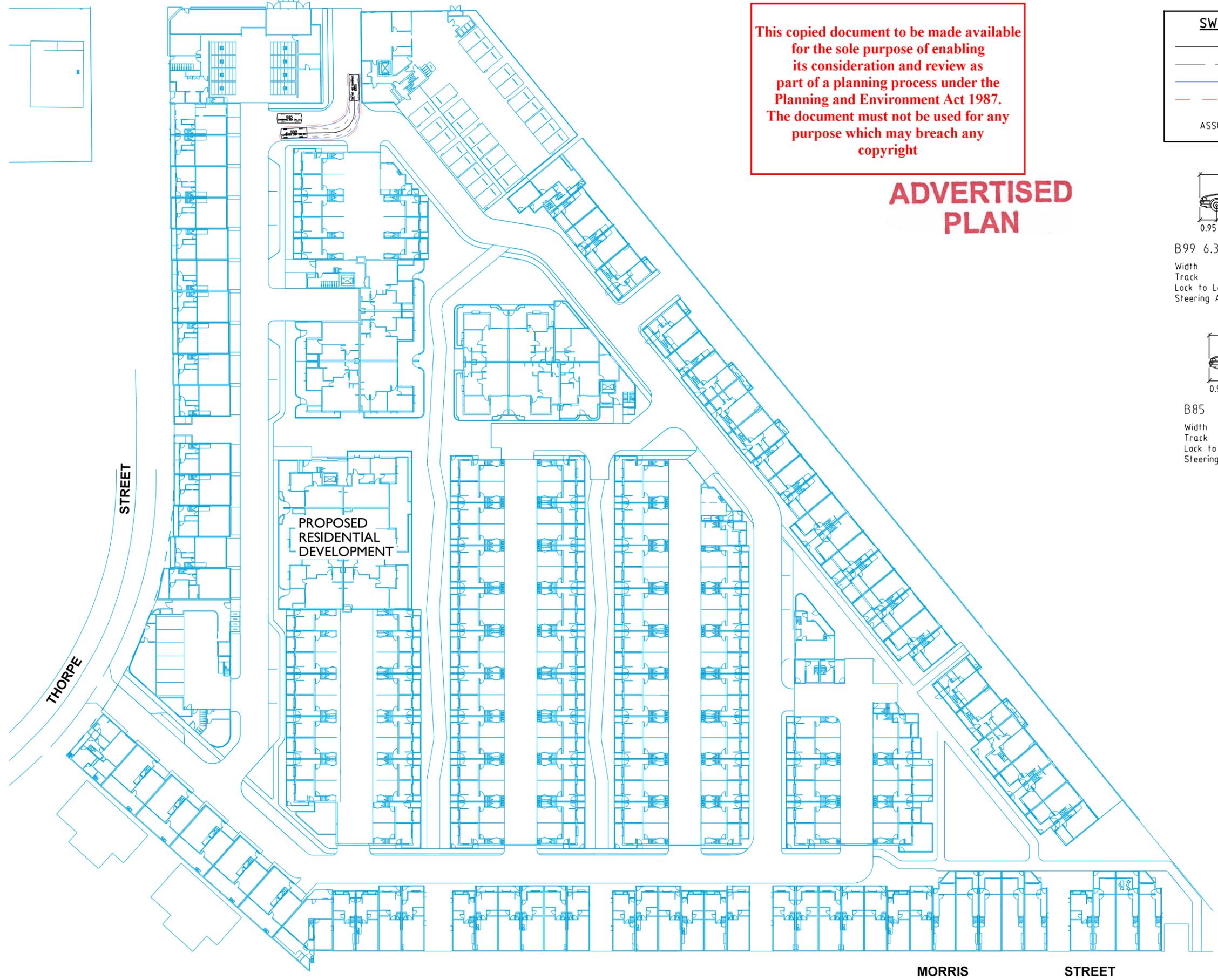


B99 6.3mR metres  
 Width : 1.94  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



B85 metres  
 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0

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 SWEPT PATH ASSESSMENT  
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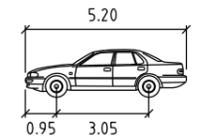
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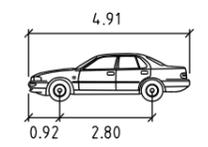
**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

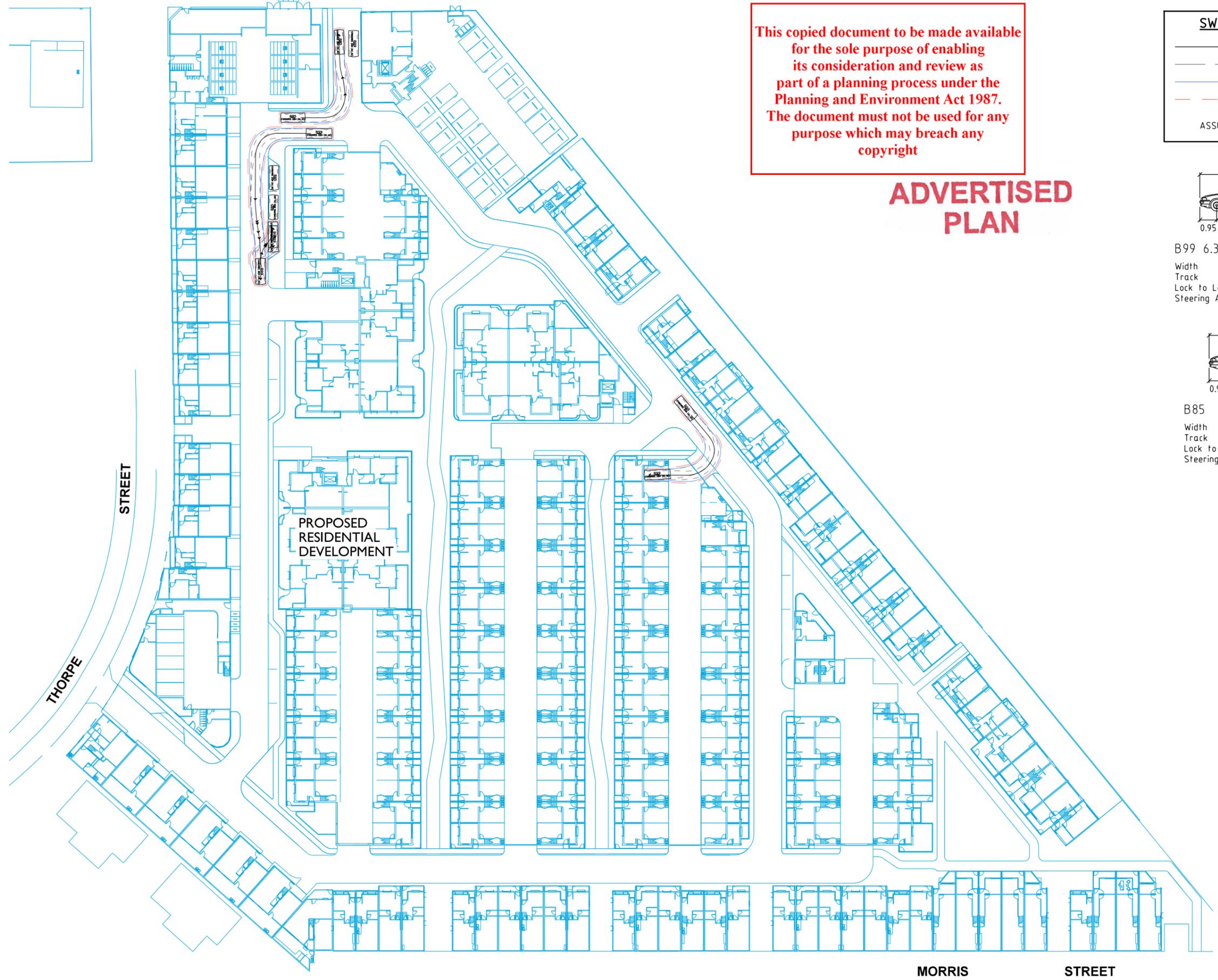


B99 6.3mR metres  
 Width : 1.94  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



B85 metres  
 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0

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 A3  
 0 7.5 15  
 CUSTOM 750  
 CAD FILE NO.  
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PROPOSED RESIDENTIAL DEVELOPMENT  
 99 DERBY ROAD, SUNSHINE  
 SWEPT PATH ASSESSMENT  
 DRAWING NO. 301401086-AT03-04



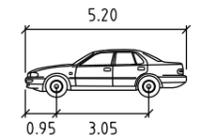
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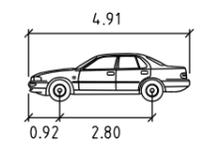
**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

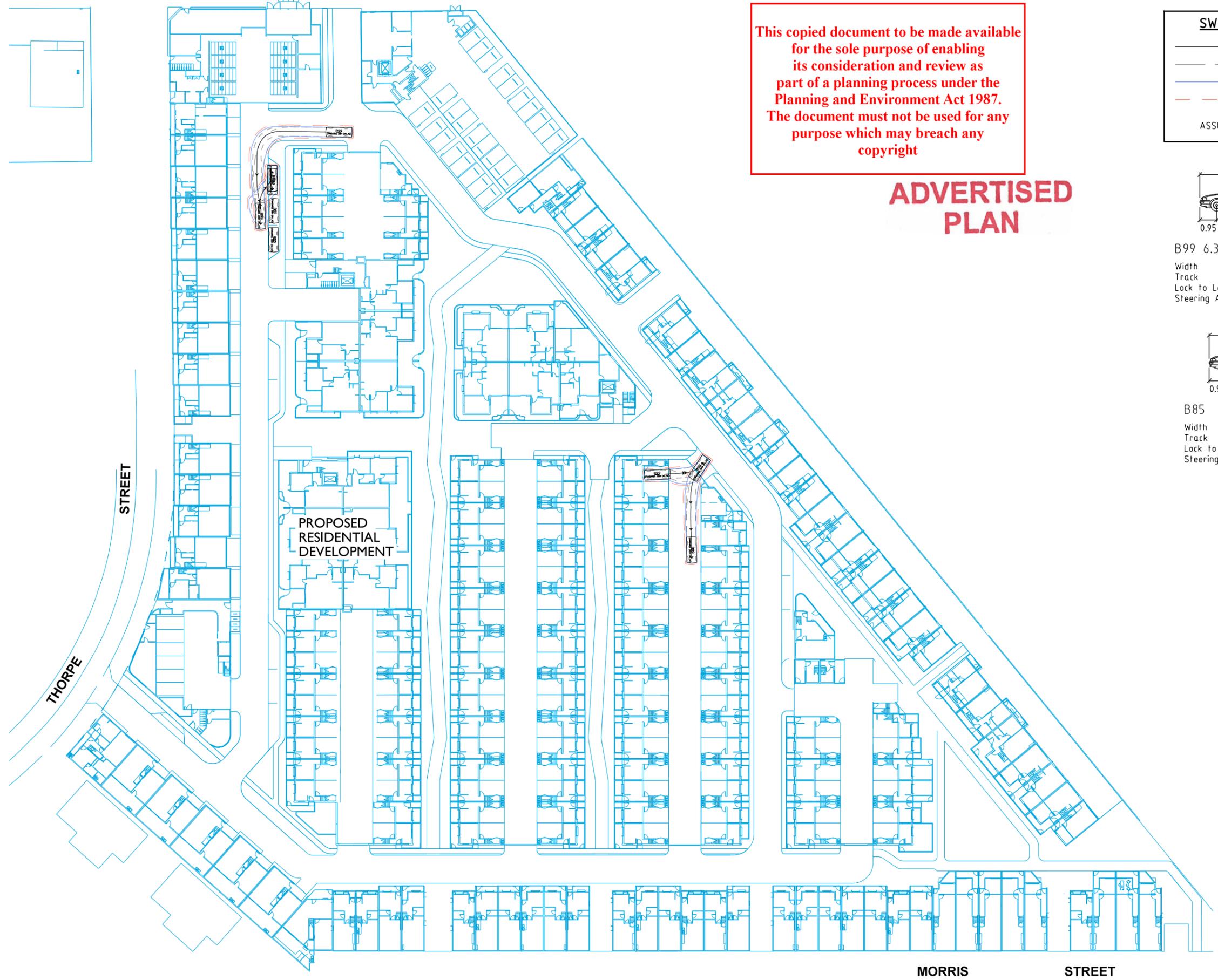


B99 6.3mR metres  
 Width : 1.94  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



B85 metres  
 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0

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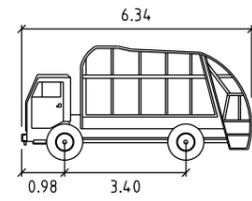
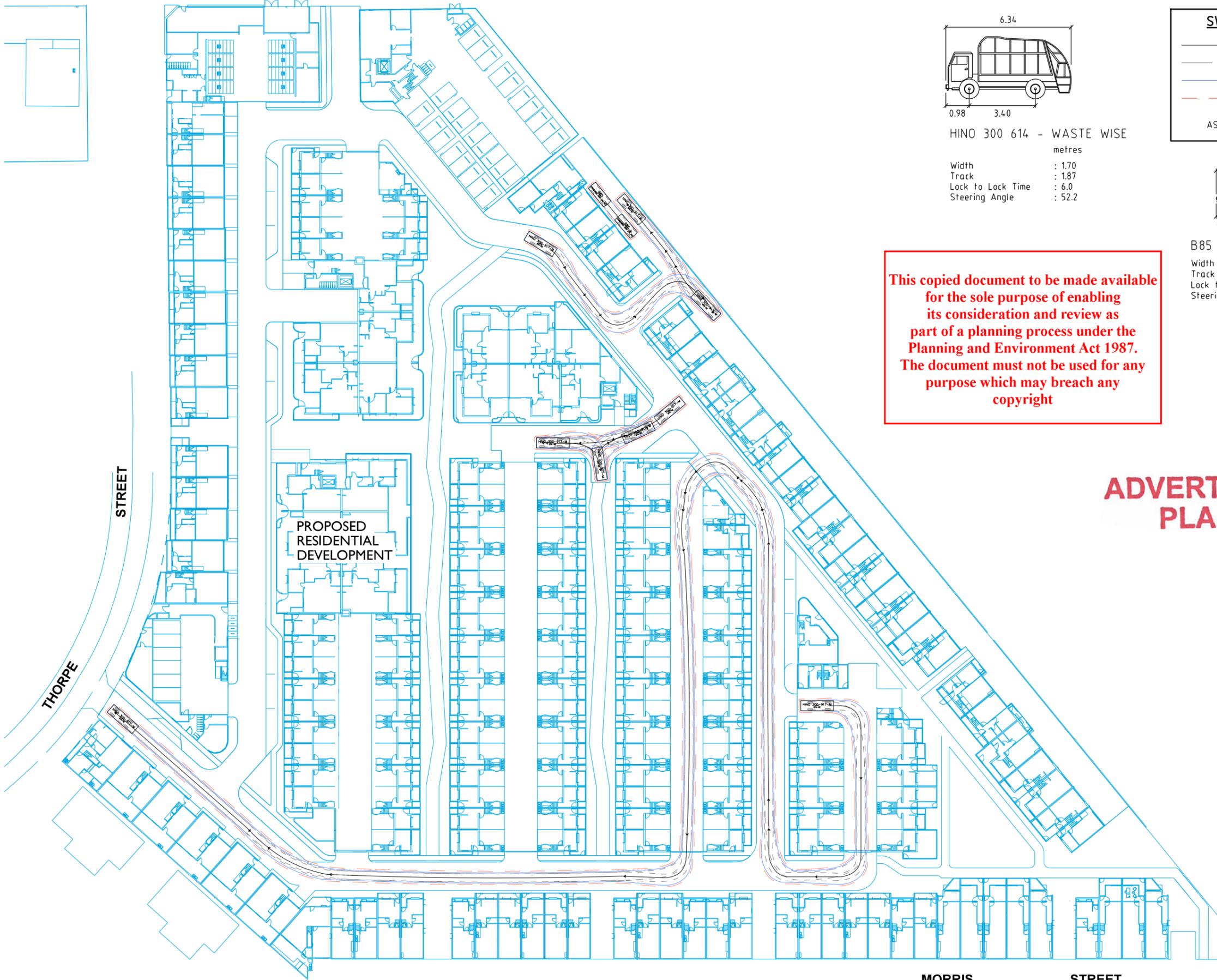
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 SWEPT PATH ASSESSMENT  
 DRAWING NO. 301401086-AT03-05

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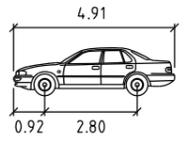
HINO 300 614 - WASTE WISE

|                   | metres |
|-------------------|--------|
| Width             | : 1.70 |
| Track             | : 1.87 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 52.2 |

**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h

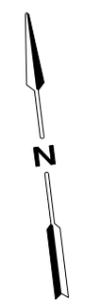


B85

|                   | metres |
|-------------------|--------|
| Width             | : 1.87 |
| Track             | : 1.77 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 34.0 |

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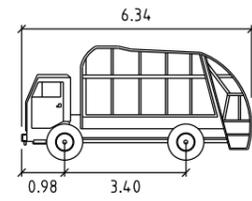
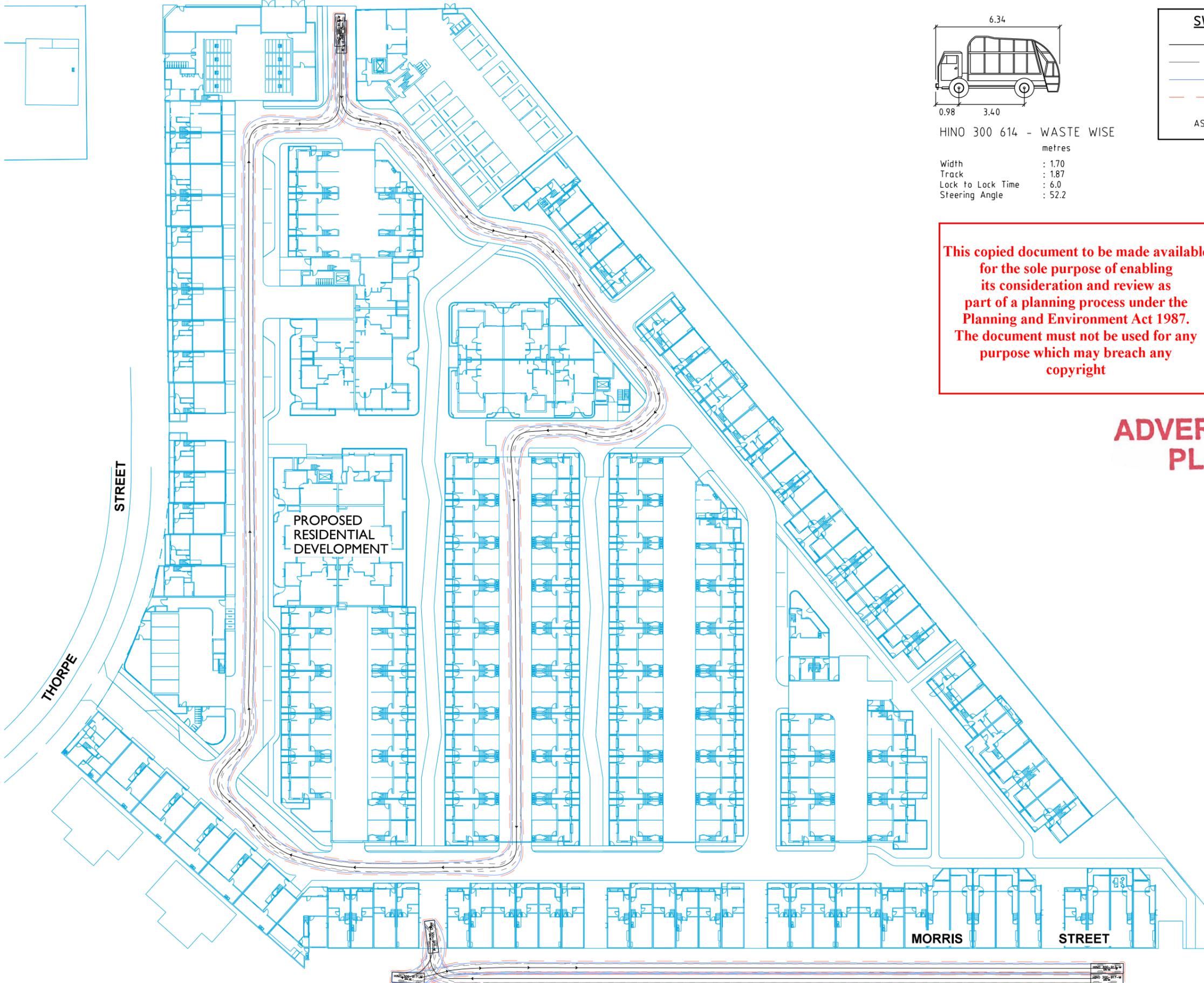
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SWEPT PATH ASSESSMENT  
DRAWING NO. 301401086-AT03-06

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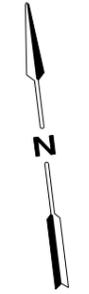
HINO 300 614 - WASTE WISE

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.70 |
| Track             | : 1.87 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 52.2 |

| SWEEP PATH KEY      |                                   |
|---------------------|-----------------------------------|
|                     | VEHICLE CENTRE LINE               |
|                     | VEHICLE TYRE PATH                 |
|                     | VEHICLE BODY PATH                 |
|                     | 300mm CLEARANCE FROM VEHICLE BODY |
| ASSUMED SPEED 5km/h |                                   |

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T. DE YOUNG

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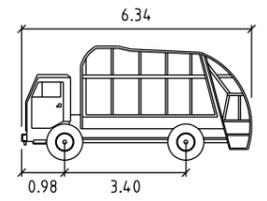
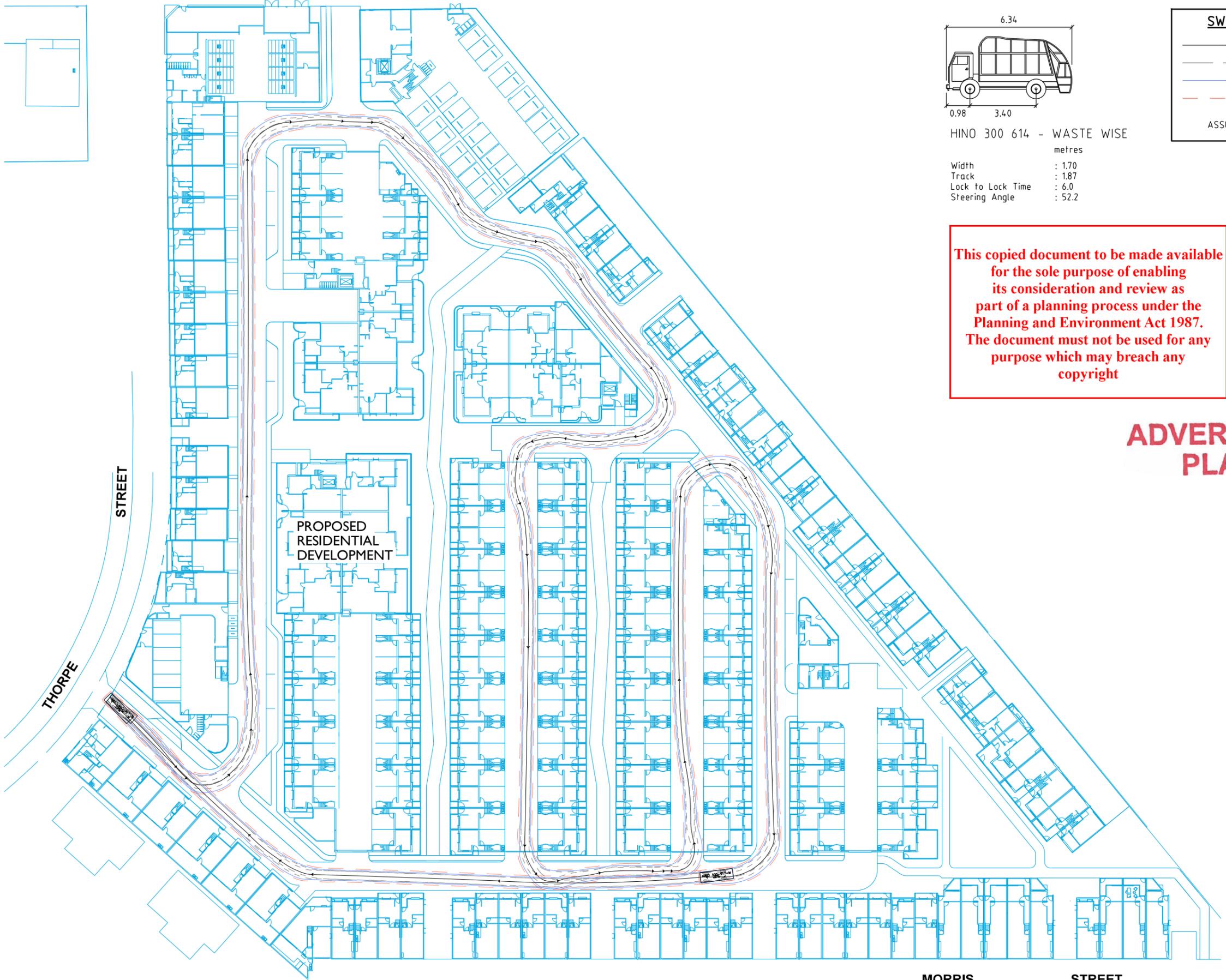
SCALE  
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CAD FILE NO.  
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PROPOSED RESIDENTIAL DEVELOPMENT  
99 DERBY ROAD, SUNSHINE

SWEEP PATH ASSESSMENT  
DRAWING NO. 301401086-AT03-07

ISSUE P1



HINO 300 614 - WASTE WISE

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.70 |
| Track             | : 1.87 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 52.2 |

| SWEEP PATH KEY      |                                   |
|---------------------|-----------------------------------|
|                     | VEHICLE CENTRE LINE               |
|                     | VEHICLE TYRE PATH                 |
|                     | VEHICLE BODY PATH                 |
|                     | 300mm CLEARANCE FROM VEHICLE BODY |
| ASSUMED SPEED 5km/h |                                   |

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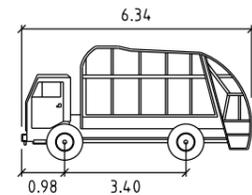
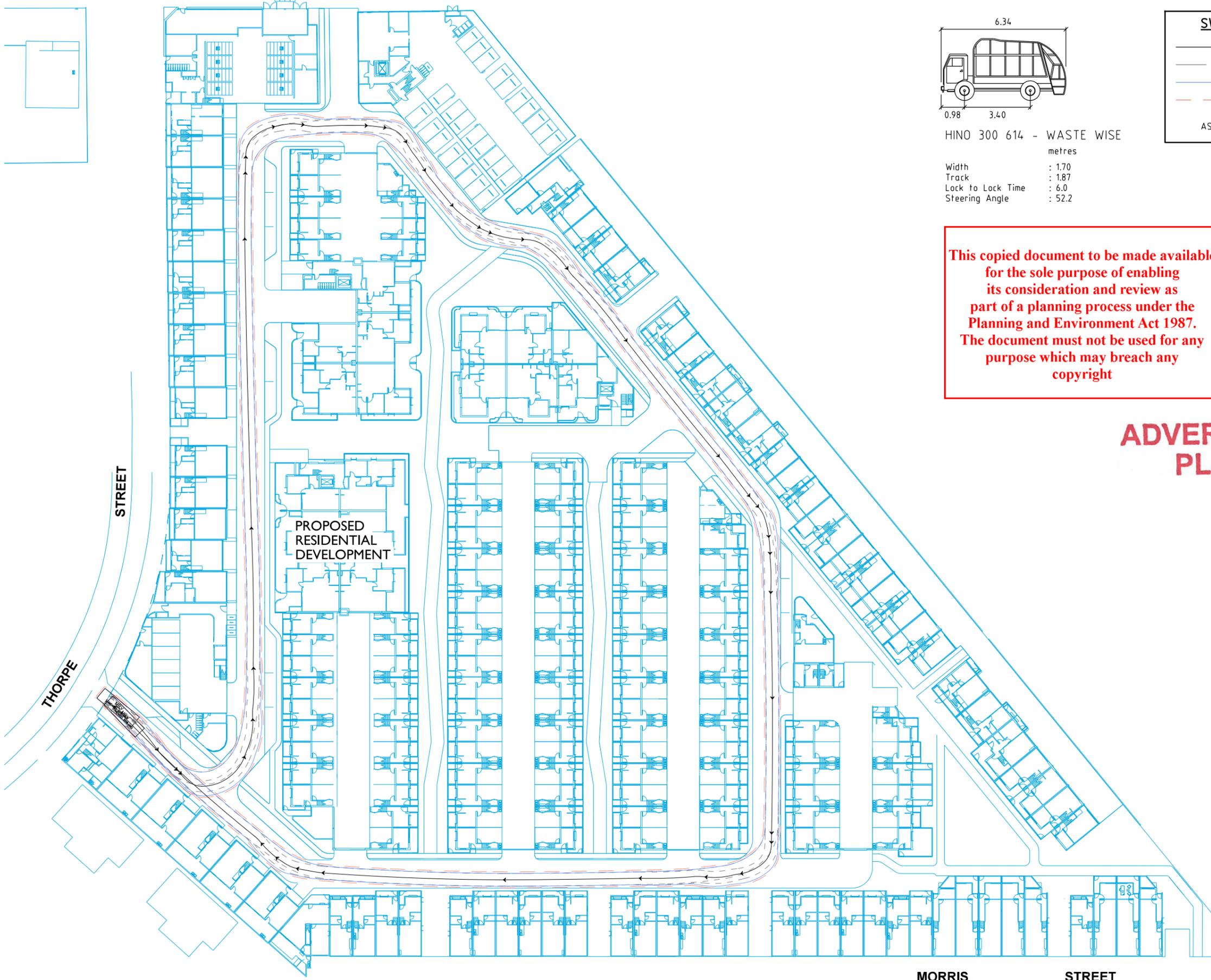
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APPROVED BY T. DE YOUNG

DESIGN CHECK D. HUYNH  
DATE ISSUED 7 DECEMBER 2021

SCALE A3  
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CAD FILE NO. 301401086-AT03-P1.dgn

PROPOSED RESIDENTIAL DEVELOPMENT  
99 DERBY ROAD, SUNSHINE  
SWEEP PATH ASSESSMENT  
DRAWING NO. 301401086-AT03-08

ISSUE P1



HINO 300 614 - WASTE WISE

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 1.70 |
| Track             | : 1.87 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 52.2 |

| SWEEP PATH KEY      |                                   |
|---------------------|-----------------------------------|
|                     | VEHICLE CENTRE LINE               |
|                     | VEHICLE TYRE PATH                 |
|                     | VEHICLE BODY PATH                 |
|                     | 300mm CLEARANCE FROM VEHICLE BODY |
| ASSUMED SPEED 5km/h |                                   |

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DATE ISSUED  
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SCALE  
A3 CUSTOM 750

CAD FILE NO.  
301401086-AT03-P1.dgn

PROPOSED RESIDENTIAL DEVELOPMENT  
99 DERBY ROAD, SUNSHINE

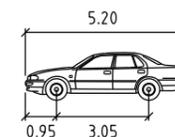
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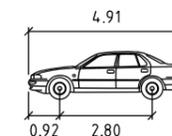
MAP REF 40/H2

**SWEPT PATH KEY**

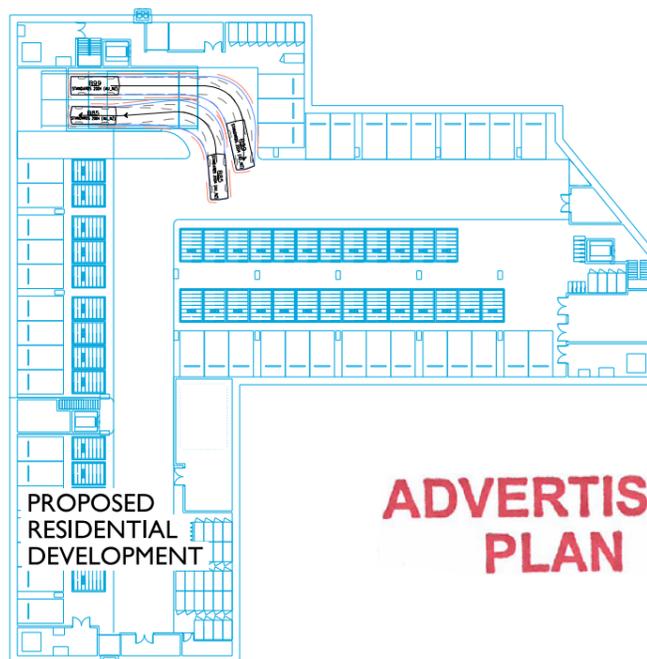
- VEHICLE CENTRE LINE
  - - VEHICLE TYRE PATH
  - VEHICLE BODY PATH
  - - 300mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



B99 6.3mR metres  
 Width : 1.94  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



B85 metres  
 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



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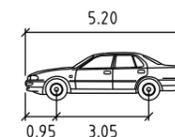


MAP REF 40/HZ

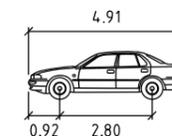
ON 17/12/2021 AT 3:16:48 PM

**SWEPT PATH KEY**

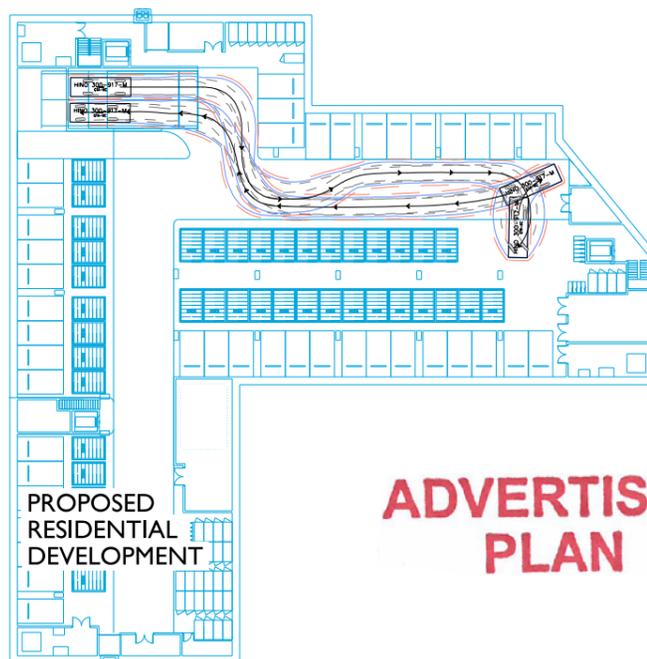
- VEHICLE CENTRE LINE
  - - VEHICLE TYRE PATH
  - VEHICLE BODY PATH
  - - 300mm CLEARANCE FROM VEHICLE BODY
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 Width : 1.87  
 Track : 1.77  
 Lock to Lock Time : 6.0  
 Steering Angle : 34.0



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MAP REF 40/HZ

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# B. MECHANICAL CAR PARKING SYSTEM DATA SHEETS

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# B

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# Product data

Dimensions, technical information and performance specification



trendvario 6200+

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## Table of contents

|   |   |  |    |
|---|---|--|----|
| Explanation of symbols.....                         | 2 | Loading schedule.....                        | 8  |
| Function diagram with standard designation.....     | 2 | Arrangement of grids – KombiSystem.....      | 8  |
| Dimensions and tolerances.....                      | 2 | Access incline.....                          | 9  |
| Overview of building configuration.....             | 3 | Clearance for installations.....             | 9  |
| Vehicle data.....                                   | 3 | Electrical installation.....                 | 9  |
| Overview of system types and building heights.....  | 4 | Technical information.....                   | 10 |
| Width dimension and door height.....                | 5 | Performance specification.....               | 11 |
| Configuration with vertical door.....               | 5 | Services to be provided by the customer..... | 13 |
| Configuration with sliding door.....                | 6 | Subject to technical changes.....            | 13 |
| Detail of building configuration - rail system..... | 7 |  |    |

## Explanation of symbols



Platforms accessible horizontally.



max. load per parking space in kg.  
Upweighting over 2000 kg possible with surcharge (see "Vehicle data", page 3).



Parking space load can be subsequently upweighted (see "Vehicle data", page 3).



Traversable and can be combined with other TrendVario systems as a KombiSystem.

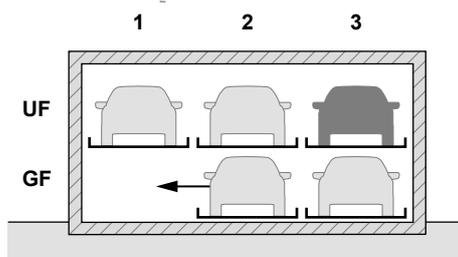


The systems provided are consistent with DIN EN 14010 and the EC Machinery Directive 2006/42/EC.  
This system has also undergone a voluntary compliance test conducted by TÜV SÜD.

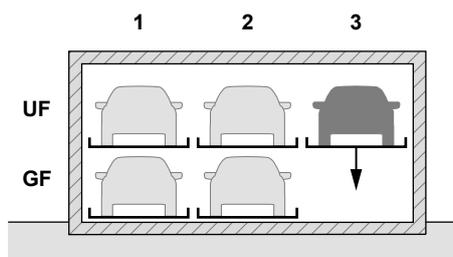
## Function diagram with standard designation



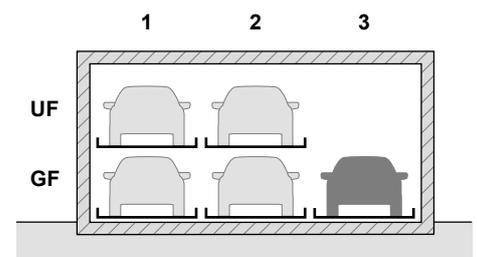
Example for vehicle on upper floor (UF) of grid 3:  
Selection via the control panel; all doors must be closed.  
Representation of parking spaces in a row.



To remove the vehicle from the space in **grid 3/UF**, the GF platforms are moved to the left.



The empty space is now located under the vehicle being removed. The parking space in **grid 3/UF** is lowered.



The vehicle in the space in **grid 3/UF** can now be removed.

## Dimensions and tolerances



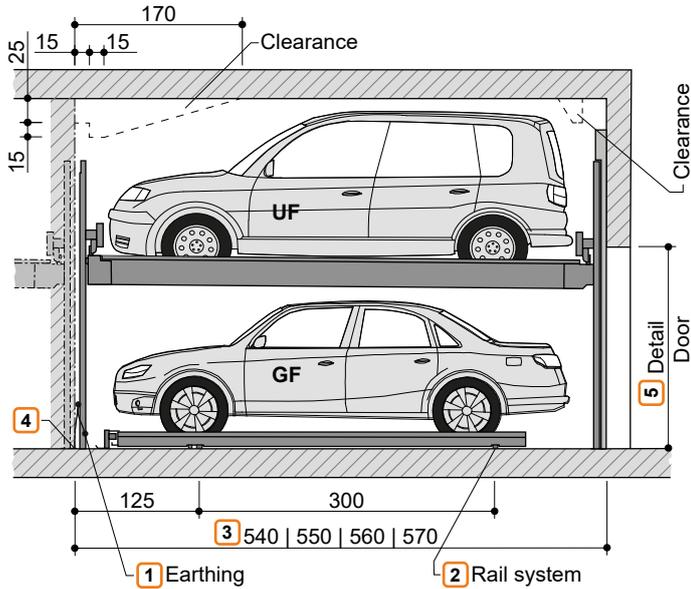
All dimensions and minimum final dimensions.  
Tolerance for dimensions +3/-0. Dimensions in cm.  
In order to adhere to the minimum final dimensions, the tolerances in accordance with the German Construction Tendering and Contract Regulations [VOB], Part C (DIN 18330 and 18331) and DIN 18202 must also be taken into account.

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## Overview of building configuration

### Building configuration with vertical door 5



- 1 Equipotential bonding from foundation earth connection to system (to be provided by the customer).
- 2 The tolerances for evenness of the roadway (floor) must be adhered to in accordance with DIN 18202, Table 3, row 3. (see "Detail of building configuration - rail system", page 7).
- 3
  - 540 cm for vehicle length max. 5.0 m
  - 550 cm for vehicle length max. 5.1 m
  - 560 cm for vehicle length max. 5.2 m
  - 570 cm for vehicle length max. 5.3 m
 Shorter versions are possible on request - observe local regulations on parking space lengths. We recommend a minimum length of 560 cm for comfortable use of your parking space and increasingly longer vehicles.
- 4 No fillets/haunches are permitted at the transition from the pit floor to the walls. If fillets/haunches are required, the systems must be narrower or the pits wider.
- 5 Door detail and other door variants (see "Configuration with vertical door", page 5 and see "Configuration with sliding door", page 6).

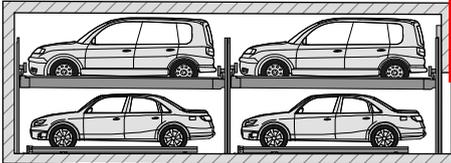


If sprinklers are required, the customer must leave sufficient clearance during the construction phase.

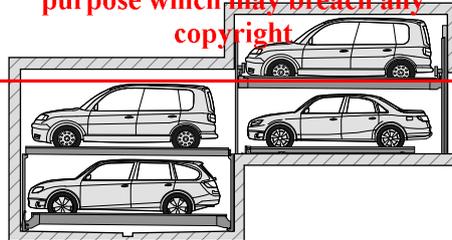
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### KombiSystem examples

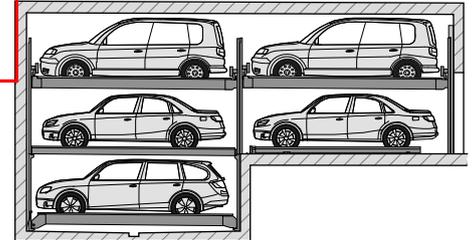
#### Combination 6200+ with 6200+



#### Combination 6100 with 6200+



#### Combination 6300 with 6200+



## Vehicle data

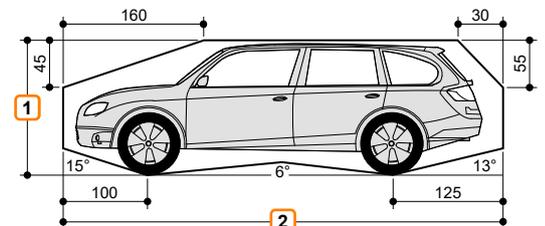
### Parking options

Series vehicles: saloon, estate, SUV, van in accordance with clearance gauge and maximum parking space load.

|   | UF   GF <span style="border: 1px solid black; padding: 0 2px;">3</span> |         |         |
|---|---|---------|---------|
| <b>Weight</b> <span style="border: 1px solid black; padding: 0 2px;">4</span> | 2000 kg   | 2600 kg | 3000 kg |
| <b>Wheel load</b>   | 500 kg  | 650 kg  | 750 kg  |

- 1 Vehicle height (see "Overview of system types and building heights", page 4)
- 2 Vehicle length (see "Overview of building configuration", page 3)
- 3 UF = upper floor | GF = ground floor
- 4 Individual space loads can also be subsequently upweighted to 3000 kg.

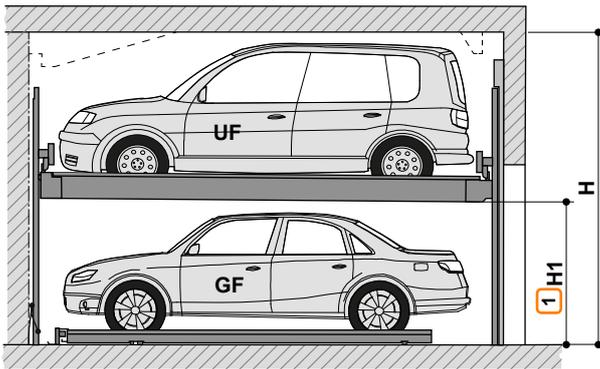
### Clearance gauge



Vehicle width 190 cm with platform width 230 cm. Correspondingly wider vehicles can be parked with wider platforms.

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## Overview of system types and building heights



H: Building height  
H1: Headroom

| Type      | H1  | Vehicle height GF | Vehicle height UF |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------|-----|-------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           |     |                   | 150               | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 |
| 6200+/160 | 160 | 150               | 330               | 335 | 340 | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 |
| 6200+/165 | 165 | 155               | 335               | 340 | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 |
| 6200+/170 | 170 | 160               | 340               | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 |
| 6200+/175 | 175 | 165               | 345               | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 |
| 6200+/180 | 180 | 170               | 350               | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 |
| 6200+/185 | 185 | 175               | 355               | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 |
| 6200+/190 | 190 | 180               | 360               | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 |
| 6200+/195 | 195 | 185               | 365               | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 |
| 6200+/200 | 200 | 190               | 370               | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 |
| 6200+/205 | 205 | 195               | 375               | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 | 445 |
| 6200+/210 | 210 | 200               | 380               | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 | 445 | 450 |
| 6200+/215 | 215 | 205               | 385               | 390 | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 | 445 | 450 | 455 |
| 6200+/220 | 220 | 210               | 390               | 395 | 400 | 405 | 410 | 415 | 420 | 425 | 430 | 435 | 440 | 445 | 450 | 455 | 460 |

H - Building height

1 Maximum vehicle height for the passage = H1 - 5 cm

### Example configuration



Example: Vehicle height, GF 165 cm and vehicle height, UF 180 cm.  
Type: 6200+/175  
Building height: 375 cm

| Type      | H1  | Vehicle height GF | Vehicle height UF |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------|-----|-------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|           |     |                   | 150               | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 |
| 6200+/160 | 160 | 150               | 330               | 335 | 340 | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 |
| 6200+/165 | 165 | 155               | 335               | 340 | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 |
| 6200+/170 | 170 | 160               | 340               | 345 | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 |
| 6200+/175 | 175 | 165               | 345               | 350 | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 |
| 6200+/180 | 180 | 170               | 350               | 355 | 360 | 365 | 370 | 375 | 380 | 385 | 390 | 395 | 400 | 405 | 410 | 415 | 420 |

H

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## Width dimension and door height

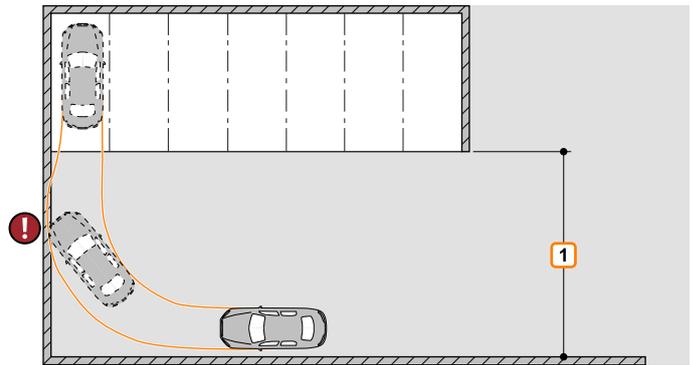


We recommend platform widths of minimum 250 cm and driving lane widths of 650 cm in order that vehicles can comfortably access the Multiparking system and enter and leave without difficulty.

Narrower platforms may impede parking according to the following criteria.

- Driving lane width
- Entrance conditions
- Vehicle dimensions

1 Observe minimum driving lane width in accordance with local regulations.



For commercial use of doors with electrical drive systems, an inspection log is required in accordance with ASR A1.7 'Technical rules for workplaces' in Germany. The door must be inspected by an expert before commissioning and annually thereafter and the result entered in the inspection log. The inspection must be carried out independently of maintenance. Observe local regulations on operation of electrical doors.

## Configuration with vertical door

|                             | Door versions        |     | Supports per grid |                   | Supports per second grid |                          |     |     |     |     |     |     |     |     |     |
|-----------------------------|----------------------|-----|-------------------|-------------------|--------------------------|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                             | UF                   | GF  | B1                | B2                | B3                       | B4                       |     |     |     |     |     |     |     |     |     |
| Vertical door               |                      |     |                   |                   |                          |                          |     |     |     |     |     |     |     |     |     |
|                             | Clear platform width |     | RB 3              | Supports per grid |                          | Supports per second grid |     |     |     |     |     |     |     |     |     |
|                             |                      |     |                   | B1                | B2                       | B3                       | B4  |     |     |     |     |     |     |     |     |
|                             | Width dimensions     | 230 | 220               | 250               | 250                      | 230                      | 500 | 480 |     |     |     |     |     |     |     |
|                             |                      | 240 | 230               | 260               | 260                      | 240                      | 520 | 500 |     |     |     |     |     |     |     |
| 250                         |                      | 240 | 270               | 270               | 250                      | 540                      | 520 |     |     |     |     |     |     |     |     |
| 260                         |                      | 250 | 280               | 280               | 260                      | 560                      | 540 |     |     |     |     |     |     |     |     |
| 270                         |                      | 260 | 290               | 290               | 270                      | 580                      | 560 |     |     |     |     |     |     |     |     |
| max. vehicle height UF   GF |                      |     |                   |                   |                          |                          |     |     |     |     |     |     |     |     |     |
|                             | 150                  | 155 | 160               | 165               | 170                      | 175                      | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 |
| H2                          | 210                  | 210 | 210               | 210               | 210                      | 210                      | 210 | 210 | 210 | 210 | 215 | 220 | 225 | 230 | 235 |
| H3                          | 325                  | 335 | 335               | 335               | 335                      | 335                      | 360 | 360 | 360 | 360 | 360 | 380 | 380 | 380 | 380 |

1 Observe minimum clear height H2 in accordance with local regulations.

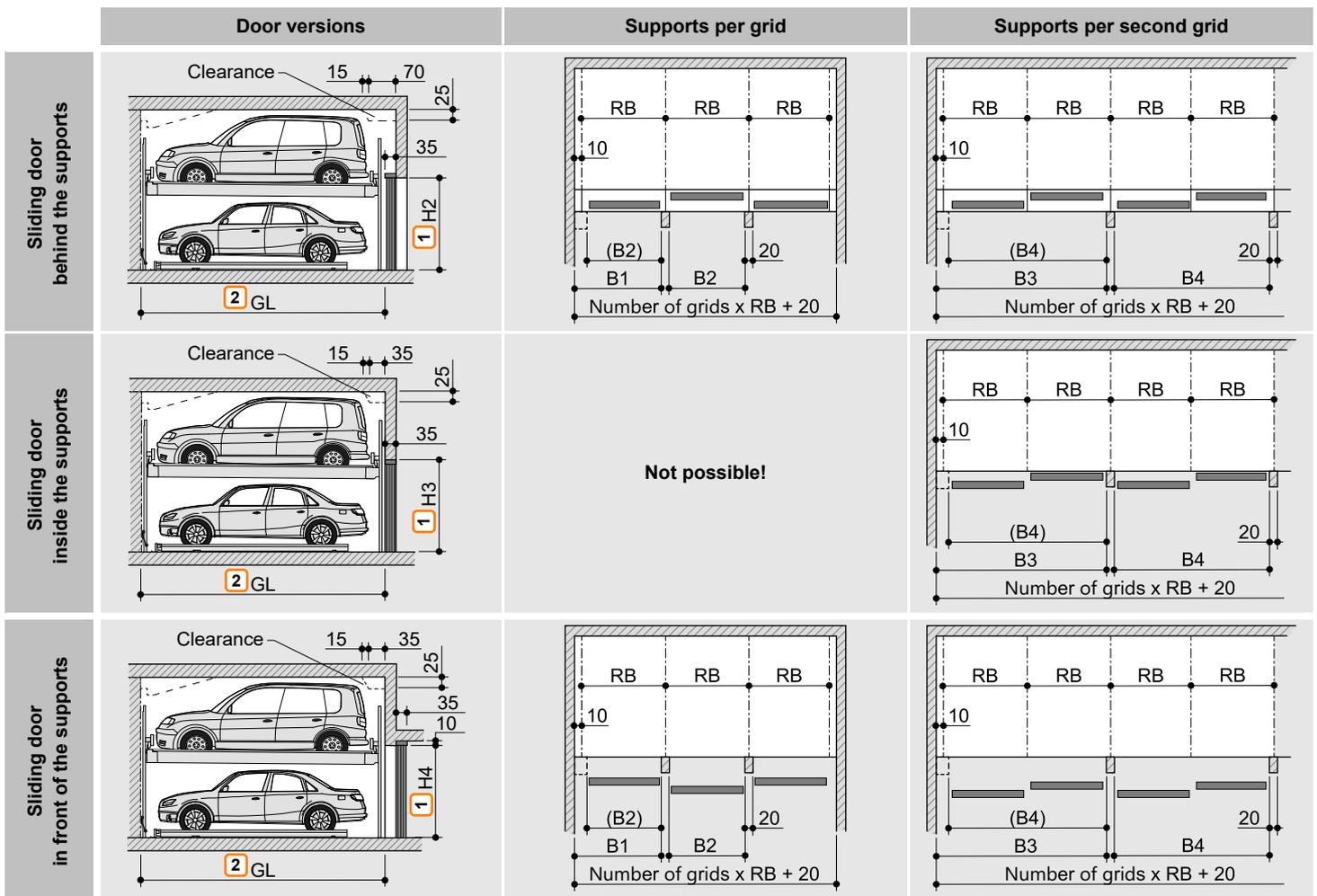
2 GL: building length (see "Overview of building configuration", page 3).

3 RB: grid width. These dimensions **must** be adhered to.

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Configuration with sliding door



|                  | Clear platform width |     | RB <sup>3</sup> | Supports per grid |     | Supports per second grid |     |
|------------------|----------------------|-----|-----------------|-------------------|-----|--------------------------|-----|
|                  | UF                   | GF  |                 | B1                | B2  | B3                       | B4  |
| Width dimensions | 230                  | 220 | 250             | 250               | 230 | 500                      | 480 |
|                  | 240                  | 230 | 260             | 260               | 240 | 520                      | 500 |
|                  | 250                  | 240 | 270             | 270               | 250 | 540                      | 520 |
|                  | 260                  | 250 | 280             | 280               | 260 | 560                      | 540 |
|                  | 270                  | 260 | 290             | 290               | 270 | 580                      | 560 |

|    | max. vehicle height UF   GF |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    | 150                         | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 | 195 | 200 | 205 | 210 | 215 | 220 |
| H2 | 210                         | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 215 | 220 | 225 | 230 | 235 |
| H3 | 220                         | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 220 | 225 | 230 | 235 | 240 | 245 |
| H4 | 210                         | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 210 | 215 | 220 | 225 | 230 | 235 |

- <sup>1</sup> Observe minimum clear height H2/H3/H4 in accordance with local regulations.
- <sup>2</sup> GL: building length (see "Overview of building configuration", page 3).
- <sup>3</sup> RB: grid width. These dimensions **must** be adhered to.

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## Detail of building configuration - rail system

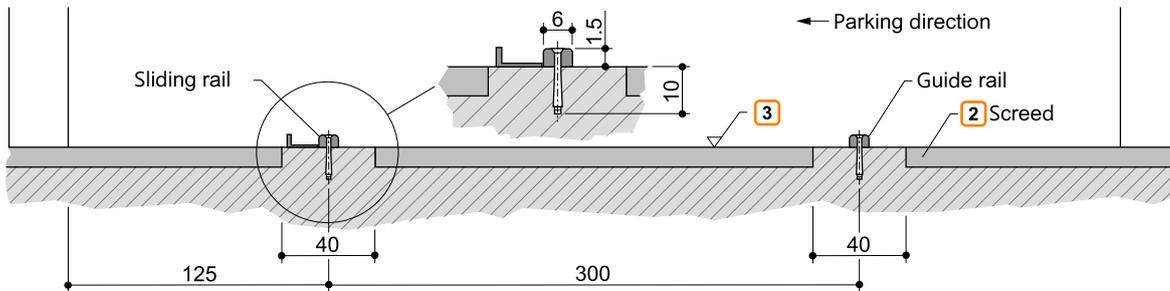


Various options are available for rail installation depending on the structural conditions.

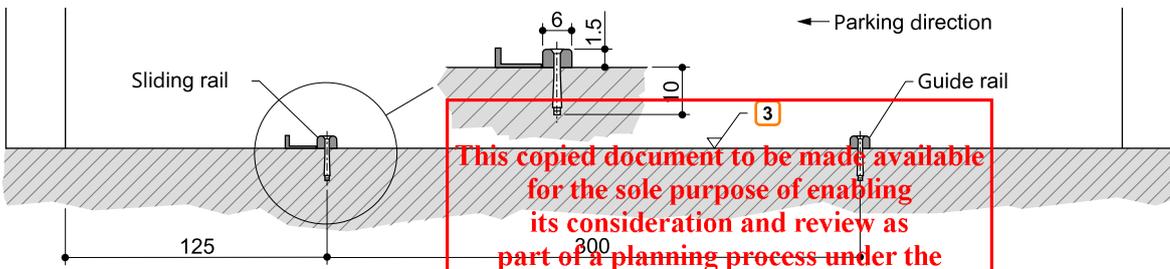
Rail load due to a moving traffic load:

- With parking space load 2000 kg: 6.5 kN per wheel
- With parking space load 2600 kg: 8.0 kN per wheel
- With parking space load 3000 kg: 9.0 kN per wheel

### Laying on strip foundation <sup>1</sup>



### Laying on finished floor <sup>1</sup>



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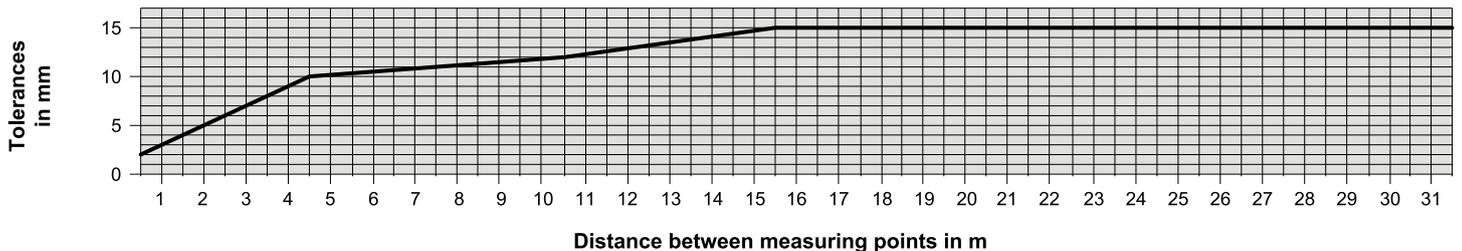
- <sup>1</sup> The tolerances for evenness of the roadway (floor) must be adhered to in accordance with DIN 18202, Table 3, row 3. There must be no building joints or expansion joints in the area around the rail system.
- <sup>2</sup> We do not recommend using poured asphalt.
- <sup>3</sup> Upper edge finished floor

### Evenness tolerance – extract from DIN 18202, Table 3



The safety clearance between the outer lower edges of the ParkBoard and the floor must not exceed 2 cm. To comply with the requirement in DIN EN 14010 and to reach the requisite floor evenness, the evenness of the finished floor in accordance with DIN 18202, Table 3, row 3 must not be exceeded. The customer does not, therefore, need to level the floor.

| Row | Reference  | Inside micrometer as limit values in mm with measuring point distances in m to <sup>1</sup> |   |    |    |    |
|-----|--|---|---|----|----|----|
|     |  | 0.1   | 1 | 4  | 10 | 15 |
| 3   | Finished floors, e.g. screeds as floor screeds, screeds for floor coverings, floor coverings, tile coverings, levelled and glued coverings | 2   | 4 | 10 | 12 | 15 |



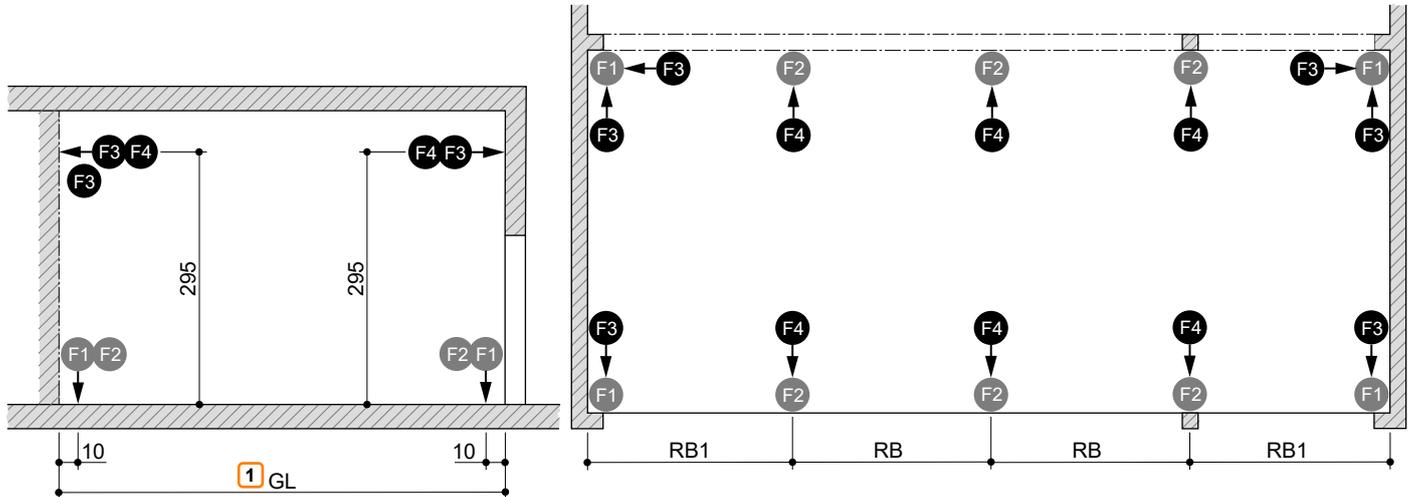
- <sup>1</sup> Intermediate values can be found in the diagram and should be rounded up.

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## Loading schedule



The systems are dowelled into the ground. The drill hole depth in the floor plate is approx. 15 cm, in the walls approx. 12 cm.  
The floor plate and walls must be from concrete (quality min. C20/25).  
The dimensions for the bearing points have been rounded. If the precise figures are required, please consult KLAUS Multiparking.



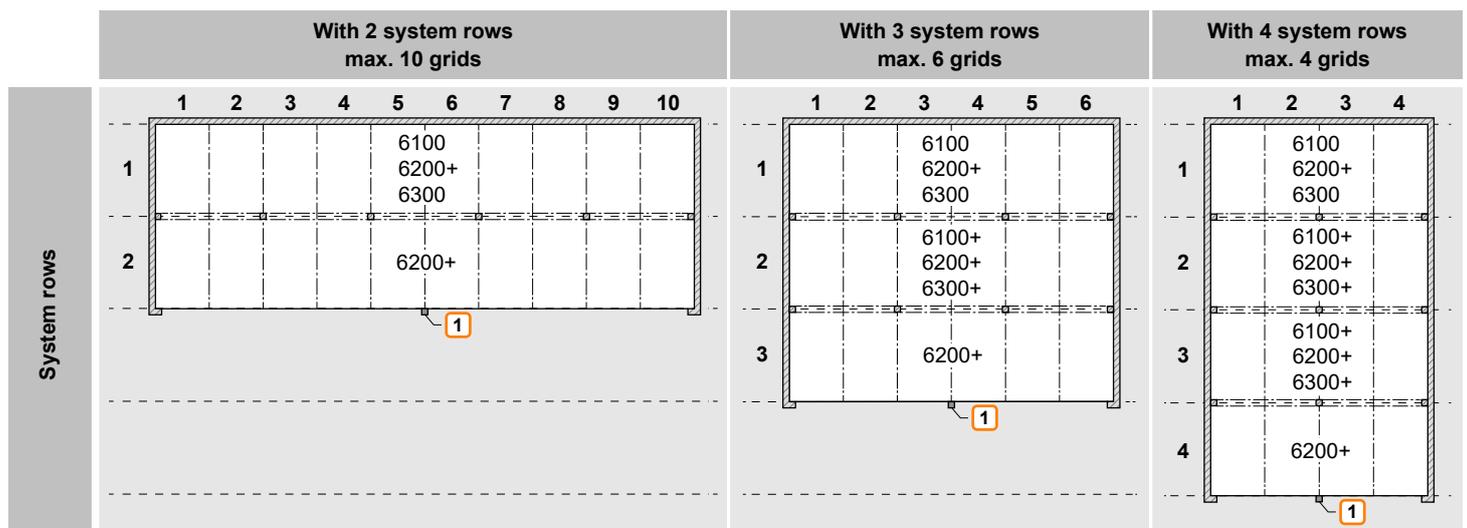
| Parking space load | F1                    | F2                    | F3           | F4           |
|--------------------|-----------------------|-----------------------|--------------|--------------|
| 2000 kg            | + 9.0 kN<br>- 0.1 kN  | + 18.0 kN<br>- 0.2 kN | $\pm 0.5$ kN | $\pm 1.0$ kN |
| 2600 kg            | + 12.0 kN<br>- 0.3 kN | + 24.0 kN<br>- 0.6 kN | $\pm 0.8$ kN | $\pm 1.6$ kN |
| 3000 kg            | + 13.0 kN<br>- 0.4 kN | + 26.0 kN<br>- 0.8 kN | $\pm 1.0$ kN | $\pm 2.0$ kN |

| Clear platform width UF | RB <sup>2</sup> | RB1 |
|-------------------------|-----------------|-----|
| 230                     | 250             | 260 |
| 240                     | 260             | 270 |
| 250                     | 270             | 280 |
| 260                     | 280             | 290 |
| 270                     | 290             | 300 |

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- <sup>1</sup> GL: building length
- <sup>2</sup> RB = grid width. These dimensions **must** be adhered to.

## Arrangement of grids – KombiSystem



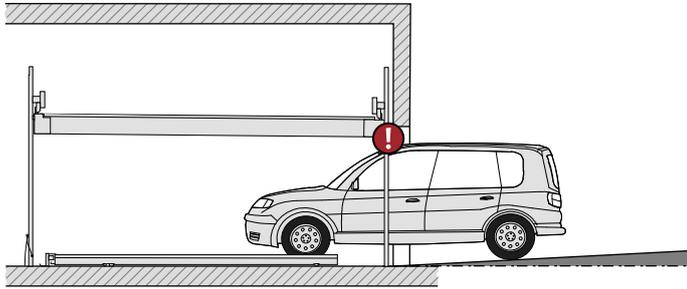
- <sup>1</sup> Control panel

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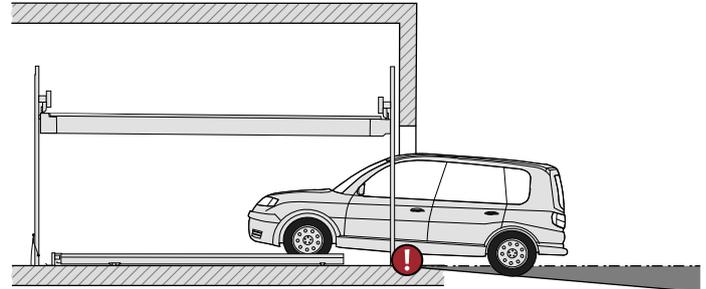
## Access incline



The maximum access inclines specified in the symbol sketch must not be exceeded. Improper configuration can lead to extreme difficulty accessing the system, for which KLAUS Multiparking cannot be held liable.

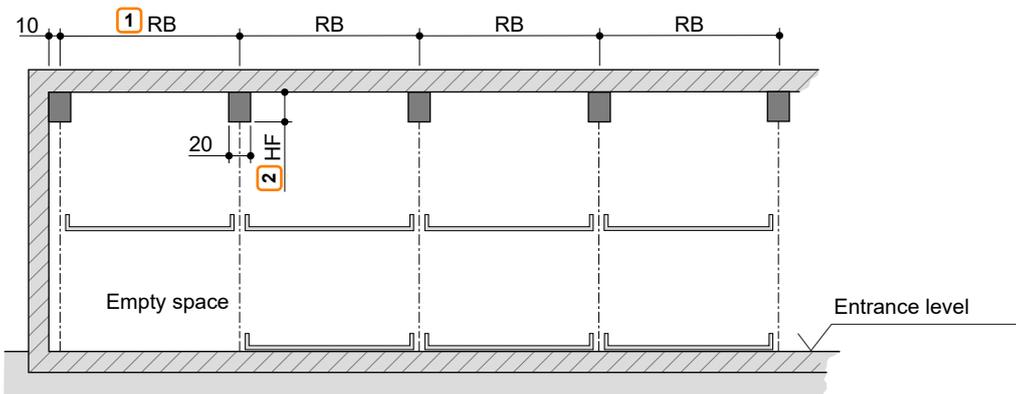


max. 3% slope



max. 5% gradient

## Clearance for installations



1 RB: grid width. These dimensions **must** be adhered to.

2 HF: clearance height = building height (H) - 305 cm | where CH max. = 45 cm (see "Overview of system types and building heights", page 4).

■ Clearance for lengthways cable routing

## Electrical installation

### Switch cabinet and master switch

The switch cabinet (approx. 60 x 60 x 25 cm) as well as the lockable master switch must be accessible from outside at all times and be located in the visual range of the system.

With wall opening from switch cabinet to system (consultation with KLAUS Multiparking required).

### Hydraulic unit

■ 3 kW, three-phase current 230/400 V / 50 Hz

### Supply cable to master switch

Supply cable min. 5 x 2.5 mm<sup>2</sup> (3 PH+N+PE) to switch cabinet with pre-fuse 3 x 16 A (slow blow) or circuit breaker 3 x 16 A (trip characteristic K or C) to be provided by the customer

DIN/VDE and local regulations of energy-supply companies must be observed (see "Supply cable to master switch - foundation earth", page 13).

### Control panel with emergency-stop

■ Attachment at a clear point (e.g. pillar).  
■ Secured against external operation.

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## Technical information

### Usage area

The system is suitable for a fixed group of users as standard. Where users change (e.g. short-term parking in office buildings or hotels), structural modifications to the Multiparking system are required. Please request a consultation if required.

### Units

Low-noise, bearing-mounted hydraulic units are installed on rubber-metal blocks. Consequently, we recommend separating the garage body from the residential building.

### Parking space designation

Please consult the function diagram for the standard designation of the parking spaces (see "Function diagram with standard designation", page 2). Alternative designations are possible with a surcharge.

Please note the following specifications:

- The empty space is situated on the left as standard.
- Any alternative designations must be notified 8 to 10 weeks before delivery.

### Ambient conditions

Ambient conditions for the areas around Multiparking systems: Temperature range  $-10$  to  $+40^{\circ}$  C. Relative humidity 50 % to a maximum external temperature of  $+40^{\circ}$  C.

If ascent/descent times are specified, these relate to an ambient temperature of  $+10^{\circ}$  C and with the system positioned immediately adjacent to the hydraulic unit. These times are increased at lower temperatures or with longer hydraulic lines.

### Building application documents

Multiparking systems generally require approval. Please observe local regulations and stipulations.

### Care

To prevent corrosion damage, please observe our special cleaning and care instructions and ensure that your garage is well ventilated.

### Corrosion protection

In accordance with the 'Corrosion protection' supplement.

### Electrically driven doors

For commercial use of doors with electrical drive systems, an annual inspection is required in accordance with ASR A1.7 'Technical rules for workplaces' in Germany. We urgently recommend concluding a maintenance contact as these services are included for the complete system.

### CE conformity

The systems provided are consistent with DIN EN 14010 and the EC Machinery Directive 2006/42/EC. This system has also undergone a voluntary compliance test conducted by TÜV SÜD.

### Noise protection

#### Standard noise protection:

In accordance with DIN 4109-1 Noise protection in high-rise - Section 9: Maximum sound pressure level in living and sleeping areas 30 dB (A). User noise is not subject to the requirements.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (KLAUS Multiparking)
- Sound insulation dimension of the building structure of min.  $R'w = 57$  dB (service to be provided by the customer)

#### Increased sound protection (special agreement):

In accordance with DIN 4109-5 Increased noise protection in high-rise - Section 8:

Maximum sound pressure level in living and sleeping areas 25 dB (A). User noise is not subject to the requirements.

The following dimensions are required for adherence to this value:

- Noise protection package in accordance with quote/order (KLAUS Multiparking)
- Sound insulation dimension of the building structure of min.  $R'w = 62$  dB (service to be provided by the customer)

#### Note:

User noise is noise that can be influenced individually by the user of our Multiparking systems. This includes, e.g., accessing the platform, the slamming of vehicle doors, engine and brake noise.

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## Performance specification

### Description

Multiparking system for independent parking of vehicles one on top of and next to one another.

The system is traversable and can be combined with the TrendVario 6100, 6100+, 6200+, 6300 and 6300+ (details on these systems can be found on the corresponding product sheets).

Dimensions in accordance with the underlying building, width and height dimensions.

Access to the parking spaces horizontally (installation tolerance  $\pm 1\%$ ).

An access must be provided over the entire width of the system (minimum driving lane width in accordance with local regulations).

The parking spaces are arranged on 2 levels one on top of the other. Vehicles park on stable steel platforms.

The platforms on the upper floor (UF) move vertically, the platforms on the ground floor (GF) move horizontally. At entrance level (GF), there is always 1 parking space less. This empty space is used for sideways movement of the GF parking spaces to allow a parking space on the UF above to lower to entrance level. Consequently, 3 parking spaces (1 on GF, 2 on UF) is the smallest unit for this parking system.

Vehicle positioning in any parking space by positioning aid mounted on one side (to be adjusted in accordance with the operating instructions).

For safety reasons, the movement operation of the platforms always takes place behind locked doors.

All requisite safety equipment is integrated into the system. This essentially comprises a chain monitoring system, locking levers for the upper platforms and locked doors. The doors can only be opened when the selected parking space has reached its parking position.

### Steel frame (secured to the floor) comprising:

- Supports (arranged in rows)
- Crossbeams and lengthways beams
- Sliding rails for the sideways moving GF platforms

### Platform comprising:

- Platform profiles
- Adjustable positioning aid
- Chamfered ramp
- Side beams
- Crossbeams
- Screws, nuts, washers, spacers, etc.

### Lifting equipment for platforms on the UF comprising:

- Hydraulic cylinders with solenoid valves
- Chain wheels
- Chains
- Limit switches
- The platforms are each suspended at 4 points and are guided at the supports by means of plastic plain bearings

### Drive unit for sideways moving platforms on GF:

- Gear motor with chain wheel
- Chains
- Sliding and guide rollers (low-noise)
- Power supply via energy chain

### Hydraulic unit comprising:

- Hydraulic unit (low-noise, fitted to bracket and bearing mounted on rubber-metal block)
- Hydraulic oil tank
- Oil filling
- Internal gear pump
- Pump holder
- Coupling
- Three-phase motor
- Noise protection, motor protection switch and control fuse
- Test pressure gauge
- Pressure relief valve
- Hydraulic hoses (to attenuate noise transmission to the hydraulic pipes)

### Control:

- Central control point (control panel with emergency-stop) for selecting the desired parking space
- The electrical wiring from the system cabinet is provided by the supplier

### Vertical doors:

#### Size

Dimensions adjusted to the underlying widths and height dimensions. The door comprises two door leaves

#### Frame

- Frame structure with two vertical centre rungs from extruded aluminium profiles (anodised, coating thickness approx. 20  $\mu\text{m}$ )
- There is a rubber lip on the closing edge for a clean seal with the building.

#### Door filling

Aluminium perforated plate

- Thickness 1.5 mm, RV 8-14 E6/EV1, anodised, coating thickness approx. 20  $\mu\text{m}$
- Ventilation cross-section of the filling approx. 30%

#### Guide rails

- The sliding rails of the doors are attached to the steel frame of the system.
- Galvanised steel guide rails (coating thickness approx. 20  $\mu\text{m}$ ).

#### Door actuation

Electrical drive system by means of electric motor, above the door frame. For safety reasons, the movement operation of the platforms always takes place behind locked doors. An electrical signal generator is used to query the positions 'door open' and 'door closed'.

#### Please note:

Door apertures (at the side, covers over the sliding rails, etc.) and door suspensions are not included with the standard configuration but can be supplied as special equipment with a surcharge.

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## Sliding doors:

### Size

- Sliding doors, size approx. 2500 mm x 2000 mm (width x height).

### Frame

- Frame structure with one vertical centre rung from extruded aluminium profile (anodised, coating thickness approx. 20 µm)
- A handle shell is provided in a vertical aluminium profile for opening the doors.
- There is a rubber lip on the closing edge for a clean seal with the building.

### Standard door filling

#### Aluminium perforated plate

- Thickness 2 mm, RV 5-8 E6/EV1, anodised, coating thickness approx. 20 µm
- Ventilation cross-section of the filling approx. 40%

### Alternative door filling

#### Plain aluminium sheet

- Thickness 2 mm E6/EV1, anodised, coating thickness approx. 20 µm

#### Corrugated steel sheet

- Thickness 1 mm, galvanised, coating thickness approx. 20 µm
- Additional powder coating, coating thickness approx. 25 µm on the outside and approx. 12 µm on the inside
- Colour options on the outside (building view):
 

|                            |                          |
|----------------------------|--------------------------|
| RAL 1015 (light ivory)     | RAL 3003 (ruby red)      |
| RAL 5014 (pigeon blue)     | RAL 6005 (moss green)    |
| RAL 7016 (anthracite grey) | RAL 7035 (light grey)    |
| RAL 7040 (window grey)     | RAL 8014 (sepia brown)   |
| RAL 9006 (white aluminium) | RAL 9016 (traffic white) |
- Door inside in a light grey tone

#### Wood filling

- Nordic spruce in A sorting
- Vertical tongue and groove boards
- Colourless, pre-coated

#### Composite safety glass

- Composite safety glass from ESG 8/4 mm

#### Wire mesh

- Mesh size 12 x 12 mm
- Wire diameter 2 mm, galvanised, coating thickness approx. 20 µm
- Ventilation cross-section of the filling approx. 70%

### Sliding rails

- The running gear comprises 2 double-pair roll systems per door, height-adjustable
- The sliding rails of the doors are attached to brackets with cover bushings or directly to the concrete lintel or a building-specific door suspension
- The lower guide comprises 2 plastic rollers on a base plate which is dowelled to the floor
- Sliding rails, cover bushings, guide roller base plate are galvanised

### Door actuation

- Electrical drive system by means of electric motor attached to the rail system in the turning point of the sliding doors. The drive pinion engages a chain attached to the door.

For safety reasons, the movement operation of the platforms always takes place behind locked doors. An electrical signal generator is used to query the positions 'door open' and 'door closed'.

### Separation (if required)

- On request

### Please note:

Door apertures (at the side, cover over the sliding rails, etc.) and door suspensions are not included with the standard configuration but can be supplied as special equipment with a surcharge.

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## Services to be provided by the customer

### Barriers

Barriers that may be required in accordance with DIN EN ISO 13857 where there are roadways immediately in front of, adjacent to or behind the systems. This also applies during the construction stage.

### Parking space numbering

Parking space numbering, if required.

### Building services systems

Any lighting, ventilation, fire-extinguishing and fire-alarm systems that may be required, plus clarification and compliance with corresponding official documentation.

### Lighting

The customer must observe local regulations pertaining to the illumination of parking spaces and roadways. In accordance with DIN EN 12464-1 'Light and lighting - Lighting of work places', an illumination level of min. 200 lx is recommended for the parking spaces and operating area of the system. A floating contact can be provided for actuation of parking space lighting provided by the customer.

### Floor structure – rails

Floor structure in accordance with the details on the product data sheet (see "Detail of building configuration - rail system", page 7).

Recesses, tolerances for evenness of the roadway must be adhered to in accordance with DIN 18202, Table 3, row 3.

Lining for the rail system by means of cement screed over the entire length. Laying the screed

### Wall openings

Wall openings, if required.

### Supply cable to master switch - foundation earth

The customer must lay the supply cable to the master switch during assembly. Functional capability can be checked by our engineers on site, in conjunction with the electronics engineer. If this is not possible during assembly for reasons attributable to the customer, the customer must commission an electronics engineer.

The customer must earth the steel structure with a foundation earth connection (earthing distance max. 10 m) and equipotential bonding in accordance with DIN EN 60204.

### Door suspensions

Please note that if the specified clear heights (see "Width dimension and door height", page 5) are not adhered to, additional measures for door attachment (door suspensions) will be required for a surcharge.

### Door apertures

Door apertures, if required. This may be requested from KLAUS Multiparking for a surcharge.

## Subject to technical changes

In the course of technical progress, KLAUS Multiparking shall be entitled to use newer or different technologies, systems, processes or standards to provide the services than initially offered, provided that this does not disadvantage the customer in any way.

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