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Emmaus College

Transport Impact Assessment

Final Report

Prepared for: Orchard Design

Date: 1 July 2024

Ref: 300305213

Stantec Australia Pty Ltd

Level 28, 600 Bourke Street, Melbourne VIC

3000 Tel: +61 3 9851 9600

www.stantec.com

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Revision

| Revision | Date | Comment | Prepared By | Approved By |
|----------|---------------|---------------|-------------|-------------|
| A | 15 March 2024 | Draft | | |
| B | 27 March 2024 | Final | | |
| C | 8 April 2024 | Revised Final | | |
| D | 17 June 2024 | Revised Final | | |
| E | 1 July 2024 | Revised Final | | |

Herman Lai

For and on behalf of

Stantec Australia Pty Ltd

L28, 600 Bourke Street, VIC

3000

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

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TRANSPORT IMPACT ASSESSMENT

Emmaus College

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1. Introduction

1.1 Background

A development application is currently being sought for the proposed Stage 1C car park expansion at Emmaus College – Vermont Campus, located at 503 Springvale Road, Vermont South.

Stantec was commissioned by Orchard Design to undertake a Transport Impact Assessment (TIA) of the proposed Stage 1C car park and landscape expansion project.

1.2 Purpose of this Report

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

- Existing traffic and parking conditions surrounding the site;
- Suitability of the proposed parking in terms of supply (quantum) and layout;
- Traffic generation characteristics of the proposed expansion;
- Public transport, walking and cycling facilities and access around the site;
- Proposed access arrangements for the site; and
- Transport impact of the development proposal on the surrounding road network.

1.3 References

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

- Whitehorse Planning Scheme and any relevant Design Code;
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004;
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009;
- Plans for the proposed development prepared by Orchard Design dated February 2024;
- Various technical data as referenced in this report;
- Site inspection of the site and environs; and
- Other documents as nominated.

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2. Existing Conditions

2.1 Subject Site

The subject site is located at 503 Springvale Road in Vermont South, within Whitehorse City Council. The site of approximately 20 acres has frontage to Springvale Road to the west.

The properties surrounding the subject site are a mix of residential, retail, and commercial. Figure 2.1 below shows the subject site in relation to its surrounds.

Figure 2.1 – Subject Site and Surrounds

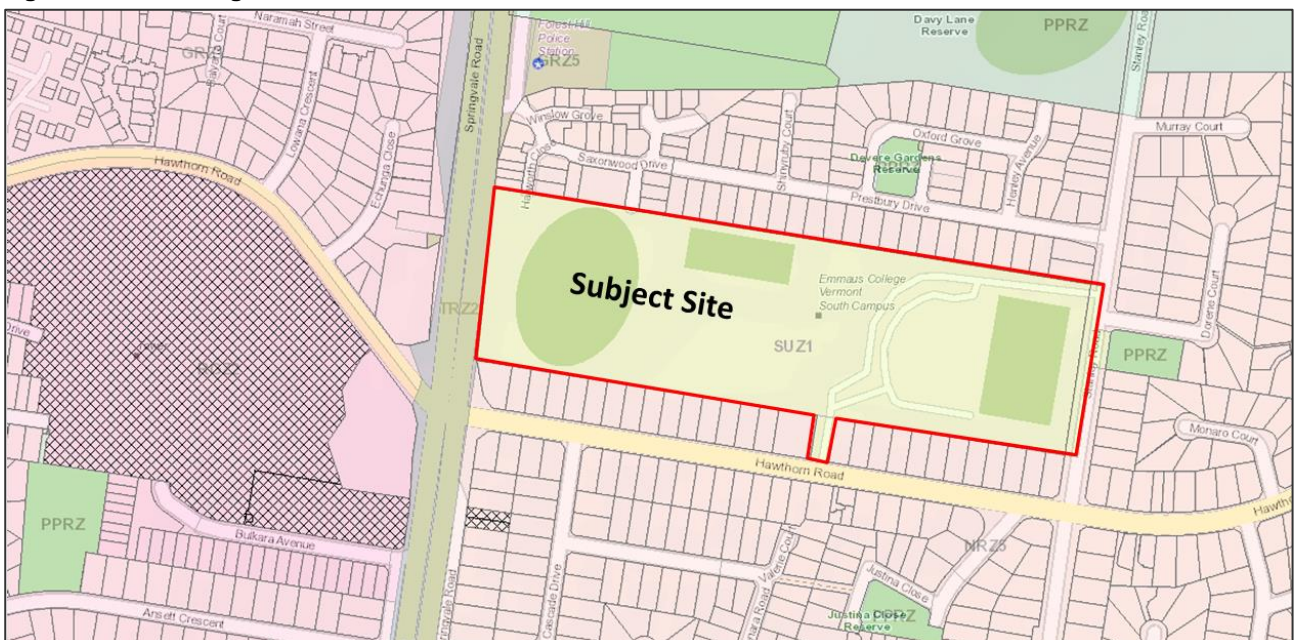


Courtesy of Nearmap

2.2 Planning Zones & Overlays

Figure 2.2 shows the location of the site as defined by the Whitehorse City Council Land Zoning Maps.

Figure 2.2 – Planning Scheme Zone



Courtesy of VicPlan

Figure 2.2 demonstrates that the subject site is located within a Special Use Zone 1 (SUZ1). Clause 37.01 of the Whitehorse Planning Scheme outlines specific requirements relating to developments in this zone.

The site is also located within an area to which Development Contributions Plan Overlay (DCPO) applies.

2.3 Surrounding Road Network

2.3.1 Springvale Road

Springvale Road is a state arterial under the care and control of Department of Transport and Planning (DTP). It generally runs in a north-south direction between Reynolds Road and Wells Road.

In the vicinity of the subject site, Springvale Road comprises a dual carriageway with three lanes in each direction. Figure 2.3 below details the Springvale Road cross-section adjacent to the school campus.

A posted speed limit of 80 km/hr applies on Springvale Road, whilst a 60 km/hr school zone speed limit is applicable from 8am to 9:30am, and 2:30pm to 4pm on school days.

Figure 2.3 – Springvale Road at the egress to Emmaus College, looking south



Courtesy of Google Street View

2.3.2 Hawthorn Road

Hawthorn Road is a local connector road that provides the primary vehicular access to Emmaus College on the southern side of the campus.

Hawthorn Road is comprised of a single carriageway that provides a single lane in each direction, and footpaths on both sides of the road. There is also an existing school crossing at the vicinity of the access to the school. This is shown in Figure 2.4

At the frontage of the site, a 40 km/hr school zone is applied 8am to 9:30am, and 2:30pm to 4pm on school days. Outside of these times, a speed limit of 50 km/hr is imposed.

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Figure 2.4 – School Crossing on Hawthorn Road, looking west



Courtesy of Google Street View

2.3.3 Stanley Road

Stanley Road functions as a local road (Council-controlled) and is aligned in a generally north-south direction between Murray Court to the north and Burwood Highway to the south.

The carriageway on Stanley Road has one lane in each direction, with on-street parking permitted on both sides.

A speed limit of 40 km/hr is applied from 8am to 9:30am, and 2:30pm to 4pm on school days on Stanley Road outside the gate of Emmaus College, between Prestbury Drive and Hawthorn Road. The speed limit is 50 km/hr on Stanley Road otherwise.

Figure 2.5 – At the school access on Stanely Road, looking south

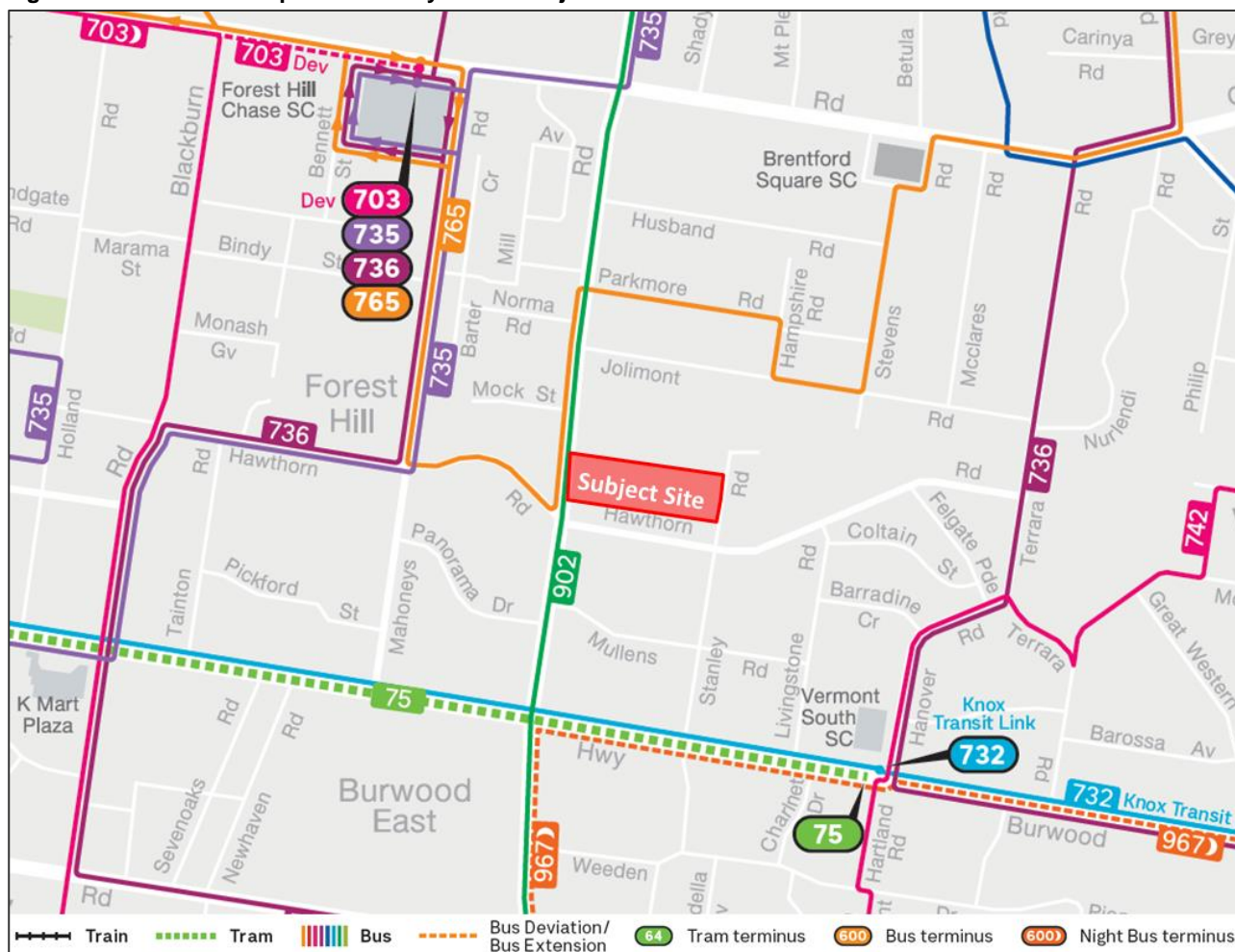


Courtesy of Google Street View

2.4 Public Transport

The locality of the subject site in relation to public transport is shown in Figure 2.6. Bus routes 902 and 765 run along Springvale Road on the frontage to the school, the bus stop is approximately 50m from the school gate. The site is also 800m north of tram stop #75 on Burwood Highway.

Figure 2.6 – Public Transport in Vicinity of the Subject Site



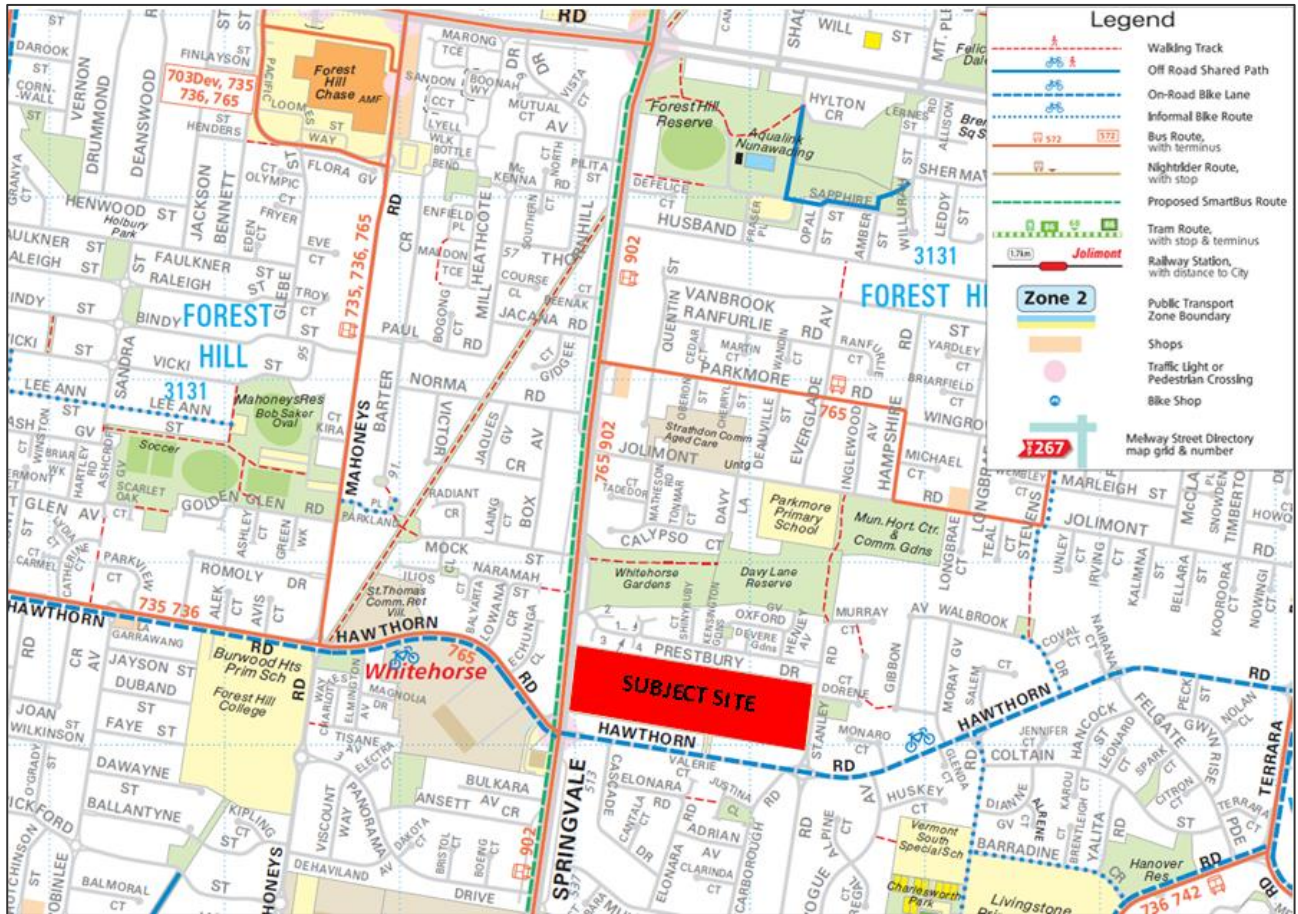
Courtesy of PTV

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2.5 Active Travel

The Whitehorse Council's TravelSmart Map, reproduced in Figure 2.7, shows that an on-road bike lane is provided on Hawthorn Road, immediately south of the campus. Pipe Trak can also be accessed from the college through Mock Street.

Figure 2.7 – Cycling Network in Vicinity of the Subject Site



Courtesy of Whitehorse City Council

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3. Proposed Development

3.1 General

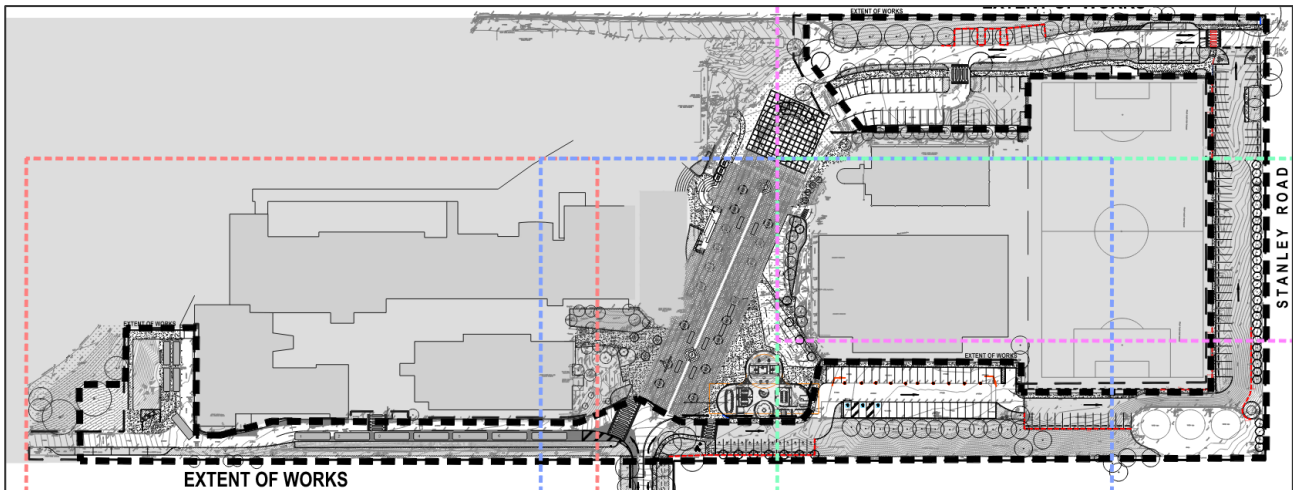
It is proposed to develop the following within the existing footprint of the campus as part of Stage 1C works:

- A new chapel building, 475m²;
- A new administration building, 860m² gross floor area (gfa); and
- The rearrangement and subsequent expansion of the existing car park from 163 on-site car parks to 183 on-site car parks.

It should be noted that at the time of writing and advice received from Orchard Design, the increase in buildings on-site will **not** result in any increase to either staff or student numbers at the College.

An overview of the proposed redevelopment of the site is shown below in Figure 3.1 – all architectural plans are attached as Appendix A.

Figure 3.1 – Proposed Site Plan



Source: Orchard Design

3.2 Car Parking

Due to the development of the new chapel and administration buildings, the existing on-site car parking arrangement will be modified, resulting in an increase of 20 car parks. This will bring the overall car parks provided on-site from 163 parks to 183 parks.

3.3 Vehicle Access

Existing vehicular access will be retained from each of Hawthorn Road to the south and Stanley Road to the east. The existing access point from Springvale Road is proposed to be utilised as a bus and waste vehicle only exit point under this proposal.

A summary of the access options on-site is detailed below, whilst Figure 3.2 outlines the existing access locations:

- Hawthorn Road (Access 1): Entry only to accommodate buses, drop-off / pick-up school traffic and waste collection vehicles.
 - All bus and waste vehicles entering the College will be managed by a new boom gate, to be installed on the 'bus only' lane of the lefthand side.
- Stanley Road (Access 2): Entry for all College staff. Exit for all staff and drop-off / pick-up school traffic.
 - All staff entering the site will be managed by a new boom gate.
- Springvale Road (Access 3): Exit only for all buses, staff maintenance vehicles and waste vehicles.

Figure 3.2 – Vehicular Access Points



3.4 Bicycle Parking

As part of the proposed development, an additional 25 bicycle racks have been proposed on-site. 20 are to be located near the north-eastern entrance and five (5) located near the south entrance.

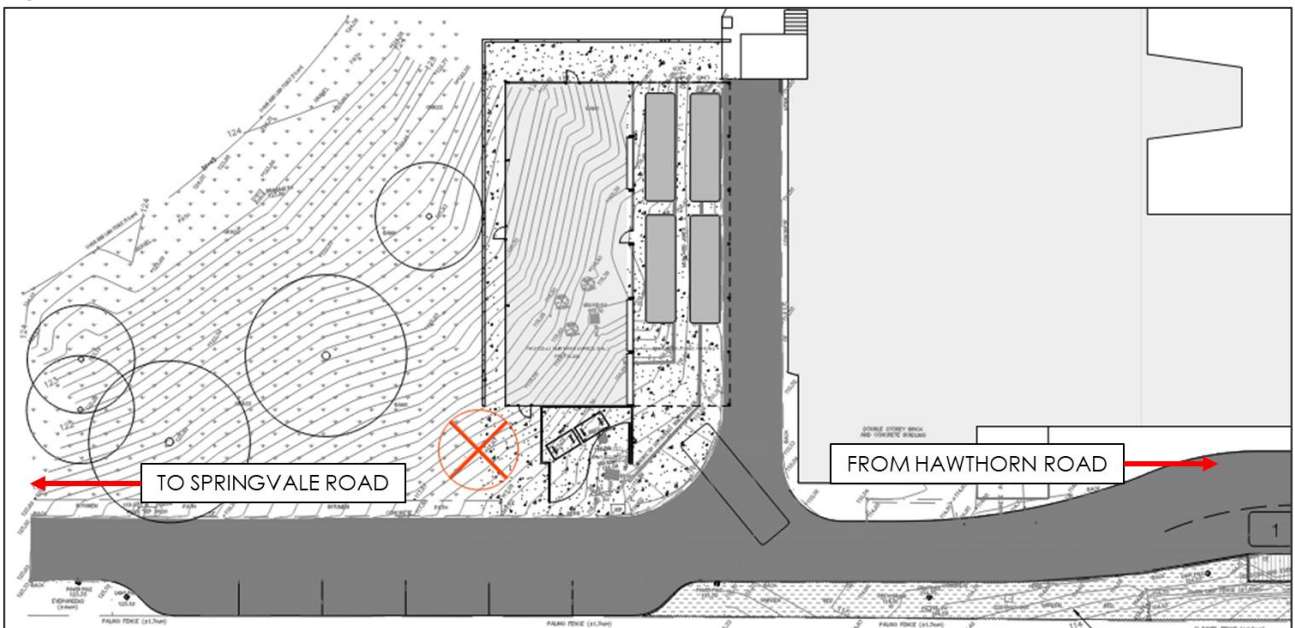
3.5 Waste Collection Area

A new waste collection area is proposed to be developed adjacent to the new maintenance shed in the western portion of the site. Vehicle entry to the area will be provided via Hawthorn Road in the south, with all vehicles required to exit via Springvale Road.

The new location for the waste collection area will improve the safety of students and staff on-site as a result of the reduced conflicts with waste vehicles.

An overview of the waste collection area and new maintenance shed is shown below in Figure 3.3.

Figure 3.3 – Proposed Waste Collection Area & Maintenance Shed



Source: Orchard Design

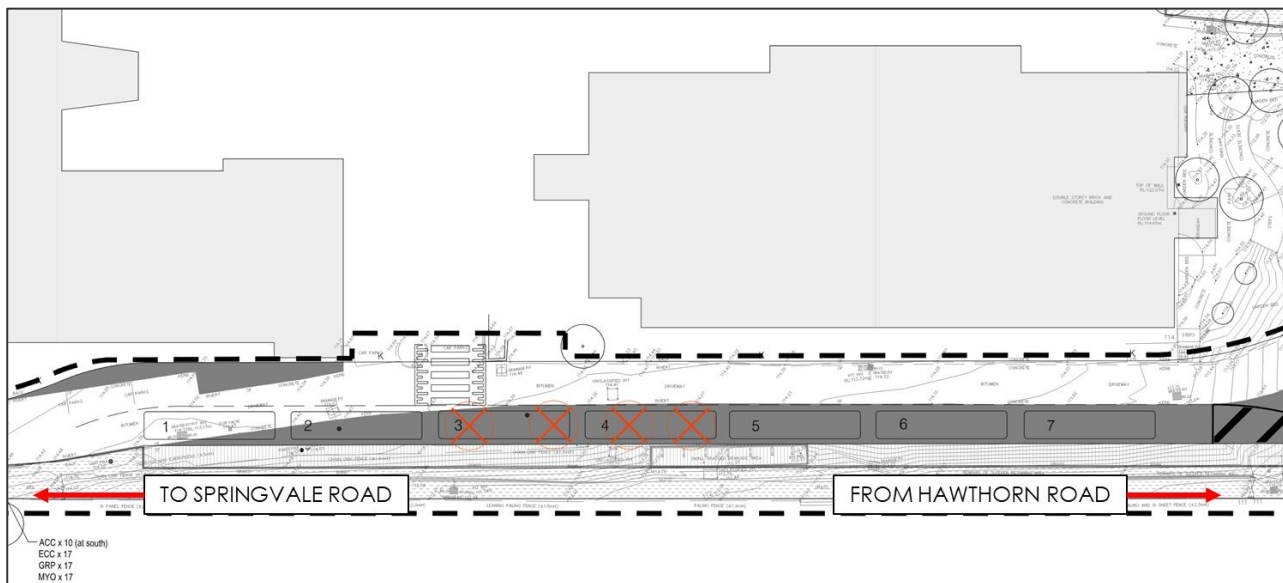
3.6 Bus Area

A new bus pick-up/drop-off area is proposed to be developed between the new maintenance shed and the accessway from Hawthorn Road. The parking area is structured to accommodate buses of varying size depending on the College's needs. At capacity, the zone can receive up to six (6) full-sized 14.5m coaches, however, it is noted that smaller buses are also regularly utilised by the school.

Pedestrian access to / from the area will be accommodated by two (2) new pedestrian crossings, with one located at the rear of the bus collection area and one located towards the front of the bus collection area. Vehicle entry to the area will be provided via Hawthorn Road in the south, with all vehicles required to exit via Springvale Road.

An overview of the new bus collection area is shown below in Figure 3.4.

Figure 3.4 – Bus Collection Area



Source: Orchard Design

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4. Parking & Access Considerations

4.1 Statutory Car Parking Requirements

Statutory requirements for the provision of car parking are set out in Clause 52.06 of the Whitehorse Planning Scheme, with parking rates specified in Table 1 of Clause 52.06-5. In this instance, the Planning Scheme specifies that the following rate is applicable for a Secondary School use:

Car Parking Rate of 1.2: To each employee that is part of the maximum number of employees on the site at any time.

In addition, the scheme also states that:

“Where an existing use is increased by the measure specified in Column C of Table 1 for that use, the car parking requirement only applies to the increase, provided the existing number of car parking spaces currently being provided in connection with the existing use is not reduced.”

Based on the above and despite the proposed development incorporating the inclusion of a new chapel and administration building, Orchard Design has advised that the increase in buildings on-site will **not** result in any increase to either staff or student numbers at the College.

Accordingly, and as outlined Clause 52.06, the statutory car parking rate for a secondary school is governed by the number of staff employed on-site at any one time. Given the advice provided to Stantec indicates there will be no uplift in staff numbers on-site, the proposed development does not generate a statutory parking requirement.

Notwithstanding, the proposed development will result in an increase of 20 car parking spaces (163 to 183) due to the rearrangement of the existing car parking facilities provided.

4.2 Statutory Bicycle Parking Requirements

Despite the proposed development of the new chapel and administration building the increase in buildings on-site will **not** result in an increase to either staff or student numbers at the College.

As outlined Clause 52.34, the statutory bicycle parking rate for a secondary school is governed by the number of students and staff employed on-site at any one time. Given the advice provided to Stantec indicates there will be no changes to both students and staff numbers on-site, the proposed development does not generate any additional bicycle parking requirements to be accommodated on-site.

Notwithstanding, the proposed development will result in an increase of 25 bicycle parking racks on-site.

4.3 Car Park Design Review

The updated parking layout has been designed generally in accordance with Australian Standard for Off Street Car parking (AS2890.1:2004) and the Australian Standard for Parking for People with Disabilities (AS2890.6:2022). The following sub-sections detail the various design elements relating to the proposed rearranged car park.

All drawings documented below can be found attached in Appendix B.

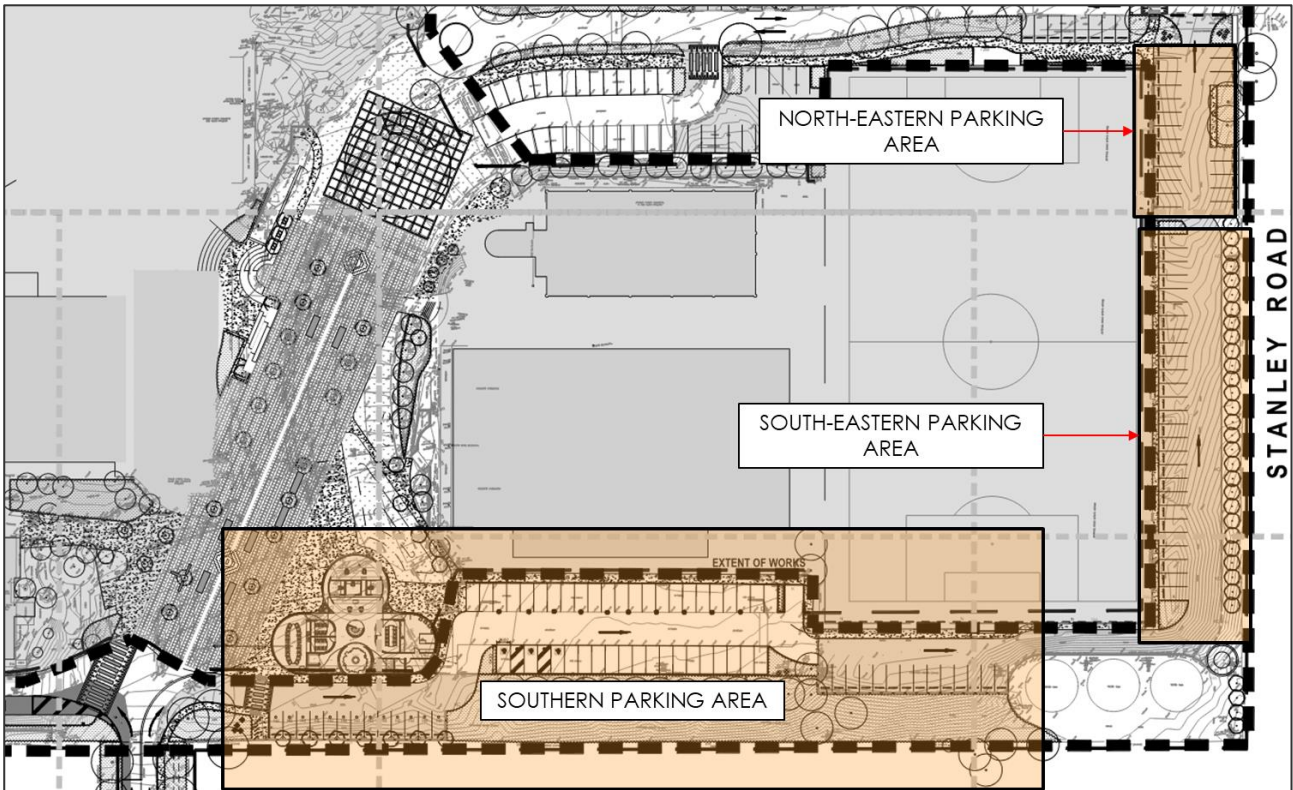
4.3.1 Pick-up / Drop-off Car Parking Area

The following is noted regarding the layout of the pick-up / drop-off car parking area, with a summary of the areas discussed shown in Figure 4.1:

- All parking spaces are 90-degree angled parking bays, with a range of parking and aisle dimensions adopted aiming to ensure compliance with AS2890.1:2004;
 - Proposed a min. 3.18 wide accessway from Hawthorn Road as per Concept Drawing No. V220429-TR-SK-0013-5.
 - The car parking dimensions of the southern area are a min. 2.6m wide, 5.4m long bays that is accessed via a 6.4m aisle, as shown in Concept Drawing V220429-TR-SK-0017-5.
 - The south-eastern parking area consist of 5.6m long, 2.6m wide parking bays accessed via a 6.5m aisle. Swept paths for an 8.8m design vehicle, as shown in Concept Drawing V220429-TR-SK-0018-5 indicate vehicles are able to safely manoeuvre through the area.

- The north-eastern parking area consists of 2.6m wide, 5.4 long parking bays to be accessed via a 5.5m aisle. Under the current proposal, the aisle width strictly does not comply with the Australian Standard. Notwithstanding the above, swept path analysis undertaken for a B85 vehicle, as shown in Concept Drawing V220429-TR-SK-0021-5 indicate vehicles are able to enter and exit the car parking bays in a satisfactory manner. It is also noted, however, that the total length (parking lengths plus aisle) would actually satisfy the planning scheme requirement in this instance, if the dimensions were reallocated.
- The exit of the Pick-up / Drop-off car parking area is to be governed by a proposed Give-Way control inclusive of signage and line-marking.

Figure 4.1 – Pick-up / Drop-off Parking Area Map



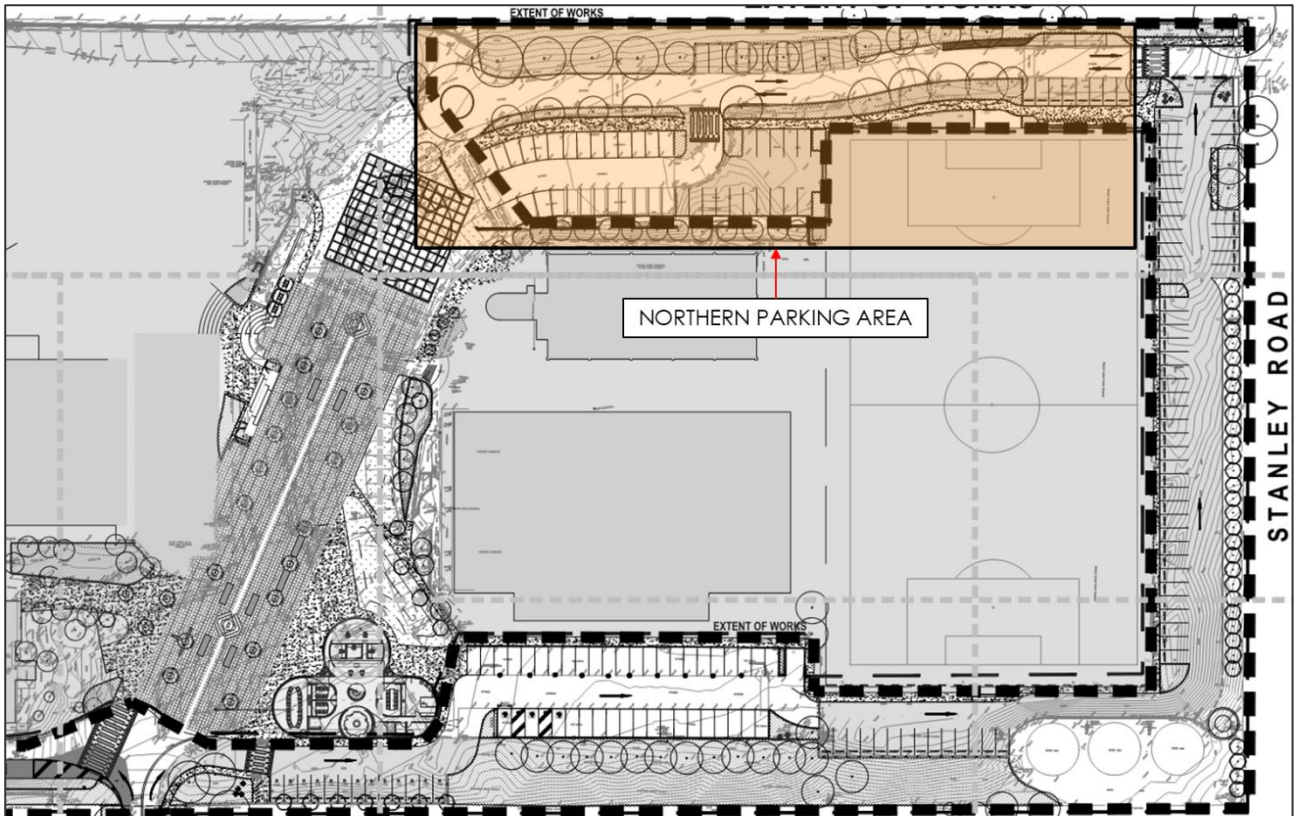
4.3.2 Staff Car Parking Area

The following is noted regarding the layout of the staff parking area, with a summary of the areas discussed shown in Figure 4.2:

- All parking spaces are 90-degree angled parking bays, with a range of parking and aisle dimensions adopted to ensure compliance with AS2890.1:2004;
 - Car parking bay dimensions range from 5.4m – 5.6m long, 2.6m wide bays accessed via a minimum 5.8m aisle. Swept path analysis undertaken for a B85 vehicle, as shown in Drawing No. V220429-TR-SK-0022-5 and V220429-TR-SK-0023-5 indicate vehicles are able to enter and exit the car parking bays in a satisfactory manner.

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Figure 4.2 – Staff Parking Area Map



4.3.3 Bus Collection Area

The following is noted regarding the layout of the new bus parking area:

- Upon design review and as shown in Concept Drawing No. V220429-TR-SK-0013-5, it is expected that up to six (6) bus parking bays can be accommodated based on a 14.5m long rigid bus.

As mentioned previously in Section 3.6, all buses are proposed to exit via the existing crossover at Springvale Road.

4.3.4 Waste Collection Area

The following is noted regarding the layout of the new waste area:

- A 10.5m front-lift waste vehicle is proposed service the site. Due to the front-lift capability of the waste vehicle, it can safely access the waste collection area via a forward-in forward-out manoeuvre, inclusive of a corrective reversing manoeuvre, and exiting via a left-out onto Springvale Road as mentioned above in Section 3.6

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5. Traffic Consideration

5.1 Assumptions

In order to assess the impact of the Stage 1C car park development on the external network, the following assumptions have been adopted in this instance:

- Although staff and student numbers are not increased on-site, it will be conservatively assumed that the increase in on-site car parking numbers will directly attribute to additional traffic generated by the College.
- School peak hour periods will occur between 8am – 9am and 3pm to 4pm.
 - Given the school PM peak will not align with the external PM peak hour traffic (typically 4:30pm to 5:30pm), the AM peak is considered to be the critical scenario in this instance.
- It is conservatively assumed each car parking space will turnover once during the relative AAM and PM school peak hours.

5.2 Trip Generation & Traffic Impact

Given staff and student numbers are not increased on-site, it could be reasonably expected that no additional traffic will be generated as a result of the proposed development. It is expected that those students that are currently being picked-up and dropped-off would not be impacted or influenced (i.e. increased) as a result of the additional car parking. Likewise, the addition of the new on-site car parking spaces is not expected to encourage staff to suddenly drive to the College. The additional on-site parking provision could accommodate any existing overflow parking demand (currently spilling onto the nearby residential streets) but will not generate additional traffic impact.

Notwithstanding the above and in order to provide a conservative assessment, given the increase in the on-site car parking spaces of 20 spaces, it has been assumed that the increase will result in an additional 20 entry and exit movements generated to / from the College during school peak hours.

This increase equates to total of approximately 40 vehicle movements per peak hour or equivalent to around one (1) additional vehicle movement on the external network per minute.

The impact of one (1) additional vehicle per minute during school peak hours on the external network is considered to be low in traffic engineering terms and cannot be expected to cause any detrimental impact to the surrounding road network.

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6. Conclusion

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

- The proposed Stage 1C development incorporates a new 475m² chapel building and a new administration building of 860m²(gfa), as well as additional car parking spaces on the campus at Emmaus College.
 - The increase in buildings on-site will not result in an increase to either staff or student numbers at the College.
- The rearrangement and subsequent expansion of the existing car park from 163 on-site car parks to 183 on-site car parks, results in an additional 20 car parking spaces.
- As part of the proposed development, an additional 25 bicycle racks have been proposed on-site; 20 located near the north-eastern entrance and five (5) located near the south entrance.
- The proposed internal and external road network, and active transport network is designed in accordance with the requirements Whitehorse Planning Scheme.
 - Based on the requirements of Clause 52.06 of the Whitehorse Planning Scheme, the proposed development does not generate a statutory car parking requirement and bicycle parking requirement
- The proposed parking layout is consistent with the dimensional requirements as set out in the Australian/New Zealand Standards for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009).
 - The north-eastern parking area consists of a 5.5m aisle which under the current proposal strictly does not comply with the Australian Standard. Notwithstanding the above, swept path analysis undertaken for a B85 vehicle, as shown in Concept Drawing V220429-TR-SK-0021-5 indicate vehicles are able to enter and exit the car parking bays in a satisfactory manner.
- The proposed car parking layout, waste collection and bus collection areas are generally designed in accordance with all with the dimensional requirements as set out in the Australian/New Zealand Standards for Off Street Car Parking (AS/NZS2890.1:2004 and AS/NZS2890.6:2009) and provide improved safety for staff and students on-site.
- It has been conservatively assumed that the increase in 20 on-site car parking spaces will result in an additional 20 entry and exit movements generated to / from the College during school peak hours. The increase in a total of approximately 40 vehicle movements per peak hour equates to around one (1) additional vehicle on the external network per minute. The impact of one (1) additional vehicle per minute during school peak hours on the external network can be deemed low in traffic engineering terms.
- There is adequate capacity in the surrounding road network during the peak periods to cater for the traffic generated by the proposed development and no mitigation works are considered necessary.

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Appendix A. Architectural Plans

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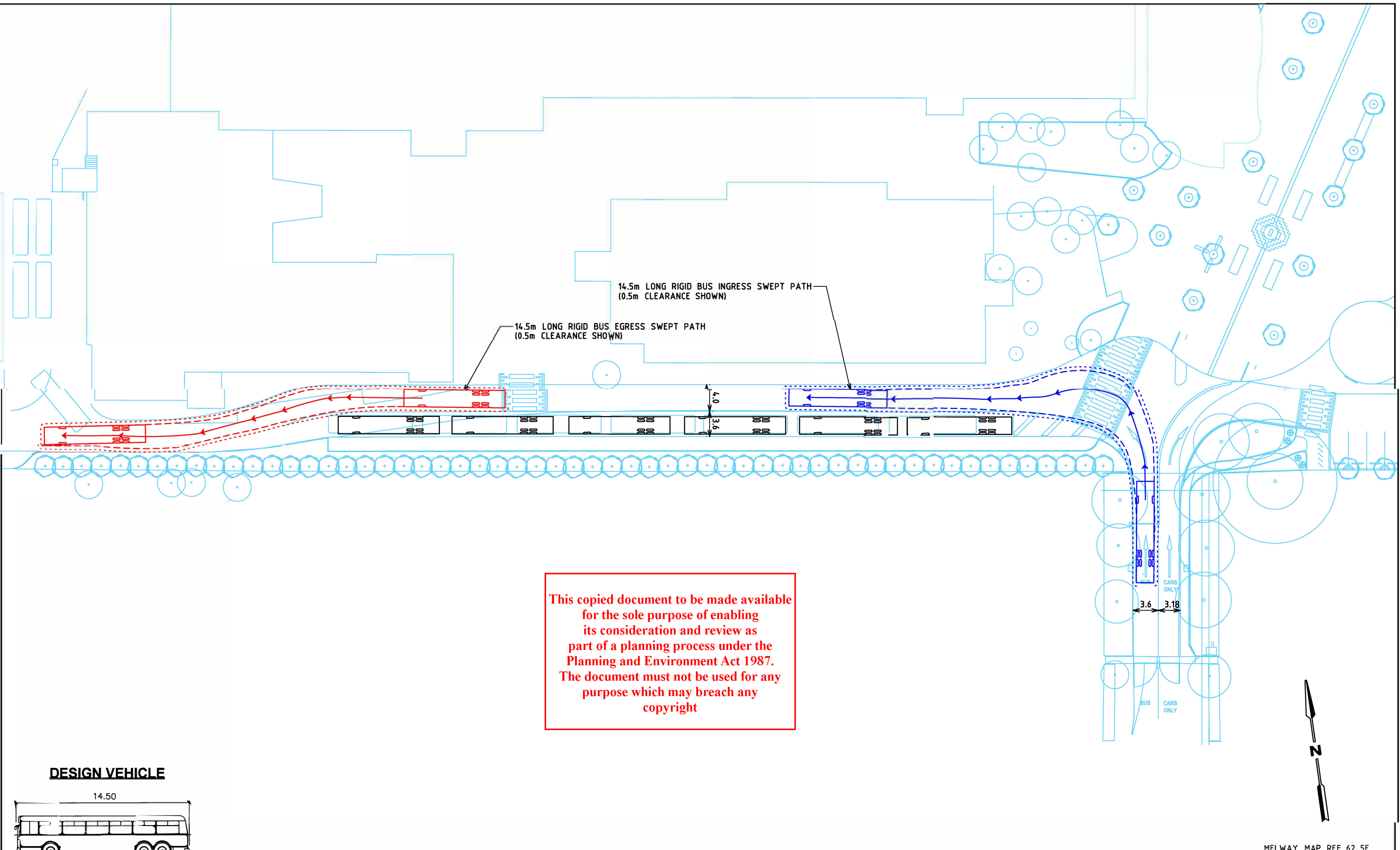


Appendix B. Concept Designs & Swept Path Assessments

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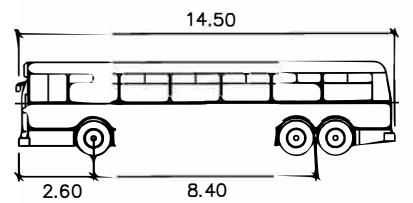


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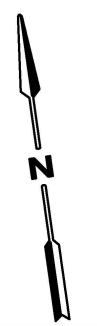
DESIGN VEHICLE



LONG RIGID BUS

| | |
|-------------------|--------|
| | meters |
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 46.4 |

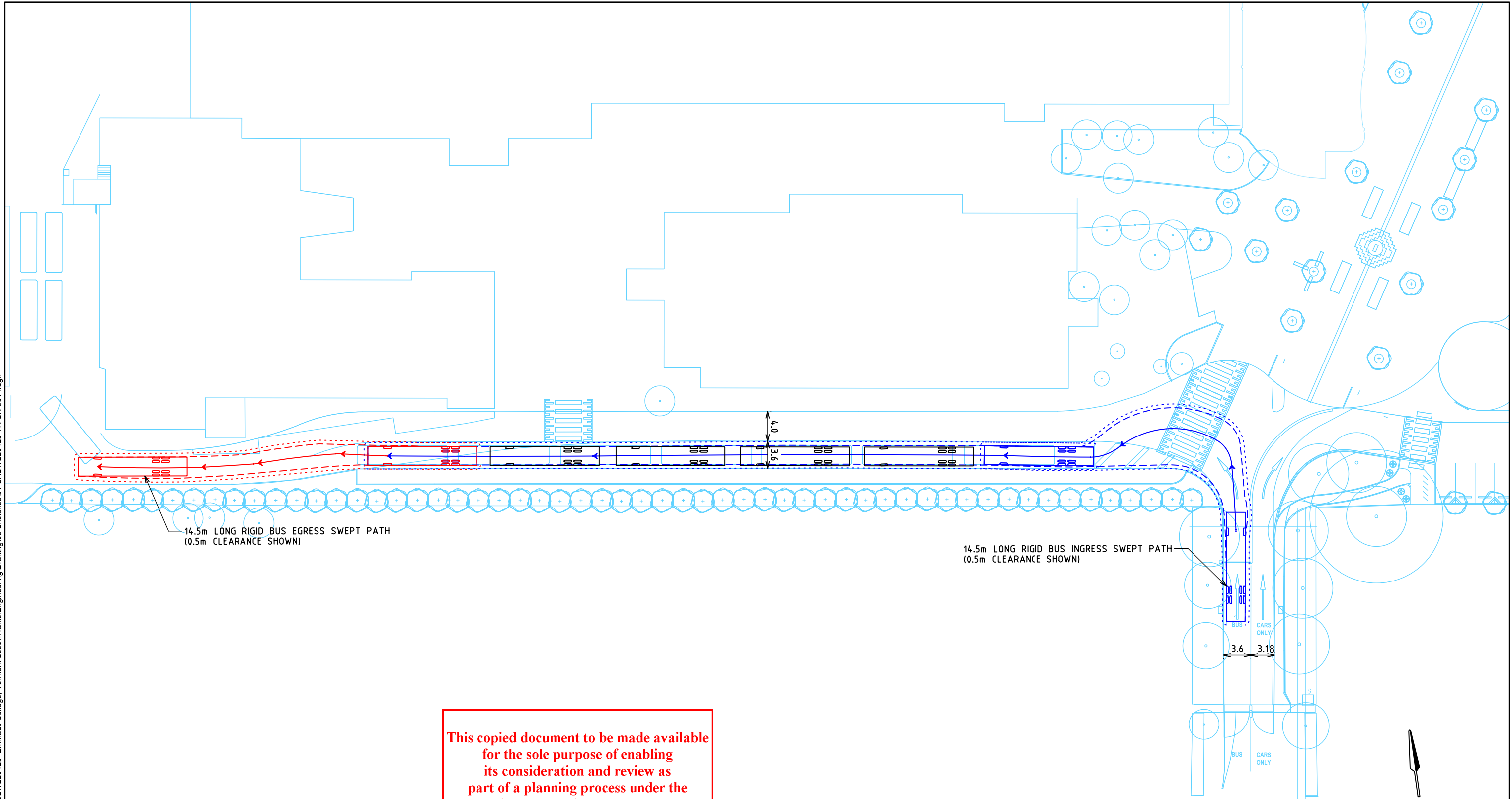
MELWAY MAP REF 62 5E



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Stantec Australia Pty Ltd | ABN 17 007 820 322
 Level 9, The Forum, 203 Pacific Highway
 St. Leonards, NSW 2065
 Tel: 02 9496 7700
 Web: www.stantec.com/au

| | | | |
|--|------------|-------|---------|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| 14.5m LONG RIGID BUS SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:500 | A3 |
| Drawing Number | | | Revison |
| V220429-TR-SK-0013 | | | 5 |

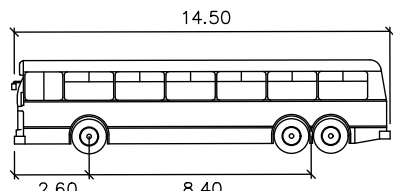


14.5m LONG RIGID BUS EGRESS SWEEP PATH
(0.5m CLEARANCE SHOWN)

14.5m LONG RIGID BUS INGRESS SWEEP PATH
(0.5m CLEARANCE SHOWN)

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DESIGN VEHICLE



LONG RIGID BUS

| | |
|-------------------|--------|
| | meters |
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 46.4 |

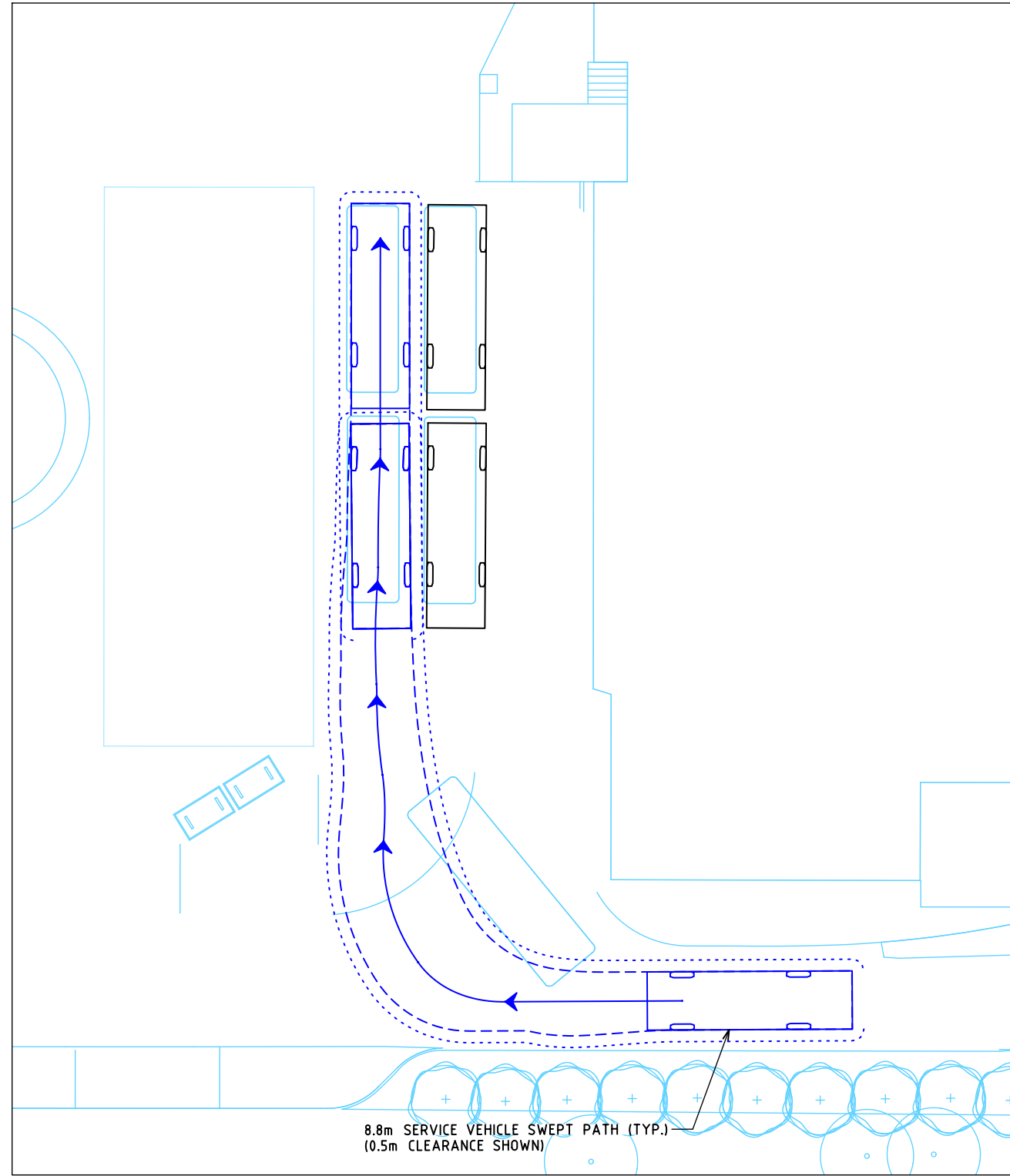
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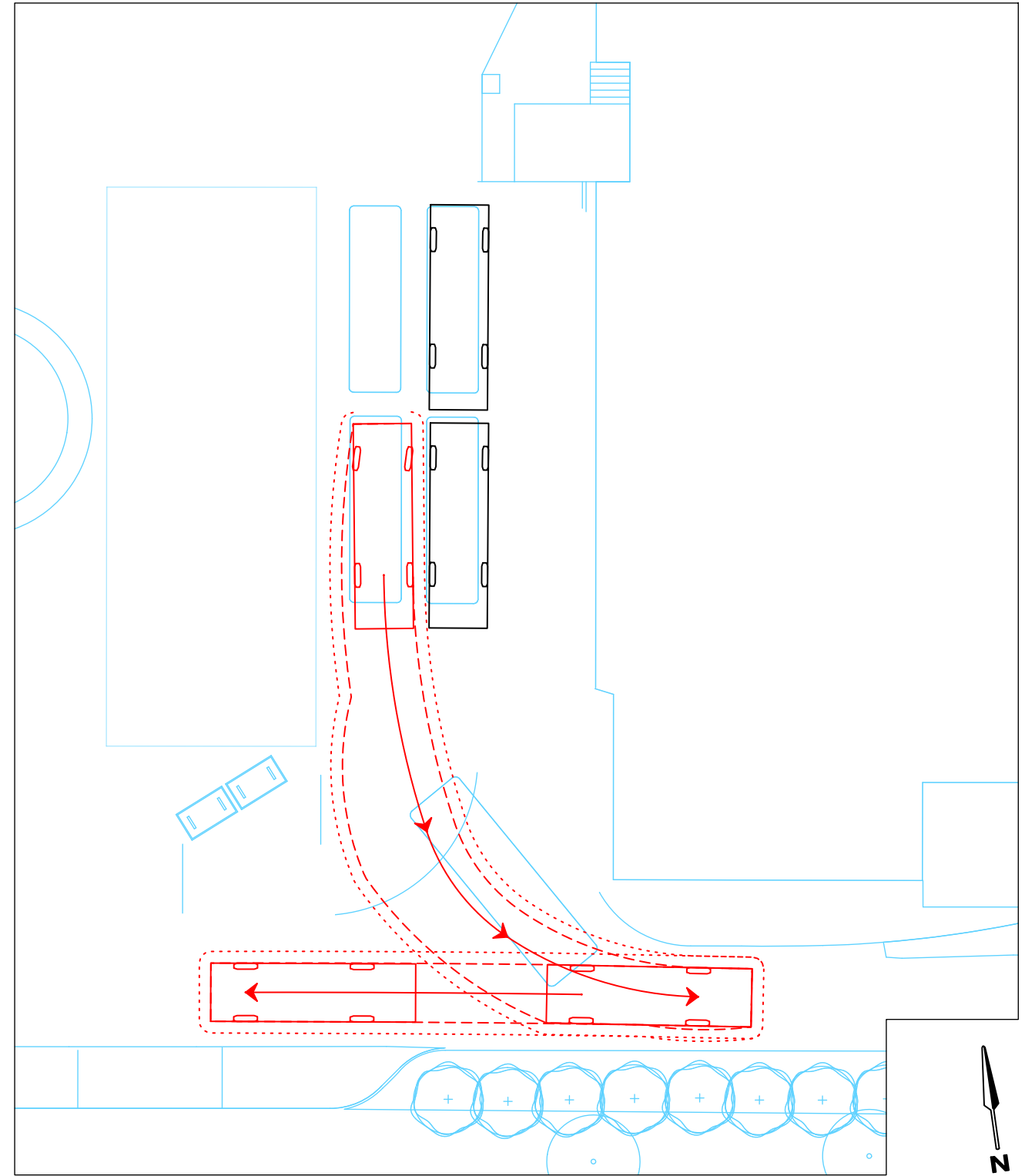
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Level 9, The Forum, 203 Pacific Highway
St Leonards, NSW 2065
Tel: 02 9456 7700
Web: www.stantec.com/au

| | | | |
|--|-------|------|----------|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| 14.5m LONG RIGID BUS SWEEP PATH | | | |
| Drawn/Check/Date | Scale | Size | |
| EK / VO 14.11.2023 | 1:500 | A3 | |
| Drawing Number | | | Revision |
| V220429-TR-SK-0014 | | | 5 |

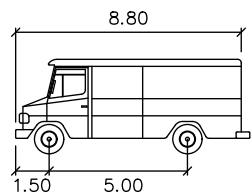
INGRESS MOVEMENT



EGRESS MOVEMENT



DESIGN VEHICLE



SERVICE VEHICLE

| | parameters | units |
|-------------------|------------|--------|
| Width | : 2.50 | metres |
| Track | : 2.50 | |
| Lock to Lock Time | : 6.0 | |
| Steering Angle | : 38.7 | |

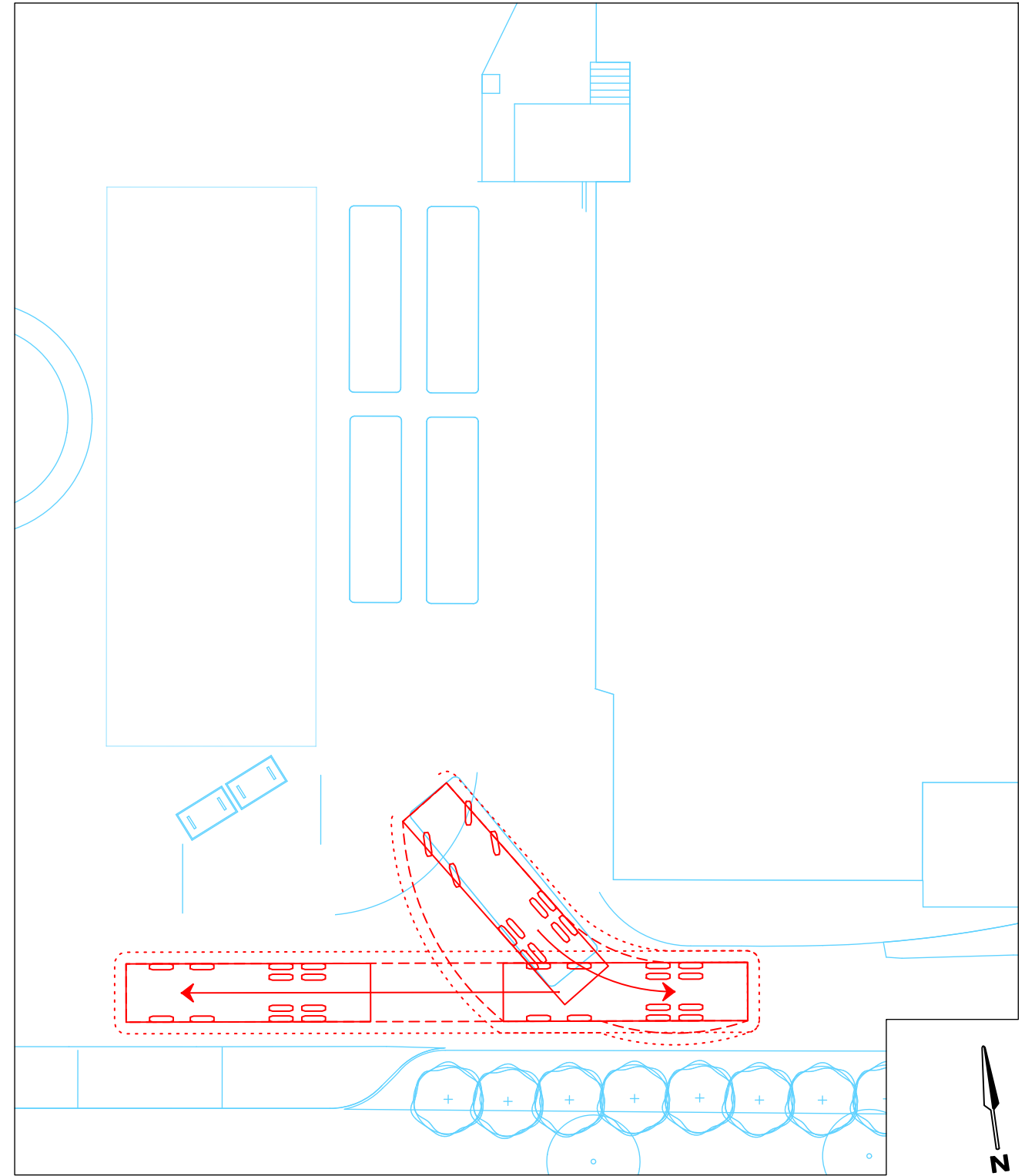
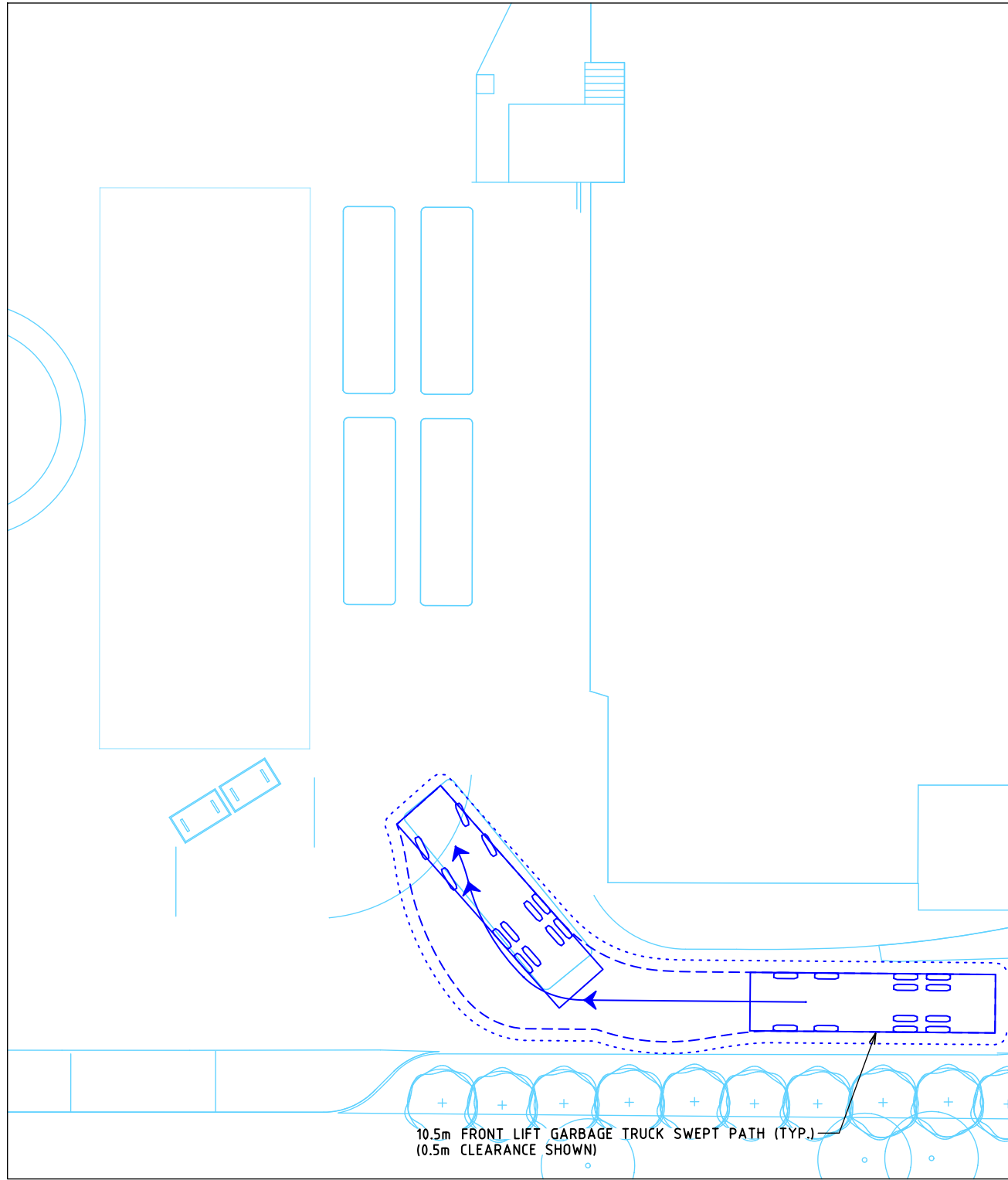
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| Drawn/Check/Date | Scale | Size | | | | | | | | | | | | |
| EK / VO 14.11.2023 | 1:250 | A3 | | | | | | | | | | | | |
| Drawing Number | Revision | | | | | | | | | | | | | |
| V220429-TR-SK-0015 | 5 | | | | | | | | | | | | | |

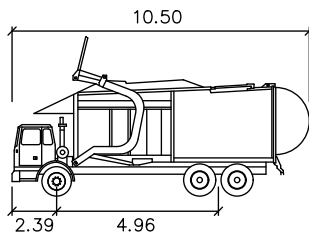
INGRESS MOVEMENT

EGRESS MOVEMENT



10.5m FRONT LIFT GARBAGE TRUCK SWEEP PATH (TYP.)
(0.5m CLEARANCE SHOWN)

DESIGN VEHICLE



Garbage 10.5m – Front

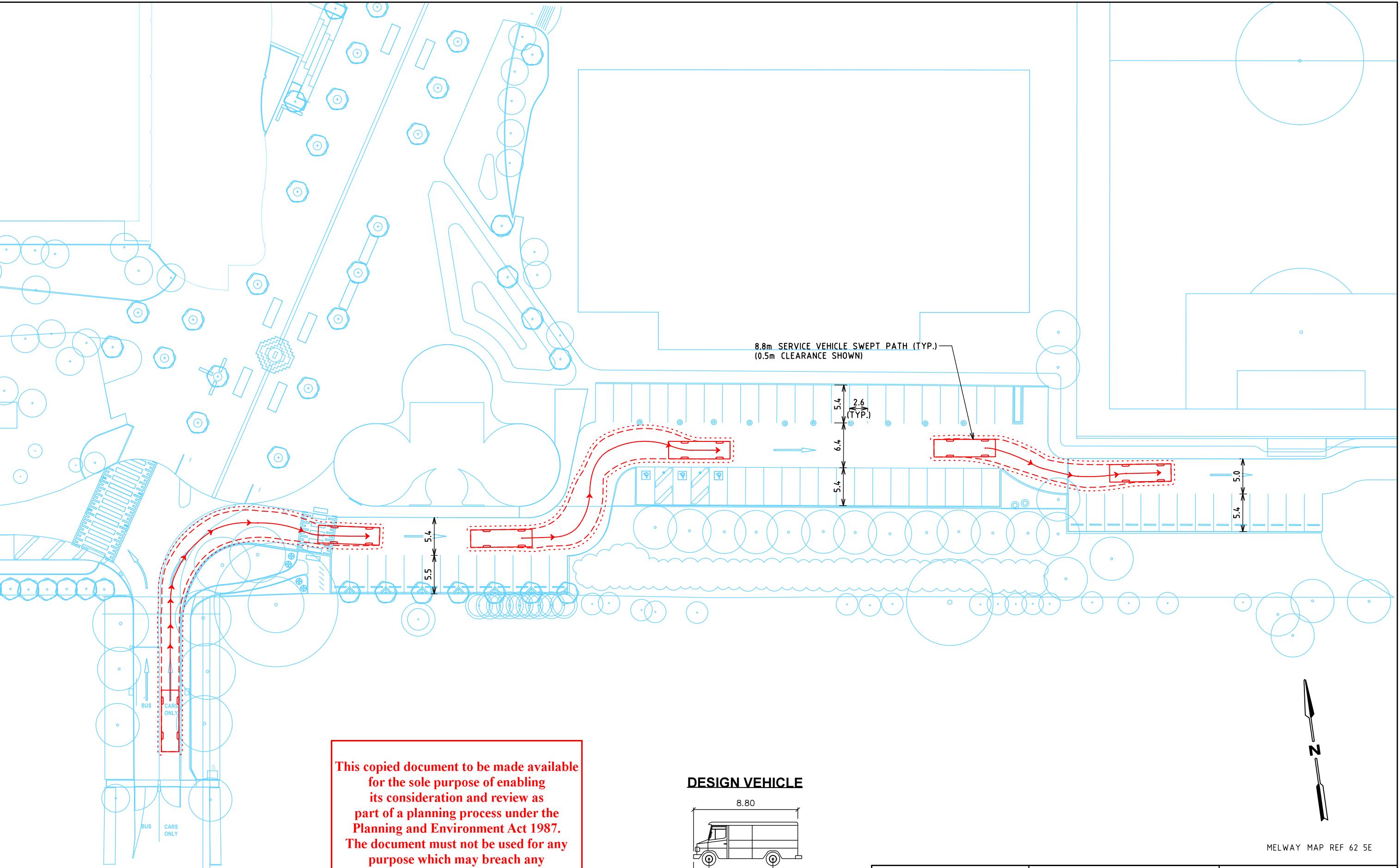
| | metres |
|-------------------|--------|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 4.0 |
| Steering Angle | : 34.4 |

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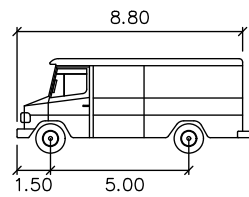
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| Drawn/Check/Date | Scale | Size | | | | | | | | | | | | |
| EK / VO / 14.11.2023 | 1:250 | A3 | | | | | | | | | | | | |
| Drawing Number | Revision | | | | | | | | | | | | | |
| V220429-TR-SK-0016 | 5 | | | | | | | | | | | | | |



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DESIGN VEHICLE



SERVICE VEHICLE

- Width : 2.50 meters
- Track : 2.50 meters
- Lock to Lock Time : 6.0 seconds
- Steering Angle : 38.7 degrees

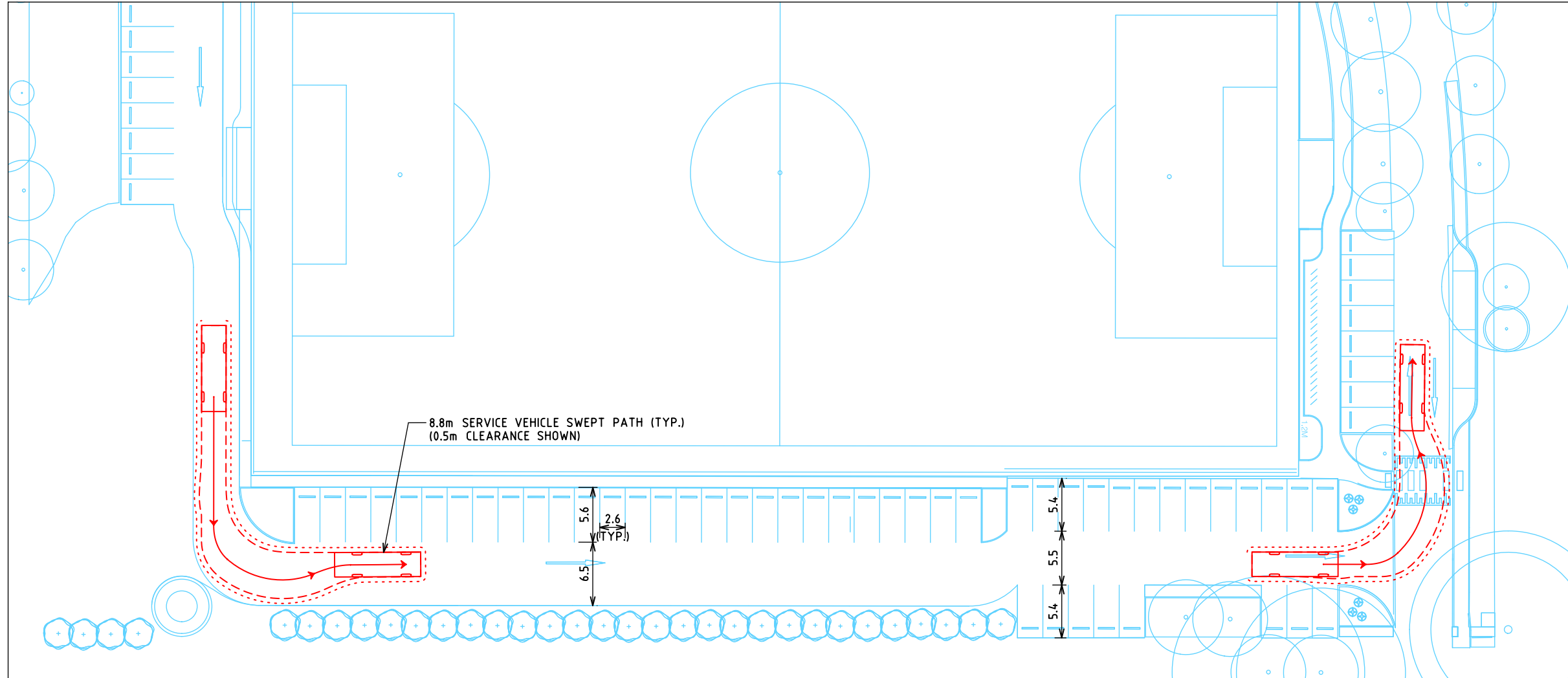


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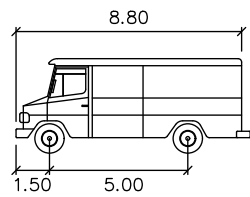
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| | | | |
|------------------------------------|------------|-------|----------|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| 8.8m SERVICE VEHICLE SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:500 | A3 |
| Drawing Number | | | Revision |
| V220429-TR-SK-0017 | | | 5 |



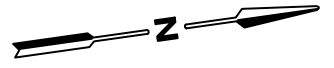
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DESIGN VEHICLE



SERVICE VEHICLE

| | |
|-------------------|--------|
| | meters |
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 38.7 |



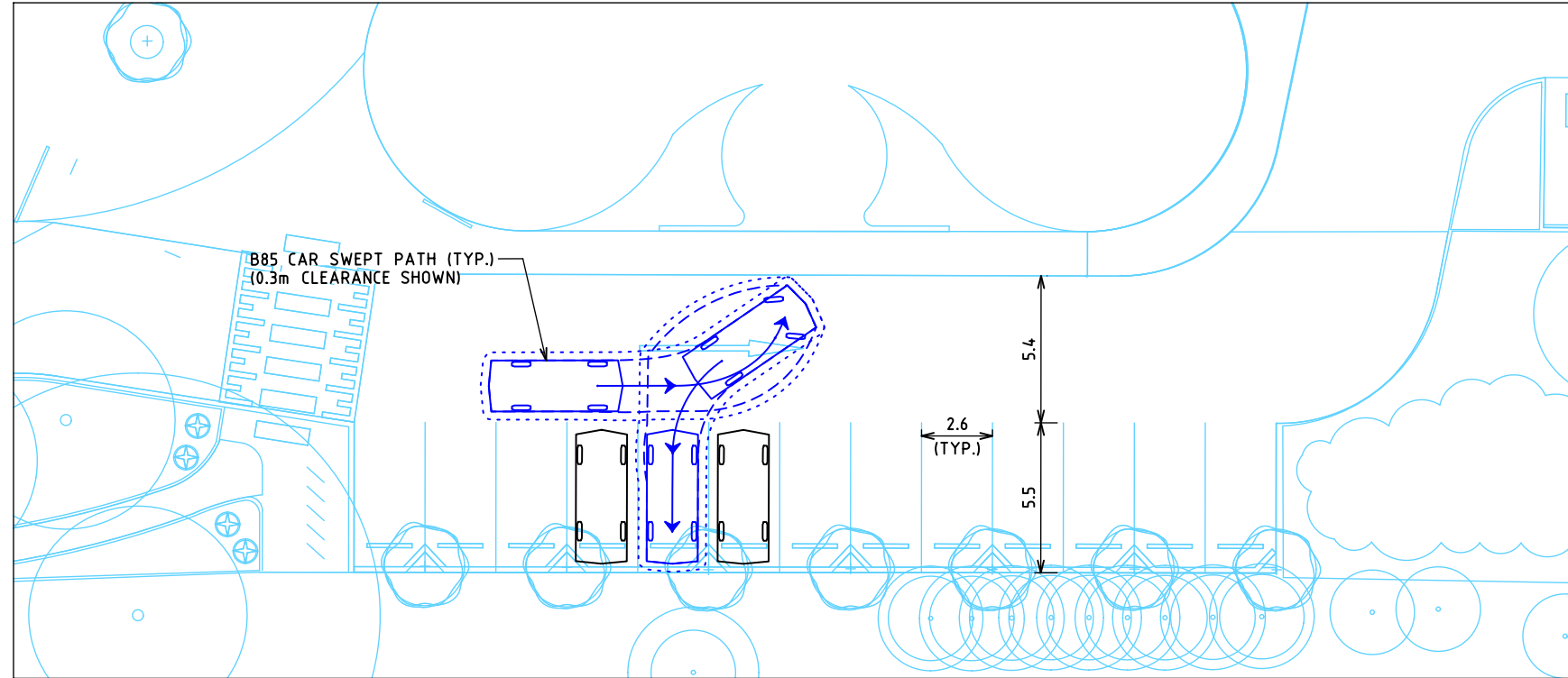
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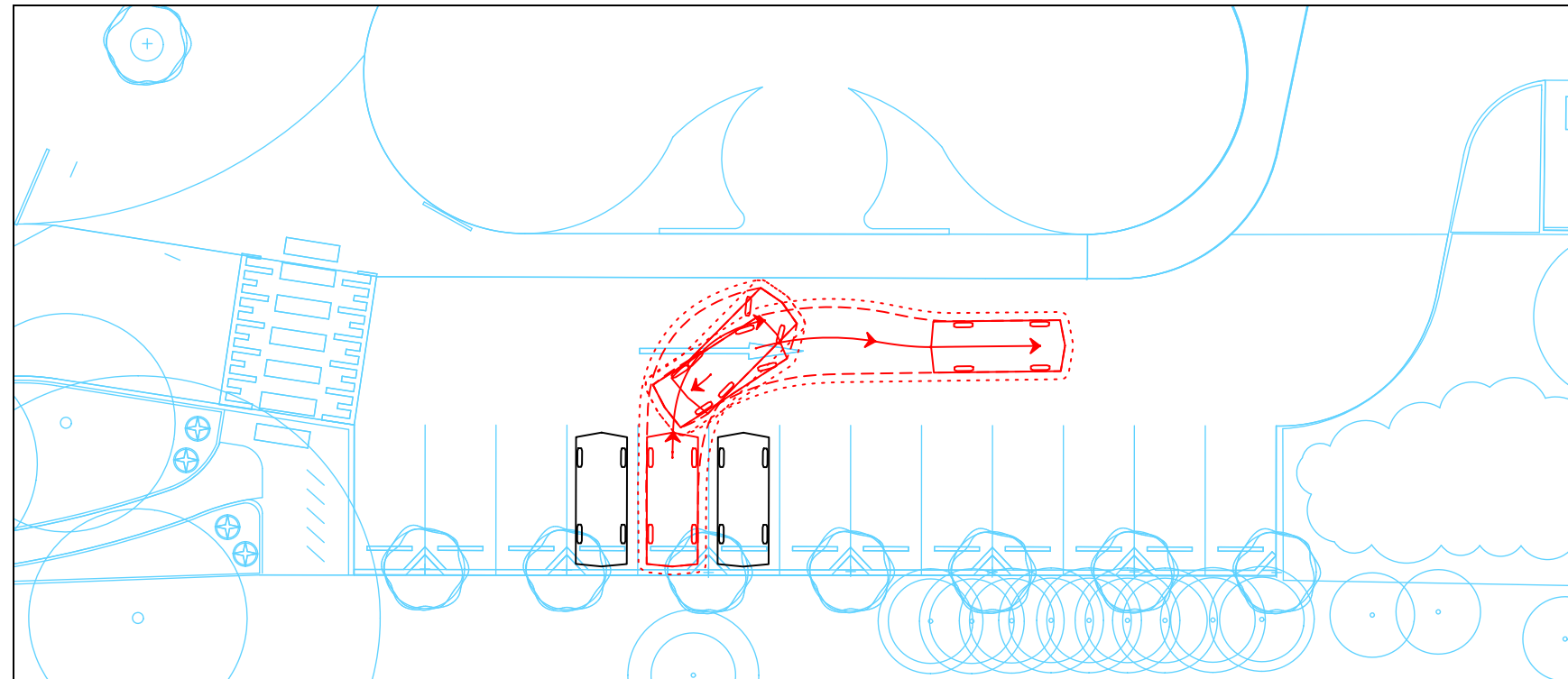


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|------------------------------------|------------|-------|----------|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| 8.8m SERVICE VEHICLE SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:500 | A3 |
| Drawing Number | | | Revision |
| V220429-TR-SK-0018 | | | 5 |

INGRESS MOVEMENT

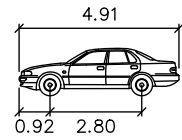


EGRESS MOVEMENT



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DESIGN VEHICLE



B85

| | units |
|-------------------|--------|
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |



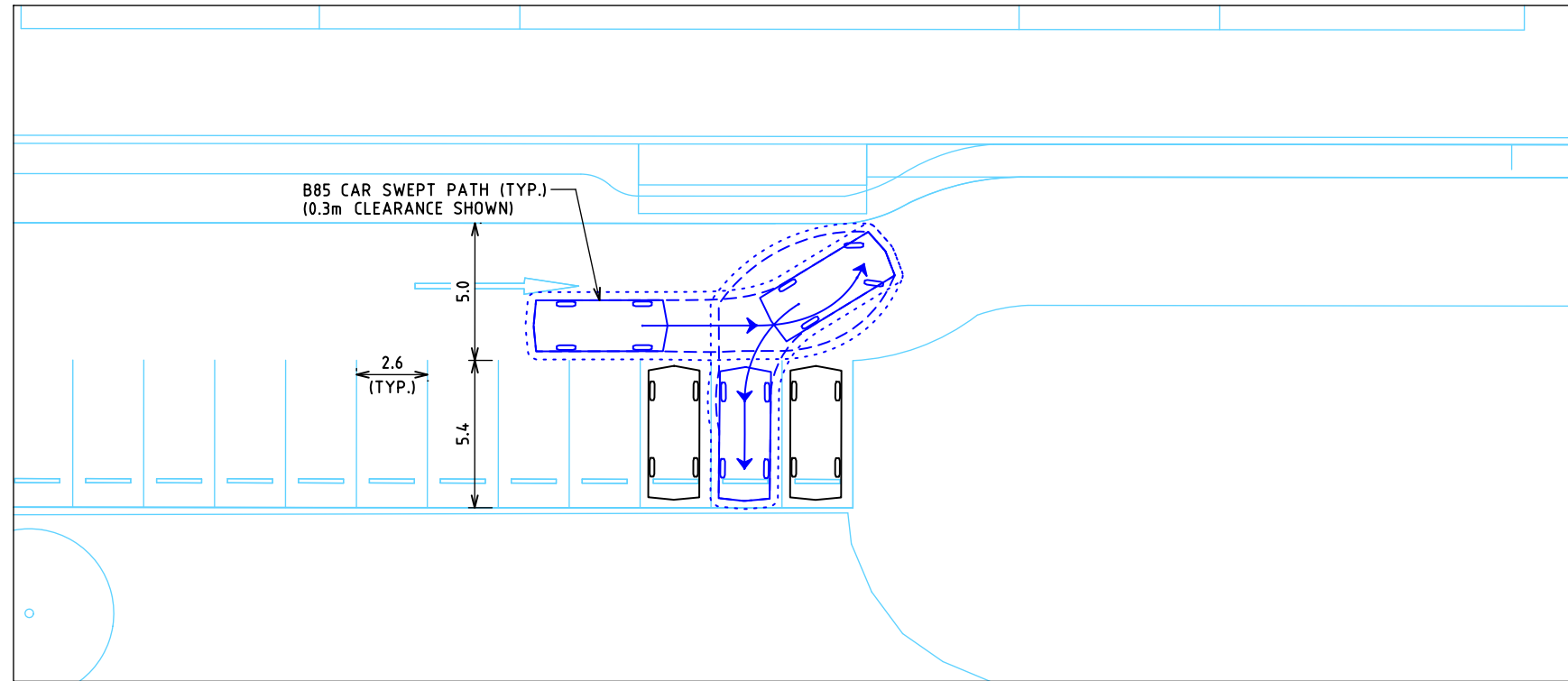
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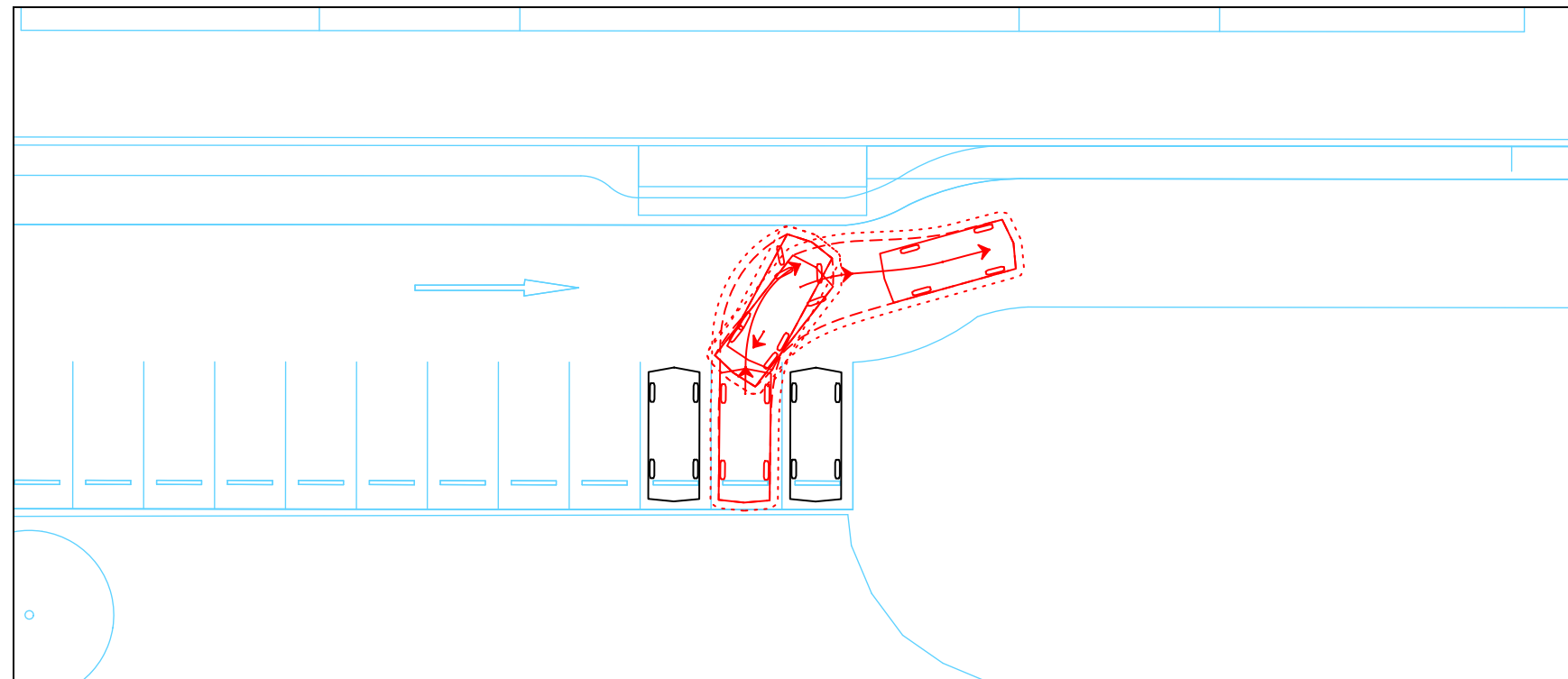
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|------------------------------------|----------|------|--|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| B85 CAR SWEEP PATH | | | |
| Drawn/Check/Date | Scale | Size | |
| EK / VO / 14.11.2023 | 1:250 | A3 | |
| Drawing Number | Revision | | |
| V220429-TR-SK-0019 | 3 | | |

INGRESS MOVEMENT

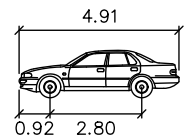


EGRESS MOVEMENT



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DESIGN VEHICLE



B85
 Width : 4.91 meters
 Track : 1.87
 Lock to Lock Time : 6.0
 Steering Angle : 34.1



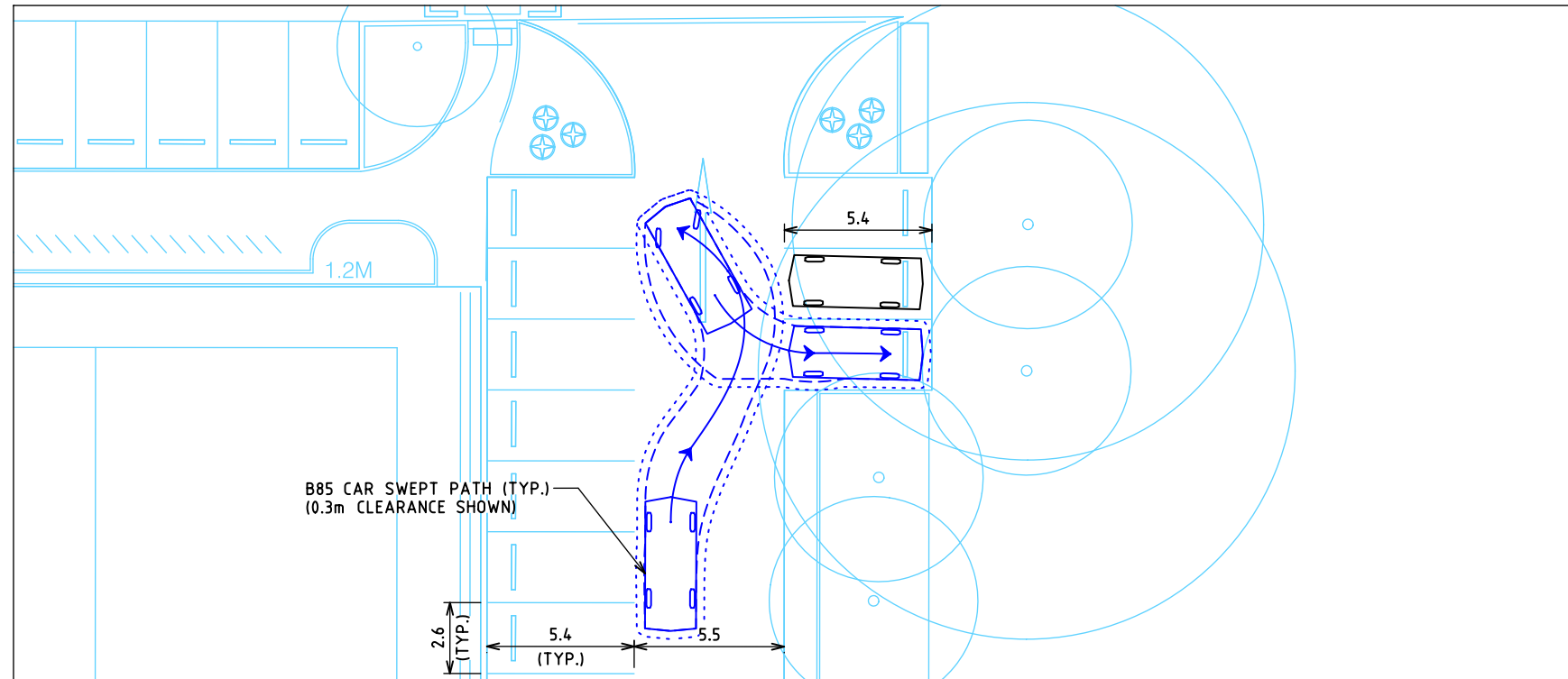
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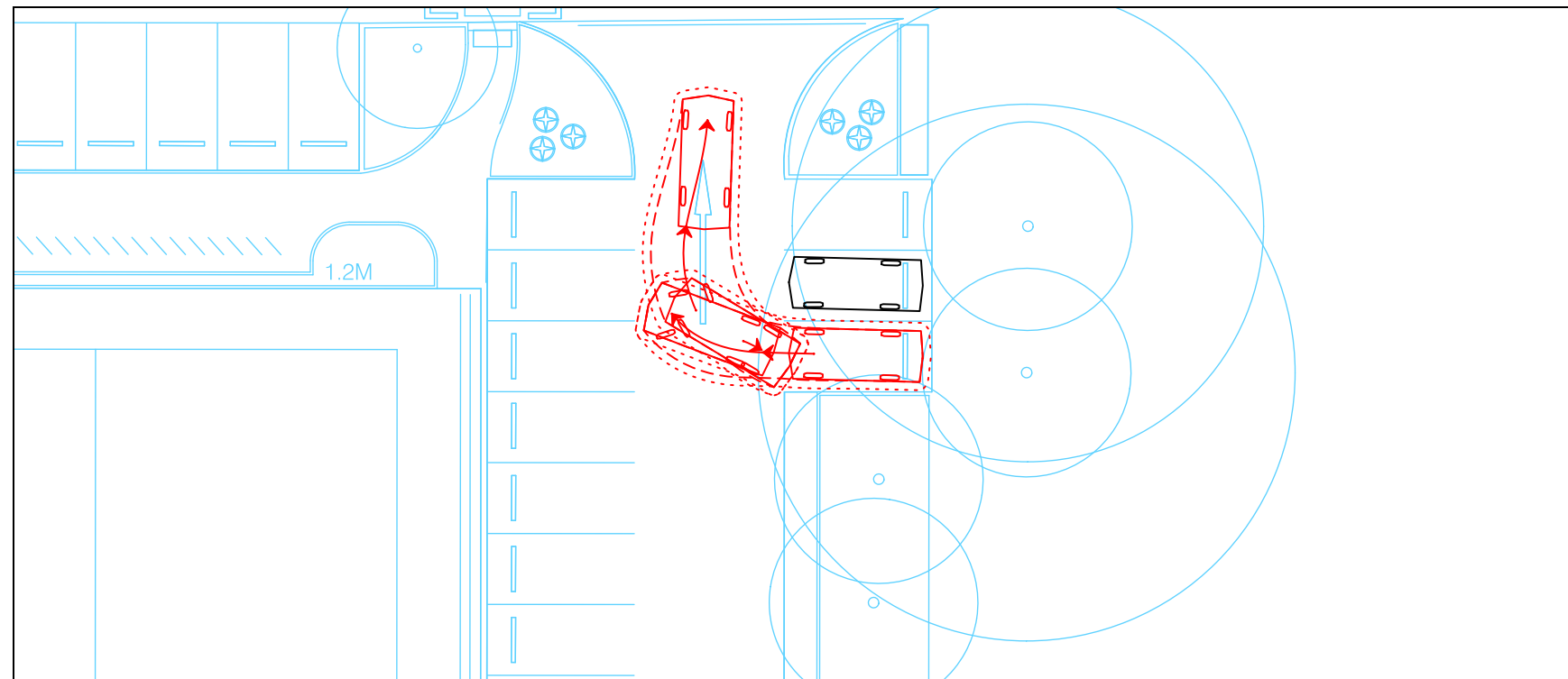


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|------------------------------------|------------|-------|----------|
| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| B85 CAR SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:250 | A3 |
| Drawing Number | | | Revision |
| V220429-TR-SK-0020 | | | 3 |

INGRESS MOVEMENT

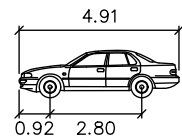


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DESIGN VEHICLE



| | |
|-------------------|--------|
| B85 | |
| | meters |
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |

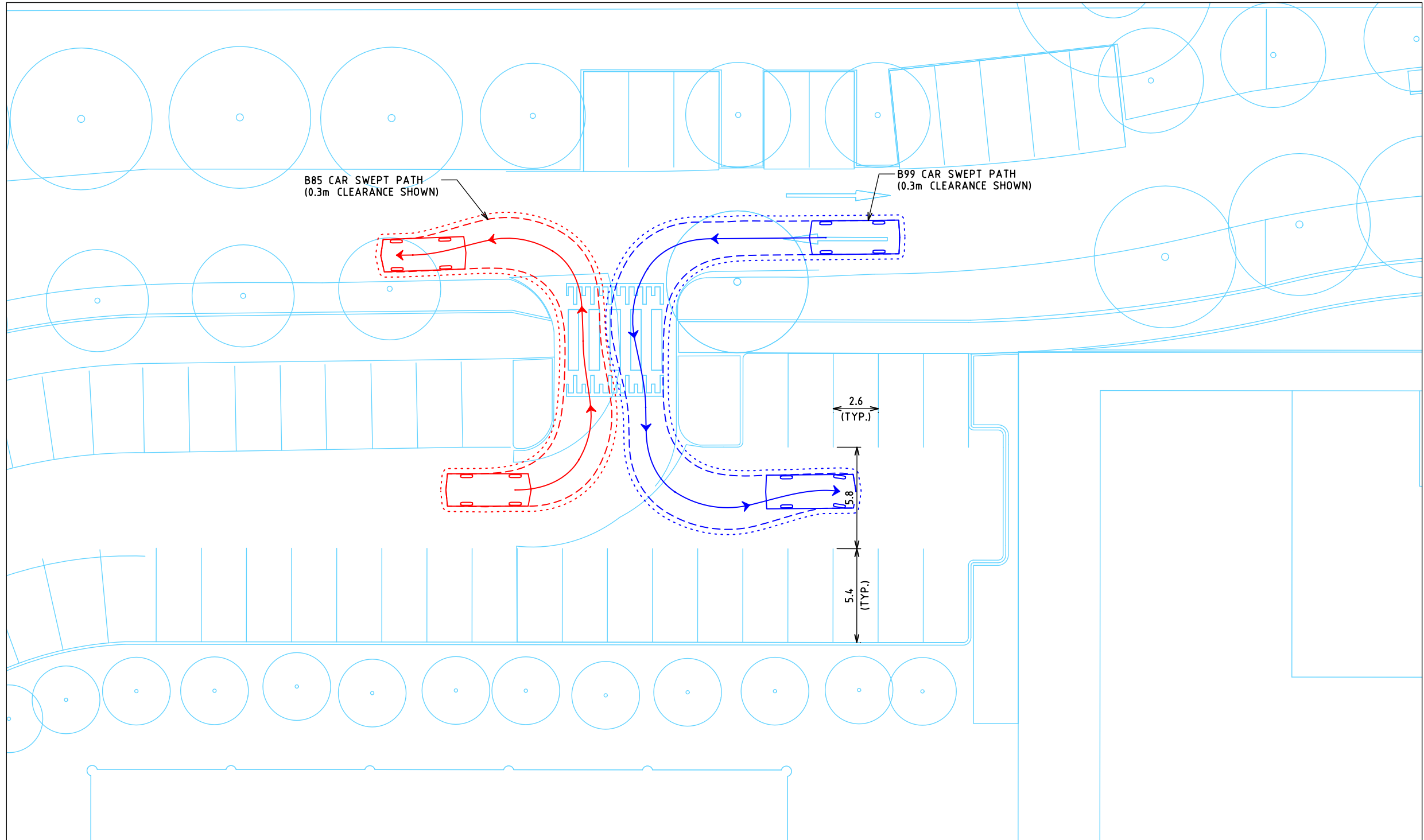


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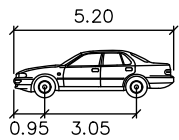
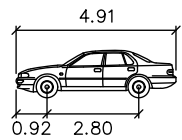


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| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| B85 CAR SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:250 | A3 |
| Drawing Number | | | Revision |
| V220429-TR-SK-0021 | | | 5 |



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DESIGN VEHICLE



| Vehicle | Width (meters) | Track (meters) | Lock to Lock Time | Steering Angle |
|---------|----------------|----------------|-------------------|----------------|
| B85 | 4.91 | 1.87 | 6.0 | 34.1 |
| B99 | 5.20 | 1.84 | 6.0 | 33.9 |

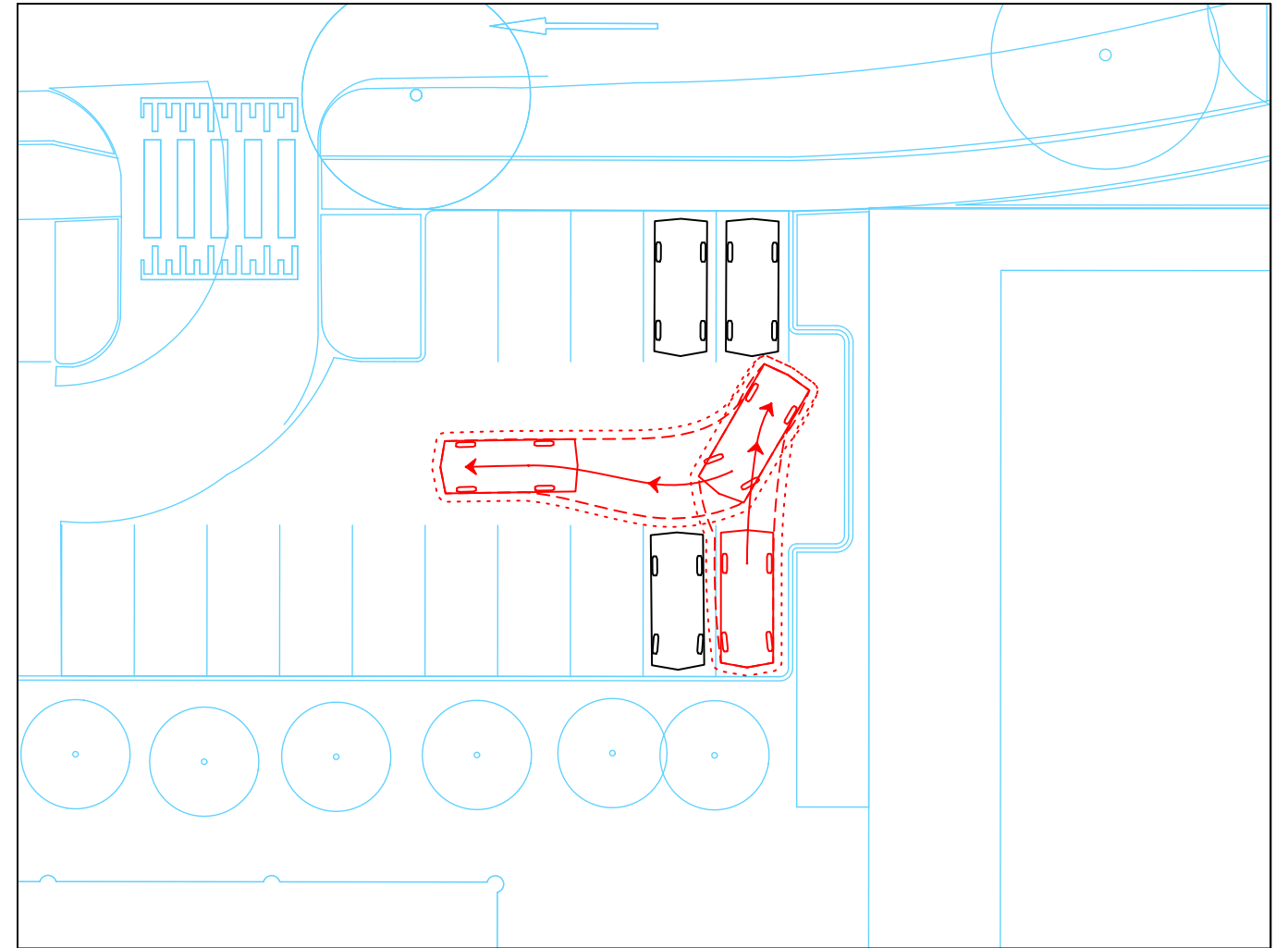
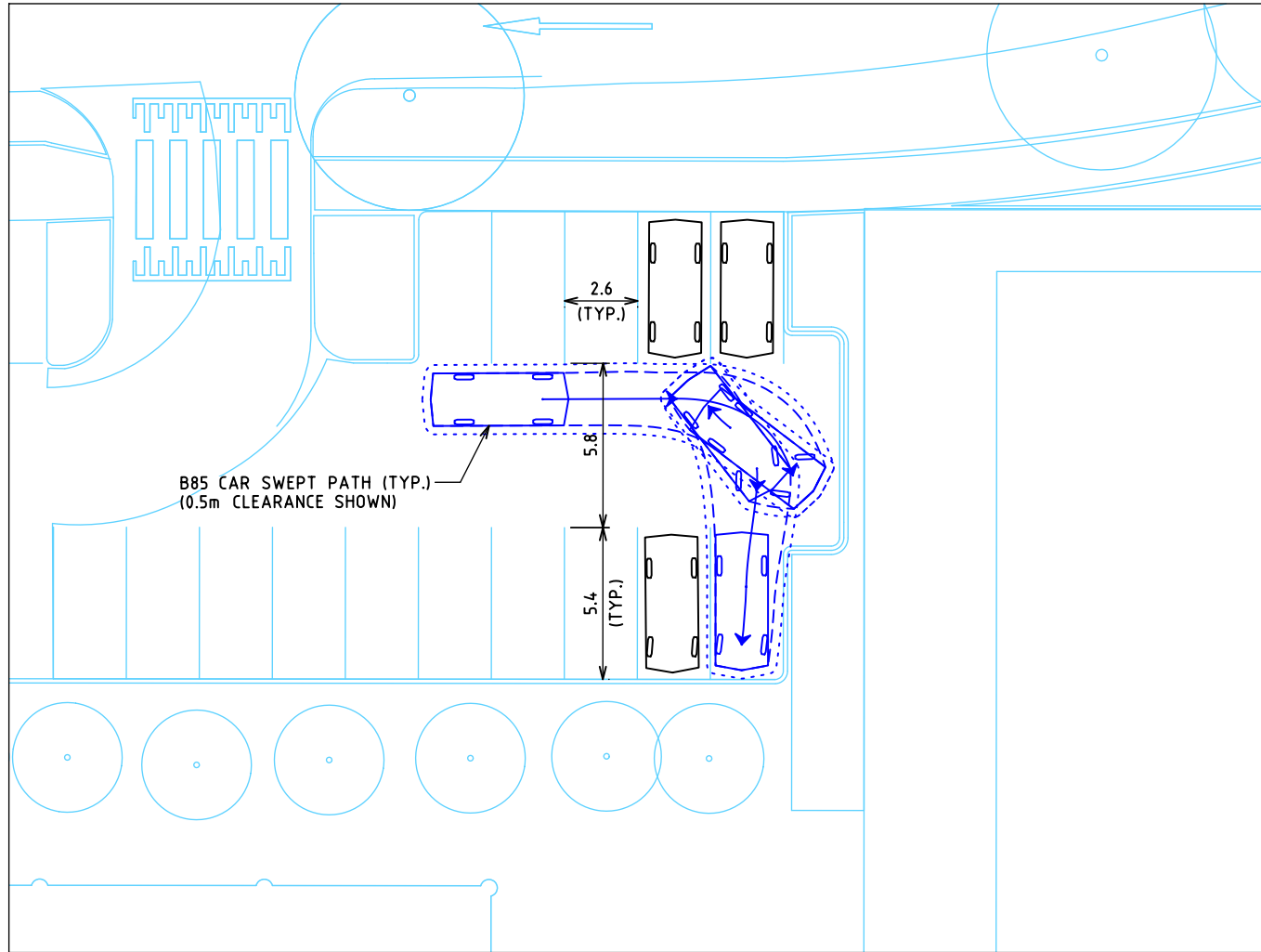
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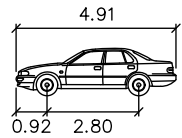


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| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEPT PATH ANALYSIS | | | |
| B85 & B99 CAR SWEPT PATH | | | |
| Drawn/Check | Date | Scale | Size |
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DESIGN VEHICLE



B85

| | units |
|-------------------|---------------|
| Width | : 1.87 meters |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |



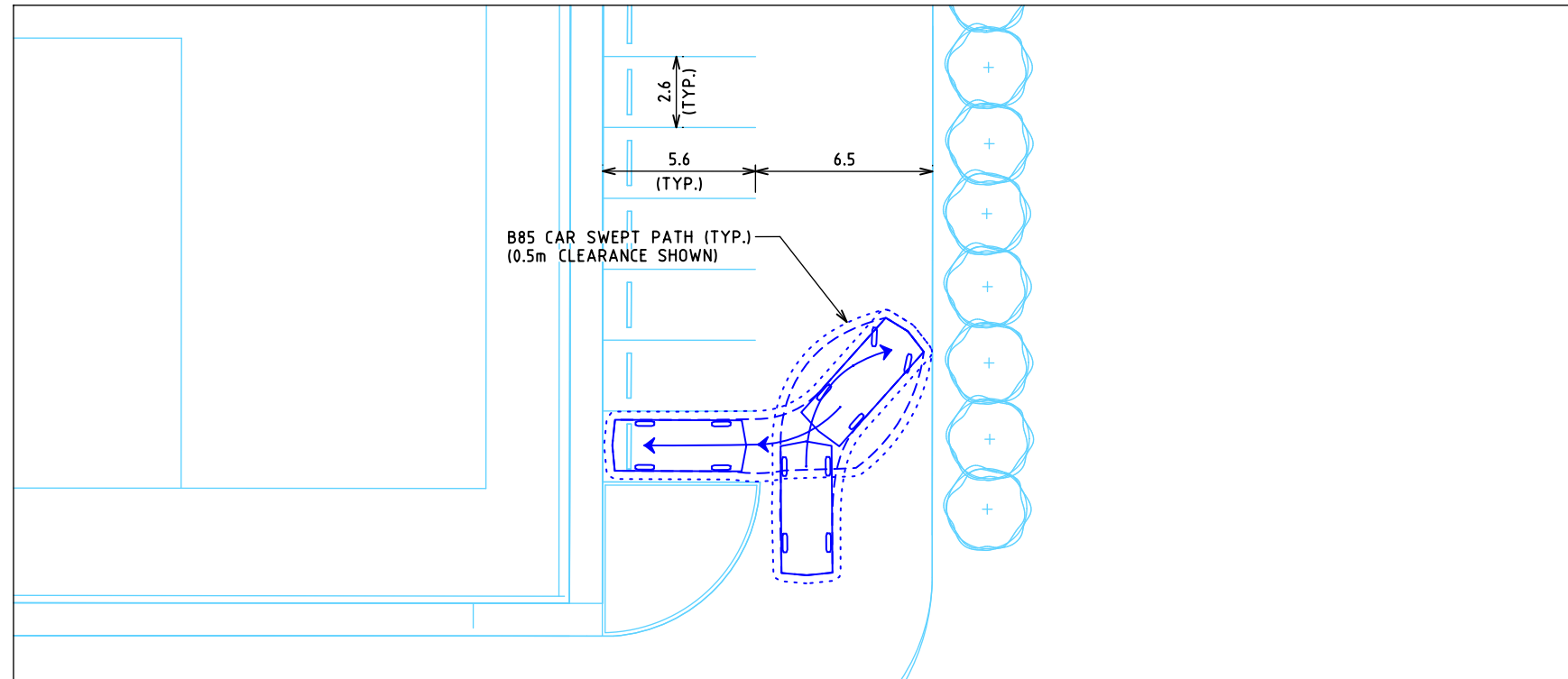
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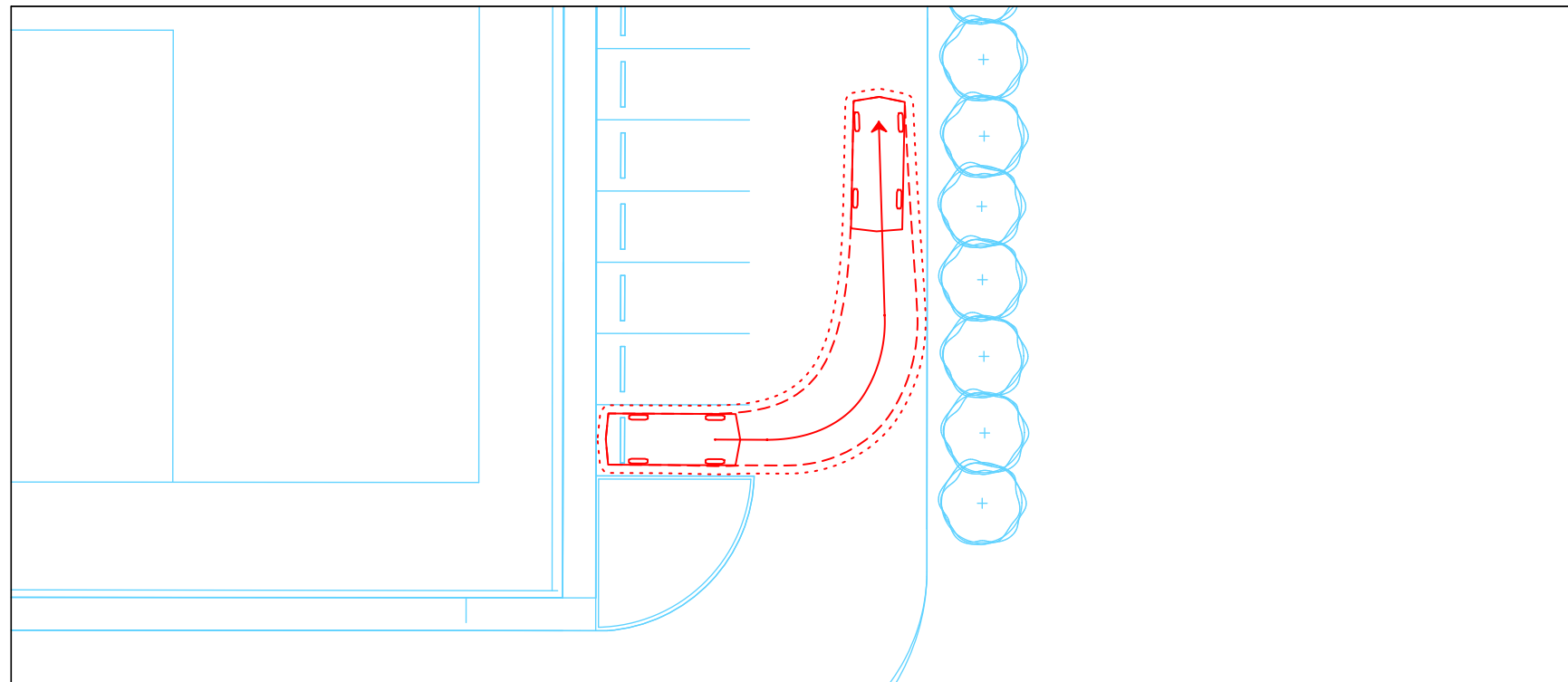
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| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| B85 CAR SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 14.11.2023 | 1:250 | A3 |
| Drawing Number | | | Revision |
| V220429-TR-SK-0023 | | | 5 |

INGRESS MOVEMENT

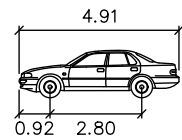


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EGRESS MOVEMENT



DESIGN VEHICLE



B85

| | units |
|-------------------|--------|
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |

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| ORCHARD DESIGN | | | |
| EMMAUS COLLEGE VERMONT SOUTH | | | |
| 503 SPRINGVALE ROAD, VERMONT SOUTH | | | |
| SWEEP PATH ANALYSIS | | | |
| B85 CAR SWEEP PATH | | | |
| Drawn/Check | Date | Scale | Size |
| EK / VO | 13.03.2024 | 1:250 | A3 |
| Drawing Number | | | Revision |
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