Steph
K X Architecture
Suite 1211, 401 Docklands Drive
Docklands VIC 3008

Ref: 828
30 January 2024

Issued via email: steph@kxarchitecture.com

Dear Steph

Residential Development – 8 Carpenter Street, Noble Park
Design Review

Amber has been asked to provide a review of the car park layout for the proposed residential development located at 8 Carpenter Street, Noble Park. A total of 4 dwellings are proposed on-site with resident car parking to be provided within individual garages. A Request for Further Information letter has been received from Council which requires the following:

- *Demonstration of the 1:20 gradient against a 1:10 gradient within the accessway, to show the steepness of the accessway, against the requirements of Clause 52.06 design standards for car parking design 3: gradients;*
- *A swept path analysis, prepared by a suitably qualified traffic engineer demonstrating that vehicles associated with all car parking spaces can enter and exit the site in a forward direction, preferably in one manoeuvre. Analysis should be undertaken using the correct vehicles as specified in AS/NZS 2890.1 and 2890.2.*

1.1 Planning Scheme Assessment

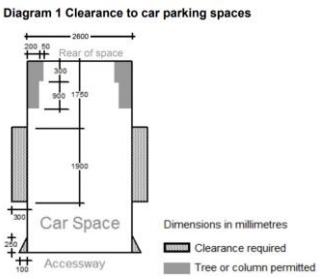
The following provides a review of the car park layout and access arrangements against the requirements of Clause 52.06 of the Planning Scheme and AS/NZS 2890.1:2004:

Table 1: Design Standard 1 - Accessways

	Standard	Response	Complies
1.1	Be at least 3 metres wide	The accessway provides a minimum width of 3.0 metres.	**Complies**
1.2	Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	No intersections or changes of direction are provided along the accessway.	**Complies**
1.3	Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre.	Not applicable.	**Complies**
1.4	Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheelbase of 2.8 metres.	A minimum 2.5 metres headroom is provided at the garage doors.	**Complies**

1.5	If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	The swept path assessment provided in Appendix A demonstrates all vehicles are able to enter and exit the site in a forward direction.	**Complies**
1.6	Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	Not applicable.	**Complies**
1.7	Have a corner splay or area at least 50 percent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	A pedestrian sight splay is provided along the exit lane in accordance with the standard.	**Complies**
1.8	If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	Not applicable.	**Complies**

Table 2: Design Standard 2 - Car Parking Spaces

	Standard	Response	Complies
2.1	Angle of car parking spaces to accessway.	Not applicable. All spaces are within garages.	**Complies**
2.2	Minimum Accessway Width.		
2.3	Minimum Car Space Width.		
2.4	Minimum Car Space Length.		
2.5	A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1, other than: - A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' - A structure, which may project into the space if it is at least 2.1 metres above the space.	Adequate clearance has been provided as per Diagram 1: **Diagram 1 Clearance to car parking spaces** 	**Complies**
2.6	Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport.	Single garages are 6.0m x 3.75m. Double garages are 6.0m x 6.0m.	**Complies**
2.7	Where parking spaces are provided in tandem (one space behind the other) an additional 500 mm in length must be provided between each space.	Not applicable.	**Complies**

2.8	Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	Not applicable.	**Complies**
2.9	Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6 - 2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm.	Not applicable.	**Complies**

Table 3: Design Standard 3 - Gradients

	Standard	Response	Complies
3.1	Accessway grades must not be steeper than 1:10 (10 per cent) within 5 metres of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or fewer.	A maximum grade of 1:20 (5%) is provided within 5 metres of the site frontage which is less than the maximum permitted grade of 1:10 (10%).	**Complies**
3.2	Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 and be designed for vehicles travelling in a forward direction. Table 3: Ramp Gradients Type / Length / Max. Grade Public / ≤20m / 1:5 (20%) Public / >20m / 1:6 (16.7%) Private or Residential / ≤20m / 1:4 (25%) Private or Residential / >20m / 1:5 (20%)	The maximum gradient provided within the site is 1:10.	**Complies**
3.3	Where the difference in grade between two sections of ramp or floor is greater that 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming. Plans must include an assessment of grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	All ramp grade changes are less than 1:8.	**Complies**

Overall, the assessment demonstrates the vehicles are able to access the car parking spaces in a suitable manner and the car parking areas have been designed in accordance with the requirements of Clause 52.06 of the Planning Scheme and AS/NZS 2890.1:2004.

1.2 Swept Path Assessment

A swept path assessment has been prepared using a B85 vehicle (85th percentile vehicle) to ensure vehicles are able to access the parking areas, and is provided within Appendix A. The assessment found that each space could be accessed (ingress and egress) in a satisfactory manner. Some corrective manoeuvres may be required, which is in accordance with AS/NZS 2890.1:2004, which specifies that three-point turn movements to enter and exit 90-degree parking spaces are permitted for regular users.

A swept path assessment was also undertaken for the B99 (99.8th percentile vehicle) which demonstrates that the access appropriately caters for vehicles entering and exiting the site.

2. Summary

The above assessment has considered the car park layout for 8 Carpenter Street, Noble Park. A total of 4 dwellings are proposed on-site with resident car parking to be provided within individual garages.

The assessment concluded that the car park layout has been designed appropriately and in accordance with the dimensional requirements of the Planning Scheme and AS/NZS 2890.1:2004. Accordingly, the proposed design is considered acceptable.

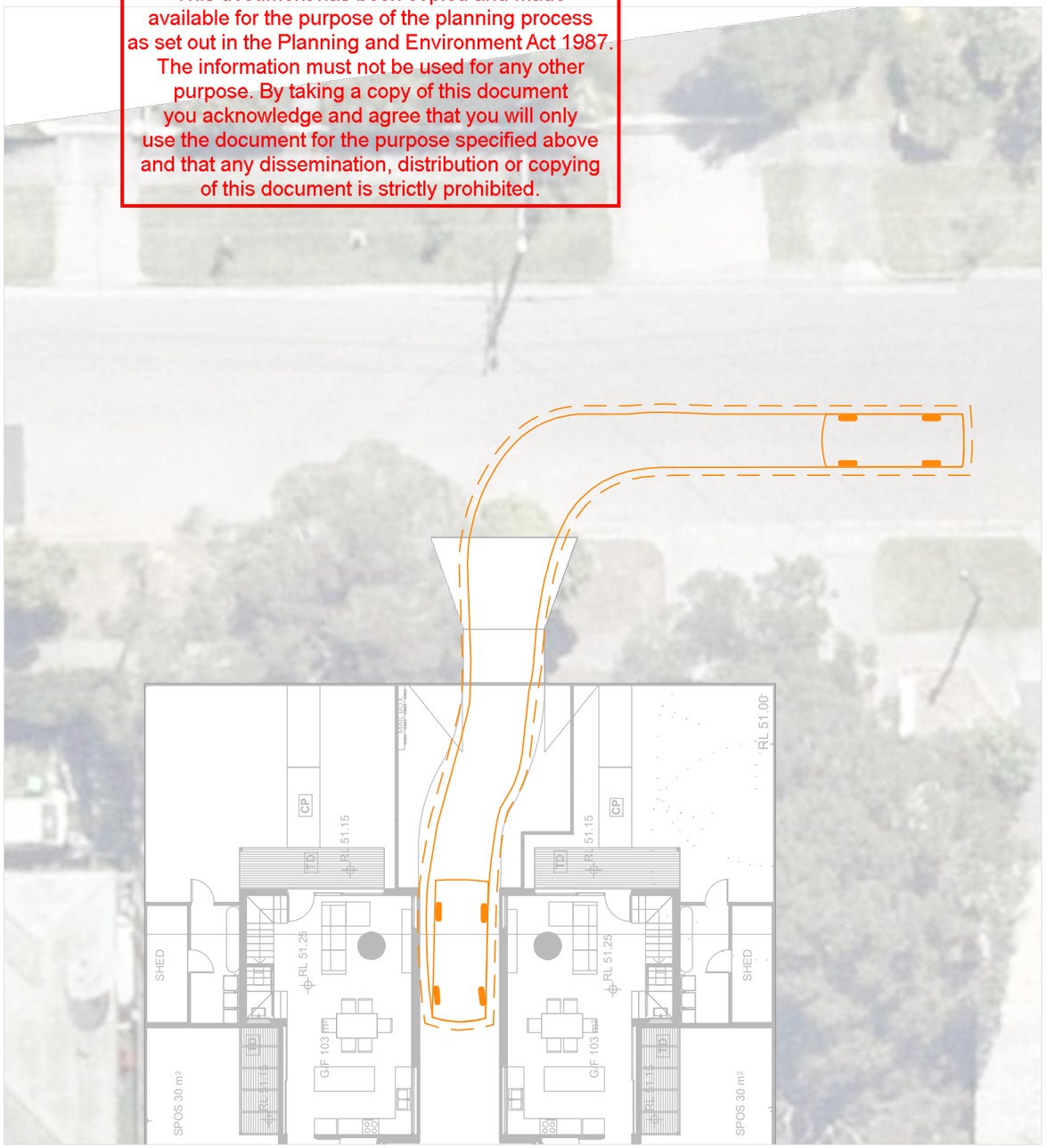
If you have any questions please feel free to contact the undersigned.

Yours sincerely
Amber Organisation

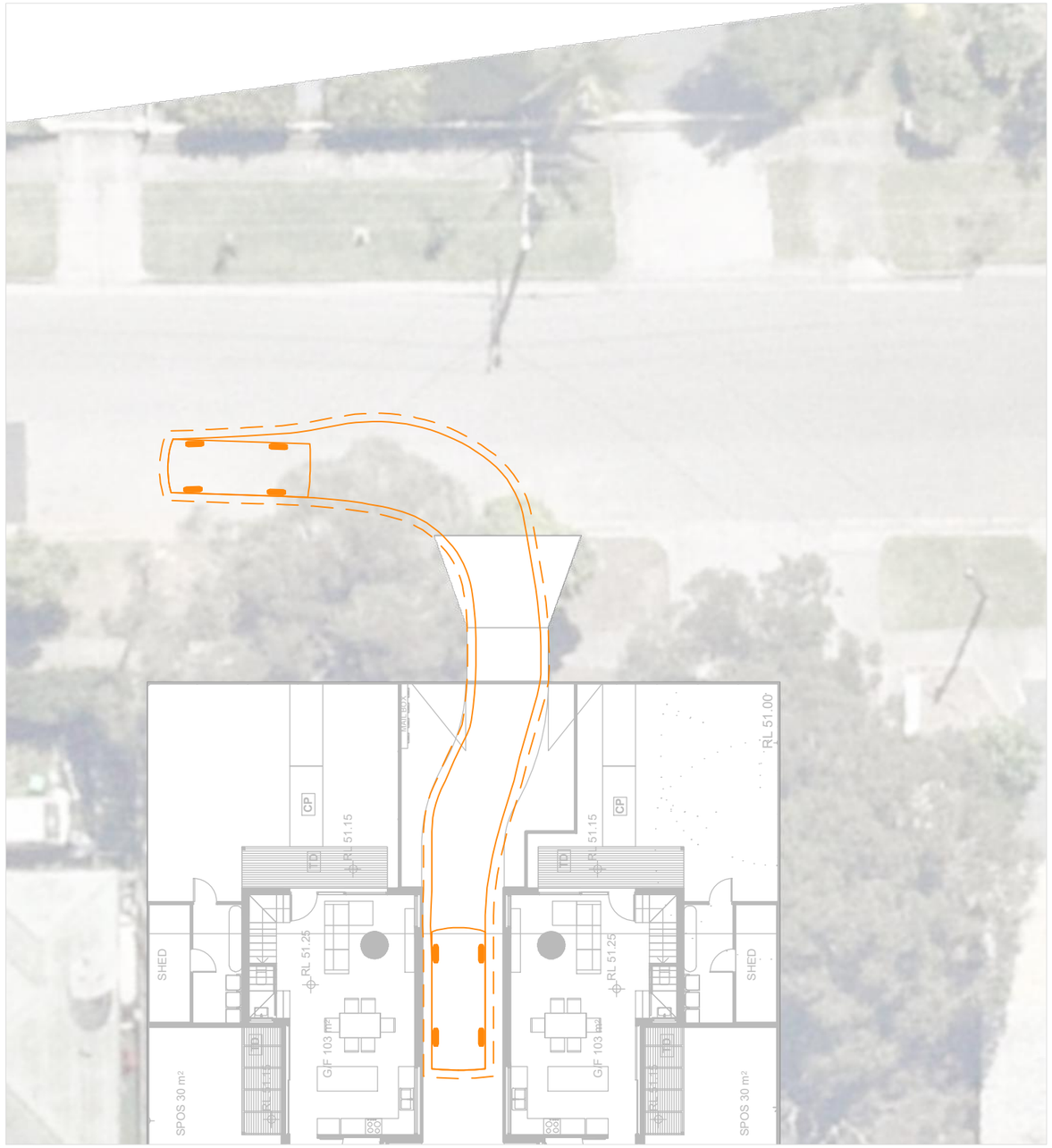
Oliver Mihaila
Senior Traffic Engineer

Appendix A

Swept Path Assessment



Entry Manoeuvre



Exit Manoeuvre

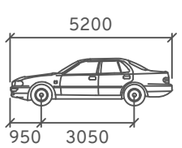
Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h

B99



	mm
Width	: 1940
Track	: 1840
Height	: 2200
Lock to Lock	: 6.0s
Steering Angle	: 33.9

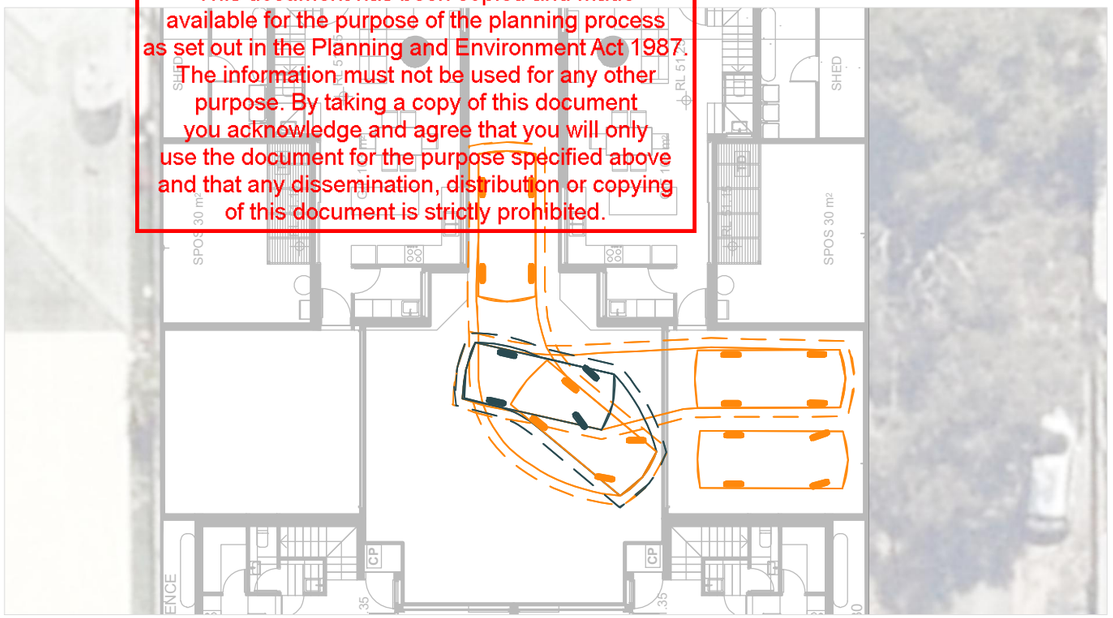
Residential Development

8 Carpenter Street, Noble Park

Swept Path Assessment

DRAWN: OM/WC
DATE: 29/01/2024
DWG NO: 828 S01C
SCALE at A3: 1:200

Amber 01



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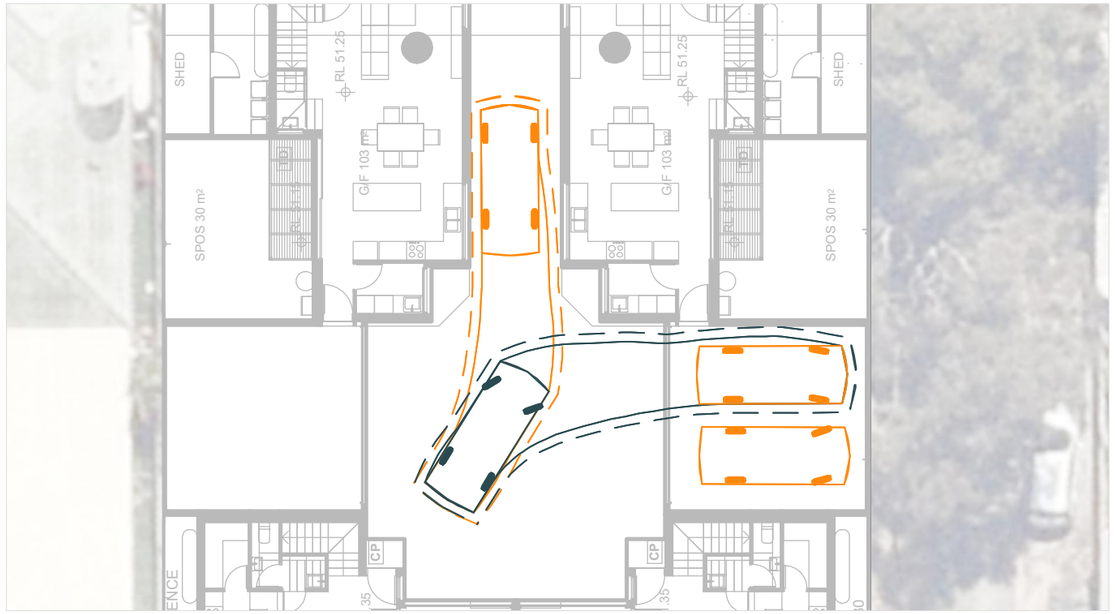
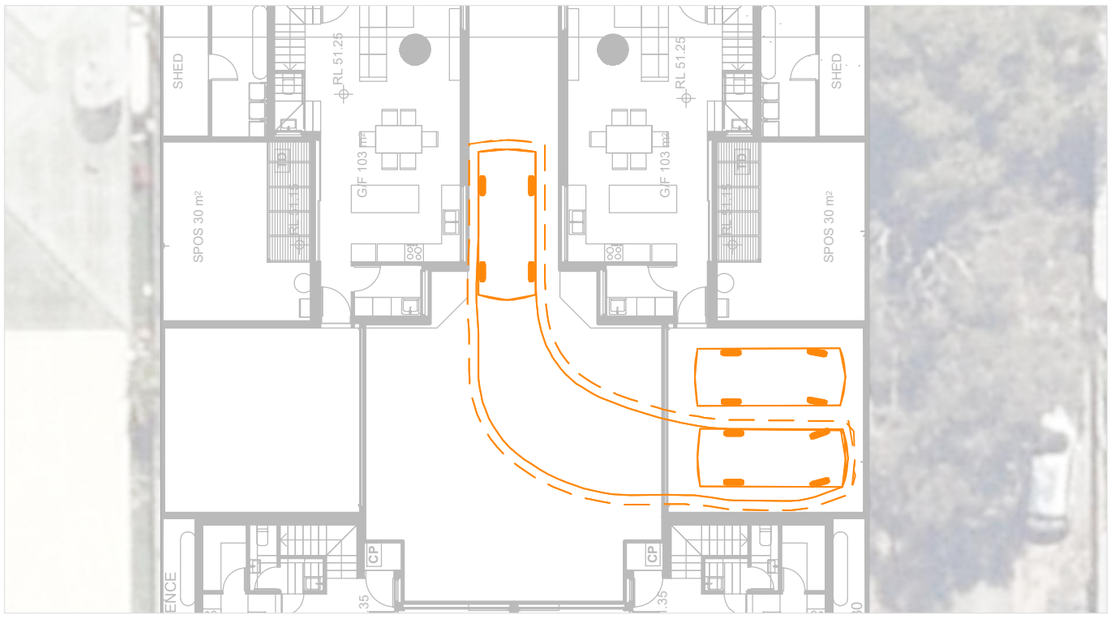


Exit Manoeuvre



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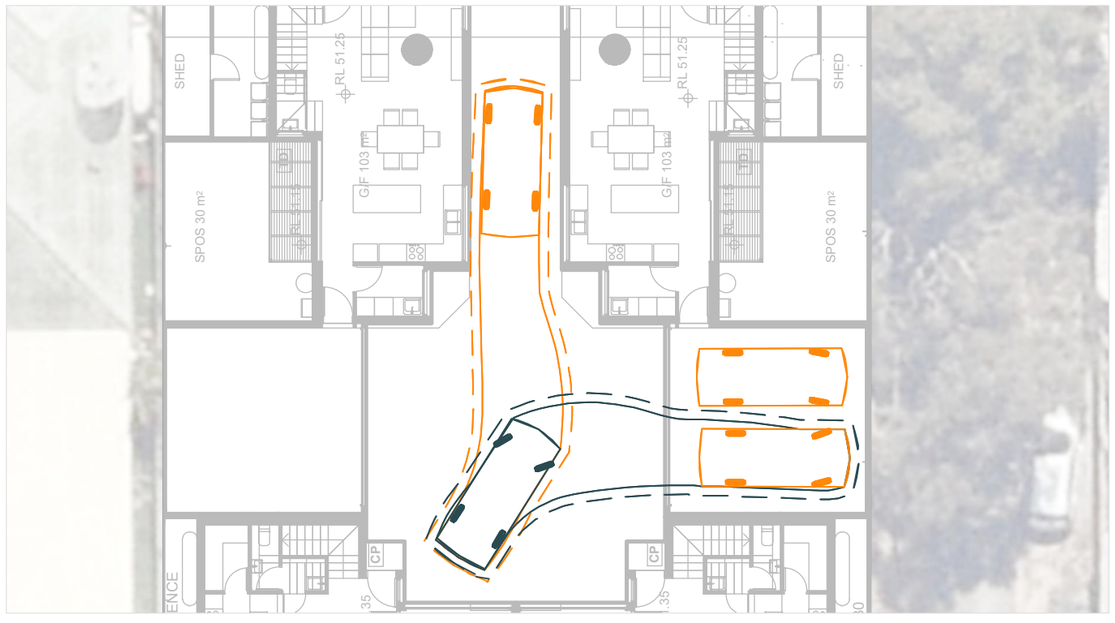


Exit Manoeuvre

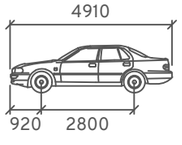
Vehicle Envelope

300mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

B85



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

Residential Development

8 Carpenter Street, Noble Park

Swept Path Assessment

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DATE: 29/01/2024
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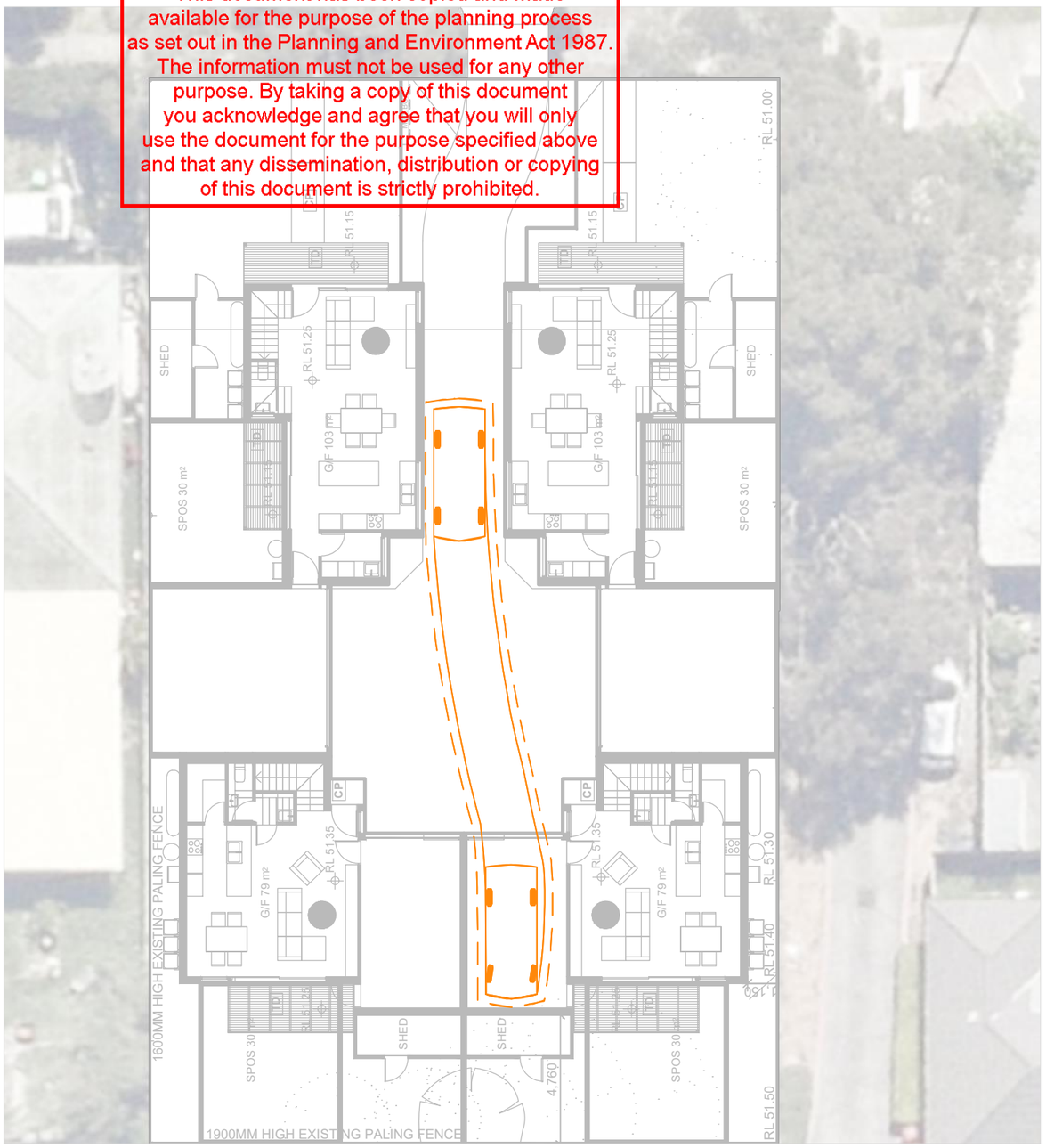
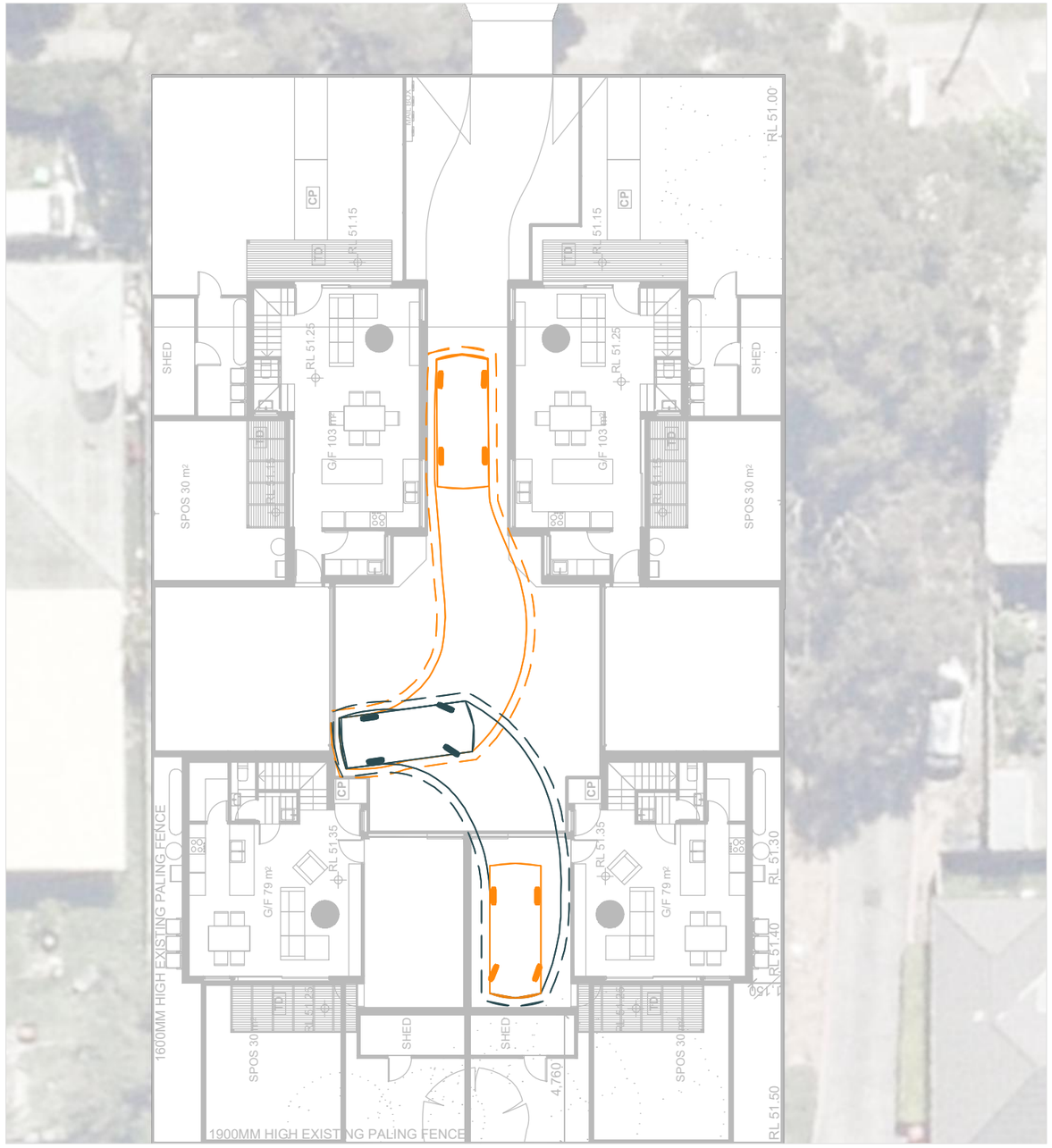
SCALE at A3: 1:200

Amber 02



Entry Manoeuvre



Exit Manoeuvre

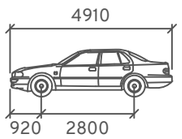
Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h

B85



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Residential Development

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Swept Path Assessment

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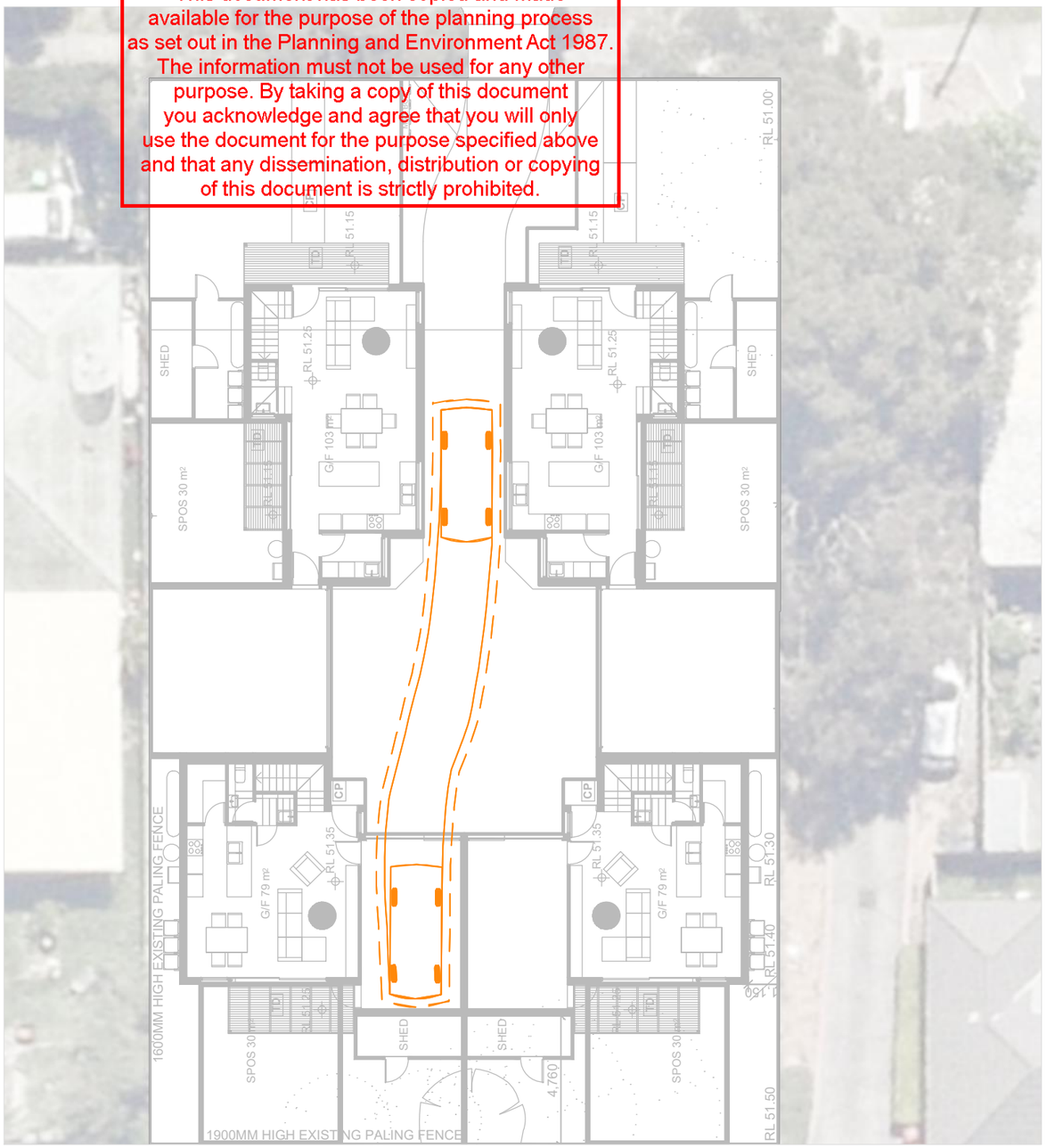
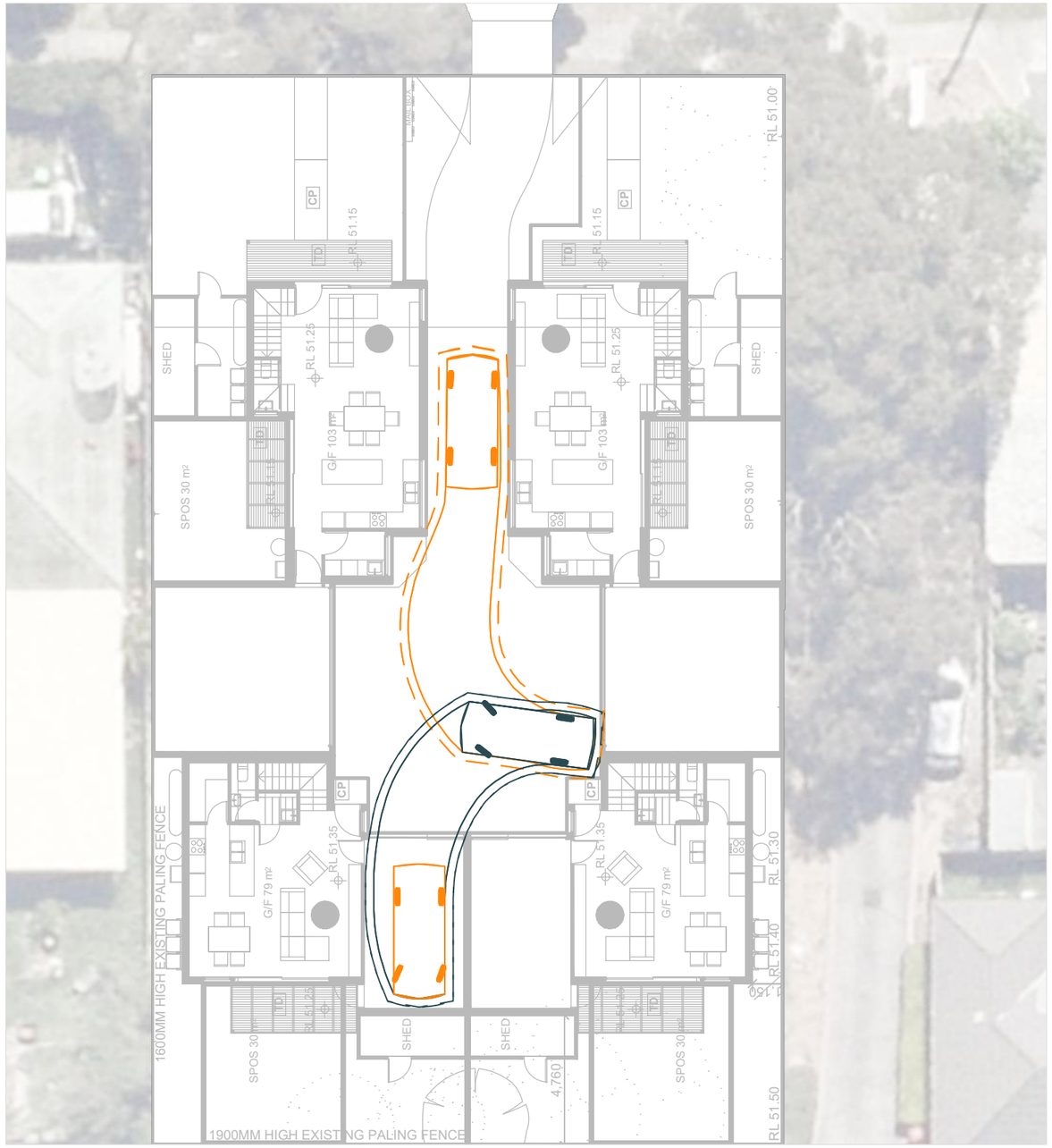
Amber 03



Entry Manoeuvre



Exit Manoeuvre

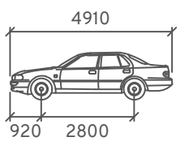
Vehicle Envelope

300mm Clearance

Reverse Manoevure

Min. Design Speed 5km/h

B85



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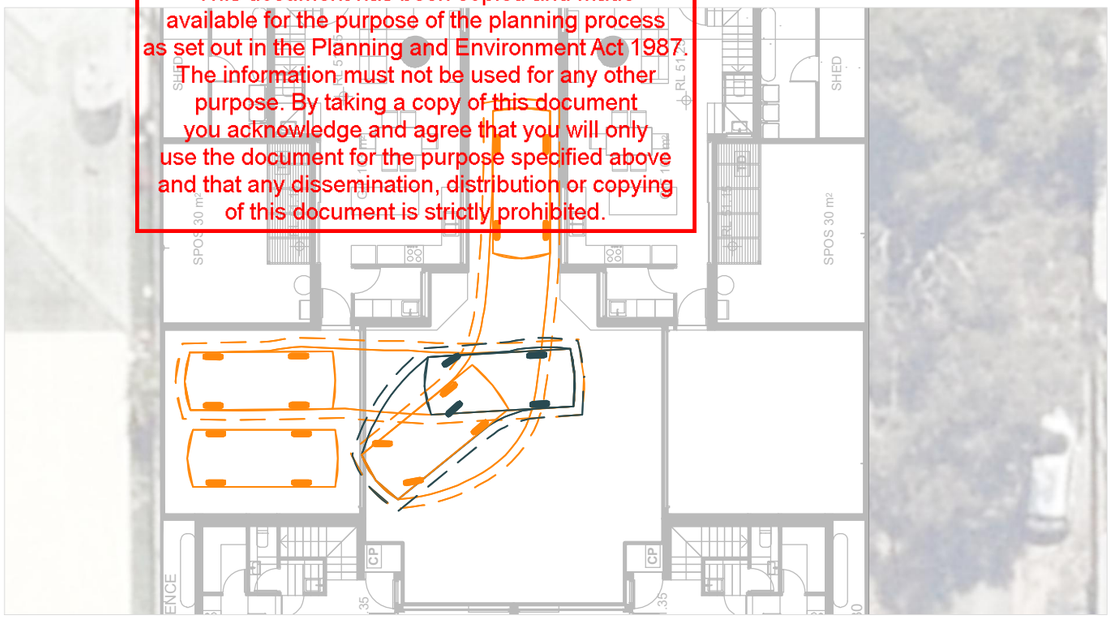
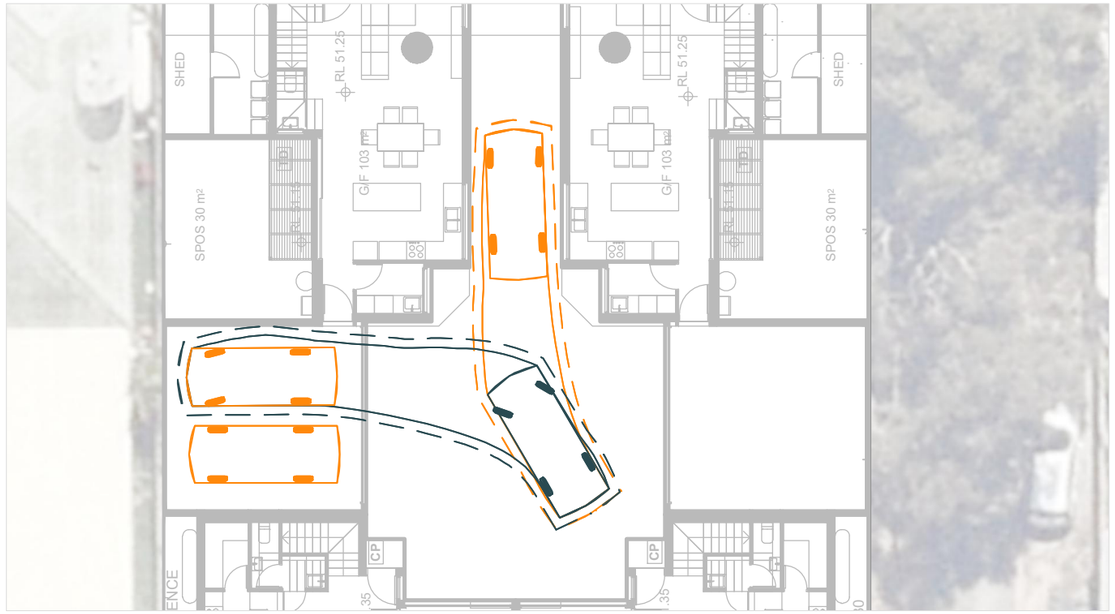
SCALE at A3: 1:200

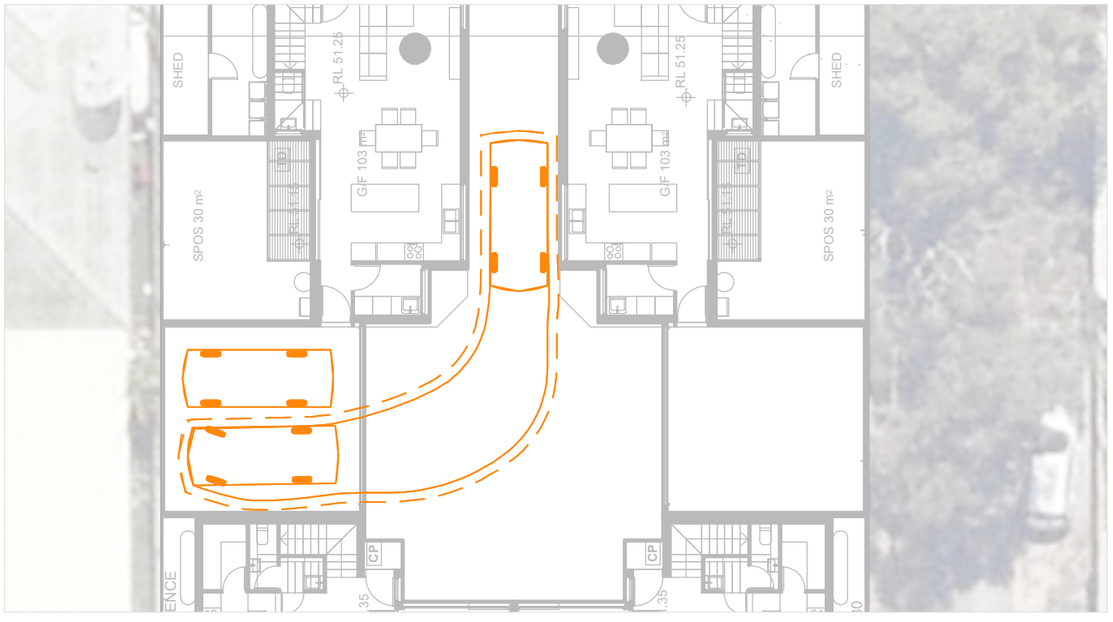
Amber 04



Entry Manoeuvre



Exit Manoeuvre



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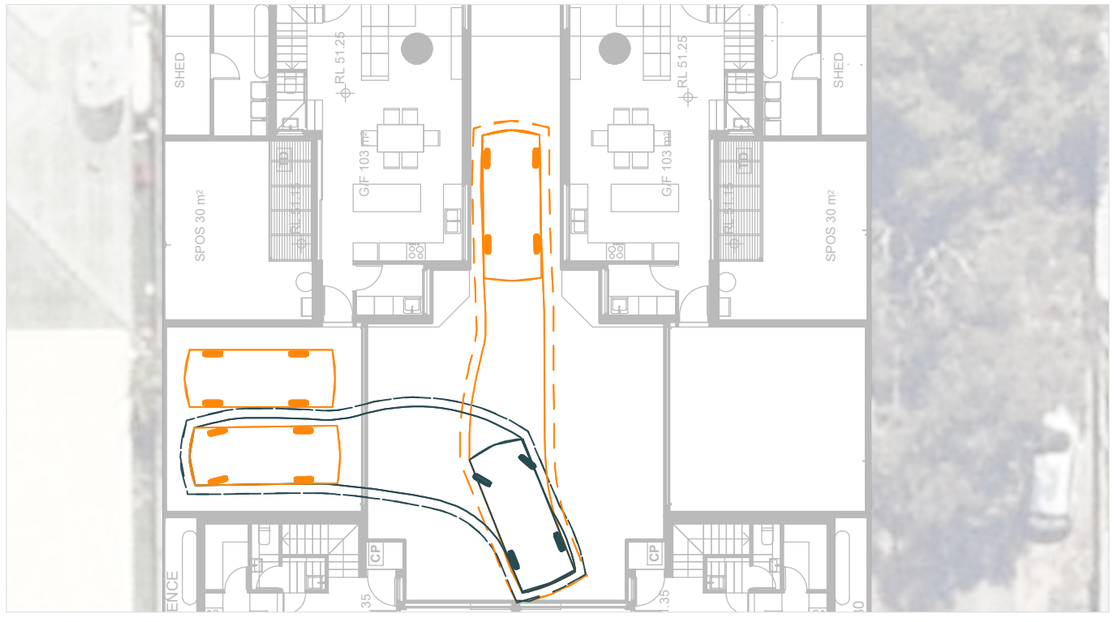

Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoeuvre

Min. Design Speed 5km/h

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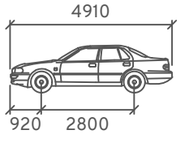

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Amber 05