



**Proposed Mixed Use Development  
Lots 10-14 Forbes Road & 40A, B, C  
Kishorn Road, Applecross  
Transport Impact Statement**

**PREPARED FOR:  
Apex View Pty Ltd**

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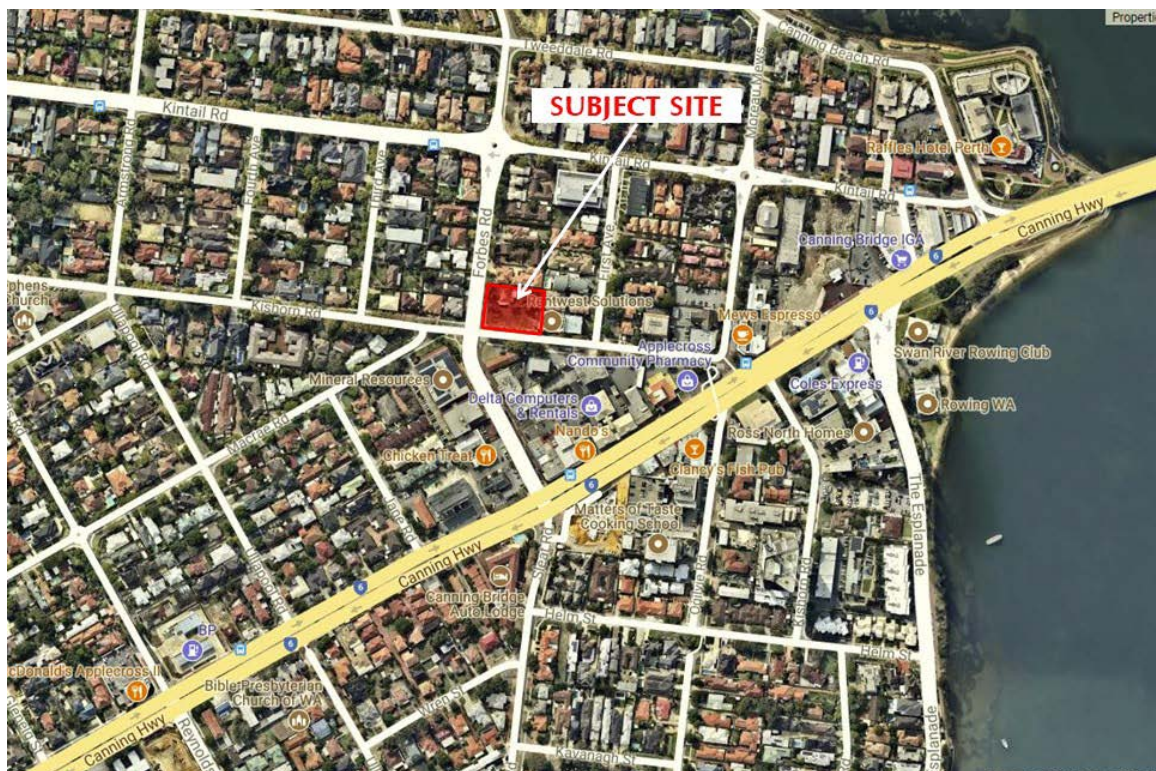
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# 1.0 Introduction

This Transport Impact Statement has been prepared by Transcore on behalf of Apex View Pty Ltd with regard to the proposed mixed-use development to be located at Lots 10-14 Forbes Road & 40A, B, C Kishorn Road in Applecross, City of Melville.

The Transport Impact Assessment Guidelines for Developments (WAPC, Vol 4 – Individual Developments, August 2016) states: “A Transport Statement is required for those developments that would be likely to generate moderate volumes of traffic<sup>1</sup> and therefore would have a moderate overall impact on the surrounding land uses and transport networks”. Section 5.0 of Transcore’s report provides details of the estimated trip generation for the proposed development. Accordingly, as the total peak hour vehicular trips are estimated to be less than 100 trips, a Transport Impact Statement is deemed appropriate for this development.

The site (amalgamation of six smaller lots) is located at the northeast corner of Forbes Road/Kishorn Road/Sleat Road intersection approximately 165m north of the Sleat Road/Canning Highway intersection as shown in **Figure 1**.



**Figure 1: Location of the subject site**

The site is bounded by Forbes Road to the west, Kishorn Road to the south, existing residential developments to the north and the existing commercial and residential

<sup>1</sup> Between 10 and 100 vehicular trips

developments to the immediate east. Vehicle access to the site is presently available off both frontage roads via the existing Forbes Road and Kishorn Road crossovers.

Pedestrians are currently accessing the site directly via existing paths along Forbes Road and Kishorn Road.

The northern half of the subject site (Lot 10) is presently occupied by a single storey residential dwelling with the balance of the site being vacant. The site is located within an established residential area with a mix of office, commercial and retail land uses located to the east and south.

## 2.0 Proposed Development

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The subject site occupies an area of approximately 2,040m<sup>2</sup> at the northwest corner of Forbes Road and Kishorn Road intersection.

As part of the development proposal the existing structures at the subject site will be replaced with a 19-storey development comprising short-stay accommodation, residential apartments, small-scale retail and restaurant/cafe tenancies and an office component with associated multi-level car parking facility.

The development proposal entails the following elements:

- ✚ Total of 15 short-stay units comprising single-bed and two-bed units;
- ✚ Total of 97 residential apartments comprising a mix of single-bedroom, two-bedroom and three-bedroom apartments over 16 levels;
- ✚ Lap pool, gym, spa and other associated amenities for the residents;
- ✚ Small-scale food & beverage store of about 110m<sup>2</sup> GFA at ground floor;
- ✚ Small-scale retail tenancy totalling 73m<sup>2</sup> GFA at ground floor;
- ✚ Commercial tenancies (office space/co-working) totalling 695m<sup>2</sup> GFA at ground and first floor; and,
- ✚ Community hall space (public use) of about 188m<sup>2</sup> at the first floor.

Parking will be fully provided on-site across five levels of car park (four basement levels and ground floor) totalling 160 parking bays served by a single, full-movement crossover on Kishorn Road located at the eastern end of the site. The proposed car park crossover will be set back approximately 45m from the Forbes Road intersection. The basement car park facility will be accessed via internal two-way ramp connecting to the ground level access driveway. Car bays will also be provided at ground floor and accessed directly from the ground level access driveway. An internal two-way ramp system provides connectivity between the basement car park levels and ground floor.

As part of the car parking provision one electric vehicle bay will be provided at ground level adjacent to the Kishorn Road crossover. In addition to the car bays a total of four motorcycle bays are also provided for the development at the ground level.

A set-down/pick-up/taxi facility in form of an embayment is proposed at the Forbes Road frontage approximately 15m to the north of Kishorn Road intersection.

The waste and recycle bin storage area is located at the ground floor and is accessed via internal driveway connecting the two car park ramps with the Kishorn Road crossover. A turn path assessment using a 8.8m long truck (typical waste collection vehicle size) was undertaken to confirm the suitability of the proposed service bay design. The turn path assessment indicates that the service vehicle can comfortably access and egress the site in forward gear. A number of turn path plans are shown in **Appendix B**.

The secured bicycle storage area with end-of-trip facilities (showers and lockers) is provided at the north end of the site at ground level and adjacent to the stair case and lift lobby for the commercial/office component of the development. Total bike parking provision for the development is 24 parking spaces, five of which are for public use and the remainder for office/co-working use.

Pedestrians will access the development from the external footpath network which is in place along the Forbes Road and Kishorn Road frontages. Separate lobbies with lifts are provided for residents/visitors and employees/visitors of the commercial component and short-stay apartments. Both lift lobbies are accessible from either road frontages.

Refer to **Appendix A** for plans of the proposed development.

### 3.0 Vehicle Access and Parking

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According to the plans prepared by WOHA the proposed car park facility would be accessed via a single full-movement crossover on Kishorn Road. The proposed crossover is located at the easternmost end of the property some 45m away from the Forbes Road/Kishorn Road/Sleat Road intersection. Refer **Appendix A** for detailed development plans.

The total proposed on-site parking provision for the development is 160 car and four motorcycle parking bays. All but two car parking bays are in form of single-bay format with only two tandem bays (at basement 1).

The total car parking supply for the development is proposed to be distributed as follows:

- ✚ A total of 135 residential bays.
- ✚ A total of 7 short-stay apartment bays;
- ✚ A total of 17 retail and commercial bays;
- ✚ One electric vehicle bay; and,
- ✚ Four motorcycle bays.

In addition to the basement car parking a total of 12 parking bays are located at ground level accessed directly off the internal site driveway. One ACROD bay is located at ground level adjacent to the site crossover.

A two-way access ramp to the basement car parking connects to the internal site driveway at ground level which is accessed via Kishorn Road crossover.

## 4.0 Provision for Service Vehicles

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The waste collection is proposed to take place off the internal site driveway, with waste collection vehicle accessing and egressing the site in forward gear. A dedicated loading bay is provided at ground level and accessed directly off the internal driveway. All truck manoeuvring takes place within the site. The rubbish bin storage areas are located immediately next to the loading area.

Turn path assessment using 8.8m long service vehicle template was undertaken to confirm that the proposed design is conducive for the use of such vehicle. A number of turn path plans demonstrating truck's ingress, manoeuvring within the site and egress are shown in **Appendix B**.

## 5.0 Daily Traffic Volumes and Vehicle Types

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The traffic volumes likely to be generated by the proposed mixed-use development have been estimated based on the proposed land uses and in accordance with the RTA NSW *“Guide to Traffic Generating Developments (2002)”*, *Transport Roads & maritime Services Technical Direction TDT 2013/04a* and *WAPC TIA 2016 Vol 2 Guidelines* documents, which provide peak hour trip rates for the constituent land uses.

In this particular case peak hour trip generation rates of 4.58, 0.53 and 0.32 trips/dwelling for total daily, AM and PM peak periods has been applied corresponding to “high density residential flat dwellings (regional)” type of residential units and short-stay apartments (TDT 04a). The adopted trip rates are conservative resulting in a robust assessment considering the site location, surrounding land uses, good public transport accessibility and higher level of bicycle and pedestrian trips participation.

The daily, AM and PM peak hour trip rate for office space of 11, 1.6 and 1.2 trips/100m<sup>2</sup> GFA was adopted for the office component of the development (TDT 04a).

The daily, AM and PM peak hour trip rate for restaurant/café of 60, 0.5 and 5 trips/100m<sup>2</sup> GFA was adopted for the food & beverage component of the development (RTA NSW).

The daily, AM and PM peak hour trip rate for retail (non-food) of 40, 1.25 and 4 trips/100m<sup>2</sup> GFA was adopted for the retail tenancy component of the development (WAPC TIA 2016).

Accordingly, it is estimated that the proposed mixed-use development would generate a total of approximately **685** daily vehicle trips with about **72** and **53** trips during the AM and PM peak hour periods. These trips include both inbound and outbound vehicle movements. It is anticipated that most of the vehicle types would be passenger cars and to the lesser extent 4WDs.

As advise by the project architects it is highly likely that the commercial space would be leased by the very residents of the development due to relatively limited size and convenience. Similarly, due to the size of the retail and restaurant/café tenancies, it is expected that these two components will attract mainly local (foot) traffic rather than trade arriving from afar. As such, it is highly likely that the proposed development will attract even less vehicle-based traffic than previously estimated. Accordingly, the estimated vehicular traffic generation represents a robust scenario.

The traffic distribution detailed in **Table 1** was based on the following directional split assumptions for peak hour periods:

- ✚ Morning (AM) peak split estimated at 25%/75% and 80%/20% for inbound/outbound trips associated with residential/short-stay and retail/commercial components, respectively; and,
- ✚ Afternoon (PM) peak split estimated at 66%/34% and 50%/50% for inbound/outbound trips associated with residential/short-stay and retail/commercial components, respectively.

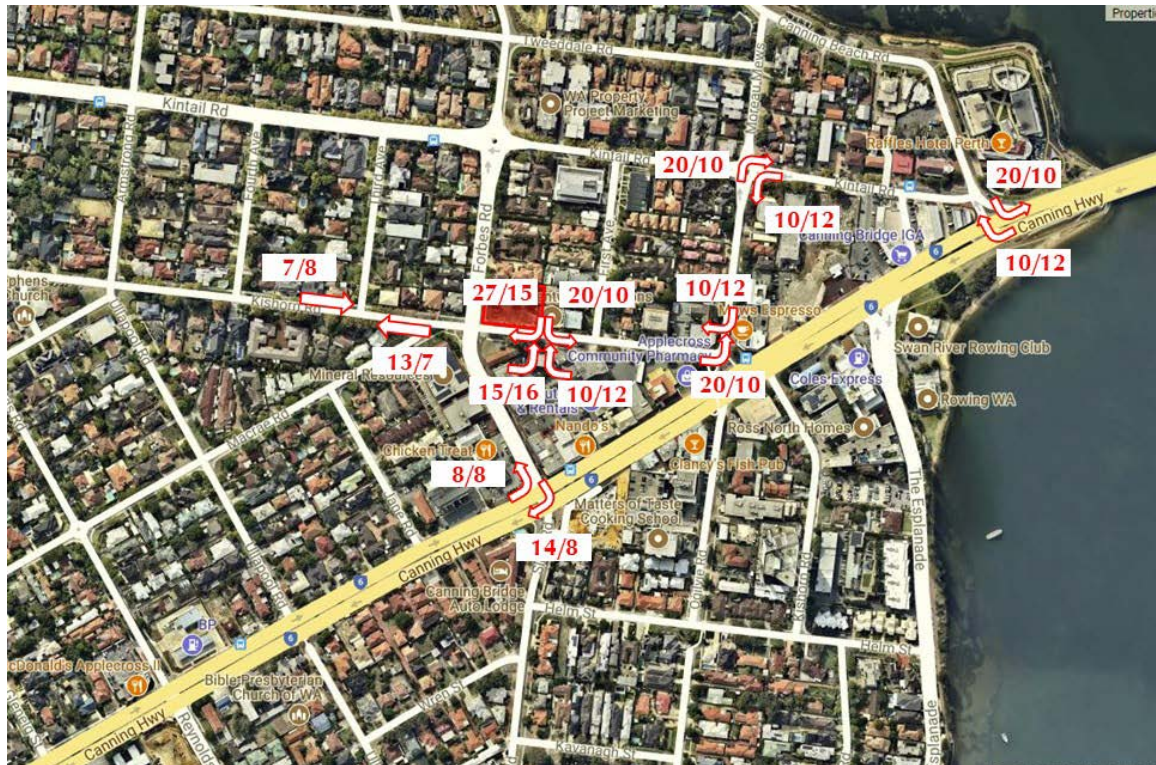
**Table 1: Peak hour trips for the proposed development**

Time period	Directional traffic split	Residential/Short-stay Component	Retail Components	Commercial Component	Peak Hour Trips
<b>Morning Peak</b>	Inbound	15	2	8	<b>72</b>
	Outbound	44	0	3	
<b>Afternoon Peak</b>	Inbound	23	3	2	<b>53</b>
	Outbound	13	6	6	

With respect to the location of the development, permeability and layout of the surrounding road network and the actual traffic operation conditions at local intersections, the assumed directional split for traffic arriving to the site is assumed as follows:

- ✚ 40% of all trips to/from the areas east of the site (along Canning Highway);
- ✚ 30% of all trips to/from the areas west of the site (along Canning Highway); and,
- ✚ 30% of all trips to/from the areas west of the site (along Kishorn Road).

The directional morning and afternoon trip distribution of the development-generated traffic is illustrated in **Figure 2**.



**Figure 2. Estimated traffic movements for the subject development – morning, and afternoon peak hour trips**

The WAPC *Transport Impact Assessment Guidelines for Developments (2016)* provides guidance on the assessment of traffic impacts:

*“As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where the development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”*

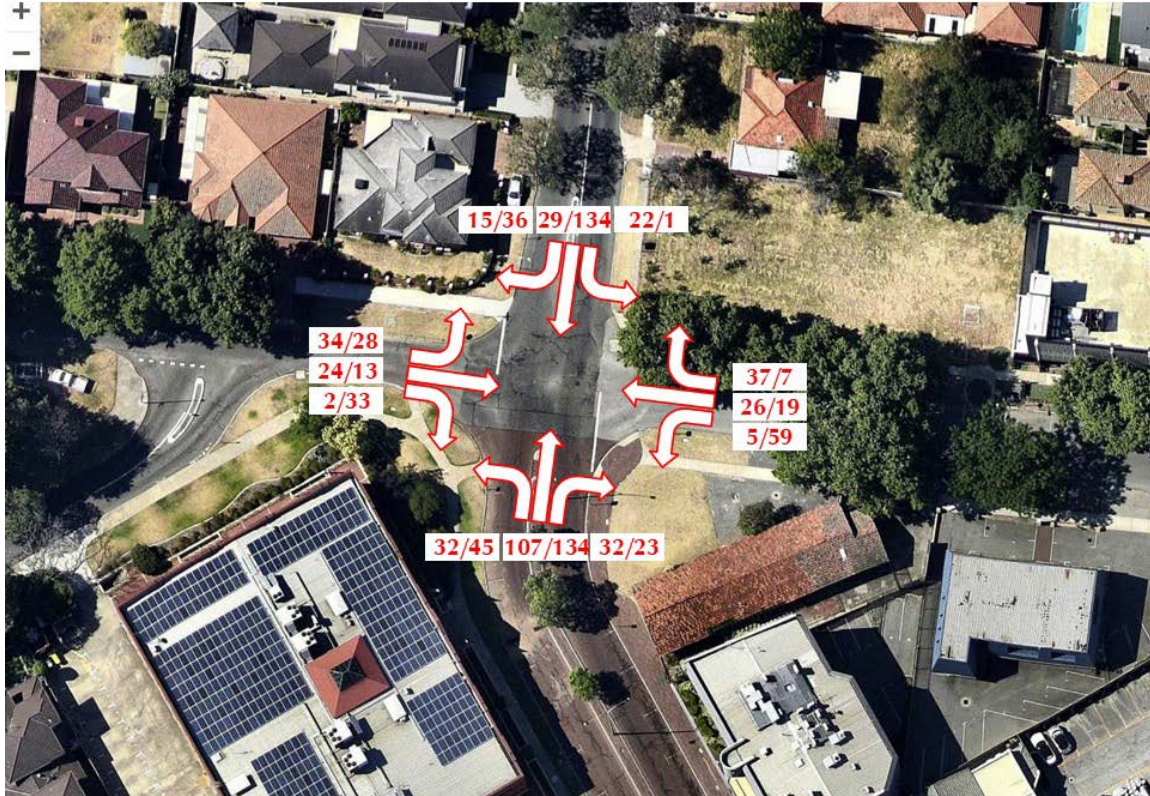
From **Figure 2** it can be seen that the estimated traffic impact from the proposed development would be nowhere near the critical thresholds with the most pronounced traffic increases of 42vph for a short distance of Kishorn Road during PM peak hour (west of development’s crossover), hence the impact on the surrounding road network is considered to be insignificant.

However, following a specific request by City of Melville, a detailed capacity assessment of the adjacent Forbes Road/Kishorn Road/Sleat Road intersection was undertaken for the existing, post-development (year 2021) and 10-year time horizon scenarios. A 1.6% background traffic growth was applied in the 2031 assessment in line with the City’s population growth projections within the subject precinct.

For the purpose of this assessment and in order to understand the existing traffic patterns at this intersection, traffic count surveys were undertaken on 13<sup>th</sup> and 14<sup>th</sup>

February 2019 during the peak morning (8:00-9:00AM) and afternoon (5:00-6:00PM) traffic activity periods.

The outcome of these surveys is presented in **Figure 3**.



**Figure 3. Results of traffic surveys at Forbes Road/Kishorn Road/Sleat Road intersection – weekday AM and PM peak periods**

Capacity analysis of the Forbes Road/Kishorn Road/Sleat Road intersection was undertaken using the SIDRA computer software package. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- ✚ **Degree of Saturation:** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.
- ✚ **Level of Service:** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of services, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- ✚ **Average Delay:** is the average of all travel time delays for vehicles through the intersection.
- ✚ **95% Queue:** is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA assessment of Forbes Road/Kishorn Road/Sleat Road intersection for the existing, post-development (year 2021) and 10-year time horizon (year 2031) are shown in **Table 2** through to **Table 7** and discussed in the following paragraphs.

**Table 2. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection – Weekday AM peak period (existing situation)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	34	2.0	0.095	4.7	LOS A	0.3	1.8	0.07	0.20	0.07	47.2
5	T1	113	2.0	0.095	0.1	LOS A	0.3	1.8	0.07	0.20	0.07	47.9
6	R2	34	2.0	0.095	4.8	LOS A	0.3	1.8	0.07	0.20	0.07	44.4
Approach		180	2.0	0.095	1.8	NA	0.3	1.8	0.07	0.20	0.07	47.4
East: Kishorn Road												
7	L2	5	2.0	0.085	7.6	LOS A	0.3	2.1	0.26	0.93	0.26	37.4
8	T1	27	2.0	0.085	8.4	LOS A	0.3	2.1	0.26	0.93	0.26	42.6
9	R2	39	2.0	0.085	8.9	LOS A	0.3	2.1	0.26	0.93	0.26	42.5
Approach		72	2.0	0.085	8.6	LOS A	0.3	2.1	0.26	0.93	0.26	42.3
North: Forbes Road												
10	L2	23	2.0	0.038	4.8	LOS A	0.1	0.9	0.16	0.28	0.16	46.5
11	T1	31	2.0	0.038	0.2	LOS A	0.1	0.9	0.16	0.28	0.16	46.8
12	R2	16	2.0	0.038	5.0	LOS A	0.1	0.9	0.16	0.28	0.16	47.0
Approach		69	2.0	0.038	2.8	NA	0.1	0.9	0.16	0.28	0.16	46.8
West: Kishorn Road												
1	L2	36	2.0	0.058	7.9	LOS A	0.2	1.6	0.25	0.90	0.25	44.9
2	T1	25	2.0	0.058	8.4	LOS A	0.2	1.6	0.25	0.90	0.25	43.0
3	R2	2	2.0	0.058	8.6	LOS A	0.2	1.6	0.25	0.90	0.25	41.9
Approach		63	2.0	0.058	8.1	LOS A	0.2	1.6	0.25	0.90	0.25	44.2
All Vehicles		384	2.0	0.095	4.3	NA	0.3	2.1	0.15	0.46	0.15	45.5

The results of the SIDRA analysis of Forbes Road/Kishorn Road/Sleat Road intersection show that the intersection presently operates at about 10-11% capacity during the typical weekday AM and PM peak periods. All delays and queues are negligible/moderate and do not impact on the operation of other adjacent intersections. Refer **Table 2** and **Table 3** for more details.

**Table 3. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection – Weekday PM peak period (existing situation)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	47	2.0	0.112	4.8	LOS A	0.2	1.6	0.09	0.17	0.09	47.3
5	T1	141	2.0	0.112	0.1	LOS A	0.2	1.6	0.09	0.17	0.09	48.0
6	R2	24	2.0	0.112	5.1	LOS A	0.2	1.6	0.09	0.17	0.09	44.6
Approach		213	2.0	0.112	1.7	NA	0.2	1.6	0.09	0.17	0.09	47.6
East: Kishorn Road												
7	L2	62	2.0	0.087	8.1	LOS A	0.3	2.4	0.28	0.90	0.28	37.6
8	T1	20	2.0	0.087	9.5	LOS A	0.3	2.4	0.28	0.90	0.28	42.7
9	R2	7	2.0	0.087	10.0	LOS A	0.3	2.4	0.28	0.90	0.28	42.6
Approach		89	2.0	0.087	8.6	LOS A	0.3	2.4	0.28	0.90	0.28	39.8
North: Forbes Road												
10	L2	1	2.0	0.097	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	47.9
11	T1	141	2.0	0.097	0.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.3
12	R2	38	2.0	0.097	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.0
Approach		180	2.0	0.097	1.3	NA	0.3	1.9	0.15	0.12	0.15	48.3
West: Kishorn Road												
1	L2	29	2.0	0.099	8.1	LOS A	0.4	2.5	0.34	0.92	0.34	44.3
2	T1	14	2.0	0.099	9.3	LOS A	0.4	2.5	0.34	0.92	0.34	42.2
3	R2	35	2.0	0.099	10.5	LOS B	0.4	2.5	0.34	0.92	0.34	41.1
Approach		78	2.0	0.099	9.4	LOS A	0.4	2.5	0.34	0.92	0.34	42.8
All Vehicles		560	2.0	0.112	3.7	NA	0.4	2.5	0.17	0.38	0.17	45.9

**Table 4. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection – Weekday AM peak period (post-development)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	34	2.0	0.100	4.7	LOS A	0.3	2.2	0.08	0.21	0.08	47.0
5	T1	113	2.0	0.100	0.1	LOS A	0.3	2.2	0.08	0.21	0.08	47.8
6	R2	42	2.0	0.100	4.8	LOS A	0.3	2.2	0.08	0.21	0.08	44.2
Approach		188	2.0	0.100	1.9	NA	0.3	2.2	0.08	0.21	0.08	47.1
East: Kishorn Road												
7	L2	20	2.0	0.112	7.6	LOS A	0.4	2.9	0.18	0.95	0.18	37.3
8	T1	41	2.0	0.112	8.5	LOS A	0.4	2.9	0.18	0.95	0.18	42.6
9	R2	39	2.0	0.112	9.0	LOS A	0.4	2.9	0.18	0.95	0.18	42.4
Approach		100	2.0	0.112	8.5	LOS A	0.4	2.9	0.18	0.95	0.18	41.9
North: Forbes Road												
10	L2	23	2.0	0.038	4.8	LOS A	0.1	0.9	0.16	0.28	0.16	46.5
11	T1	31	2.0	0.038	0.2	LOS A	0.1	0.9	0.16	0.28	0.16	46.8
12	R2	16	2.0	0.038	5.0	LOS A	0.1	0.9	0.16	0.28	0.16	47.0
Approach		69	2.0	0.038	2.8	NA	0.1	0.9	0.16	0.28	0.16	46.8
West: Kishorn Road												
1	L2	36	2.0	0.058	7.9	LOS A	0.2	1.6	0.25	0.90	0.25	44.9
2	T1	25	2.0	0.058	8.4	LOS A	0.2	1.6	0.25	0.90	0.25	43.0
3	R2	2	2.0	0.058	8.9	LOS A	0.2	1.6	0.25	0.90	0.25	41.9
Approach		63	2.0	0.058	8.2	LOS A	0.2	1.6	0.25	0.90	0.25	44.2
All Vehicles		421	2.0	0.112	4.6	NA	0.4	2.9	0.14	0.50	0.14	45.1

**Table 5. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection – Weekday PM peak period (post-development)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	47	2.0	0.117	4.8	LOS A	0.3	2.0	0.11	0.18	0.11	47.1
5	T1	141	2.0	0.117	0.1	LOS A	0.3	2.0	0.11	0.18	0.11	47.8
6	R2	33	2.0	0.117	5.1	LOS A	0.3	2.0	0.11	0.18	0.11	44.3
Approach		221	2.0	0.117	1.9	NA	0.3	2.0	0.11	0.18	0.11	47.3
East: Kishorn Road												
7	L2	71	2.0	0.104	8.1	LOS A	0.4	2.9	0.29	0.90	0.29	37.5
8	T1	27	2.0	0.104	9.6	LOS A	0.4	2.9	0.29	0.90	0.29	42.7
9	R2	7	2.0	0.104	10.1	LOS B	0.4	2.9	0.29	0.90	0.29	42.6
Approach		105	2.0	0.104	8.6	LOS A	0.4	2.9	0.29	0.90	0.29	39.9
North: Forbes Road												
10	L2	1	2.0	0.097	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	47.9
11	T1	141	2.0	0.097	0.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.3
12	R2	38	2.0	0.097	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.0
Approach		180	2.0	0.097	1.3	NA	0.3	1.9	0.15	0.12	0.15	48.3
West: Kishorn Road												
1	L2	29	2.0	0.101	8.1	LOS A	0.4	2.6	0.35	0.92	0.35	44.2
2	T1	14	2.0	0.101	9.4	LOS A	0.4	2.6	0.35	0.92	0.35	42.2
3	R2	35	2.0	0.101	10.7	LOS B	0.4	2.6	0.35	0.92	0.35	41.0
Approach		78	2.0	0.101	9.5	LOS A	0.4	2.6	0.35	0.92	0.35	42.7
All Vehicles		584	2.0	0.117	3.9	NA	0.4	2.9	0.19	0.39	0.19	45.7

The addition of the development traffic in the post-development stage results in no practical impact on the intersection operation which continues to enjoy ample spare capacity and negligible queues and delays.

An 1.6% increase in background traffic was applied in case of 2031 scenario as requested by the City of Melville technical staff in order to account for the projected population growth in this locality. Refer **Table 4** and **Table 5** for more details.

**Table 6. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection  
– Weekday AM peak period (year 2031)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	35	2.0	0.102	4.7	LOS A	0.3	2.2	0.09	0.21	0.09	47.0
5	T1	115	2.0	0.102	0.1	LOS A	0.3	2.2	0.09	0.21	0.09	47.8
6	R2	43	2.0	0.102	4.8	LOS A	0.3	2.2	0.09	0.21	0.09	44.2
Approach		193	2.0	0.102	1.9	NA	0.3	2.2	0.09	0.21	0.09	47.1
East: Kishorn Road												
7	L2	20	2.0	0.114	7.6	LOS A	0.4	3.0	0.19	0.95	0.19	37.3
8	T1	41	2.0	0.114	8.6	LOS A	0.4	3.0	0.19	0.95	0.19	42.6
9	R2	40	2.0	0.114	9.1	LOS A	0.4	3.0	0.19	0.95	0.19	42.4
Approach		101	2.0	0.114	8.6	LOS A	0.4	3.0	0.19	0.95	0.19	41.9
North: Forbes Road												
10	L2	23	2.0	0.038	4.8	LOS A	0.1	0.9	0.16	0.27	0.16	46.5
11	T1	31	2.0	0.038	0.2	LOS A	0.1	0.9	0.16	0.27	0.16	46.8
12	R2	16	2.0	0.038	5.0	LOS A	0.1	0.9	0.16	0.27	0.16	47.0
Approach		69	2.0	0.038	2.8	NA	0.1	0.9	0.16	0.27	0.16	46.8
West: Kishorn Road												
1	L2	37	2.0	0.059	8.0	LOS A	0.2	1.6	0.25	0.90	0.25	44.9
2	T1	25	2.0	0.059	8.4	LOS A	0.2	1.6	0.25	0.90	0.25	43.0
3	R2	2	2.0	0.059	8.9	LOS A	0.2	1.6	0.25	0.90	0.25	41.9
Approach		64	2.0	0.059	8.2	LOS A	0.2	1.6	0.25	0.90	0.25	44.2
All Vehicles		427	2.0	0.114	4.6	NA	0.4	3.0	0.15	0.50	0.15	45.1

**Table 7. SIDRA results for the Forbes Road/Kishorn Road/Sleat Road intersection  
– Weekday PM peak period (year 2031)**

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Sleat Road												
4	L2	48	2.0	0.119	4.8	LOS A	0.3	2.0	0.11	0.18	0.11	47.1
5	T1	143	2.0	0.119	0.1	LOS A	0.3	2.0	0.11	0.18	0.11	47.8
6	R2	33	2.0	0.119	5.1	LOS A	0.3	2.0	0.11	0.18	0.11	44.3
Approach		224	2.0	0.119	1.9	NA	0.3	2.0	0.11	0.18	0.11	47.3
East: Kishorn Road												
7	L2	72	2.0	0.106	8.1	LOS A	0.4	2.9	0.29	0.90	0.29	37.5
8	T1	27	2.0	0.106	9.7	LOS A	0.4	2.9	0.29	0.90	0.29	42.7
9	R2	7	2.0	0.106	10.2	LOS B	0.4	2.9	0.29	0.90	0.29	42.5
Approach		106	2.0	0.106	8.7	LOS A	0.4	2.9	0.29	0.90	0.29	39.9
North: Forbes Road												
10	L2	1	2.0	0.099	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	47.8
11	T1	143	2.0	0.099	0.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.3
12	R2	39	2.0	0.099	5.2	LOS A	0.3	1.9	0.15	0.12	0.15	48.0
Approach		183	2.0	0.099	1.3	NA	0.3	1.9	0.15	0.12	0.15	48.2
West: Kishorn Road												
1	L2	29	2.0	0.104	8.1	LOS A	0.4	2.7	0.35	0.92	0.35	44.2
2	T1	14	2.0	0.104	9.4	LOS A	0.4	2.7	0.35	0.92	0.35	42.1
3	R2	36	2.0	0.104	10.8	LOS B	0.4	2.7	0.35	0.92	0.35	41.0
Approach		79	2.0	0.104	9.6	LOS A	0.4	2.7	0.35	0.92	0.35	42.6
All Vehicles		593	2.0	0.119	3.9	NA	0.4	2.9	0.19	0.39	0.19	45.6

The assessment of the AM and PM peak periods in the 2031 scenario confirms that similar operational conditions will be maintained in the future. Ample spare capacity remains available for further traffic growth.

It is therefore concluded that this key local intersection has the capacity to accommodate the additional traffic from the proposed development and will continue to operate satisfactorily and with moderate queues and delays into the future.

## 6.0 Traffic Management on the Frontage Streets

**Kishorn Road**, is approximately 8m wide single-carriageway, two-way road with pay (8AM-6PM, Monday to Saturday) on-street parking along one or both sides of the road. The pedestrian footpaths are in place along both sides of the road in this vicinity. Refer **Figure 4** and **Figure 5** for more details.



**Figure 4. Westbound view along Kishorn Road in the vicinity of subject site**



**Figure 5. Eastbound view along Kishorn Road in the vicinity of subject site**

Kishorn Road operates under a default 50km/h built-up area speed limit regime. It is classified as an *Access Road* in the *Main Roads WA Metropolitan Functional Road Hierarchy* document.

Based on the latest available traffic counts sourced from the City of Melville, Kishorn Road (east of Forbes Road) carried approximately 1,170vpd on a regular weekday in November 2015.

**Forbes Road**, is approximately 9m wide single-carriageway, two-way road with pedestrian path on eastern side along most of its length except for the stretch between Kishorn Road and Canning Highway where it entails paths along both sides and a painted 2m wide median. Pay parking (8AM-6PM, Monday to Saturday) is also available along one or both sides of the road. Refer **Figure 6** for more details.

Forbes Road operates under a default 50km/h built-up area speed limit regime. It is classified as an *Access Road* in the *Main Roads WA Metropolitan Functional Road Hierarchy* document. There are no available up-to-date traffic counts for Forbes Road at present.



**Figure 6. Northbound view along Forbes Road in the vicinity of subject site**

**Sleat Road**, between Forbes Road and Canning Highway is presented as a single-carriageway, boulevard-style road with a 2m wide painted/raised median and pay parking (9AM-6PM, Monday to Saturday) along both side of the road serving local commercial/retail developments. Refer **Figure 7** for more details.

Sleat Road operates under a default 50km/h built-up area speed limit regime. It is classified as an *Access Road* in the *Main Roads WA Metropolitan Functional Road Hierarchy* document.



**Figure 7. Southbound view along Sleat Road in the vicinity of subject site**

Based on the latest available traffic counts sourced from the City of Melville, Sleat Road (north of Canning Highway) carried approximately 3,860vpd on a regular weekday in June 2017.

Immediately adjacent to the subject site, Kishorn Road, Forbes Road and Sleat Road form a stop-controlled four-way intersection with priority on Forbes Road and Sleat Road.

Main Roads WA Intersection *Crash Ranking Report* provides detailed crash data for the Labouchere Road/Lyall Street intersection over the 5-year period ending 31 December 2017. There has been only one crash (one medical intervention) recorded at this intersection during the previous five-year period. Crash report information for this intersection is presented in **Table 8**.

The crash history data for the Forbes Road/ Kishorn Road/Sleat Road intersection suggests there are no safety concerns relating to the operation of this intersection.

**Table 8. Crash history for the Kishorn Road/Forbes Road/Sleat Road intersection**

Intersection				Total Crashes	Casualty
Forbes Road/Kishorn Road/Sleat Road				1	1
Side Swipe	Rear End	Pedestrian	Cycle	Wet	Night
1	0	0	0	0	0

## 7.0 Public Transport Access

The site is very well served by a number of high frequency bus services (111, 114, 115, 150, 160 and 910) operating along Canning Highway and (148 and 158) operating along Kintail Road with bus stops located within the walking distance from the subject site.

In addition, the subject site is located about 950m walking distance from the Canning Bridge Train Station to the east of the subject site securing access to the greater Perth metro area.

Bus stops and train station are accessible via existing footpath network which is in place within the locality. Refer **Figure 8** for more details.

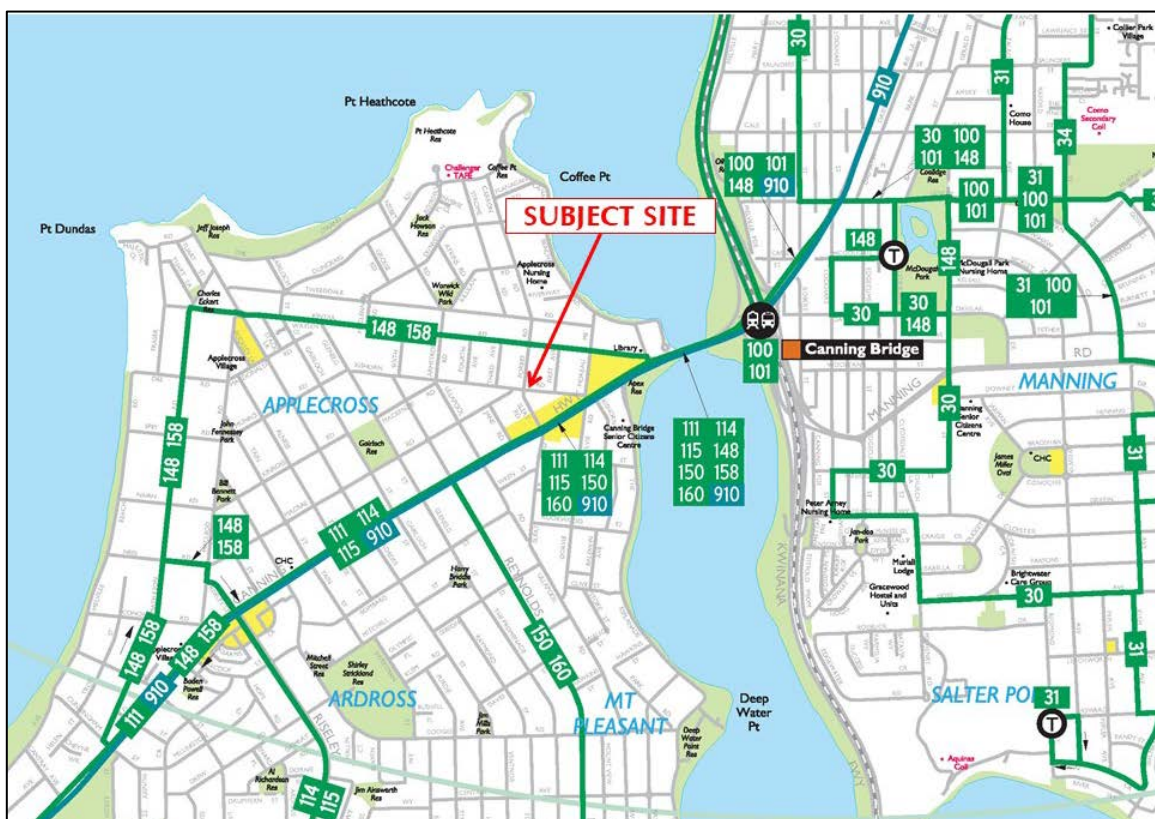


Figure 8. Local public transport service map (source: Transperth Maps)

## 8.0 Pedestrian Access

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Pedestrian access to the proposed development is available directly from the existing extensive footpath network within the locality and on Forbes and Kishorn Roads. The existing path network provides direct and convenient access to and from local food and beverage, retail, educational attractors reducing reliance on private vehicles.

Pedestrian crossing opportunities are available immediately next to the subject site at Forbes Road/Kishorn Road intersection, on Kishorn Road mid-block some 65m east of the site, at adjacent signal-controlled pedestrian crossing at Canning Highway/Forbes Road traffic signals and at the footbridge over Canning Highway located some 170m east of the site, facilitating access to/from the site to/from the nearby bus stops and Canning Bridge Train Station.

## 9.0 Cycle Access

According to the current Department of Transport *Perth Bicycle Network Plan*, the subject site is served exceptionally well by the existing bike network within the locality.

The Perth bicycle network route SW5 is in place along Kishorn Road providing direct and convenient access to the local recreational high quality shared path along western bank of Canning River as well as the Principal Shared Path along Kwinana Freeway.

In addition, there are a number of local roads classified as “good road riding environment” providing access to the local Applecross Primary School located some 500m west of the subject site.

With these routes and facilities, it is evident that the subject site enjoys excellent access to existing cycling network and facilities connection to public transport services thus supporting the use of non-motorised means of transport. Refer **Figure 9** for more details.

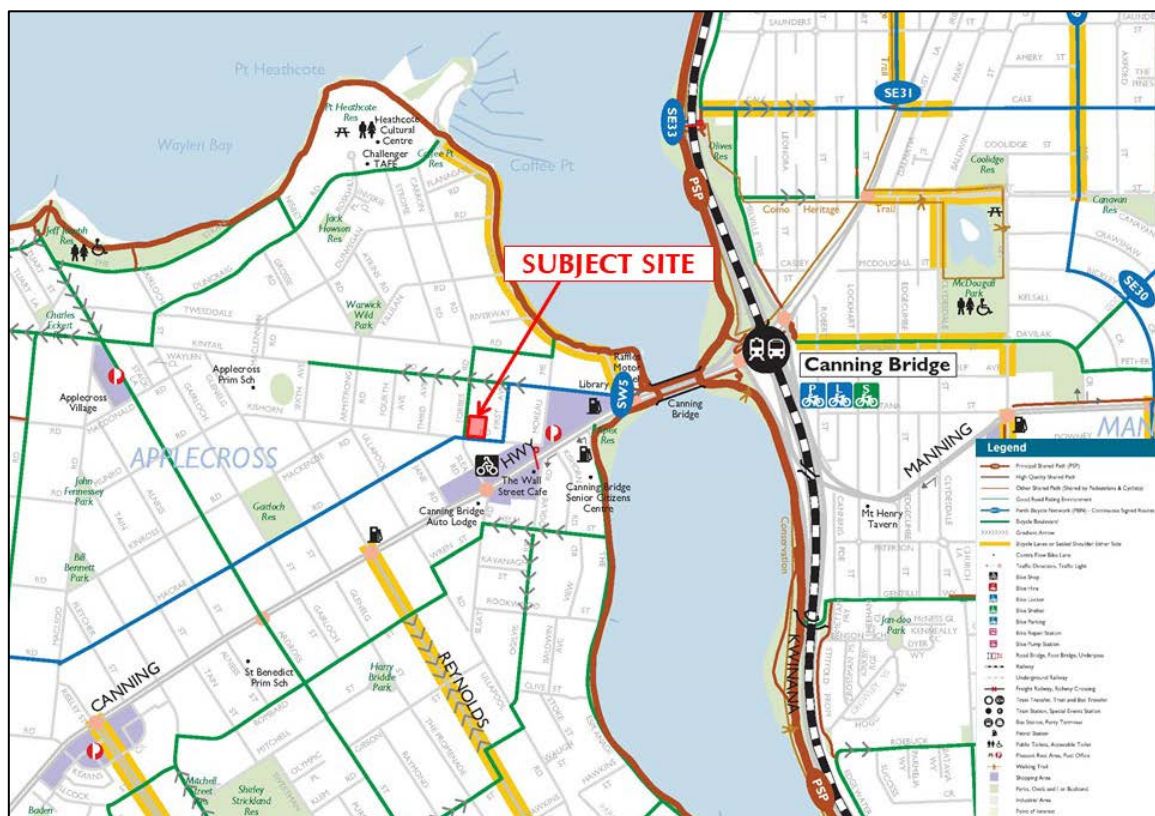


Figure 9: Extract from Perth Bicycle Network (Department of Transport)

## 10.0 Site Specific Issues

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No particular site-specific issues have been identified for this proposed mixed-use development.

## 11.0 Safety Issues

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No particular transport safety issues have been identified for this proposed development.

## 12.0 Conclusions

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This Transport Impact Statement provides information on the proposed multi-storey, mixed-use development located at 10-14 Forbes Road & 40A, B, C Kishorn Road in Applecross, City of Melville. The development comprises 15 short-stay units, 98 residential apartments, small-scale retail and restaurant/café tenancies (70m<sup>2</sup> and 120m<sup>2</sup> GFA), and one office space (420m<sup>2</sup> GFA). The proposed development is served by a multi-level (three basement levels, ground and one upper floor) car park facility.

A total of 160 car and four motorcycle parking bays are provided on site for the use of residents, employees and visitors. The car park access/egress to and from the site will be provided from Kishorn Road via a single, full-movement crossover.

The subject site has very good accessibility by the existing road, pedestrian and cyclist network and enjoys very good public transport coverage through existing bus and train services located in close proximity of the site.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed development is conservatively estimated to be in order of about 685 daily and 72/53 peak hour trips during AM/PM peak (both inbound and outbound). Accordingly, the traffic impact of the proposal on the surrounding road network will be insignificant and well within its capacity.

No particular transport or safety issues have been identified for the proposed development.

Finally, it is concluded that the traffic-related issues should not form an impediment to the approval of the proposed development.

# Appendix A

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## PROPOSED DEVELOPMENT PLANS

# WOHA

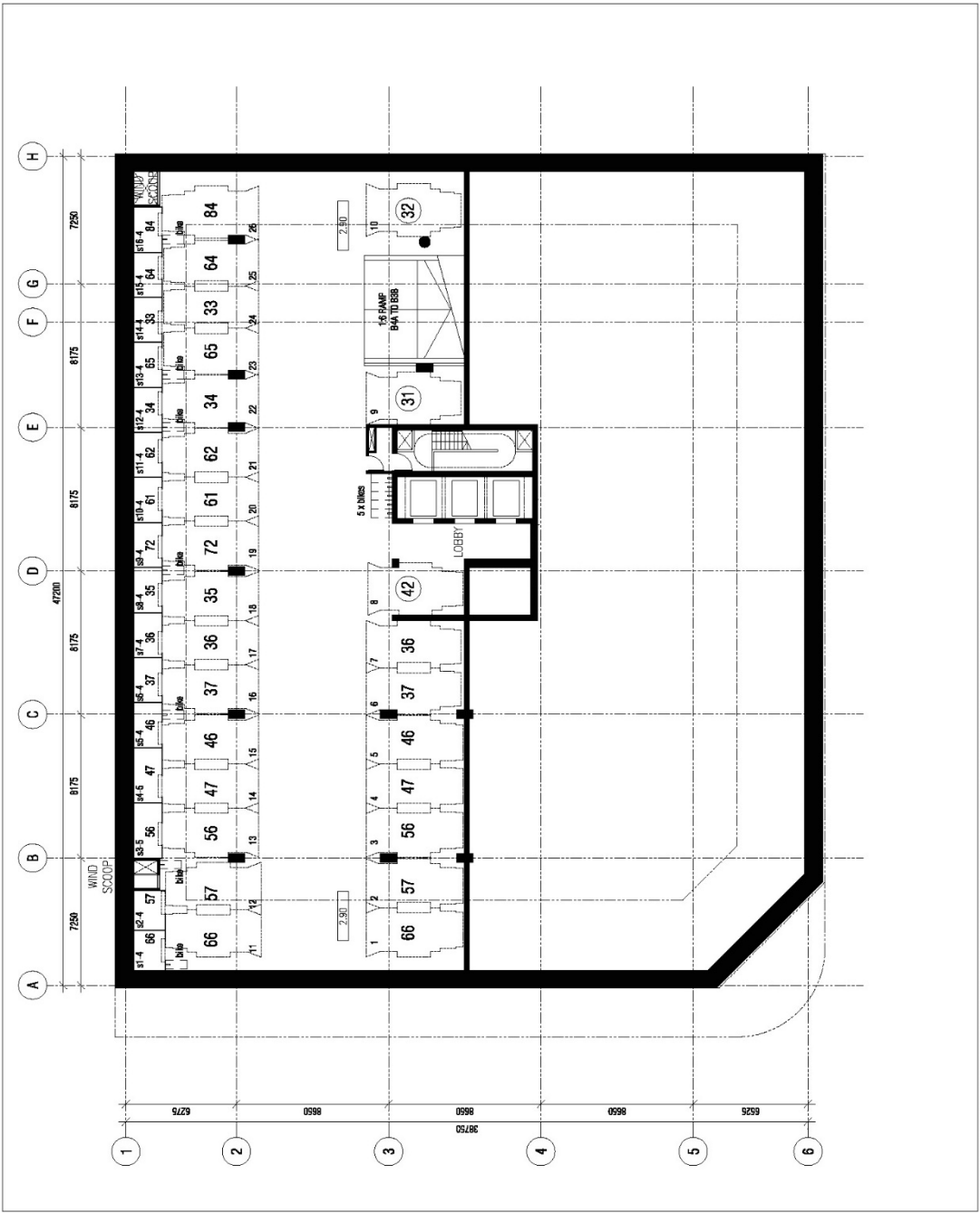
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REV.	DATE	DESCRIPTION	BY
1	13.11.16	DA SET	MJC
2	20.01.18	REVISIONS	MJC

CLIENT: APEX VIEW PTY LTD  
 PROJECT: FORBES RESIDENCES  
 PROJECT ADDRESS: 10-14 FORBES RD  
 APPLICROSS  
 NVA PROJECT NUMBER: 18003  
 SHEET NO: 1 PROJECT NO: 1  
 SCALE: 1:200 @ A3  
 STATUS: ISSUED FOR DA  
 DRAWING: BASEMENT 4  
 DRAWING NO: DWG04 OUTSIDE NO: 2  
 DA: 02 MEC MEC 2



# WOHA

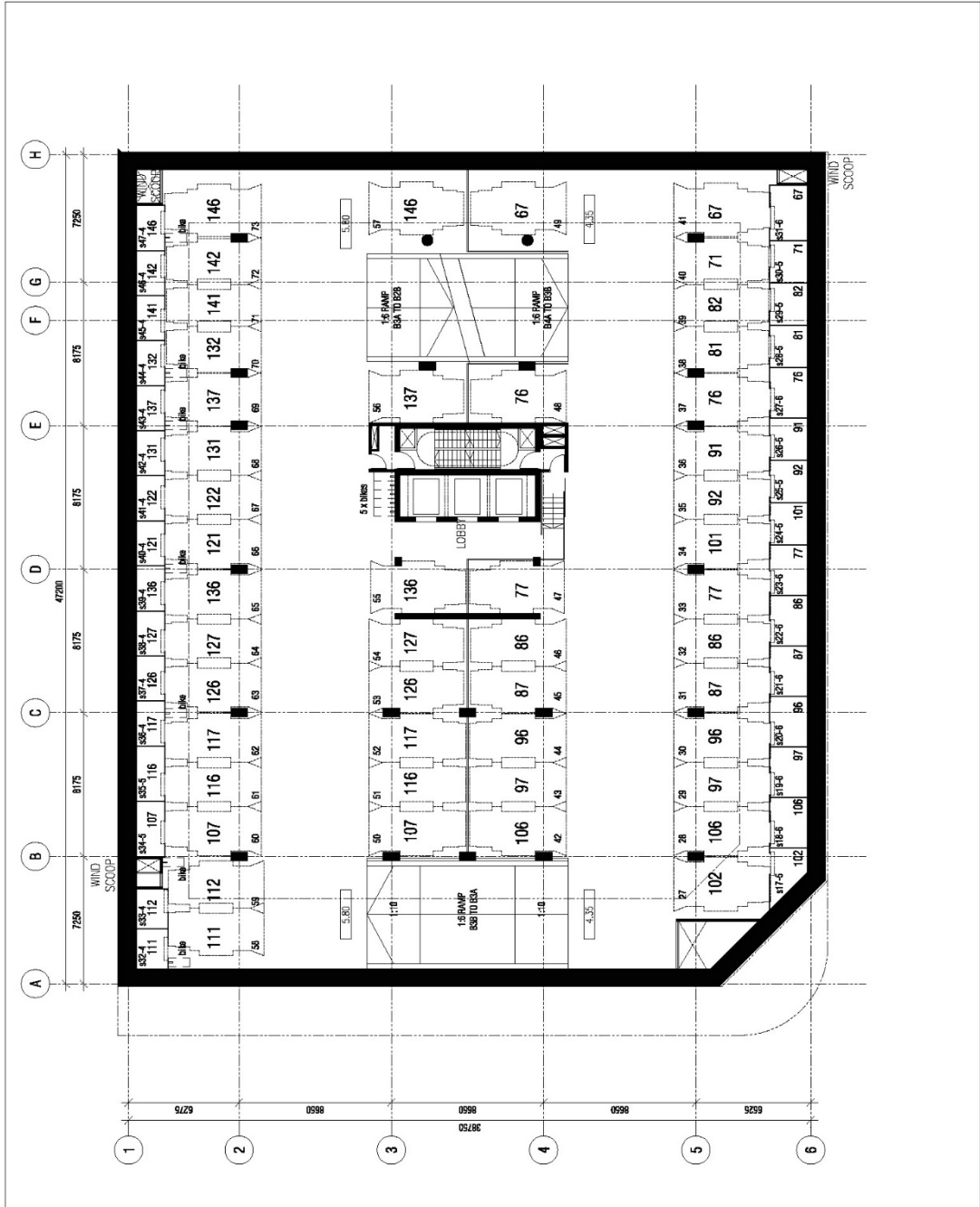
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REV.	DATE	DESCRIPTION	BY
1	13.11.15	DA SET	MJC
2	20.01.15	REVISIONS	MJC

CLIENT	APEX VIEW PTY LTD
PROJECT	FORBES RESIDENCES
PROJECT ADDRESS	10-14 FORBES RD APPLECROSS
N/A PROJECT NUMBER	10003
REV. NO.	1
PROJECT NAME	1
SCALE	1:200 @ A3
STATUS	ISSUED FOR DA
DRAWING	BASEMENT 3
DRAWING NO.	DA-03
DRAWN BY	MJC
CHECKED BY	MJC
DATE	2





REV.	DATE	DESCRIPTION	BY
1	13.11.18	DA ISSUE	MJC
2	20.01.19	REVISIONS TO ISSUE	MJC

**NOTE:**

TOTAL RES. CAR BAYS 135  
 TOTAL SHORT STAY CAR BAYS 07  
 TOTAL CO-WORK CAR BAYS 15  
 TOTAL F & B BAYS 02  
 EV CHARGING BAY 01  
 TOTAL CAR BAYS 160  
 \* CAR BAYS TO BE CAPABLE OF UTILISING  
 INDIVIDUAL STACKER SYSTEM

94

APARTMENTS WITH REMOTE STORE  
 ROOMS LOCATED ON GROUND FLOOR  
 CAR BAYS TO BE CAPABLE OF UTILISING  
 INDIVIDUAL STACKER SYSTEM

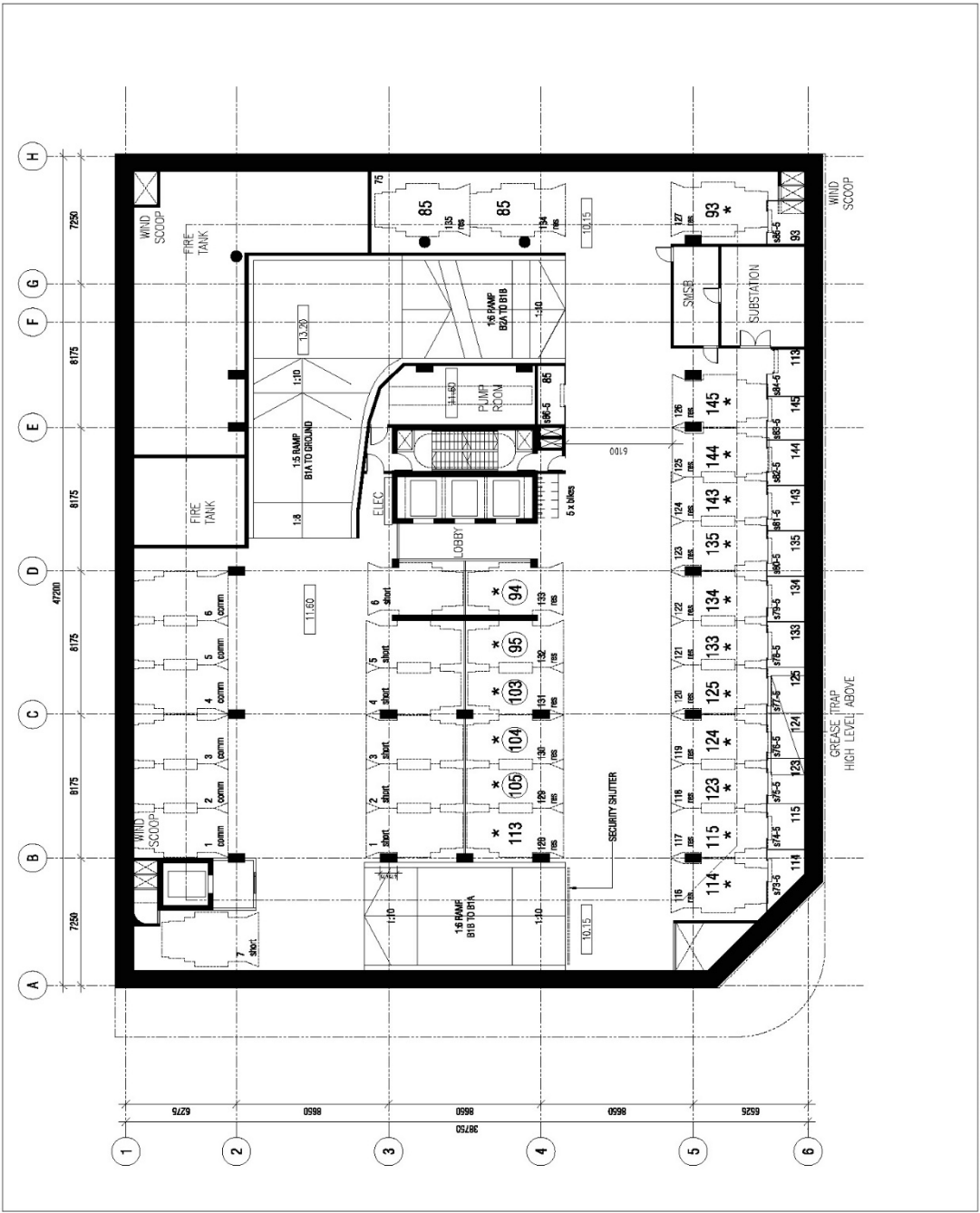
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 APEX VIEW PTY LTD  
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 FORBES RESIDENCES  
 PROJECT ADDRESS  
 10-14 FORBES RD  
 APPLGROSS  
 N/A PROJECT NUMBER  
 18003

FILE NAME  
 PROJECT NUMBER  
 1

SCALE  
 1:200 @ A3  
 STATUS  
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ISSUED FOR DA  
 DRAWING  
 BASEMENT 1

DRAWING NO.  
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 DA/05 MEC MEC 2



# WOHA

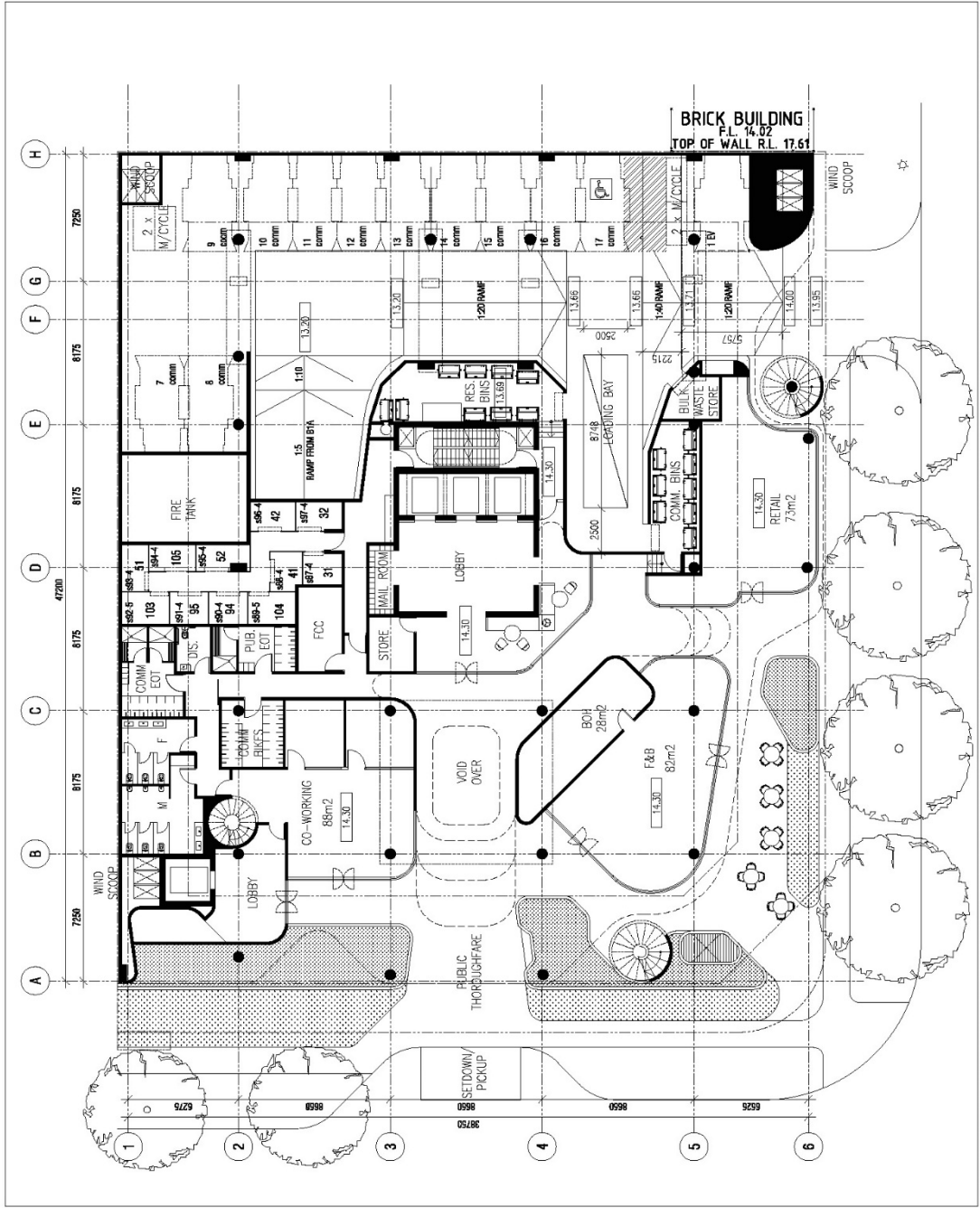
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REV.	DATE	DESCRIPTION	BY
1	13.11.15	DA SET	MJC
2	20.01.16	REVISIONS TO ISSUE	MJC

CLIENT	APEX VIEW PTY LTD
PROJECT	FORBES RESIDENCES
PROJECT ADDRESS	10-14 FORBES RD APPLEGROSS
NVA PROJECT NUMBER	18003
FILE NUMBER	1
PROJECT NUMBER	1
SCALE	1:200 @ A3
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DRAWING NO.	DA-06
DRAWN BY	MJC
CHECKED BY	MJC
DATE	2



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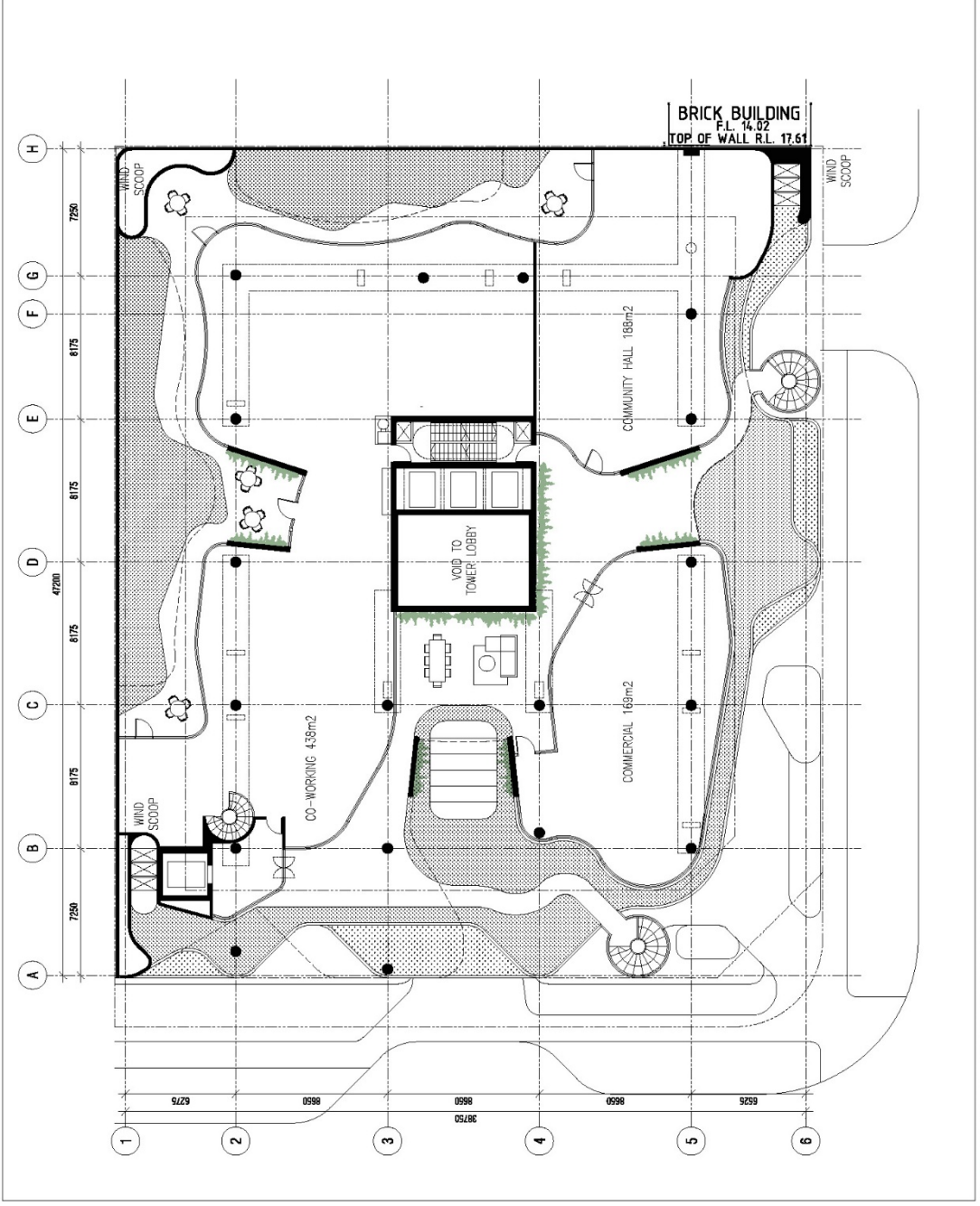
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REV.	DATE	DESCRIPTION	BY
1	13.11.18	DA ISSUE	MJC
2	20.01.19	REVISION 01 ISSUE	MJC

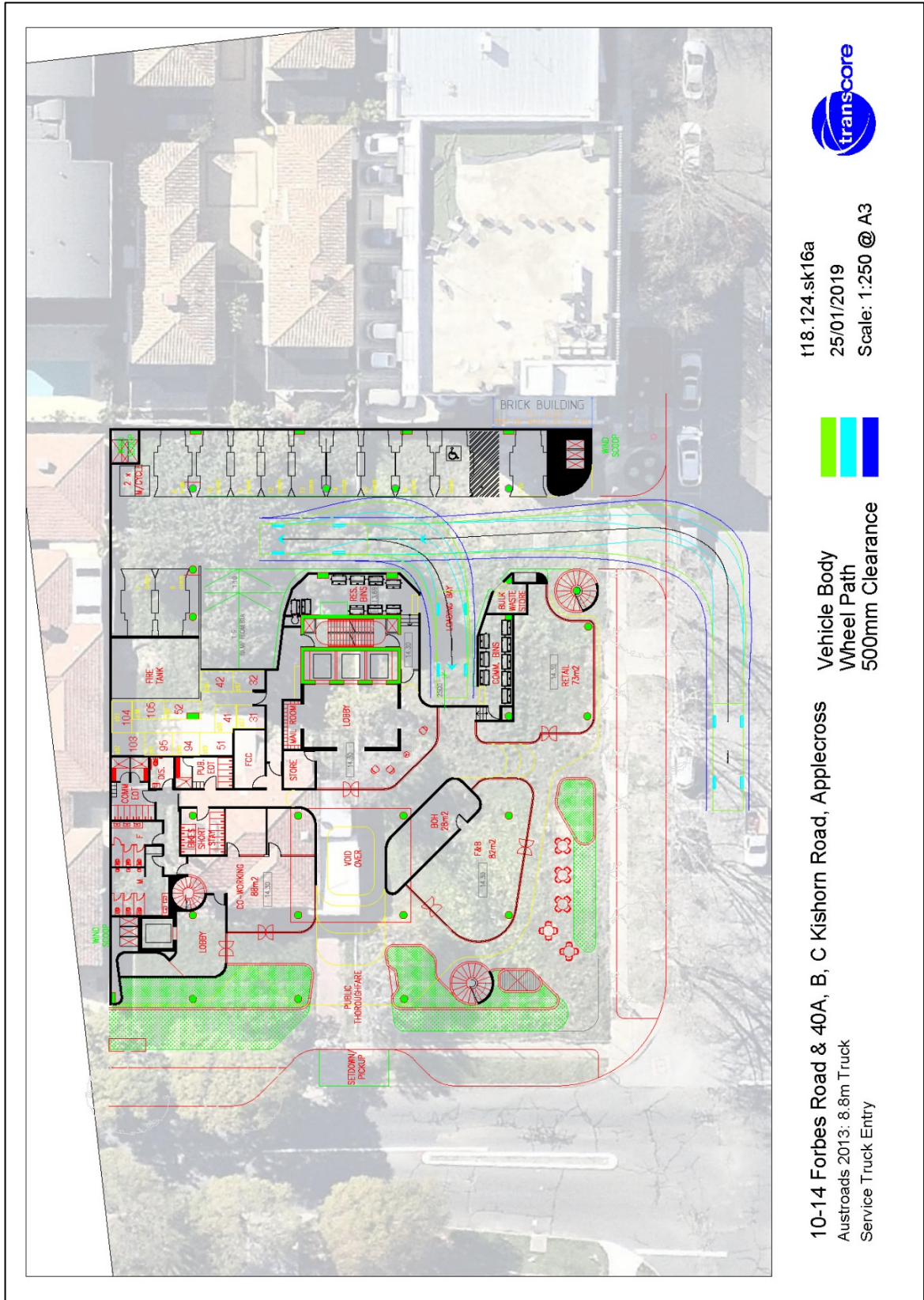
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 PROJECT ADDRESS: 10-14 FORBES RD  
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 SCALE: 1:200 @ A3  
 STATUS: ISSUED FOR DA  
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 DRAWING NO: DWG07 DATE: 2018  
 TYPE: MEC MEC 2



# Appendix B

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## SERVICE VEHICLE TURN PATH PLANS

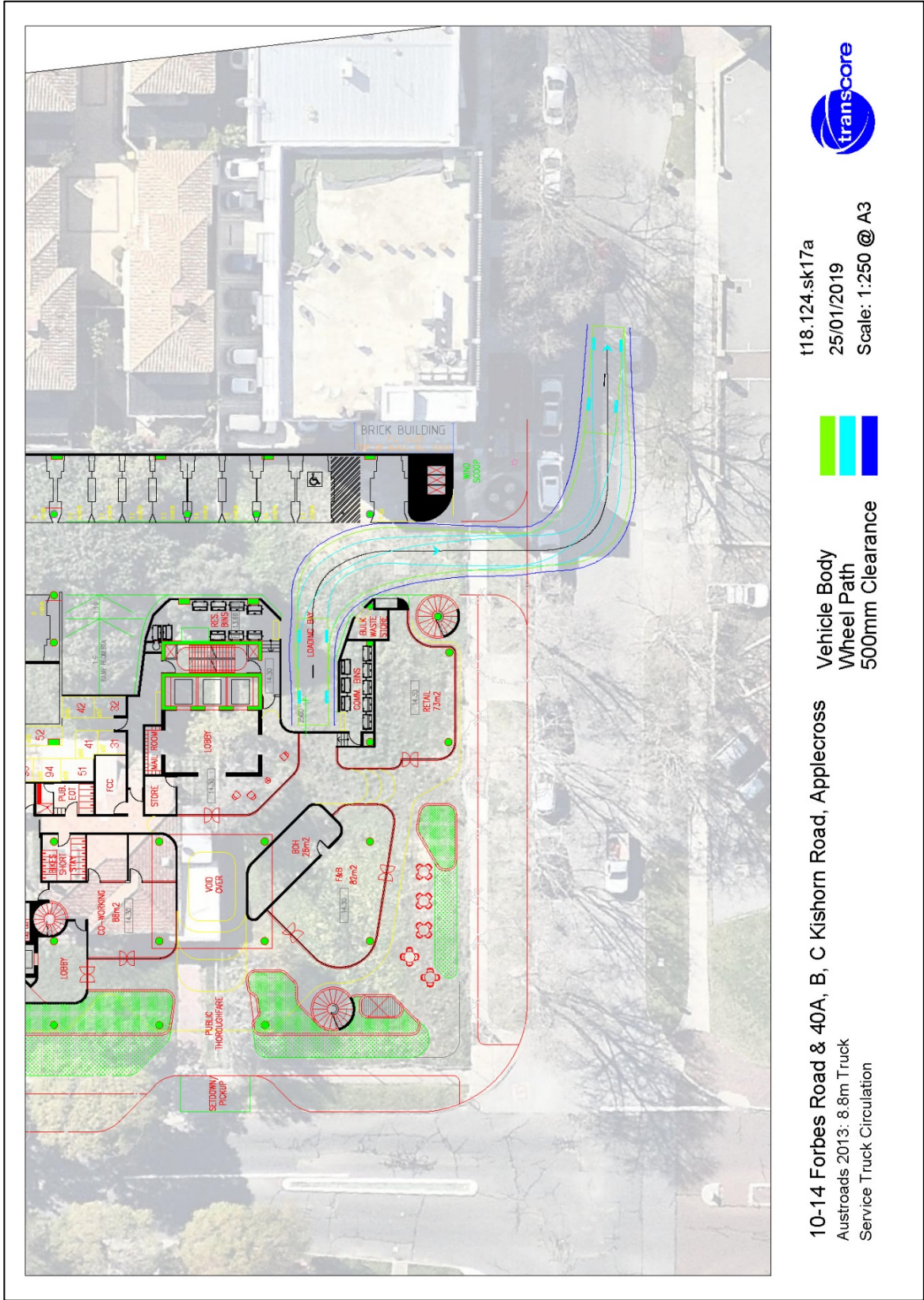


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Vehicle Body  
 Wheel Path  
 500mm Clearance

10-14 Forbes Road & 40A, B, C Kishorn Road, Applecross  
 Austroads 2013: 8.8m Truck  
 Service Truck Entry



t18.124.sk17a  
 25/01/2019  
 Scale: 1:250 @ A3



Vehicle Body  
 Wheel Path  
 500mm Clearance

10-14 Forbes Road & 40A, B, C Kishorn Road, Applecross  
 Austroads 2013: 8.8m Truck  
 Service Truck Circulation