ML
Traffic Engineers

A1915744W Traffic Impact Statement 1.1

21st November 2019

Shire of Serpentine and Jarrahdale
6 Paterson Street
Mundijong WA 6123

Dear Sir/Madam,

Traffic Impact Statement – Proposed School 'Eton Farm Education' at 145 Summerfield Road, Serpentine

1. Overview

ML Traffic Engineers have been engaged to prepare a Traffic Impact Statement for the proposed school at Eton Farm – 145 Summerfield Road, Serpentine. The subject site is located on the southern side of Summerfield Road, midway between Richardson Street and South Western Highway in a rural zone area. Summerfield Road has a posted speed limit of 80km/h road, which will reduce to 60km/h during the drop off and pick up times of the school (as implemented by Main Roads).

Eton Farm Education currently operates playgroup and pre-kindergarten/kindergarten sessions for up to 15 children from Tuesday to Friday during the school term. A single existing building houses the classroom and auxiliary areas (kitchen/office), with all car parking contained onsite.

The proposal comprises of the staged development of a primary school with the year of commencement, 2020, seeing a maximum enrolment of 50 students aged between pre-kindergarten to pre-primary.

This traffic impact statement addresses the following points:

- Public transport accessibility;
- Car parking and bicycle space requirements based on the frontage road speed limit;
- Vehicle access and parking layout, including swept path analysis based on the frontage road speed limit;
- Service vehicle accessibility, including swept path analysis; and
- Traffic generation

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Figure 1: Subject Site and Surrounding Area

Figure 2: Aerial of Subject Site

Figure 3: Subject Site access looking east from Summerfield Road

Figure 4: Subject Site Access

2. Public Transport

There is no public transport within walking distance from the subject site. The nearest bus service is in Mundijong, some 5.7km north of the subject site.

The Serpentine train station, 1.7km south of the subject site, provides access to the Australind service only, a service that passes only once a day and is only accessible via prior booking (i.e. does not stop at all stations without tickets purchased).

3. Statutory Requirements

3.1 Car Parking Spaces

The Shire of Serpentine and Jarrahdale Draft Local Planning Scheme (LPS) No. 3 (September 2019) Schedule 4.3 stipulates the car parking rate applicable to the proposed use of the subject site. The following rates apply:

- Education establishment: 14 bays per 100 students

With a maximum of 50 students proposed for the initial phase of the development, the requirement is to provide 7 car parking spaces on site.

Refer Appendix A for the concept parking plan which shows 18 car parking spaces on site including 2 disabled persons spaces near the building and 4 within a 'kiss and drop' area, greatly exceeding the requirement of the Planning Scheme.

The provision of 18 car parking spaces (minimum) will allow for future enrolment of up to 128 pupils without car park layout changes needing to be undertaken.

3.2 Bicycle Parking Spaces

The Draft LPS No. 3 Schedule 4.4 stipulates the bicycle parking space requirements for the proposed use as:

- Education establishment: 1 bay per 4 students

With a maximum of 50 students, the required number of bicycle parking spaces is 13. In the initial stages of development students will range in age from pre-kindergarten (2/3 years old) to Year 1 (5/6 years old). Due to the rural location of the site it is unlikely that cycling will be the preferred as a mode of transportation for students. However, bicycle stands can be provided near the exit crossover to minimise conflict with onsite vehicular traffic.

3.3 Service Vehicles

The Draft LPS No. 3 does not provide detail as to the required design service vehicle for the development. It is expected that the largest service vehicle to enter the site will be a small rigid vehicle and access will be infrequent (less than once a week) and outside of the peak drop of and pick up times of the school.

In addition to the SRV, infrequent access to the site by a school bus (e.g. for excursions) may be required. With Summerfield Road being a rural road with a speed limit of 80km/h, it would be undesirable for a bus to stand with arriving and departing students and as such on-site collection is recommended.

Refer section 4.2 which discusses the on-site manoeuvrability of the nominated service vehicle and school bus.

4. Traffic Generation

The WA Department of Planning Transport Impact Assessment Guidelines Volume 5 provides traffic generation rates for different land uses. The rate applicable to the subject site are:

- Schools: 1 trip per pupil in the AM and PM peak hour with an 50/50 in/out split in both periods

The rates for school are derived from results of the PARTS surveys that indicate 65% – 70% of students drive to school, with an average occupancy of 1.4 – 1.5 students per car. Taking into consideration the location of Eton Farm Education being in a rural area with no/very limited access to public transport, it is considered that the percentage of children driven to school would be higher than 90%. Therefore, the vehicle trip rate will be closer to be in the order of 1.2 vehicle trips per pupil in the AM and PM peak hours.

Taking the above into consideration, the expected traffic generation equates to:

- 60 vehicle trips in the peak periods, of which 30 are inbound and 30 are outbound in the AM peak, and the reverse in the PM peak.

The total peak period traffic generation of 60 vehicles in both the AM and PM peak periods, of which 30 are inbound and 30 are outbound, with the reverse in the PM peak is considered low and will not have a detrimental effect on the safety or functionality of Summerfield Road or the surrounding road network.

5. Proposed Site Access and Car Park Layout

5.1 Site Access

5.1.1 Turning Facilities

The subject site traffic generation does not warrant the creation of turning facilities (e.g. left turn or right turn lane) on Summerfield Road, as per the specifications of the Turning Lane Warrants contained within Austroads Guide to Road Design Part 4A.

Austroads Guide to Road Design Part 4 Intersections and Crossings details the layout requirement for property access from a rural road, such as Summerfield Road. The internal driveway will be widened to 6.2m (refer 4.1.2), adhering to the minimum width requirement of 4m as detailed in Figure 7.2. Reconfiguration of the access layout will be undertaken to provide curve radius of 10m and the access will be sealed to 10m offset from the edge of the road.

It is proposed that the largest vehicles to enter the site be a 12.5m bus and 6.4m SRV. Access by a bus will be infrequent and as such some tracking over of the opposing exit lane on entry (or entry lane on exit) is considered acceptable. Section 5.3 of Austroads Guide to Road Design Part 4 notes that designing for the largest vehicle (bus) is not always appropriate and to design to represent the majority of the vehicles, i.e. the SRV.

Swept path analysis for a B99 using AutoTURN has been undertaken for simultaneously entry and exit from the site to confirm there will be no conflict between the two movements. Access to the site by the nominated service vehicle will be outside of the peak pick up and drop off times of the school, however swept path analysis for a B99 car and SRV has been undertaken to demonstrate simultaneous entry and exit from the subject site. Refer Appendix B for swept path diagrams.

5.1.2 Internal Driveway

Currently the site is accessed via an unsealed driveway at the western edge of the subject site. The driveway varies in width, with the main entrance driveway approximately 2.5m wide, inadequate for two-way flow.

It is proposed that the driveway will be widened to 6.2m wide from the boundary through the car park area, before reducing to the existing width for a short one-way only section, and widening again as it enters into the Administration car park area.

On the eastern side of the main driveway will be a one-way driveway loop, giving access to the 'kiss and drop' spaces and the Administration building.

Inner curve radius of a minimum of 6m will be provided at all internal intersections to accommodate the manoeuvrability of a B99 car.

5.2 Car Park Layout

The access and car park layout are required to conform to AS2890.1:2004 Part 1: Off-Street Car Parking, AS2890.6 Off-Street Car Parking for People with Disabilities and ASA2890.2:2018 Off-Street Commercial Vehicle Facilities.

The following comments apply:

- Car parking spaces are 2.6m x 5.4m with aisle width of 6.2m in accordance with AS2890.1:2004 Part 1: Off-street car parking;
- Disabled car parking spaces of 2.4m x 5.4m with shared zone of the same dimension are provided near the building, in accordance with AS2890.6 Off-street parking for people with disabilities;
- A 'kiss and drop' area of length 25m is proposed. This will accommodate up to 4 vehicles at any one time. With a driveway width of 3.5m, the proposed car park width of 3.5m which exceeds the requirement of AS2890.1:2004 and will assist with the entry and exit from the car parking spaces and provide additional width for door opening;
- To accommodate a small rigid vehicle, the internal driveway will be widened to 3.5m, sufficient to accommodate one-way movements of a small rigid vehicle, in accordance with AS28902:2018 Off-street commercial vehicle facilities Table 3.1; and
- Swept path analysis has been undertaken for a B99 car using AutoTURN to demonstrate the functionality of the site.

Refer Appendix B for swept path diagrams.

5.3 Sight Distances

AS2890.1:2004 Part 1: Off-street car parking Figure 3.2 details of the minimum sight distance requirements at an access point. The sight distance requirement to allow for a '5 second gap' for a road with a speed limit of 80km/h, such as Summerfield Road, is 111m. The sight distance from the access exceeds the requirement with in excess of 300m of sight distance available in both directions.

Austroads Guide to Road Design Part 4A – Unsignalised and Signalised Intersections also discusses sight distance from a rural property access. For an access to a frontage road with a design speed of 90km/h (taken to be 10km/h above the speed limit) is 214m with a reaction time of 2 seconds. With in excess of 300m of sight distance available, the requirements of Austroads is met.

5.4 Loading and Unloading

The subject site will be serviced by vehicles no larger than a small rigid vehicle. Swept path analysis has been undertaken on the proposed car park plan and forward direction entry and exit is achievable. Deliveries will be infrequent and occur outside of the peak drop off and pick up times of the school and can therefore utilise the main driveway length with minimal obstruction and conflict with opposing traffic. Refer Appendix B for swept path diagrams.

5.5 Waste Collection

Waste collection is currently undertaken via kerb side collection. It is proposed that this method of collection will continue with the proposed development.

6. Conclusions

We trust the explanations presented in this letter are sufficient for Council to support this planning application.

The low-level traffic generation will have minimal impact on the surrounding road network, and the intended vehicle movements at the access points will not interfere with the functionality of Summerfield Road or the surrounding road network.

Should you wish to discuss any aspect of the report, please contact the undersigned on 0406 473 681 or shayes@mltraffic.com.au.

Yours sincerely,

Sonja Hayes
Senior Traffic Engineer

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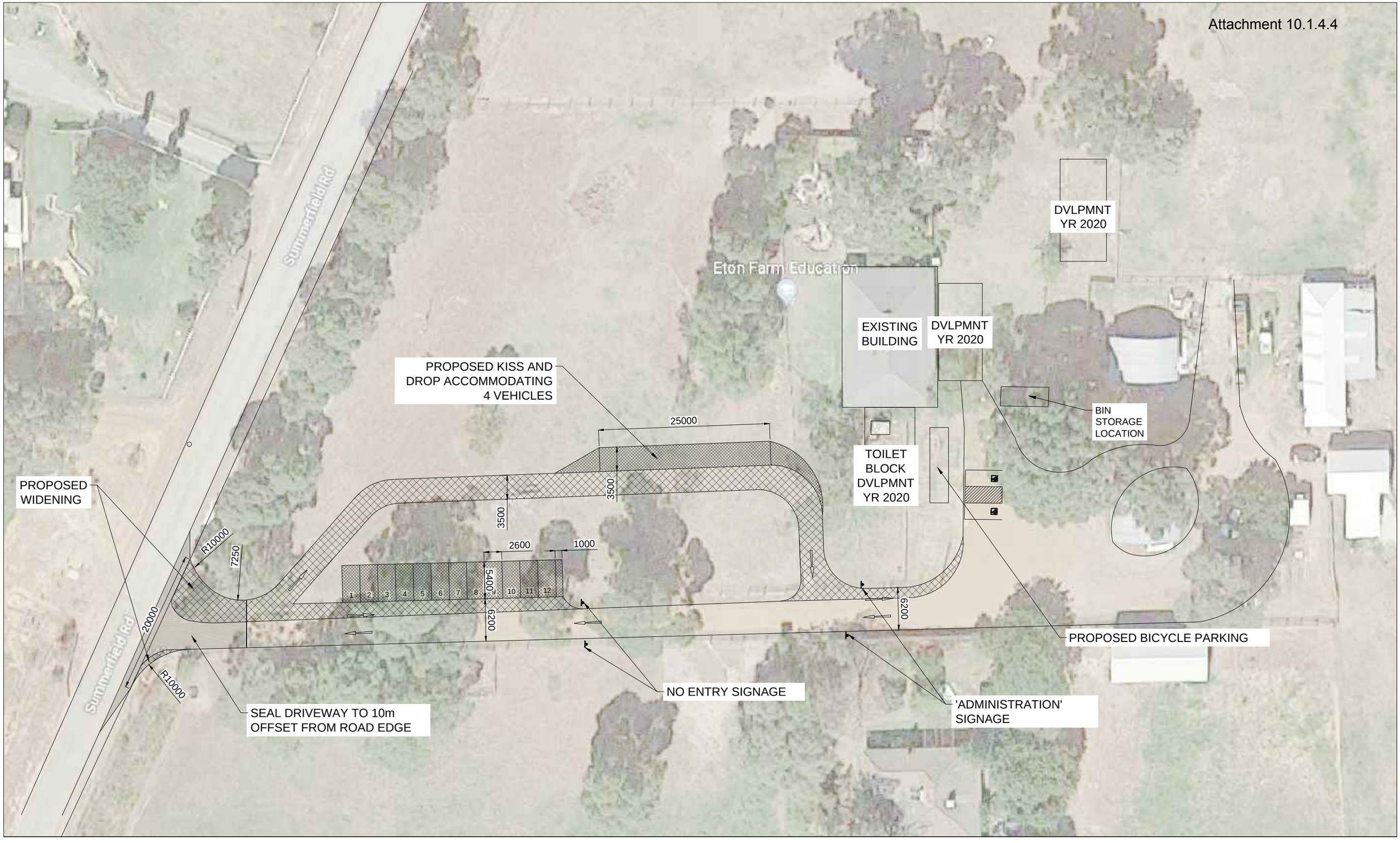
APPENDIX A



SITE LAYOUT: CAR PARKING LAYOUT

SCALE 1:500 @ A3

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Job No:	A1915744W
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CONCEPT CAR PARK LAYOUT

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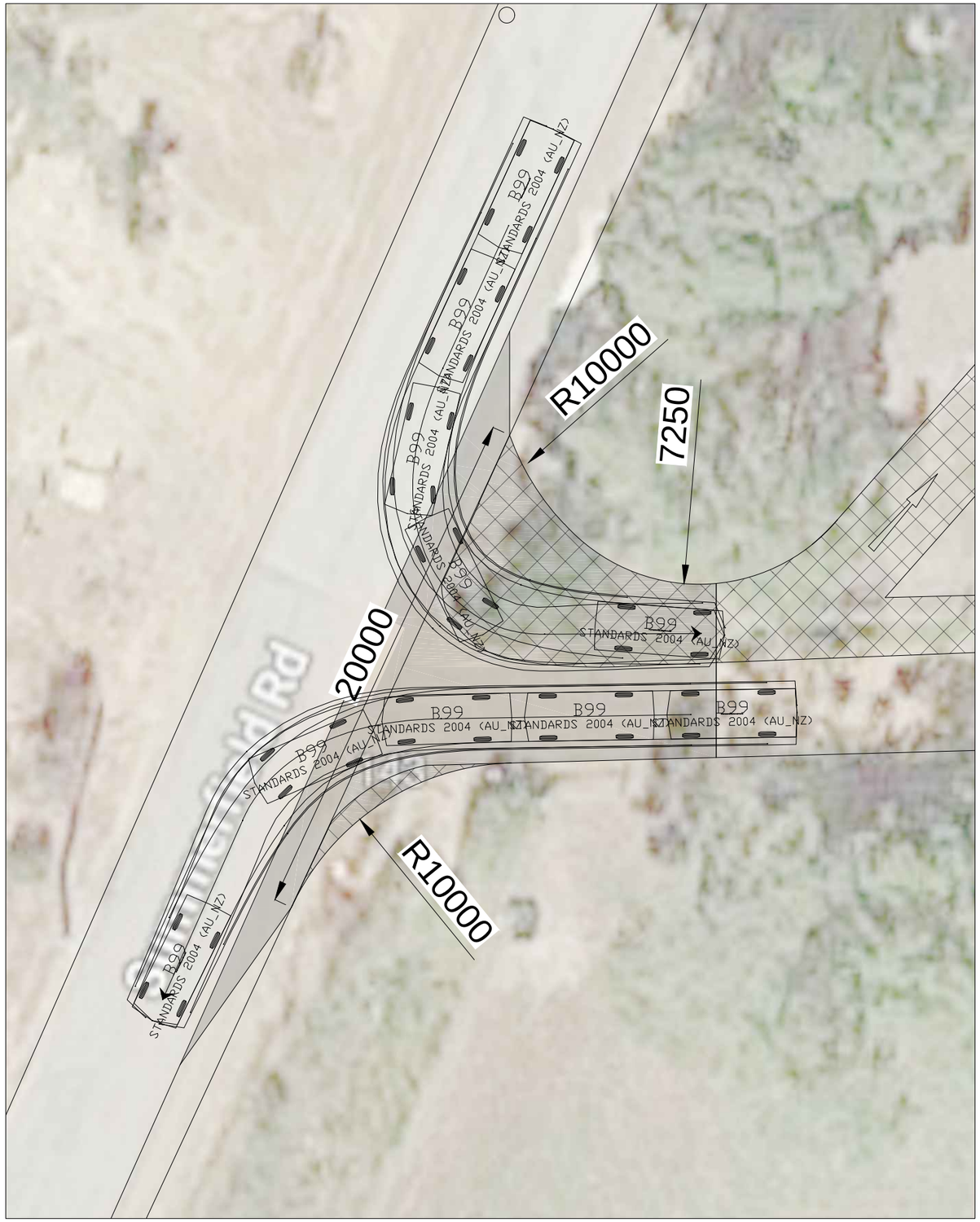
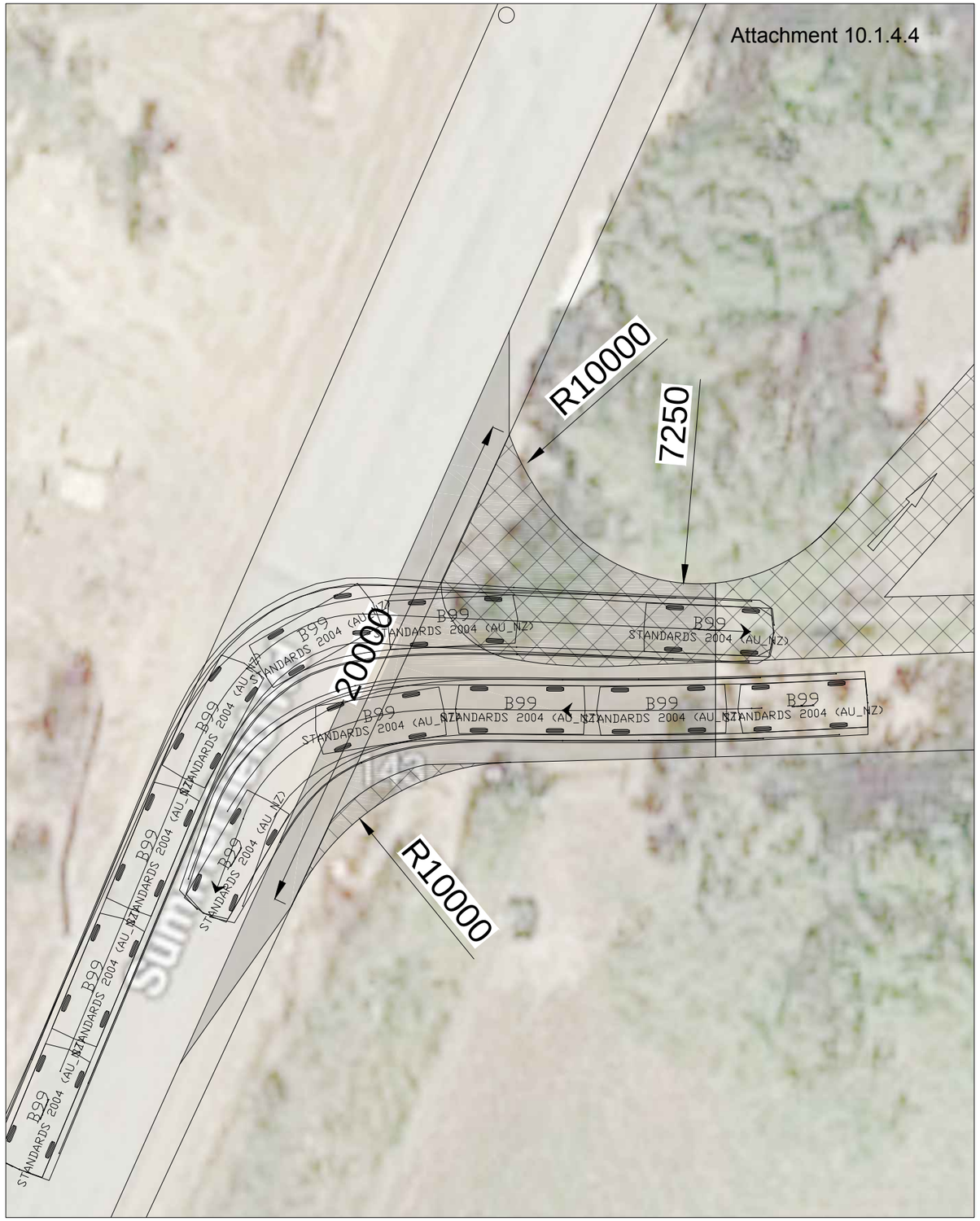
APPENDIX B





SWEPT PATHS - B99

SCALE 1:250 @ A3

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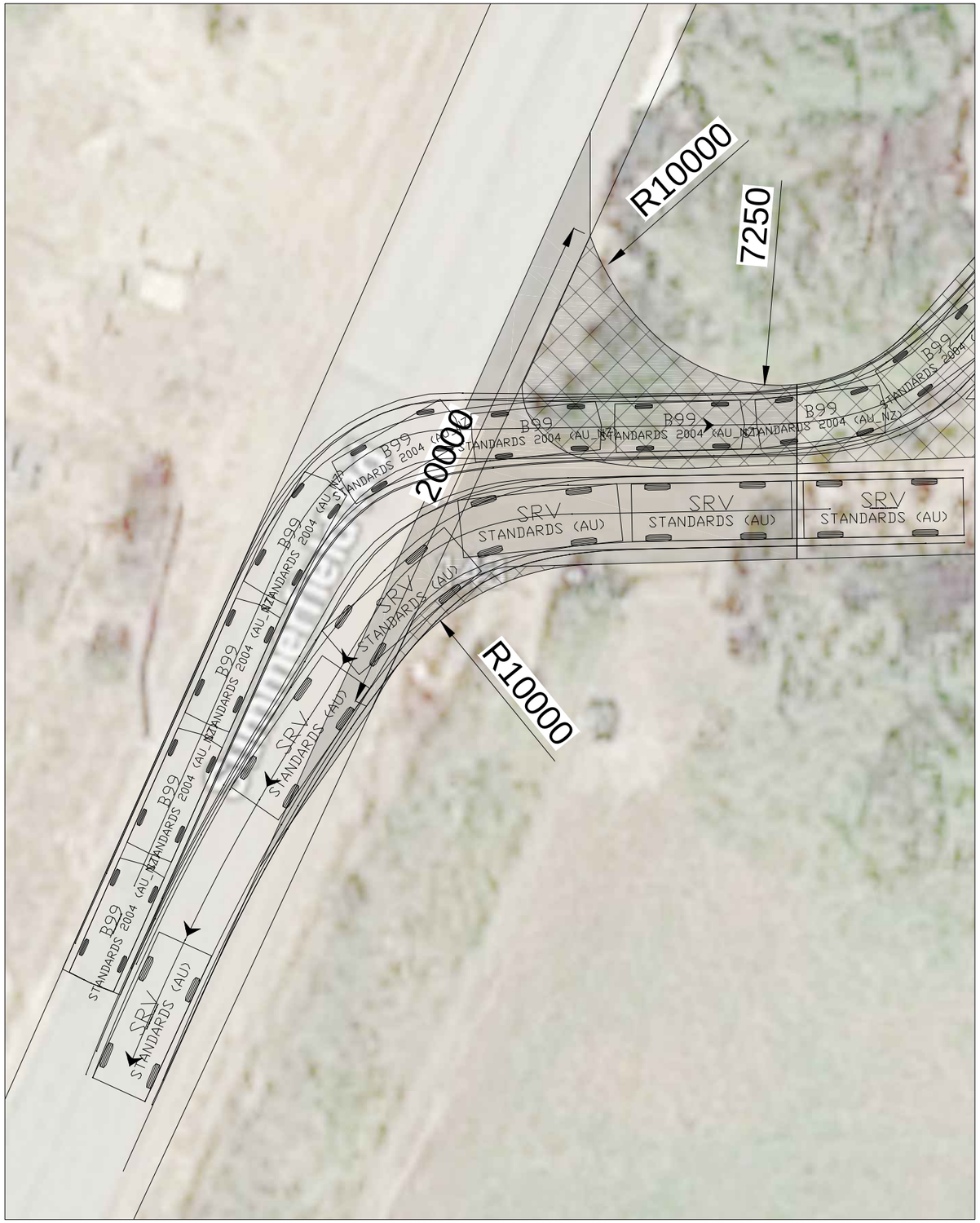
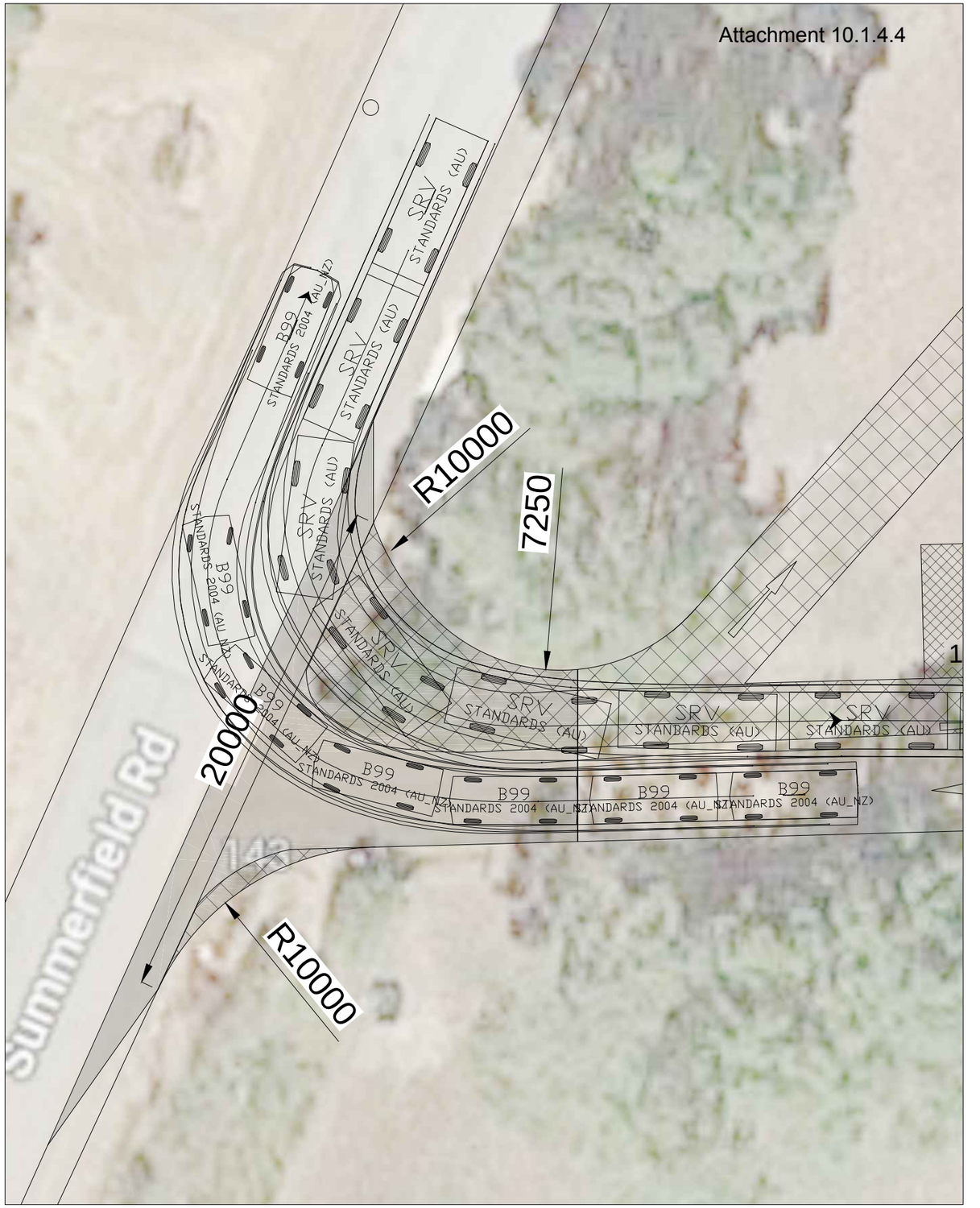
SWEPT PATHS – B99





SWEPT PATHS - B99 AND SRV

SCALE 1:300 @ A3

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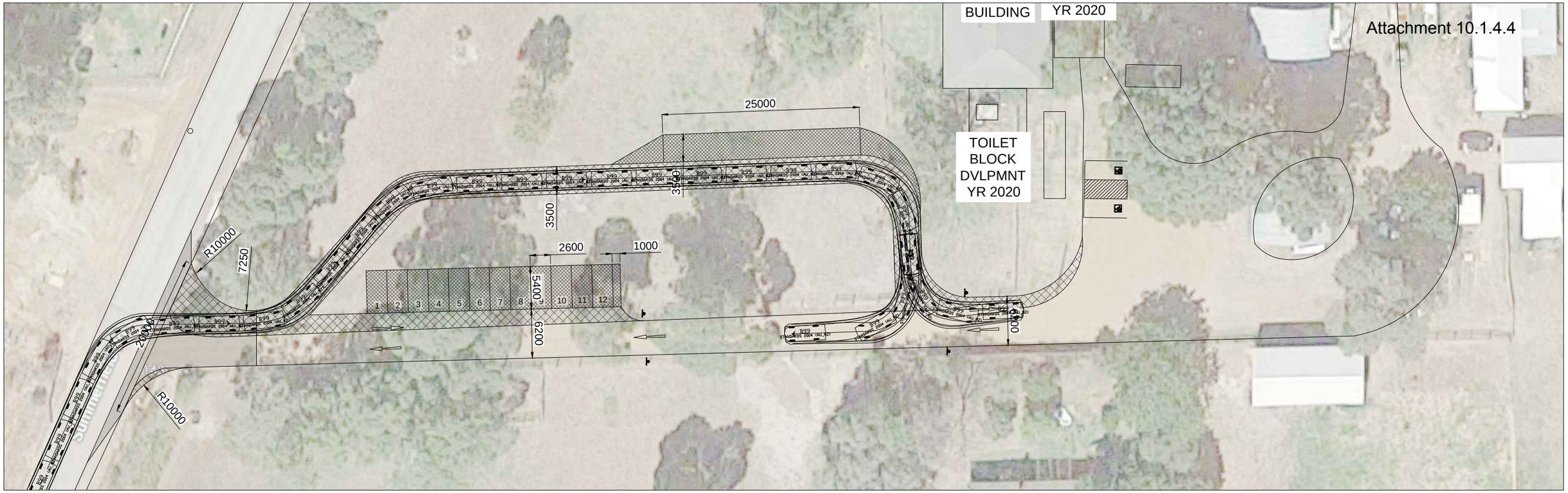
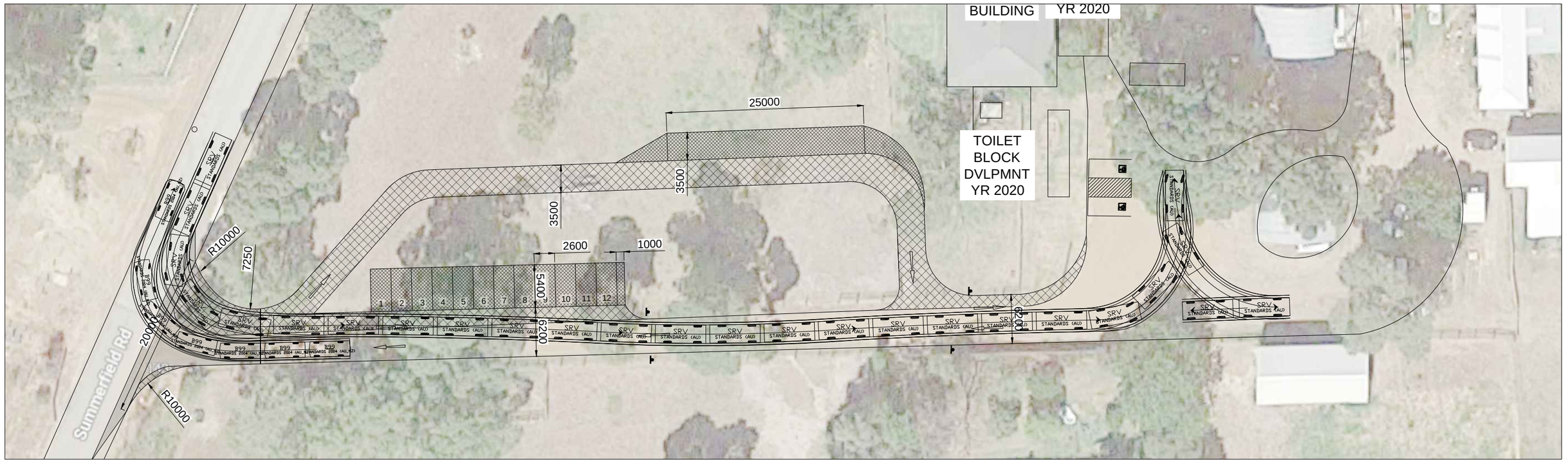
SWEPT PATHS – B99/SRV

Attachment 10.1.4.4





SWEPT PATHS - B99 AND SRV
INTERNAL MOVEMENTS
SCALE 1:500 @ A3

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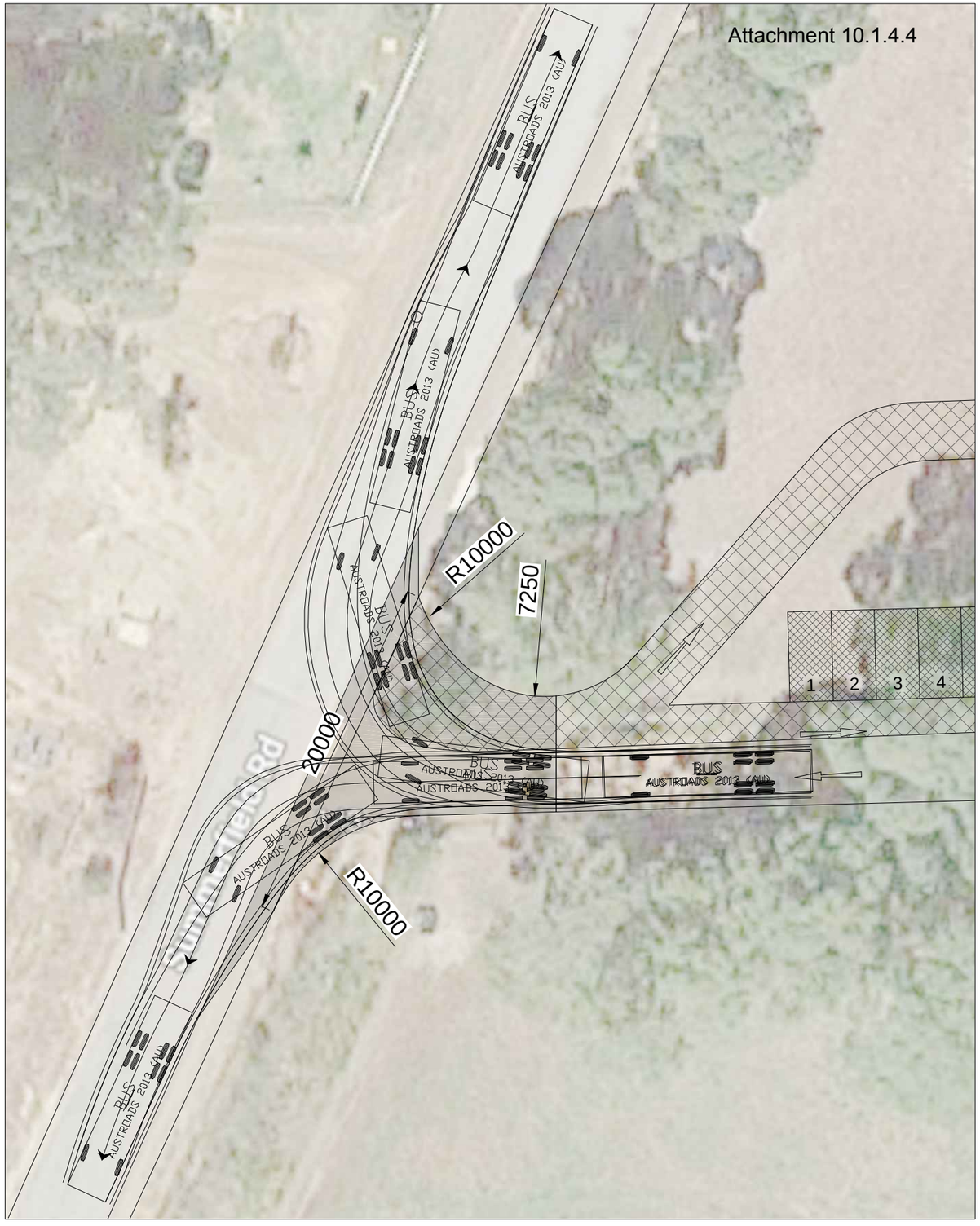
SWEPT PATHS – B99/SRV



SWEPT PATHS - BUS

SCALE 1:300 @ A3

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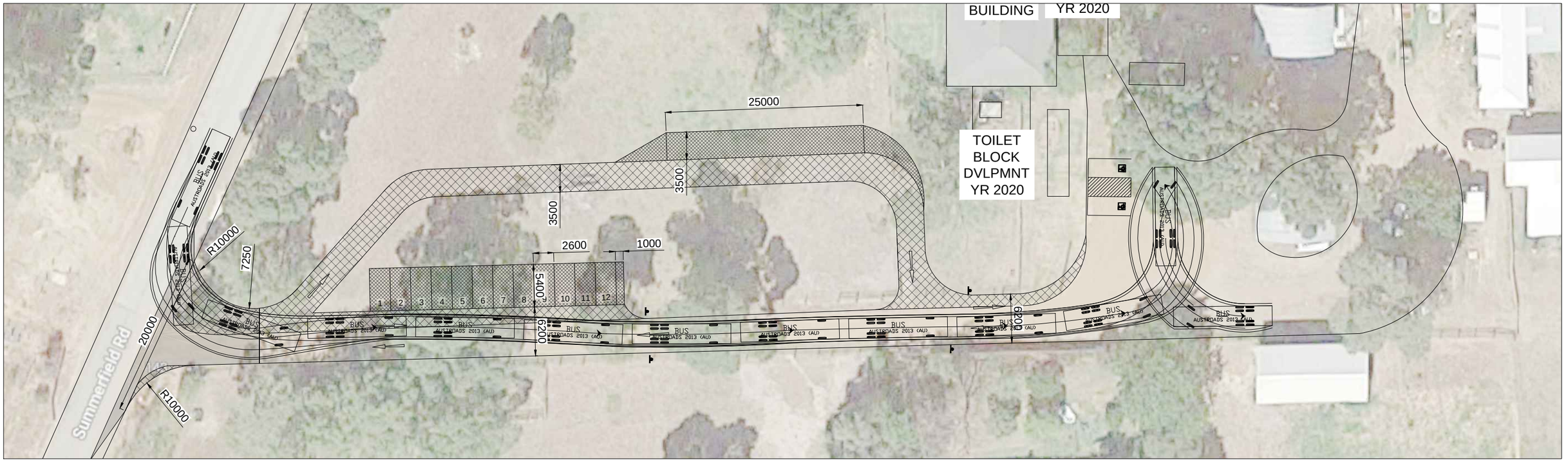
SWEPT PATHS – BUS



SWEPT PATHS - BUS INTERNAL MOVEMENTS

SCALE 1:500 @ A3

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SWEPT PATHS – BUS