

traffic impact assessment

**for additions to the lourdes village seniors development, 95
stanhope road, killara**

prepared on behalf of Aevum Limited by **TRAFFIX** traffic & transport planners
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1. introduction

TRAFFIX has been commissioned by Hill Talis Architecture, on behalf of Aevum Limited, to undertake a traffic impact assessment in support of a development application relating to the development of 18 new seniors independent living units located at Lourdes Village, 95 Stanhope Road Killara. The development is located within the Ku-ring-gai Council LGA and has been assessed under that Council's controls.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately. The development is a minor development and does not require referral to the RTA under the provisions of SEPP (Infrastructure) 2007.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions.



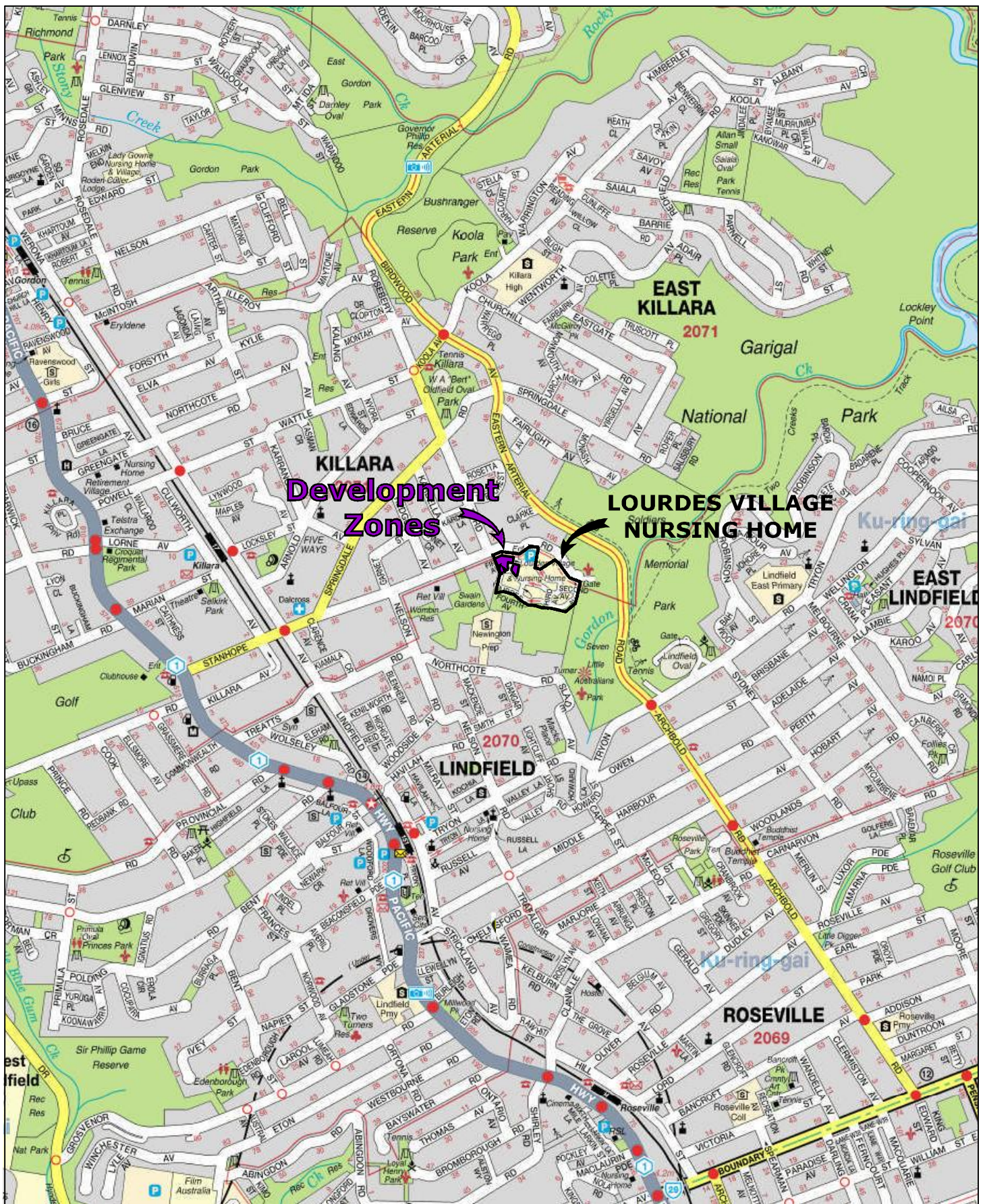
2. location and site

Lourdes Village is located on the southern side of Stanhope Road, and is bound by a residential dwelling to the west and parkland to the south and east. Stanhope Road forms the northern site boundary.

Access to Lourdes Village is provided via three (3) driveway crossings to Stanhope Road. There is a driveway approximately 65 metres to the east of Rosebery Road which provides access to a small car park at the rear of the existing community facility. The main driveway, providing access to the internal road system, lies approximately 100 metres to the east of Rosebery Road. Another secondary access is provided at the eastern end of Stanhope Road, however this is a gated access primarily for emergency use.

The subject site(s) form part of the existing Lourdes Village site. The 'Stanhope' development is located in the northwestern corner of the site in what is currently occupied by the car park to the rear of the community facility. The 'Southwest' building is located to the southwest of the community facility with the 'Croquet' development situated to the west of the existing croquet lawn and independent living units.

A Location Plan is presented in **figure 1**, with a Site Plan presented in **figure 2**. Reference should also be made to the Photographic Record presented in **appendix a**, which provides an appreciation of the general character of roads and other key attributes in proximity to the site.



Source: UBD 2008

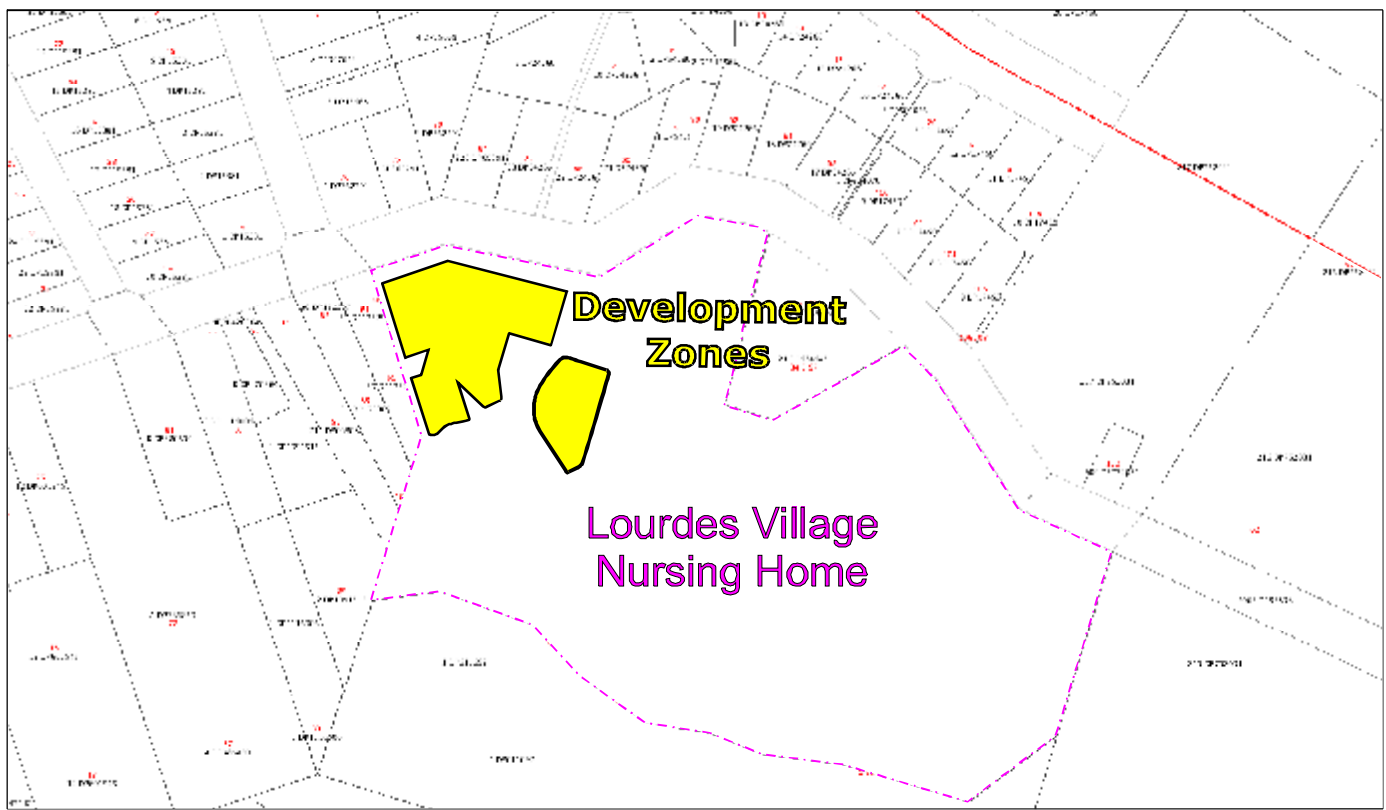


traffic impact assessment: seniors living development
95 stanhope road, killara

figure 1
location



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aerial photograph: dated January 2007

0 100m

+ lands department cadastre plan

0 100m

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figure 2
site

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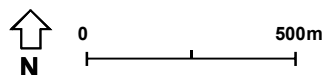
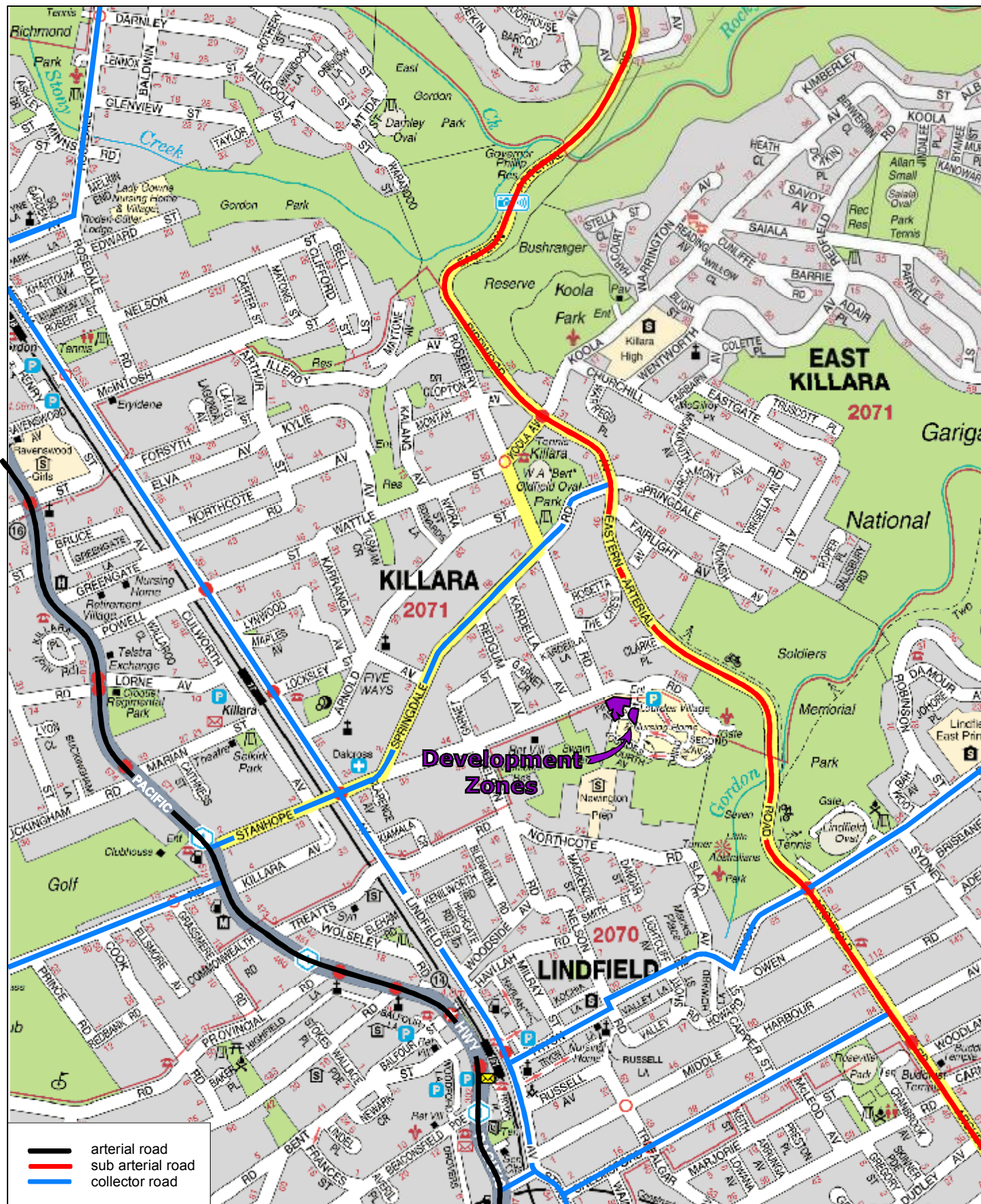


3. existing traffic conditions

3.1 road hierarchy

The road hierarchy in the vicinity of the site is shown in **figure 3** with the following roads of particular interest:

-  Pacific Highway: an RTA State Road (MR 10) that generally runs in a north-south direction running from North Sydney in the south to Newcastle in the north. This road runs along the eastern side of the site and will provide the main site access. It carries approximately 48,000 vehicles per day (vpd) to the west of the site;
-  Eastern Arterial Road: a sub-arterial road that runs in a north-south direction to the east of the site. It carries in the order of 19,000vpd to the north of Springdale Road;
-  Springdale Road: a collector road that generally runs in an east-west direction between Stanhope Road and the Garigal National Park. Together with Stanhope Road and Koola Avenue, it forms part of a major east-west regional route (RR 7349);
-  Stanhope Road: Generally runs in an east-west direction between the Pacific Highway in the west and the Lourdes Village in the east. It is a local road in the immediate vicinity of the site, however Stanhope Road is classified as part of RR 7349 between the Pacific Highway and Springdale Road. All vehicle access to the site is provided from Stanhope Road;
-  Werona Avenue: a local collector road to the west of the site that runs in a north-south direction to the west of the site. It runs parallel to the Pacific Highway, on the eastern side of the North Shore railway line.
-  Rosebery Road: a local road that runs in a north-south direction to the west of the site.



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figure 3
road hierarchy





It can be seen from **figure 3** that the site is conveniently located with respect to the arterial and local road systems serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising traffic impacts.

3.2 general description of road environment

The Pacific Highway is constructed with an 18 metre divided carriageway and generally carries three lanes of traffic in either direction. The Pacific Highway forms a signal controlled intersection with Stanhope Road to the west of site and is subject to a speed zoning of 60 km/hr.

Stanhope Road is constructed with an 8 metre wide undivided carriageway and carries a single lane of traffic in either direction in addition to kerbside parking. A westbound left turn lane is provided at its intersection with the Pacific Highway through the restriction of kerbside parking. Stanhope Road is subject to a 50 km/hr speed zoning.

Werona Road is constructed with an 8 metre wide undivided carriageway and carries a single lane of traffic in either direction. Werona Road forms a signal controlled intersection with Stanhope Road to the west of site and has a speed limit of 50 km/hr.

The internal road system within Lourdes Village generally comprises an inner and outer circumferential loop road arrangement with additional radial connections between the two. The loop road generally allows one-way (clockwise) circulation, however a length of the outer perimeter road is marked as two-way with a width of approximately 4.1 metres. Whilst this width is insufficient for two way flow, the good visibility within this area means that drivers can wait before proceeding onto this length. The main access and inner loop road are marked two-way up to the turning area adjacent the community facility and to the south of the high care facility.

3.3 public transport

The existing bus services that operate in the locality are shown in **figure 4**. It is evident that the site benefits from good access to the public transport system with buses running along Stanhope Road



between Lindfield and east Killara. Furthermore the site is located approximately 1.2km and 1.5km walking distance from the Killara and Lindfield railway stations, respectively.

A public bus service (Route 556) operates through the Lourdes Village up to twice a day during weekdays and the Village provides additional private shuttle bus services. The Transdev TSL Shorelink Buses services are timetabled to occur at 9.27am and 12.29pm which meets the requirements of SEPP Seniors regarding public transport access to facilities.

3.4 existing site generation

The specific sites of the proposed development are generally open space and do not generate traffic in their own right. The 'Stanhope' site is currently occupied by a car park, however it is expected that any traffic associated the use of this parking area would simply be displaced post development and not removed. In this regard, any traffic generated by the proposed development would be considered a net increase above existing traffic volumes.



4. description of proposed development

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development for which approval is now sought seeks to provide an additional 18 independent living units across three distinct areas within the Lourdes Village as follows:

‘Stanhope’

- Construction of a new basement access to Stanhope Road;
- A total of 10 independent living units including:
 - 2 one bedroom plus study units;
 - 4 two bedroom units; plus
 - 4 two bedroom plus study units;
- New basement car park with a total of 15 parking spaces including 10 resident spaces plus 5 visitor/staff spaces;

‘Croquet’

- New basement car park, accessed from the internal road system, with a total of 4 resident spaces;
- A total of 4 independent living units including:
 - 4 two bedroom plus study units;
- Internal changes to the Lourdes Village road system to permit two-way flow up to the entrance of the ‘Croquet’ basement access;

‘Southwest’

- New basement car park with a total of 4 resident spaces. Two (2) additional visitor spaces are to be provided within the internal road verge, to the south of the ‘Southwest’ building;
- A total of 4 independent living units including:



- 2 one bedroom plus study units; and
- 2 three bedroom plus study units;

The parking and traffic impacts arising from the development are discussed in Sections 5 and 6, respectively. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **appendix b**.



5. parking requirements

5.1 council controls

The Ku-ring-gai Council DCP 43 provides the following recommended parking rates for resident funded developments:

2 spaces per 3 self contained units; plus

1 visitor space per 5 units;

Application of the above rates results in a requirement to provide a total of 16 spaces, including 12 resident and 4 visitor spaces. However the DCP also states that the provisions of SEPP 5, which is now superseded by SEPP Seniors, apply which requires a minimum provision of 0.5 spaces per bedroom to be provided which results in the parking requirement outlined in Table 1, below.

table 1: SEPP Seniors parking rates and provision

Type	No. Units	Parking Rates	Spaces Required	Spaces Provided
Stanhope				
One Bed	2	0.5 / bedroom	1	2
Two Bed	8	0.5 / bedroom	8	8
Visitor		n/a	nil	5
Croquet				
Two Bed	4	0.5 / bedroom	4	4
Visitor		n/a	nil	nil
Southwest				
One Bed	2	0.5 / bedroom	1	2
Three Bed	2	0.5 / bedroom	3	2
Visitor		n/a	nil	2
Totals			17	25



It can be seen from above that the car parking provided exceeds the minimum requirements of both Council's DCP and SEPP Seniors. Each independent unit is provided with a single parking space with additional shared parking provided for visitors and staff.

It is noted that the existing car park on the 'Stanhope' site will be removed which results in the loss of 11 existing spaces plus a garage for mini-bus parking. Two of these spaces are reserved for use by the mini-bus as a turning bay. However, the remaining 9 spaces are currently underutilised and the 5 visitor/staff spaces provided by the development will accommodate any additional demands associated with the existing use of these spaces.

Alternate parking for the mini-bus is proposed within the car port on the eastern side of the Nursing Home building. The use of this space will need to be managed as it requires the mini-bus to reverse approximately 25 metres.

Table 2, below, provides a summary of the car parking requirements and provision for the overall site both currently and post development.



table 2: DCP 43 parking rates and provision – entire Lourdes Village

Type	No. Units	Council Parking Rate	Spaces Required	Spaces Provided
EXISTING			163	165
<i>Resident Parking</i>			106	92
ILU	108 units	2 space / 3 units	72	
Serviced Apartment	51 units	2 space / 3 units	34	
<i>Visitor Parking¹</i>			40	55 ¹
ILU & Serviced Visitors	159 units	1 space / 5 units	32	
Hostel Beds	19 beds	1 space / 10 beds	2	
Nursing Home Beds	63 beds	1 space / 10 beds	6	
<i>Staff Parking</i>			17	18
Staff ²	23 staff	1.5 space / 2 staff	17	
PROPOSED			178 (177)³	180
<i>Resident Parking</i>			118	115
ILU	126 units	2 space / 3 units	84	
Serviced Apartment	51 units	2 space / 3 units	34	
<i>Visitor Parking¹</i>			43 ¹ (42) ³	45 ¹
ILU & Serviced Visitors	177 units	1 space / 5 units	35	
Hostel Beds	19 beds	1 space / 10 beds	2	
Nursing Home Beds	63 beds	1 space / 10 beds	6	
<i>Staff Parking</i>			17	20
Staff ²	23 staff	1.5 space / 2 staff	17	

Note: 1) This is unassigned parking which is also available for use by both residents and visitors.
 2) On-site at any one time
 3) See following commentary.



The site requires the provision of a total 118 resident spaces. A total of 115 spaces are allocated for resident use with the balance of 3 spaces provided through sharing of the unassigned visitor parking. This is expressly permitted under Council's DCP.

With regard to the visitor parking, 43 spaces are nominally required. However, there are 3 unassigned resident spaces which effectively satisfy the visitor requirement of up to 9 self-contained units and when this adjustment is made, there is a need for only 42 designated visitor spaces.

The parking requirements of the entire Lourdes Village as required under SEPP Seniors is demonstrated in Table 3, below. This is based on the schedule included on Drawing DA7.1, prepared by Hill Thalys, with the additional 18 ILU's added (including 4 one bed, 12 two bed and 2 three bed units).



table 3: SEPP Seniors parking rates and provision – entire Lourdes Village

Type	No. Units	Council Parking Rate	Spaces Required	Spaces Provided
EXISTING			151	165
<i>Resident Parking</i>			129	92
<i>ILU</i>	108 units			
One Bed	31 units	0.5 / bedroom	15.5	
Two Bed	55 units	0.5 / bedroom	55.0	
Three Bed	22 units	0.5 / bedroom	33.0	
Serviced Apartment	51 units	0.5 / bedroom	25.5	
<i>Visitor Parking¹</i>			10.1	55 ¹
Hostel Beds	19 beds	1 space / 5 beds	3.8	
Nursing Home Beds	63 beds	1 space / 10 beds	6.3	
<i>Staff Parking</i>			11.5	18
Staff ²	23 staff	1.0 space / 2 staff	11.5	
PROPOSED			168	180
<i>Resident Parking</i>			146	115
<i>ILU</i>	126 units			
One Bed	35 units	0.5 / bedroom	17.5	
Two Bed	67 units	0.5 / bedroom	67.0	
Three Bed	24 units	0.5 / bedroom	36.0	
Serviced Apartment	51 units	0.5 / bedroom	25.5	
<i>Visitor Parking¹</i>			10.1	45 ¹
Hostel Beds	19 beds	1 space / 5 beds	3.8	
Nursing Home Beds	63 beds	1 space / 10 beds	6.3	
<i>Staff Parking</i>			11.5	20
Staff ²	23 staff	1.0 space / 2 staff	11.5	

Note: 1) This is unassigned parking which is also available for use by both residents and visitors.

2) On-site at any one time



From above, it can be seen that Council's DCP 43 are critical when assessing the development car parking requirements. It is noted that

Having regard for the above, the overall development is required to provide a total of 180 spaces under Council's controls. The overall parking provision of 180 spaces satisfies Council's requirements and is considered acceptable.

5.2 disabled parking

All (18) resident parking spaces are to be designed for use by persons with a disability. Council's DCP 43 requires these spaces be provided with a width of 3.2 metres. In further consultation with Council officers, it was advised that Council now nominally seek compliance with AS 2890.6 (2009) which requires a space width of 2.4 metres plus a 'shared area' of an additional 2.4 metres. (i.e. 4.8 metres for a single space or 7.2 metres for two spaces).

In response, all resident spaces have been designed in accordance with AS 2890.6 (2009). It should be noted that the width of two adjacent spaces and shared area in accordance with AS2890.6 (7.2 metres combined), as proposed, exceeds the minimum width required under AS2890.1 (1993) referred to in SEPP Seniors (6.4 metres OR 7.0 metres, if including the 5% of spaces with an adaptable width of up to 3.8 metres).

5.3 servicing

Current servicing of the site includes collection of:

- 29 general waste bins collected twice weekly from within the village (16 for ILU's plus 13 for the Nursing Home);



- 30 recycling (21 paper & cardboard, 9 bottles & plastic) picked up weekly from within the village and Nursing Home;
- Weekly pickup of a skip bin at the rear of the administration building;
- 8 garden refuse (green) bins picked up fortnightly from Stanhope Road;

No change to the existing servicing arrangements are proposed or considered necessary in support of the proposed development.

Garbage collection will continue to occur from within the internal road system for the 'Southwest' and 'Croquet' site with collection occurring from on-street in Stanhope Road for the 'Stanhope' development. It is expected that the following additional bin requirements will be required by the proposed development:

- 2 general waste bins collected twice weekly;
- 2 recycling bins (1 paper, 1 bottles) picked up weekly;

It is also proposed to replace the administration skip bin with 4 general waste bins which would be collected from Stanhope Road. This will relieve the need for a separate skip bin truck to access the site which has benefits for the surrounding road network.

There are no known issues with the existing servicing arrangements and these conditions will not change significantly as a result of the proposed development. Slightly increased 'dwell times' for waste collection vehicles will have no measurable impact on the surrounding road network due to the relatively low traffic volumes at the eastern end of Stanhope Road, adjacent the site. It should be noted that the additional number of bins to be collected from Stanhope Road is similar to that which would be required were the frontage occupied by up to four dwelling houses.

In summary, the proposed servicing arrangements are considered appropriate.



6. traffic impacts

6.1 trip generation

The RTA's Guide to Traffic Generating Developments recommends a peak hour traffic generation rate of between 0.1-0.2 trips per dwelling for seniors developments. Application of this rate to the 18 units proposed results in a total generation of up to 4 trips per hour during peak periods.

The 'Stanhope' basement would be expected to experience up to 7 trips per hour including 2 new resident trips and up to 5 staff and visitor trips. However, as discussed in Section 3, these staff/visitor trips are existing trips associated with the use of current car park at the rear of the community facility and are not a net increase on existing conditions.

6.2 traffic impacts

The development results in a net increase of only 4 movements per hour, or 40 trips per day. This is a minor increase and will have an indiscernible impact on the performance of the surrounding road network or surrounding residents.

Due to the distribution of development across the site and the access arrangements proposed, it is expected that only an additional 2 movements per hour would occur on the internal road system within the Lourdes Village.



7. access & internal design aspects

7.1 access

Access to the Lourdes Village will remain as per the current layout with the exception of the new basement access to the 'Stanhope' building which includes a new vehicle crossing to Stanhope Road. AS 2890.1 requires the provision of a Category 1 driveway with a width of between 3.0-5.5 metres for the 'Stanhope' site. An increased width of 6.415 metres is proposed to allow the installation of a card reader/intercom at the access for security reasons.

AS 2890.1 requires that the driveway gradient be limited to 1:20 (5%) for the first 6 metres from the property boundary. The development proposes a reduced length of 4 metres at 1:20 which is considered acceptable in the circumstances considering the low traffic volumes and number of passing pedestrians at this access.

Access to all sites is demonstrated by the swept paths included in **appendix c**. It is noted that a kerb blister is to be provided on the southern side of the 'Croquet' access to ensure that passing traffic is off-set from this access so that acceptable sight distances can be achieved.

An indicative pedestrian crossing location has been proposed approximately 30 metres to the west of the main site access to Stanhope Road. The warrants for a pedestrian crossing in terms of pedestrian and passing vehicular traffic are not expected to be met at this location, or indeed, within any reasonable distance of the site. Therefore, a formal pedestrian ('zebra') crossing is not recommended and would be not in any case be supported by the RTA having regard for relevant Austroads Guidelines. Indeed, where a warrant is not met, such a crossing would be unsafe as its infrequent use would lead to complacency amongst the driving public at other crossing locations, which has more strategic implications for road safety as a whole. This is in fact the basic objective of the warrant criterion.

A pedestrian refuge island would therefore be considered the most appropriate treatment, in the event that Council was to require a crossing of Stanhope Road. A central refuge island would ensure that adequate crossing sight distances can be achieved at this location in accordance with Austroads



guidelines. The travel time for elderly users to cross the full width would require excessive sight distance along Stanhope Road which cannot be achieved and therefore a staged crossing would be more appropriate with a refuge. This will require parking restrictions along Stanhope Road in the vicinity of the crossing which will need to be considered further by Council. In any event, this is a detailed matter that will require referral to Council's Traffic Committee and the existing pedestrian access arrangements associated with the approved Lourdes Village are not expected to be altered by the proposed development.

Access by fire services will not be changed as a result of the proposed development. Therefore any currently approved access arrangements for the overall Lourdes Village will be maintained. Reference should be made to the Bushfire Report, prepared separately, regarding access by rural bush fire services.

7.2 internal design

The internal design of all parking areas generally satisfies the requirements of AS2890.1 and AS 2890.6 with the following considered noteworthy:

- All resident parking spaces are designed in accordance with AS 2890.6 (2009) in accordance with advice from Council officers;
- The plans indicate a minimum vertical clearance of 2.2 metres within the Stanhope car park which is consistent with the requirements of AS2890.6 (2009);
- Visitor/staff spaces are provided with a width of 2.5 metres which is appropriate;
- A convex mirror should be installed within the 'Stanhope' basement to improve visibility between cars waiting to leave the basement and vehicles entering the site. This is a detailed matter that can be addressed in subsequent construction documentation;
- An improved kerb return is proposed on the northern side of the 'Croquet' basement entry to allow two-way flow between this car park and the Lourdes Village access. The internal road up to this point has a width in excess of 6 metres which is sufficient for two-way flow. One-way (clockwise) flow will still apply to the remainder of the internal loop road which is reinforced by the construction of a kerbside blister on the southern side of the 'Croquet' access;



- The opening from the 'Croquet' car park to the existing basement car park underneath the croquet lawn and high care facility is to be widened under the proposal to match the existing aisle width. It is noted that the proposal intends to widen the access to that of the current parking aisle and therefore any existing deficiency related to the length of these garages is not considered part of the subject application;
- The Lourdes Village perimeter road generally has a width of 4 metres which does not meet the requirement for 6 metres under Rural Fire Brigade design requirements for access by emergency vehicles. There is potential for passing opportunities within the driveways and verge areas of this road such that this is not expected to be a significant issue. Furthermore, this is an existing deficiency and any remedial works to rectify this situation would be considered onerous with regard to the development proposed. Reference should be made to the report prepared by the bushfire consultant regarding this issue further;
- Reference should be made to the swept paths provided in **appendix c** which demonstrate access and provide further comments regarding minor changes to the plans that will be required prior to construction;

In summary, the internal design of the car park is acceptable and will provide a high standard of safety and efficiency.



8. conclusions

In summary:

- Lourdes Village is an established retirement village and the proposed development is only a minor increase above that already approved (and operational) on the site. Any minor departure from relevant guidelines associated with the existing village are considered to be established conditions and the moderately increased number of independent living units is not expected to create a significantly increased demand that would warrant retrospective consideration of the overall site in terms of its accessibility to public transport services, traffic or parking;
- The development requires the provision of a total of 17 spaces under the minimum requirements of SEPP Seniors and Council's DCP. In response a total of 25 spaces are proposed, including 7 visitor/staff spaces which are intended to off-set the removal of the existing car park on the 'Stanhope' site which, in any case, is underutilised;
- Increased traffic of 4 vehicles per hour associated with the development will be minimal and there will be no discernable impact on the performance or amenity of the surrounding road network;
- The proposed access and internal design is generally considered acceptable as discussed in Section 7;

It is therefore concluded that the proposed development is supportable on traffic planning grounds and the proposed development will operate satisfactorily.

appendix a

photographic record



View looking south at the existing access to the car park located on the 'Stanhope' site.



View looking south at the main Lourdes Village site access.





View looking south at the secondary site access providing a connection with the Lourdes Village perimeter road.



View looking south along the main site access driveway towards its internal connection with the inner loop road. The community facility porte-cochere is on the right.





View looking east at the entry to the existing basement beneath the croquet lawns.

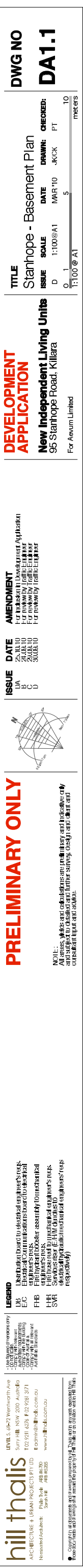


View looking north along Werona Avenue at its intersection with Stanhope Road.



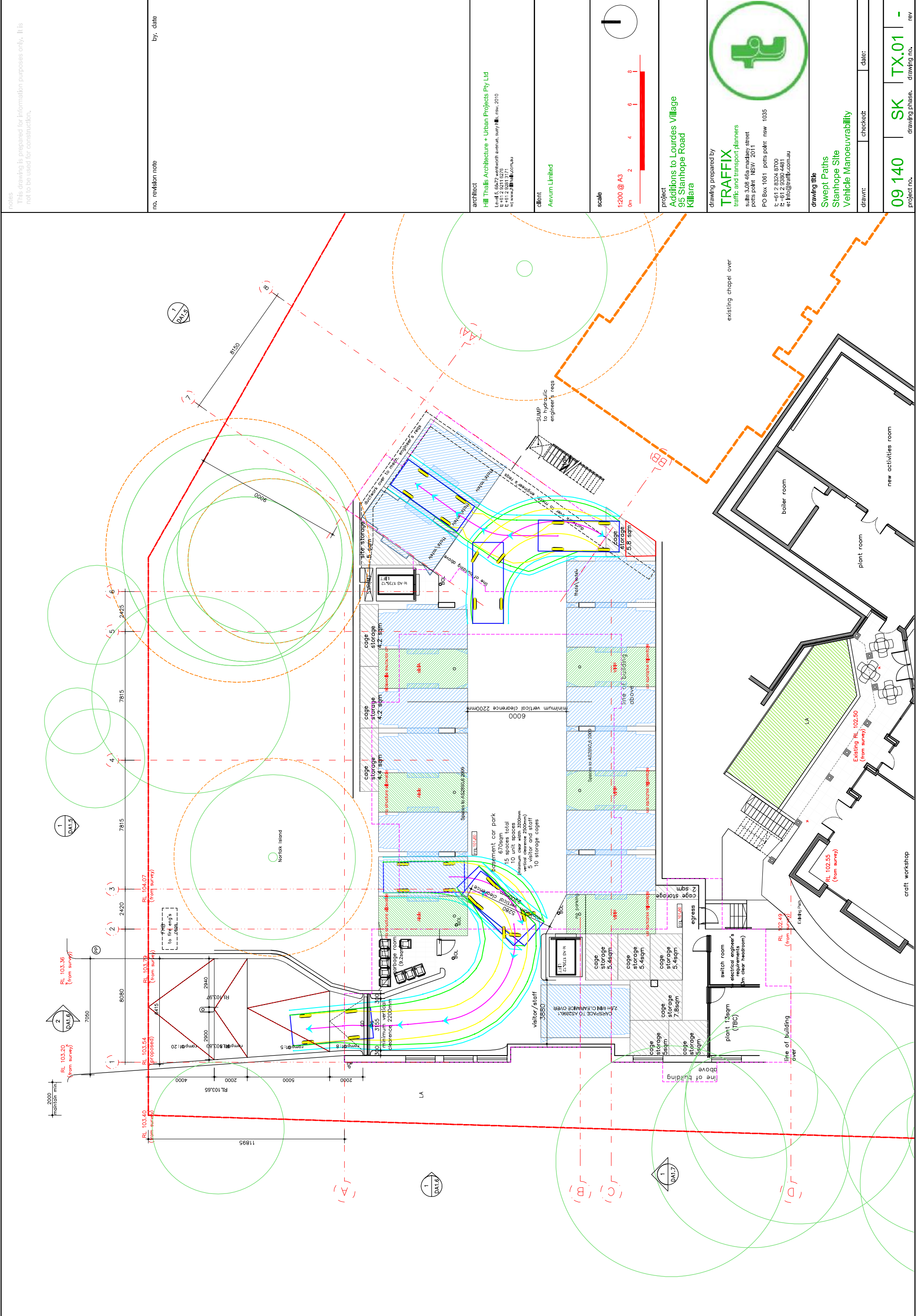
appendix b

reduced plans



appendix c

swept path analysis




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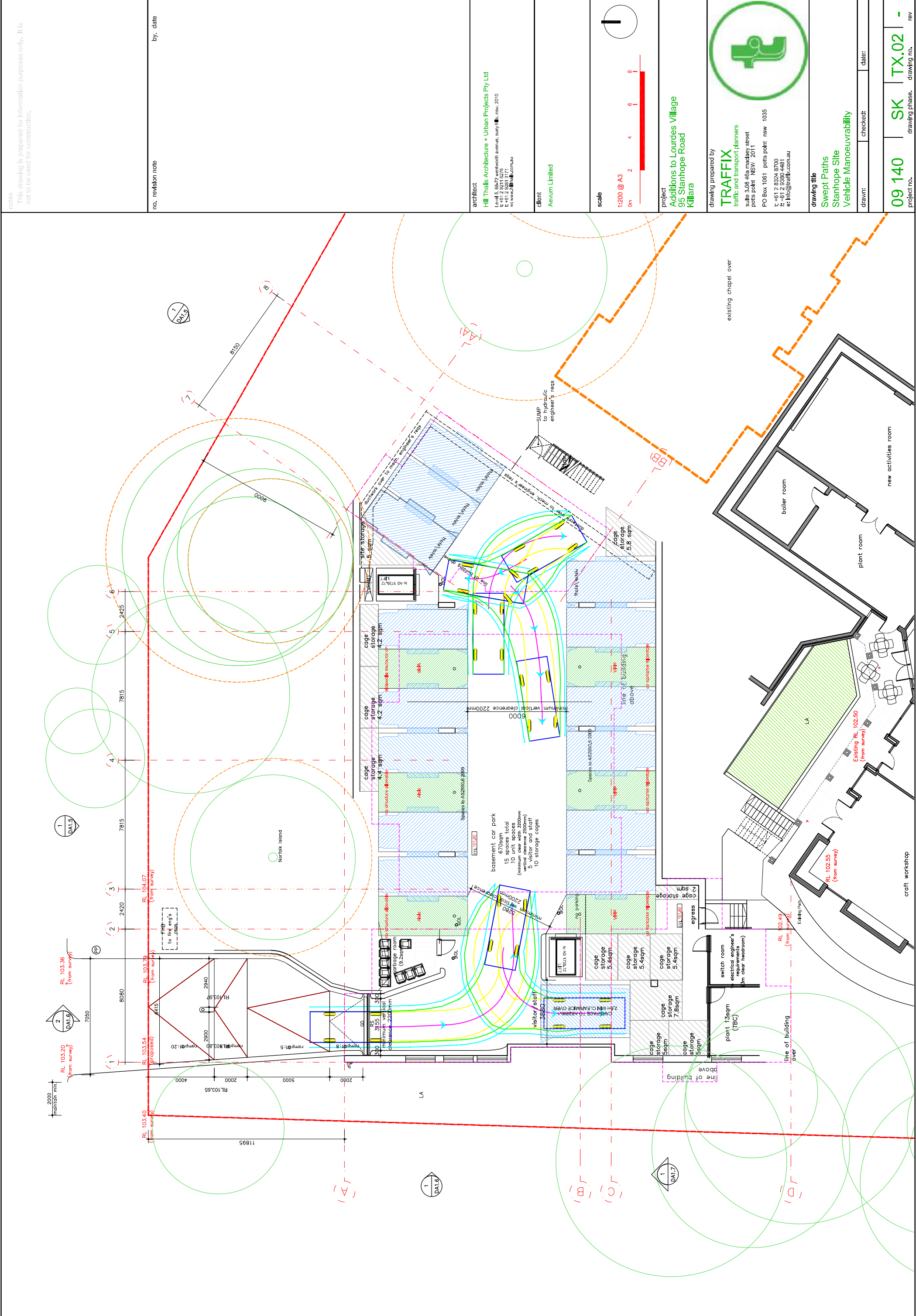
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drawing title
Swept Paths
Stanhope Site
Vehicle Manoeuvrability

drawn: checked: date:

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project no. drawing phase, drawing no. rev



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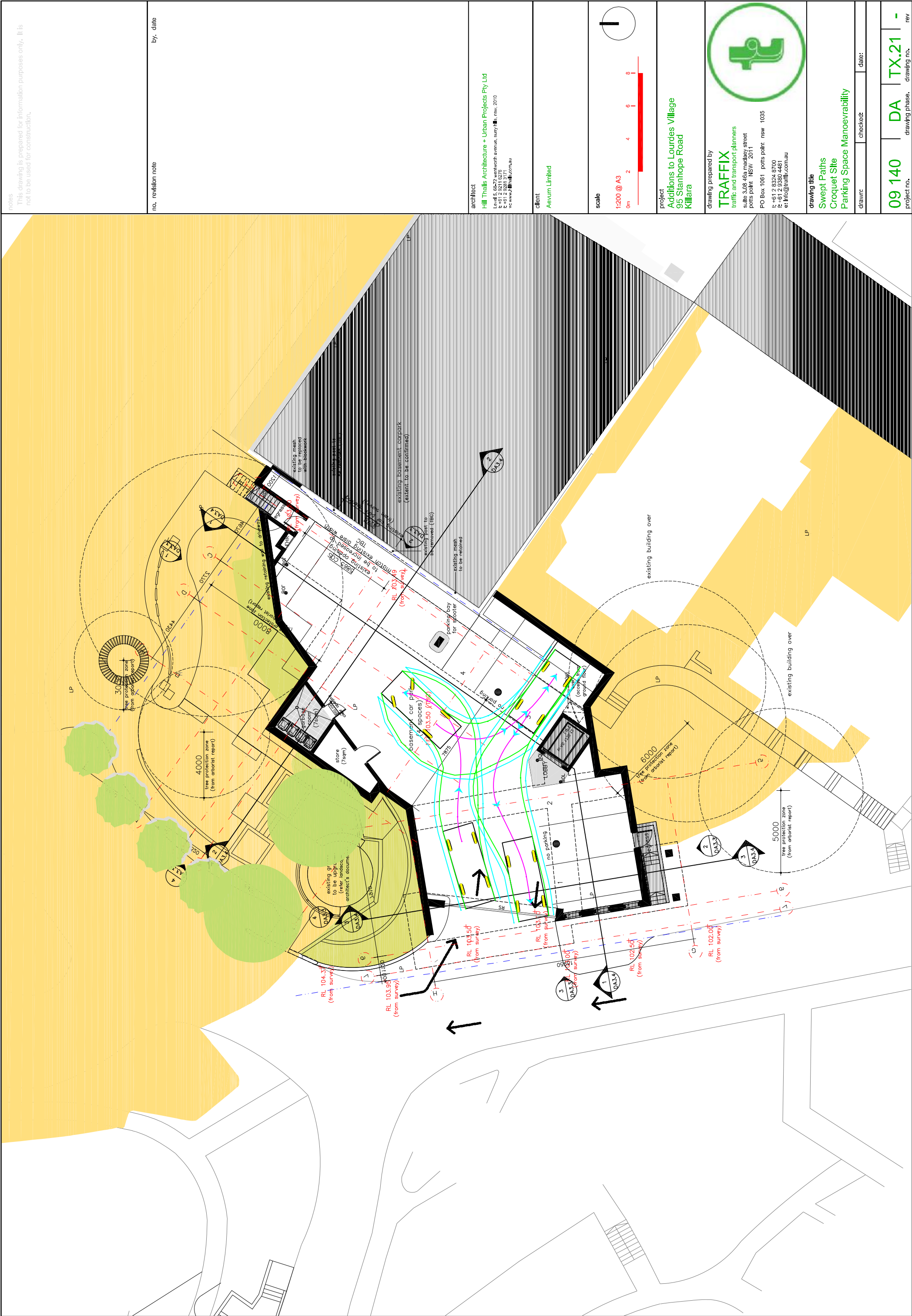
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Croquet Site
Parking Space Manoeuvrability

drawn: checked: date:

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project no. drawing phase, drawing no. rev