Appendix 4: Transport impact assessment

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transport planning
traffic engineering
modelling

St John of God Health Campus Development Plan (Subiaco)

Transport Impact Assessment

PREPARED FOR:
St John of God Health Care Inc
October 2022

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1 Introduction

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of St John of God Health Care Inc (SJGHC) with regards to the proposed Development Application (DA) for the St John of God Subiaco Hospital (SJGSH) located at Lot 800 (12) Salvado Road and Lots 147, 148 and 149 (177) Cambridge Street in Subiaco.

Transcore prepared a TIA in September 2020 for the original Local Development Plan (LDP). The Council resolved to approve the LDP for the site on 23 February 2021, and the LDP was approved on 3 March 2021. An updated development plan has been recently prepared by Silver Thomas Hanley (the architect of the project). The objective of this TIA is to undertake an updated traffic modelling and analysis for the proposed development and document the outcome of the traffic assessments.

The subject of this development application is the SJGHC landholdings which is shown in **Figure 1**. SJGSH is bound by Cambridge Street to the north, Salvado Road to the south, McCourt Street to the east and Station Street to the west. D'Arcy Lane currently runs through the site, forming a left-in/left-out intersection with Cambridge Street to the north and a full movement intersection with Station Street to the west.

As part of this assessment and previous studies undertaken by Transcore for SJGSH, extensive parking surveys, video traffic surveys and manual traffic counts have been undertaken to establish the existing traffic and parking situation at SJGSH. The followings provide a summary of the traffic surveys undertaken for the site:

- Transcore has undertaken a parking and traffic study for SJGSH which focused on the parking and traffic impact of the then proposed car park extension. The study was undertaken in early 2016;
- Transcore organised a 24-hour video survey of the existing site crossovers for a standard weekday in early December 2016;
- Transcore undertook manual traffic counts of the existing site crossovers for a standard weekday in August 2018; and,
- Transcore undertook video traffic counts for the entry/ exit points of the existing multi-level carpark in November 2021.

For the purpose of this project Transcore updated the original microsimulation models which were developed for the original LDP (using Vissim software) to effectively investigate traffic operations of the proposed development.

As part of the modelling process for the original LDP, Transcore developed an existing calibrated base case model (for year 2018) and a future base model for the original LDP (outset of the development). A review of the 2022 SCATS data for signalised intersections within the modelling study area indicates that the 2022 traffic counts have not changed significantly compared to 2018 and therefore the calibrated 2018 base case scenario

would reflect the 2021 situation, so there was no need to update the 2018 calibrated base case model.

However, the future case model was updated to reflect the latest development plan. A separate traffic modelling report is prepared to document the methodology and outcome of the microsimulation models.

Key transport issues that are addressed in this report include the anticipated traffic generation of the proposed development, capacity of nearby intersections and operations of key hospital crossovers.

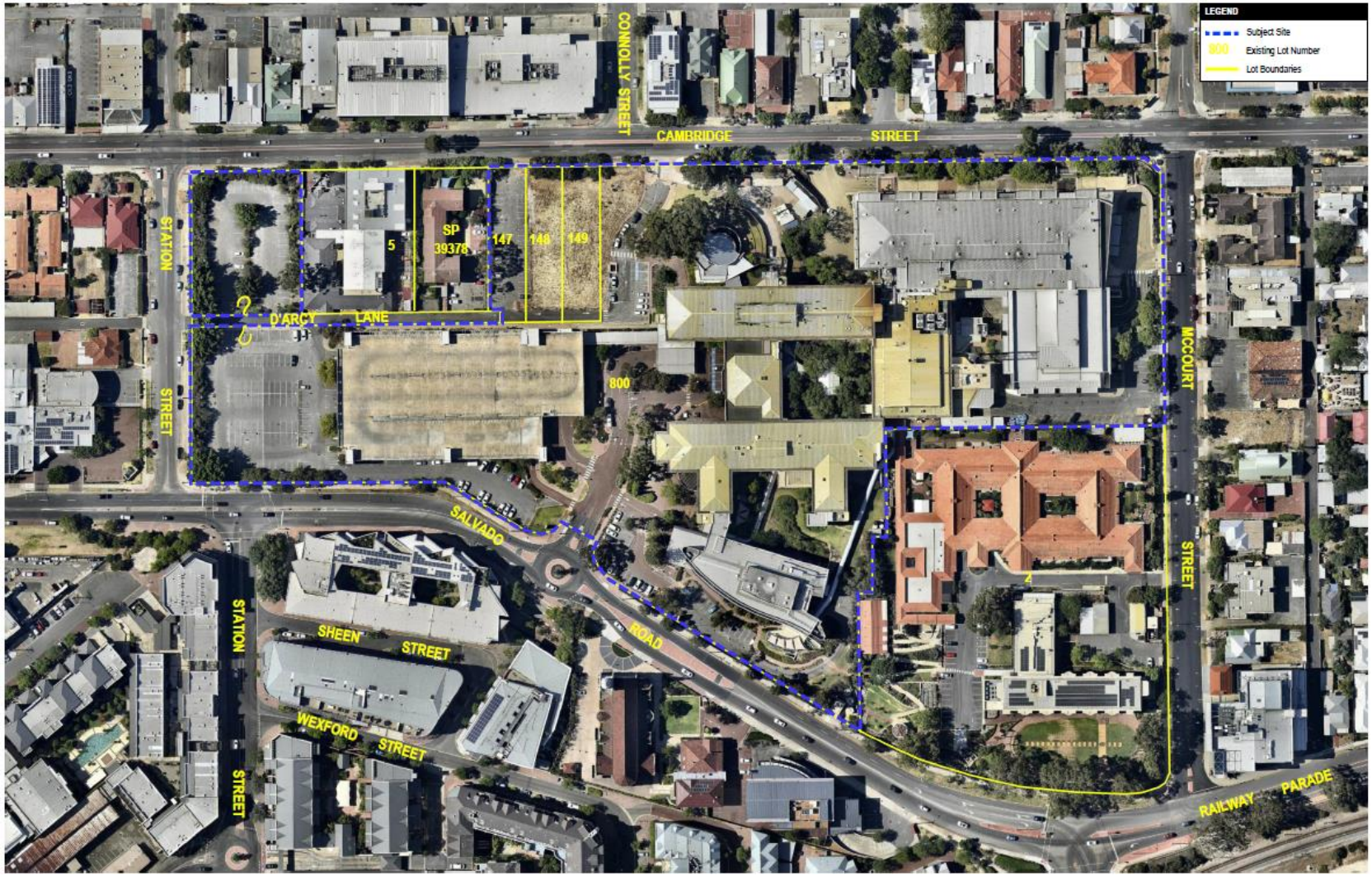

Figure 1: Site Plan (Source: Planning Solutions)

2 Development Proposal

The proposed development provides:

- New Clinical Block (NCB);
- Site Energy Plant (SEP);
- Medical suites;
- Additional car parking to the existing multi-level car park (addition of two new levels at the multi-level car park); and,
- Additional car parking under the proposed SEP in two levels.

The layout of the proposed development is included in **Appendix A**. **Figure 2** illustrates the proposed development areas.

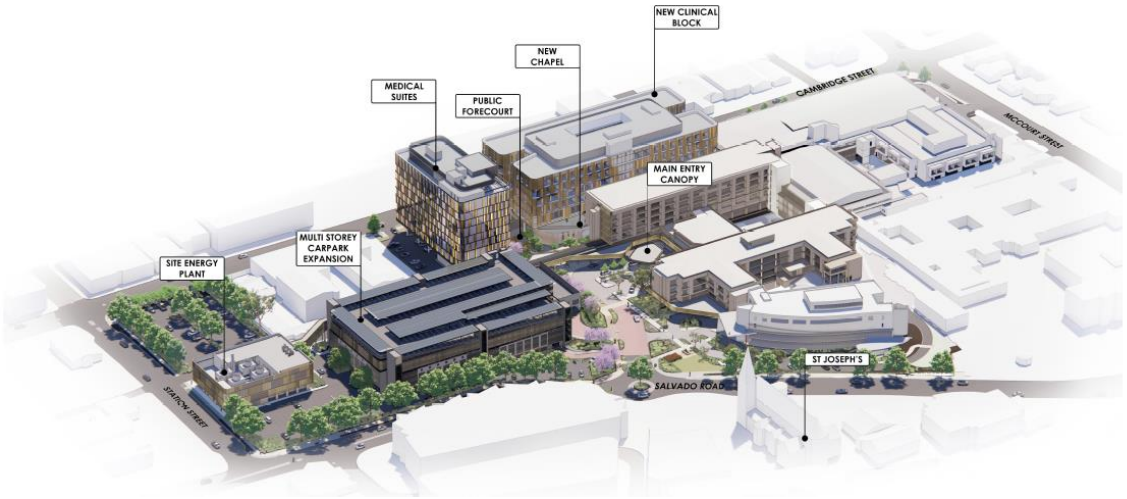

Figure 2: Proposed development areas

The NCB is a new 260-bed clinical block located along Cambridge Street. The NCB will include a new 24/7 ED, including ambulance and public entry accessed at the Cambridge Street frontage.

The proposed medical suites building is an 11-level (plus basement parking and roof-top plant) structure which will provide medical consulting services. The proposed medical suites will be constructed along Cambridge Street with total of about 81 parking bays for staff and public which would be distributed in three levels.

As part of the development, the existing four-level multi-storey carpark will be extended by adding a further two levels on top of the structure, increase the number of car parking bays from existing 644 bays to 951 bays (net gain of 307 bays). Additional 175 parking bays will also be provided in two levels under the proposed SEP.

As detailed in **Figure 3**, the proposed development continues to utilise the existing crossovers on surrounding roads for access/ egress to/ from the hospital compound with addition of two new crossovers on Cambridge Steet.

A new crossover will be constructed on Cambridge Street immediately west of the Subiaco Medical Clinic crossover, providing vehicle access the proposed eight (8) public parking bays and an access/ egress for the ambulance drop-off for NCB ED. The egress for the NCB public parking (8 bays) is from a modified existing crossover as shown in **Figure 3**.

A new controlled crossover is proposed on Cambridge Street about 40m to the east of Station Street which leads up to the existing parking area which is located at the south-east corner of the intersection of Cambridge Street/ Station Street. This crossover would be utilised infrequently by service vehicles to provide access to the SEP. The SEP is a proposed two-level (plus roof-top plant) building located to the west of the multi-storey carpark adjacent to Station Street and D'Arcy Lane.

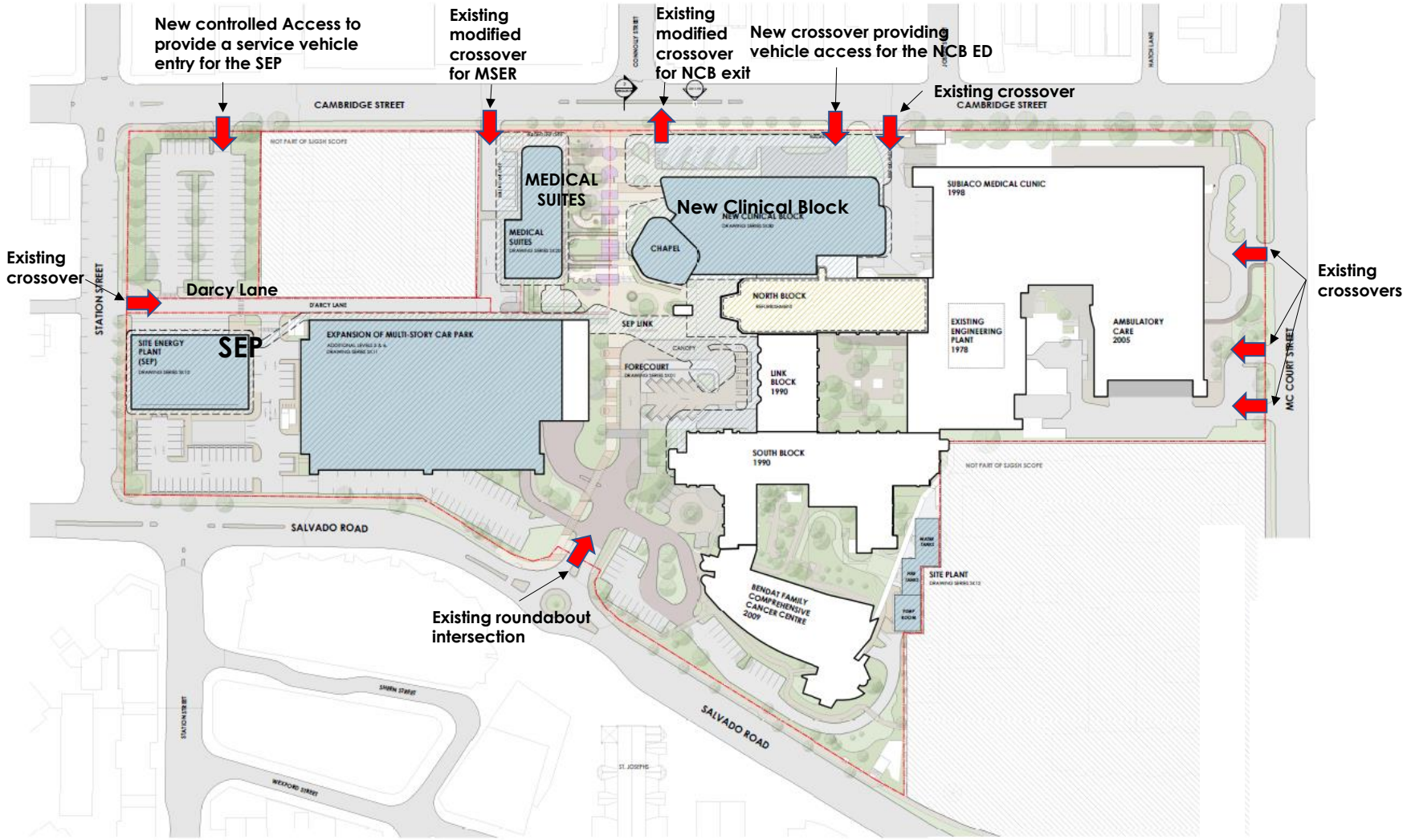

Figure 3: Existing and proposed access/egress

3 Existing Situation

3.1 Existing Site Use, Access and Parking

Several hospital buildings, clinics and a comprehensive cancer centre currently form part of the health campus. The convent and St Johns apartments are excluded from the boundaries of the health campus. The SJGSH House building was demolished in 2017 as part of the then Hospital redevelopment plan and recently replaced with a temporary carpark. The temporary car park will be removed and replaced by the new clinical block.

The boundary of the SJGSH campus is marked in green in **Figure 4**.

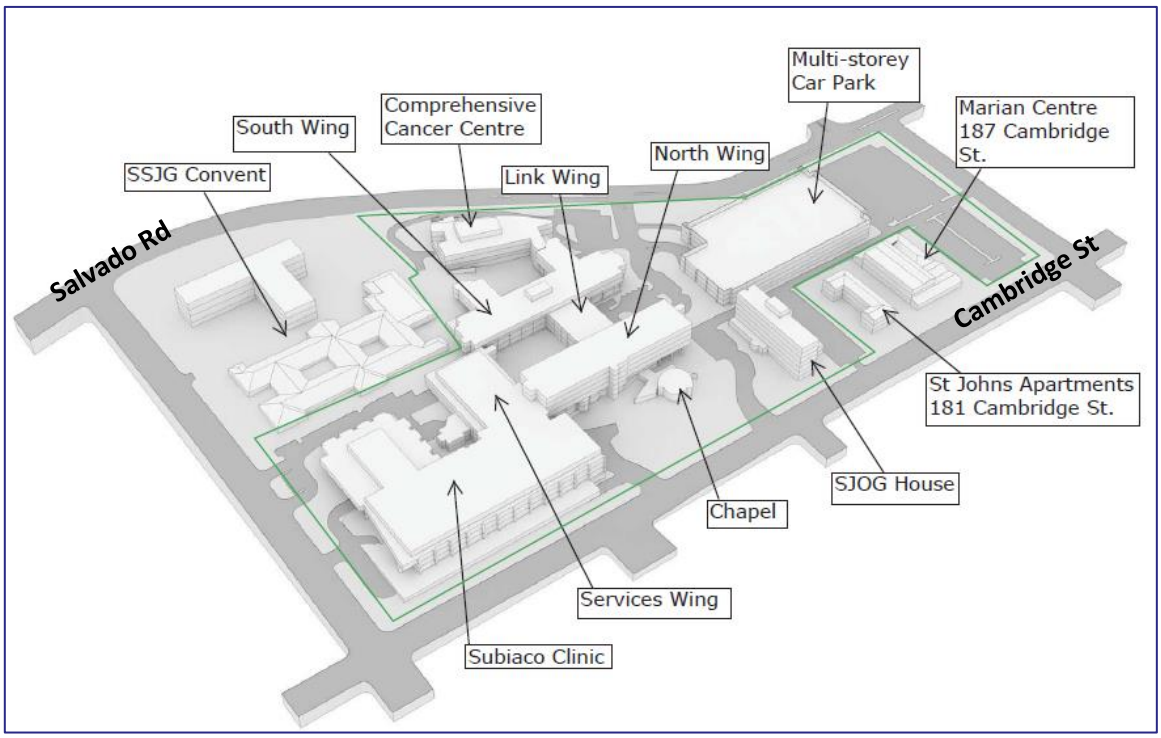

Figure 4: Existing site plan

Based on the information provided to Transcore, SJGSH currently has around 535 beds.

Existing vehicle access to and from the external road network is currently facilitated via multiple access crossovers on Cambridge Street, Station Street, Salvado Road and McCourt Street. The existing access crossovers are numbered in **Figure 5** and include:

1. Full movement intersection of D'arcy Lane / Station Street.
2. Roundabout intersection of an internal SJGSH road with Salvado Road, providing access to the main parking areas.
3. Dual crossover system (separate entry and exit to parking and delivery yard).
4. Full movement access into Subiaco Clinic and multi-level car park.

5. Full movement access to Sports Medicine parking and secondary access to Clinic multi-level car park.
6. Left-out only at D'arcy Lane / Cambridge Street (exit for temporary carpark).
7. Full movement crossover on Cambridge Street (currently gated).

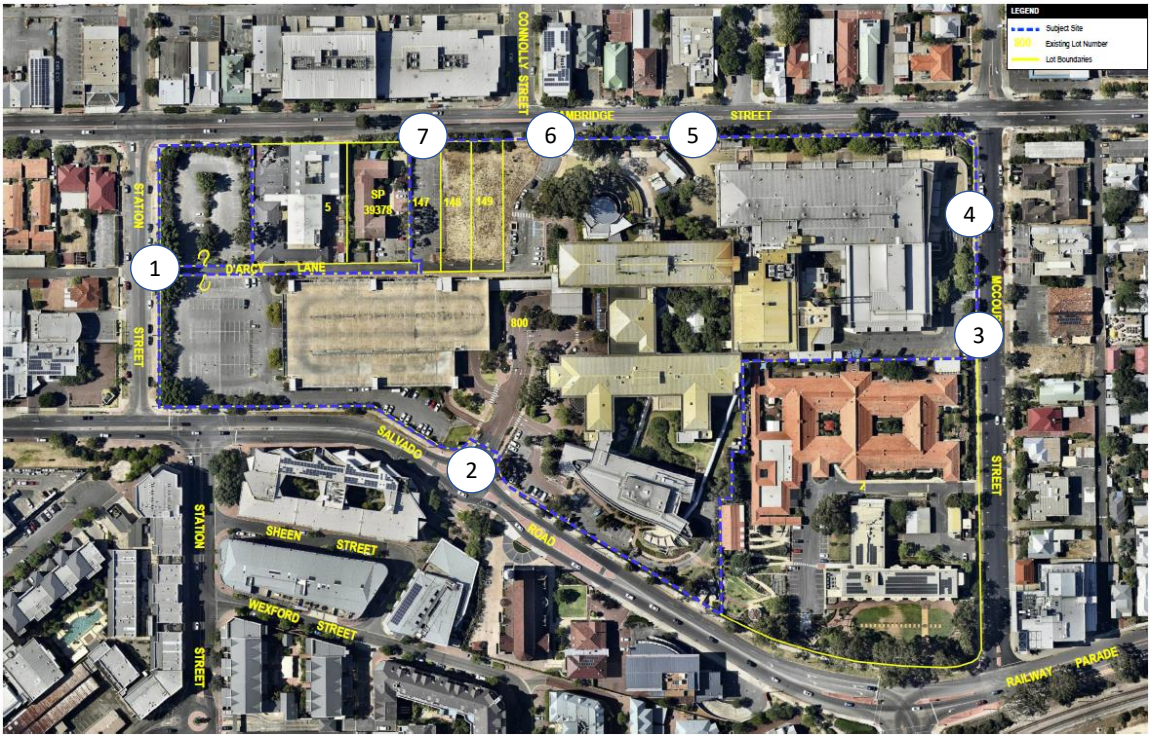

Figure 5: Existing vehicular access points

According to the parking survey undertaken by Transcore in December 2016 and the updated parking survey undertaken by Urbii in November 2021 currently around 1,353 parking spaces are provided across various parking areas within the campus. The existing multi-level car park provides about 644 parking bays in 4 levels.

3.2 Existing Site Traffic Generation

Transcore organised a 24-hour video survey of existing site crossovers during a typical weekday in early December 2016. Transcore also undertook up-to-date manual traffic surveys in August 2018, which confirmed consistency between the 2016 and 2018 data.

The video data was analysed to obtain directional traffic flows at all crossovers in 30-minute intervals for the 24-hour period.

Based on the survey information it is estimated that the existing SJGSH health campus generates about 9,310 vehicles per day (vpd). The highest traffic flows were recorded at:

- Site 2 – Roundabout access intersection on Salvado Road (43% of total traffic);

- Site 4 – Full movement access to/from the Subiaco Clinic on McCourt Street (21% of total traffic); and,
- Site 1 – Full movement access at intersection of D'arcy Lane / Station Street (16% of total traffic).

Analysis of the 2016 traffic survey data indicated that the AM peak hour for SJGSH occurs between 10:30am and 11:30am and the PM peak hour occurs between 1:00pm and 2:00pm.

The peak traffic generation periods for SJGSH do not coincide with the road network peak traffic periods.

Analysis of traffic surveys indicated that SJGSH currently generates about 631 vehicles per hour (vph) during the road network AM peak hour (between 8:00am and 9:00am). The campus generates about 488 vph during the road network PM peak hour (between 5:00pm and 6:00pm). Same date indicates that SJGSH generates peak traffic flows of about 781vph between 1:00pm and 2:00pm.

3.3 Existing Road Network

Cambridge Street

Cambridge Street adjacent to SJGSH is a four-lane divided road with a combination of raised and painted median. On-street parking is permitted during off-peak periods in the kerbside lanes on both sides of the road with 2P 'ticket' signs in place. Clearways are applicable to the kerbside lanes during peak traffic periods.

Cambridge Street is classified as a *Distributor A* road in the Main Roads WA *Functional Road Hierarchy* and operates under a sign-posted speed limit of 60km/h in the immediate vicinity of the campus.

Salvado Road

Salvado Road adjacent to SJGSH is a two-lane road with widening and additional traffic lanes on approach to the signalised intersections of Salvado Road / Haydn Bunton Drive and Salvado Road / Station Street.

Salvado Road is classified as a *Distributor A* road in the Main Roads WA *Functional Road Hierarchy* and operates under a sign-posted speed limit of 60km/h in the immediate vicinity of the campus.

Station Street & McCourt Street

Station Street and McCourt Street are constructed as two-lane undivided standard with additional pavement width for on-street parking on both sides of the road. 2P ticket paid parking is in place on both Station and McCourt Streets at all times.

Station Street and McCourt Street are classified as *Access* roads in the Main Roads WA *Functional Road Hierarchy* and operate under the default built-up area speed limit of 50km/h in the immediate vicinity of the campus.

3.4 Existing Traffic Volumes on Roads

The traffic count data obtained from Main Roads WA indicates that Cambridge Street carried average weekday traffic flows of approximately 19,000 vehicles per day (vpd) in 2016/ 2017 west of McCourt Street. The recorded heavy vehicle traffic component was 5.5% of total weekday traffic volume. A review of the 2018/2019 data for the same location indicated that the traffic counts on Cambridge Street have not increased significantly since 2016/2017.

Salvado Road carried average weekday traffic flows of approximately 16,500 vehicles per day (vpd) in 2015/ 2016 east of Station Street. The recorded heavy vehicle traffic component was 3% of total weekday traffic volume. Transcore also obtained SCATS data for the existing signalised intersections along Salvado Road (in 2021 and 2022) which shows no significant changes to the 2015/2016 traffic counts for the same locations.

The weekday AM peak hour on the surrounding road network occurs between 8:00am and 9:00am and the PM peak hour occurs between 5:00pm and 6:00pm.

In order to establish existing peak hour traffic flows, Transcore undertook traffic turn count surveys at key intersections during the AM peak hour between 8:00am and 9:00am and the PM peak hour between 5:00pm and 6:00pm, in August 2018.

3.5 Heavy Vehicles

Restricted Access Vehicle (RAV) Network routes are designated by Main Roads WA for access by large heavy vehicle combinations.

None of the surrounding roads are part of RAV network and therefore, only the “as of right” vehicles (up to 19.0m semi-trailers) are allowed to travel on the surrounding road network.

3.6 Public Transport Access

Bus services No. 81-85 and 97 run past SJGSH along Cambridge Street and provide connectivity between Perth and western suburbs, as shown in **Figure 6**. The closest bus stops are in place on Cambridge Street adjacent to the campus (refer **Figures 7** and **8**).

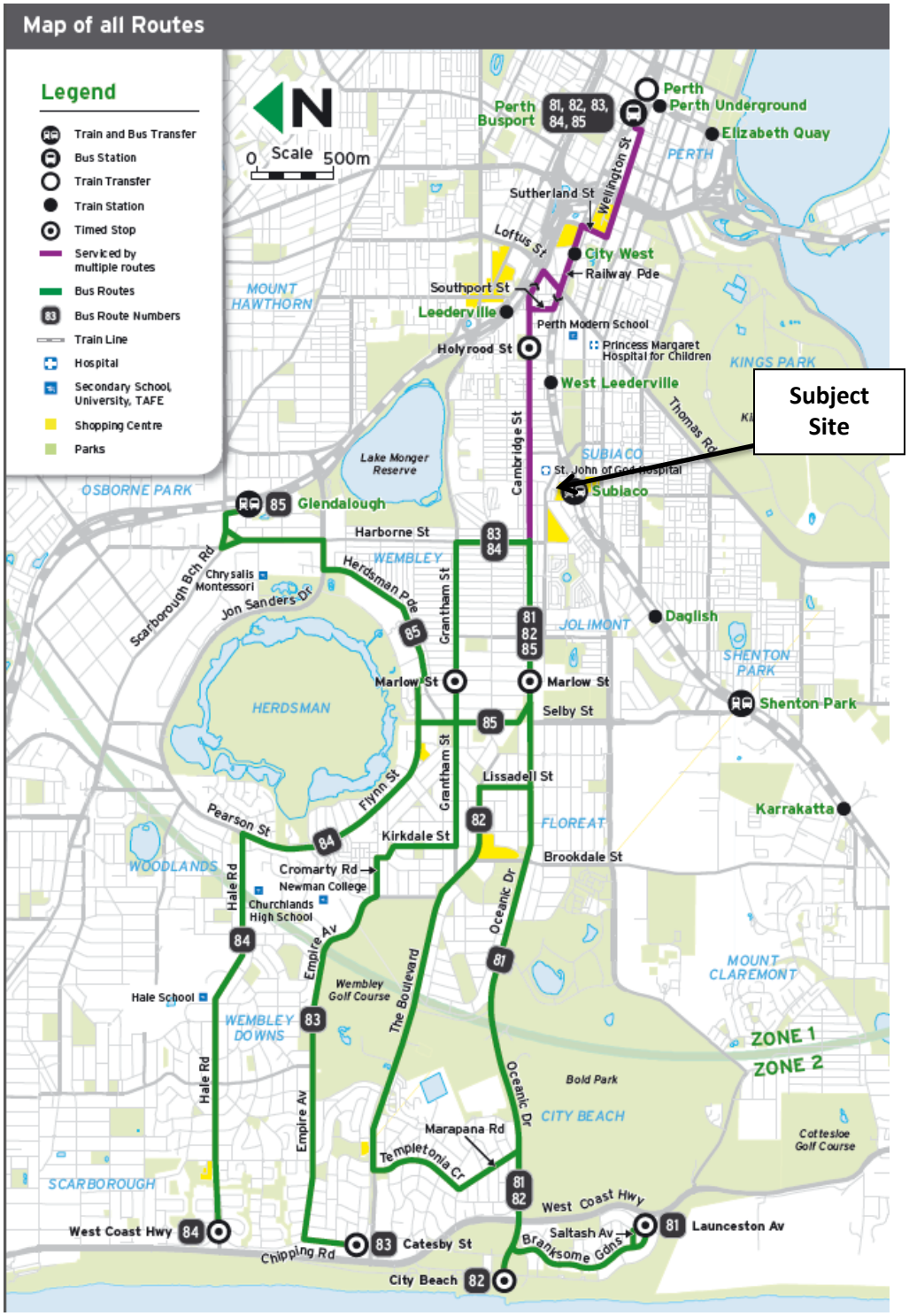

Figure 6: Existing public transport services (Transperth Network Map)

Figure 7: Eastbound bus stop and shelter on Cambridge Street adjacent to SJGSH

Figure 8: Westbound bus stop and shelter on Cambridge Street adjacent to SJGSH

Subiaco Train Station is accessible within close walking distance of approximately 300m to the south of SJGSH.

3.7 Pedestrian and Cyclist Facilities

Footpaths are currently provided on all four frontage roads abutting SJGSH site.

The existing pedestrian crossing facilities in place on the adjacent road network are detailed in Figure 9. Multiple pedestrian crossings with raised median island refuges are provided along the major road frontages on Cambridge Street and Salvado Road.

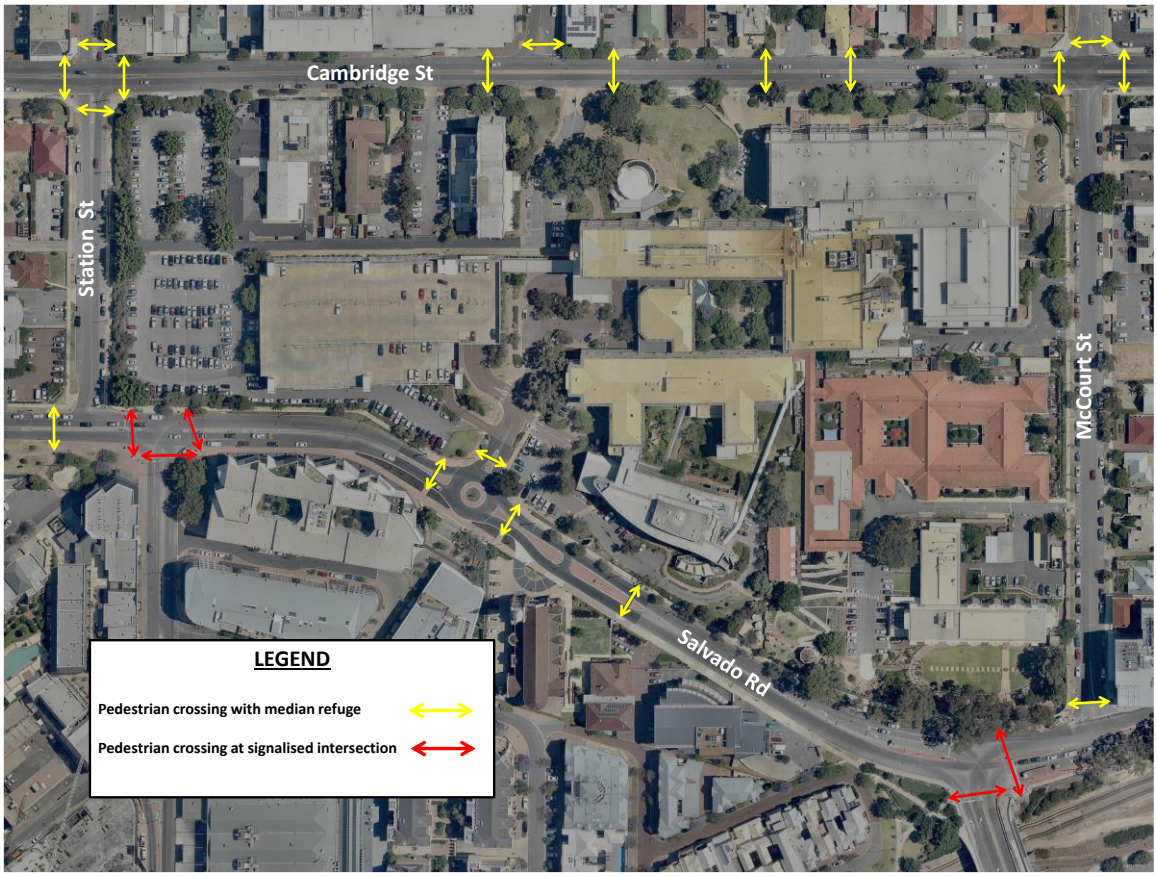

Figure 9: Existing pedestrian crossings on the adjacent road network

As detailed in Figure 10, a shared path is in place on Salvado Road adjacent to the campus which provides cyclist connectivity to the Principal Shared Path (PSP) along the Railway to the south.

As part of the development, an internal footpath network is provided to link the various areas of the campus. This includes development of a new public forecourt between the new clinical building and medical suites, providing a landscaped transition between the lower Cambridge Street level and the hospital's main entry level. At grade entrances are provided to the buildings at each level. Pedestrian movements are also improved between the main entry and Salvado Road, with a new pedestrian path linking to the western side of the roundabout on Salvado Road.

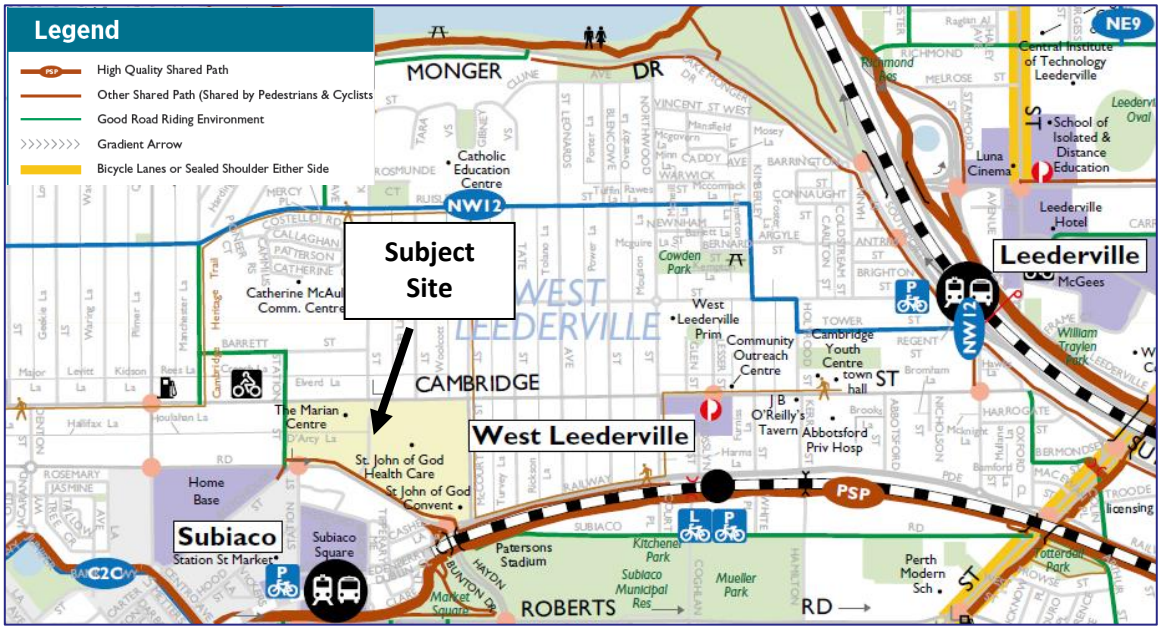

Figure 10: Extract from Perth Bicycle Network (Department of Transport)

4 Changes to Surrounding Transport Network

The proposed development utilises the existing crossovers on surrounding roads for access/ egress to/ from the hospital site. With respect to Cambridge Street crossovers, one new crossover is proposed for the new clinical building (as shown in **Figure 11**), which provide access/ egress to/ from the proposed eight public parking bays plus an ambulance drop-off area for this building. The eastern crossover in **Figure 11** is a new crossover which provides entry and exit for the ED ambulances and also entry for the public car park. The western crossover is modified existing crossover which provides exit for the public car park.

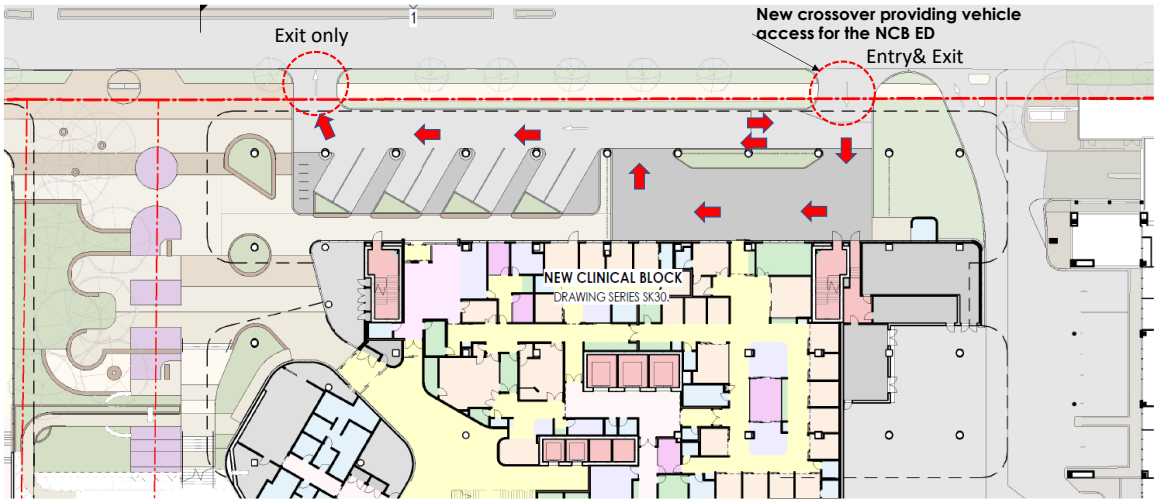

Figure 11: Existing and proposed access/egress for NCB

The service vehicle access/ egress to/ from the proposed Site Energy Plant (SEP) will be via a proposed new controlled crossover on Cambridge Street which is located about 40m to the east of Station Street and will lead up to the existing parking area located at the south-east corner of the intersection of Cambridge Street/ Station Street (refer **Figure 12**). This crossover would be utilised infrequently by service vehicles to provide access to the SEP. The exact location and layout of this crossover will need to be confirmed during the detailed design stage of the development.

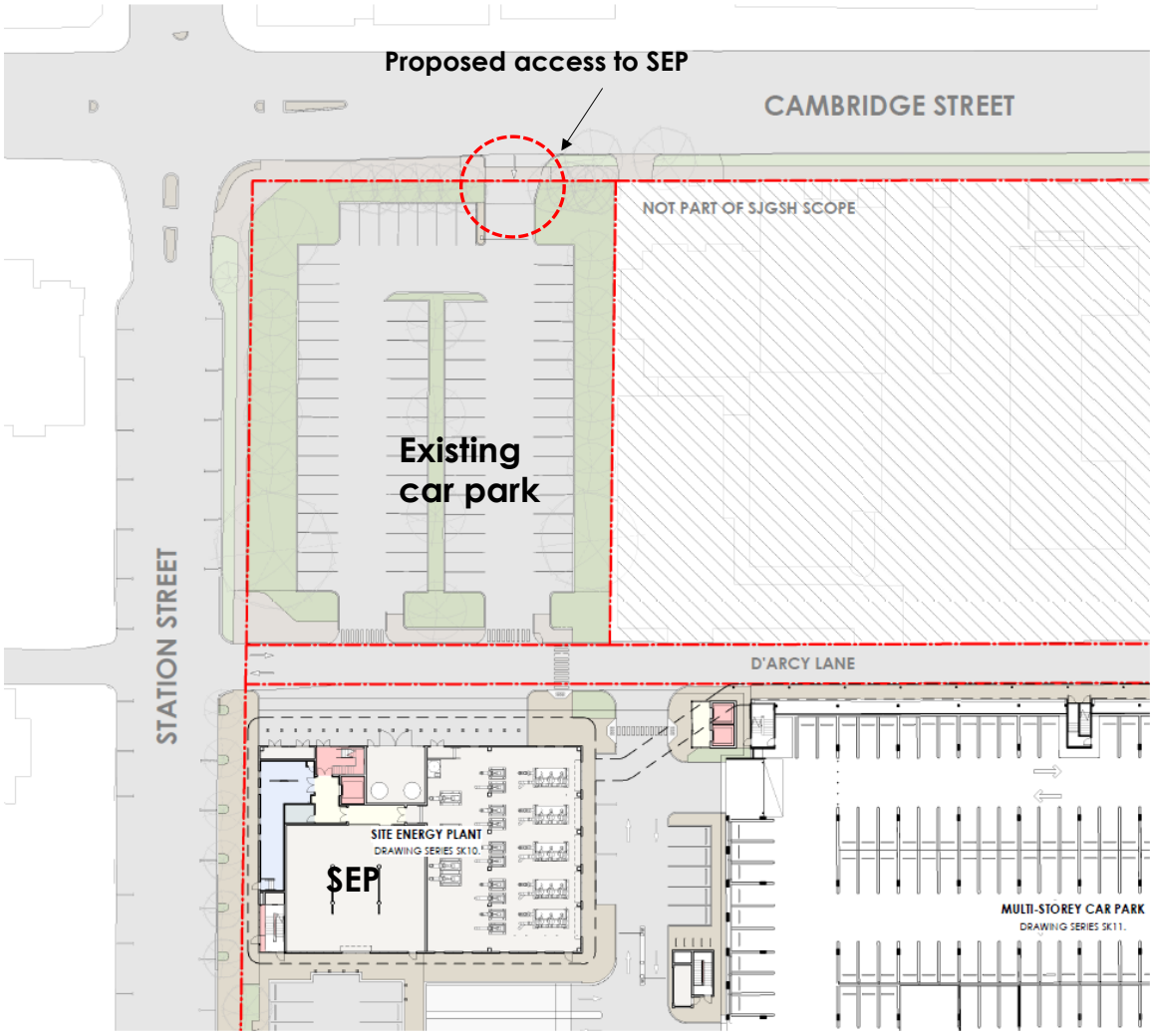

Figure 12: Proposed access to SEP

5 Integration with Surrounding Area

The subject site is located within the area comprising a mix of commercial land uses (particularly medical) including residential (houses, unit blocks and apartments).

The proposed redevelopment is an upgrade to the existing situation and will be well integrated within the locality. The Council resolved to approve the LDP for the site on 23 February 2021, and the LDP was approved on 3 March 2021.

6 Traffic Assessment

6.1 Assessment Period

Considering that the SJGSH is located within a well stablished area, no significant background traffic growth is expected on surrounding roads in the future, therefore traffic modelling and analysis is undertaken for the full development.

Based on the existing traffic count data, the weekday AM peak hour on the surrounding road network occurs between 8:00am and 9:00am and the PM peak hour occurs between 5:00pm and 6:00pm.

Therefore, traffic analysis was undertaken for these time periods to establish the traffic operations of the surrounding road network with the development traffic.

6.2 Trip Generation and Distribution

6.2.1 Existing SJGSH Traffic Generation

As detailed in Section 3.2 of this report, the existing SJGSH health campus is estimated to generate about 9,310 vehicles per day (vpd).

SJGSH currently generates about 631 vehicles per hour (vph) during the road network AM peak hour (between 8:00am and 9:00am about 488 vph during the road network PM peak hour (between 5:00pm and 6:00pm).

The existing trip generation of the multi-level carpark is estimated for AM and PM peak hours. Indicative trip generation rates are calculated based on the surveyed trip generation of the existing 644 bays at the car park. The resulting traffic generation rates are as follows:

- Road network AM peak trip rate: 0.31 trips per bay (87% in / 13% out).
- Road network PM peak trip rate: 0.28 trips per bay (25% in / 75% out).

It should be noted that Transcore undertook updated video traffic counts for the entry/ exit points of the existing multi-level carpark in November 2021. The outcome of the 2021 traffic survey showed simar trips as 2018 traffic survey by Transcore for the PM peak hour and slightly higher trips during the AM peak hours. Conservatively, the 2020 survey results were used for the purpose of the analysis.

6.2.2 Proposed Development Traffic Generation

The traffic volume that would be generated by the proposed development has been estimated based on the additional parking bays proposed at the existing multi-level car park (+307 bays), SEP underground car park (+175bays) medical suites car park (+81) and drop-off bays proposed adjacent to the ED in the new clinical building (+8bays and one ambulance bay).

It should be noted that the proposed development would result in net parking gain of 410 bays which is explained in **Table 1** and reflected in **Figure 13**.

Figure 13: post development parking loss (-)/ gain (+)

Table 1: Summary of changes to car parking (source: Planning Solutions)

Location	Pre-development	Post-development	Description
1. "F" external carpark	48	40	3 bays lost for new crossover to Cambridge Street. Bays removed for increased setback to D'Arcy Lane
2. "B" external carpark	33	30	Bays removed for increased setback to D'Arcy Lane
3. "S" external carpark	128	239	64 bays lost for construction of SEP. New underground carpark and reconfiguration of surface-level carpark adds 175 bays. Net gain of 111 bays.
4. Salvado Road	39	39	
5. Multi-storey carpark	644	951	Two additional levels to multi-storey carpark (net gain of 307 bays)
6. BFCCC	38	35	3 bays lost on the east side of BFCCC for new pump rooms.
7. Main entrance	20	15	Main entrance drop-off area redesigned and improved
8. MSER	43	81	Three levels of parking for the MSER (net gain of 38 bays)
9. Cambridge Street[Note 2]	21[Note 2]	0	To be removed
10. ED	0	8	8 new drop-off bays proposed adjacent to the ED in the NCB
11. Sports medicine	15	8	7 bays lost for the NCB
12. Subiaco Medical Clinic	293	289	4 bays lost for new switchroom (separate to this application)
13. Clinic north	4	4	
14. Clinic south	27	24	Reconfiguration of parking (separate to this application)
Total	**1,353**	**1,763**	**Net gain of 410 bays**

Note 1: The above parking bay counts do not include special purpose bays including:

- pick-up/set-down lanes at the hospital main entrance and the Subiaco Medical Clinic, and the proposed pick-up/set-down lanes at the BFCCC and at the entry to the South Block's Cancer Support & Research Service.
- 2 existing bus /courier bays near the hospital main entrance (to be removed).
- taxi bays near the hospital main entrance (to be retained in the new design).
- existing loading bays (3 in the Cambridge Street carpark (to be removed), 1 at BFCCC, 1 at the Sports Medicine parking area).
- 1 existing patient transfer bay at the entry to the BFCCC.
- existing ambulance bays near hospital's main entrance / new ambulance drop-off area at the NCB ED.
- 2 existing motorcycle bays in the Subiaco Medical Clinic, 10 proposed motorcycle bays in the multi-storey carpark, and 9 proposed motorcycle bays in the basement carpark under the SEP.

Note 2: The above numbers do not include the temporary carpark, which had removed 7 bays and added approximately 100 car parking bays. The temporary carpark will be removed as the development progresses.

In order to establish the net traffic increase, due to the proposed development, the trip reduction due to the parking loss of different car parking areas within the SJGSH was also calculated and removed from the total development trips. The parking loss are mainly associated with the new site energy plant (-64bays), new medical suites (-43 bays) and Cambridge Street carpark (-21) as shown in **Figure 13**. The other parking losses are minimal and distributed within the Hospital. Therefore, for the purpose of trip generation

assessment, conservatively, the parking losses other than site energy plant, new medical suites and Cambridge Street car park were not considered.

For the additional 307 bays on the existing multi-level car park, it was assumed that the same trip rate per parking bay calculated above applies and the same trip distribution as per the existing situation would apply in the future. For the additional 111 bays under the SEP similar trip rates for the existing staff parking bays were calculated and used.

It should be noted that the proposed Site Energy Plant (SEP) will be constructed within the existing staff parking area located at the south-east corner of Station Street and D'Arcy Lane and would replace about 64 staff parking bays. The trip generation reduction due to the removal of these bays was also considered in establishing the net traffic increase of the proposed development. Similarly, the trip generation of the existing 42 bays adjacent to the proposed medical suites and the 21 bays on Cambridge Street have been removed from the demand matrices.

For the proposed medical suites' parking bays, it was conservatively assumed that the parking bays would be full during the AM and PM peak hours and the in/ out split would be 80%/ 20% during the AM and reverse during the PM peak hours.

For the additional 8 drop-off bays proposed adjacent to the ED in the new clinical building conservatively a turnover of 2 cars per peak hour per parking bay was assumed for the proposed 8 drop-off bays which would result in 32 trips (inbound and outbound). It was also conservatively assumed that one ambulance would enter and exit the ambulance bay during the peak hours.

Table 2 summarises the net traffic increase due to the proposed redevelopment.

Table 2: Net traffic increase due to the proposed SJGSH redevelopment

Land use	Carpark	Weekd-AM trips	Weekd-PM trips	AM		PM	
				IN	OUT	IN	OUT
New Medical Suits	81	81	81	65	16	16	65
Paking area adjacent to the proposed new Medical Suits	-43	-43	-43	-34	-9	-9	-34
Multi Storey Carpark	307	95	86	83	12	21	64
New Site Energy Plant	-64	-4	-13	-3	-2	-1	-11
New Site Energy Plant (additional)	175	54	49	47	7	12	37
New clinical building	8	34	34	17	17	17	17
Cambridge St parking	-21	-21	-21	-17	-4	-4	-17
Net traffic increase		**196**	**173**	**158**	**38**	**53**	**121**

Accordingly, it is estimated that the proposed development would add approximately additional 196 and 173 trips to surrounding road network during the road network weekday AM and PM peak hours after development respectively.

The estimated traffic generation of SJGSH after development assumes that the travel mode share of the hospital site will be consistent with the existing situation. It is our understanding that implementation of the recommendations proposed in "Integrated Transport and Parking Strategy" prepared by Urbii would reduce reliance on car mode

share and encourage more sustainable transport choices for people who have access to these options. On this basis, the trip generation of the proposed hospital is expected to be less than what has been reported in above table.

Traffic was distributed to and from the surrounding road network and intersections as per the existing distribution of surveyed intersection traffic flows as shown in **Figure 14**. Further detail on the distribution of the development traffic is provided in section 6.3 of this report.

6.3 Traffic Flow Forecasts

Transcore traffic surveys were used to establish the existing traffic flows at key intersections during the AM and PM peak hours as shown in **Figure 15**. The proposed development traffic generation is illustrated in **Figure 16**. The total projected traffic volumes after full development of the development are illustrated in **Figure 17**.

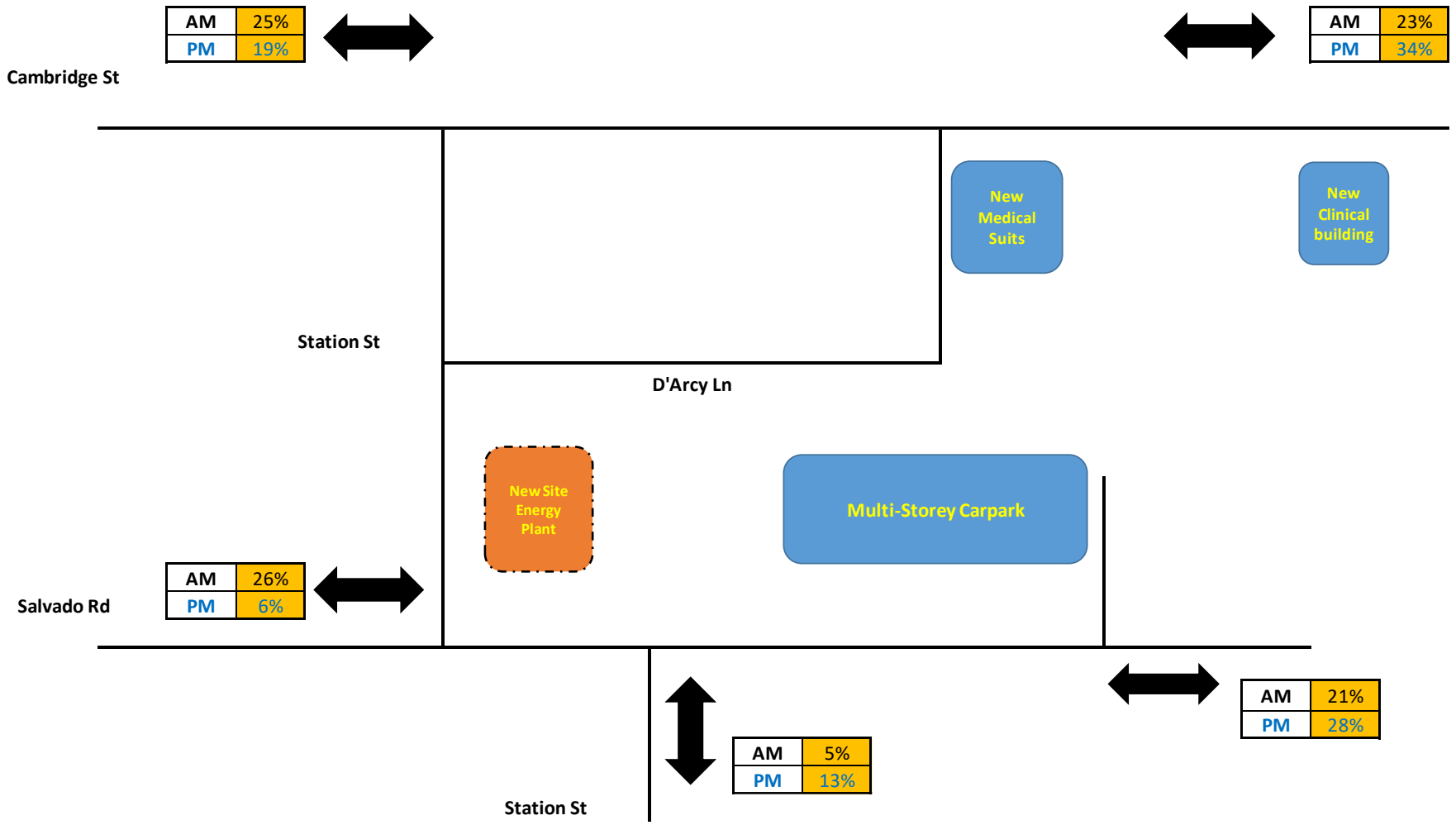

Figure 14: Traffic distribution assumption on key surrounding roads

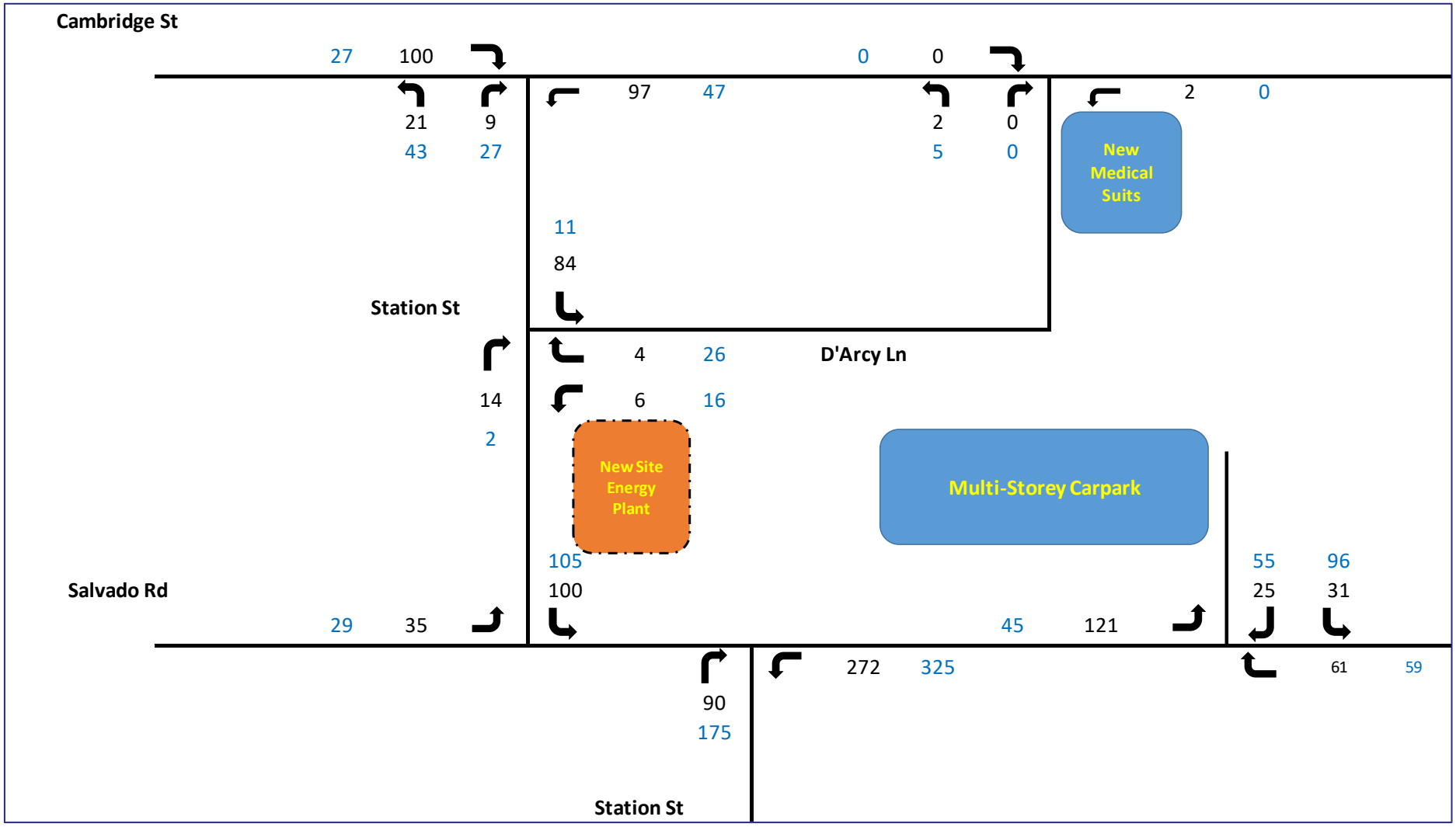

Figure 15: Existing traffic flows near the subject site – Weekday AM & PM peak hours

Development

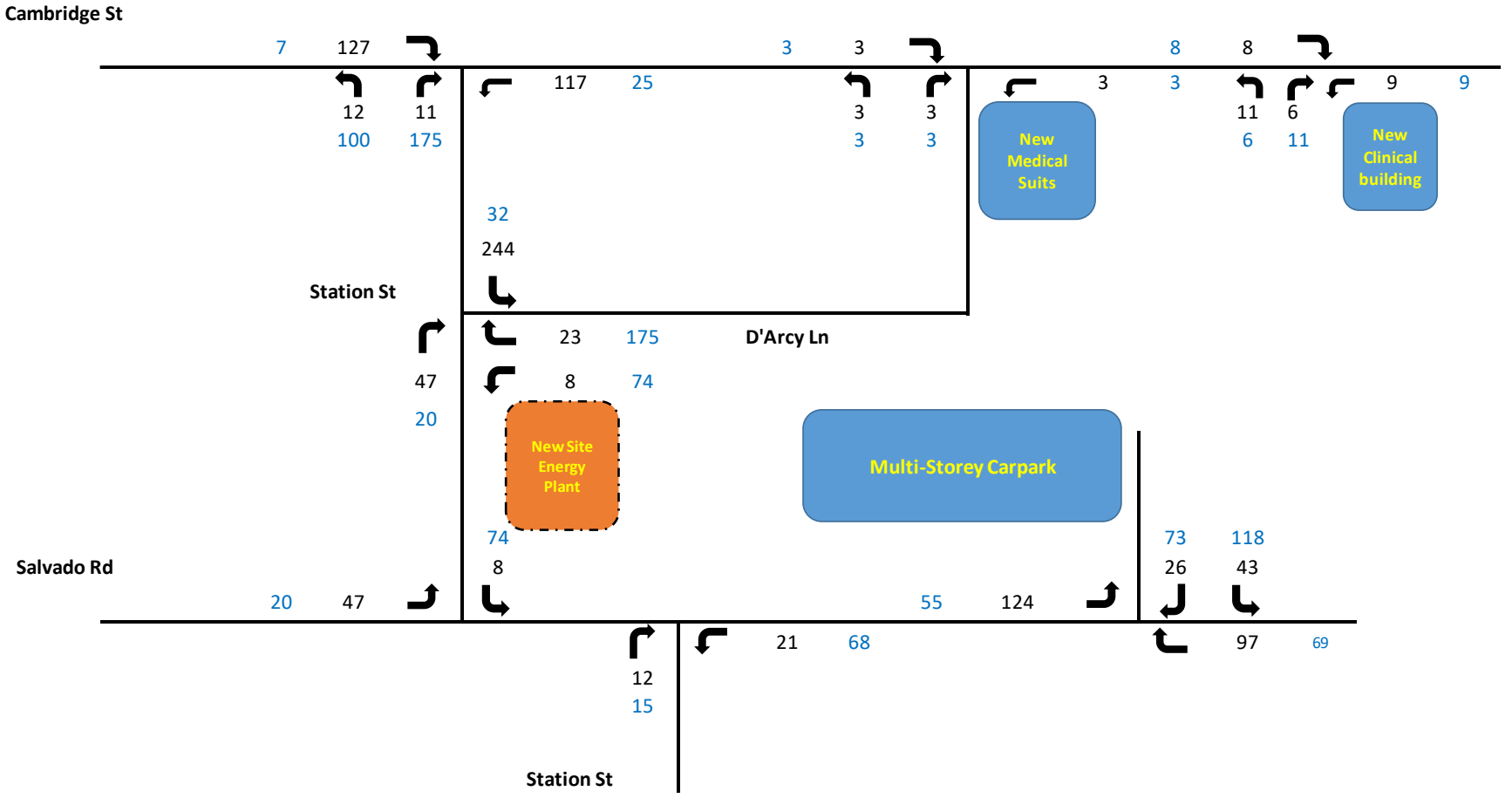

Figure 16: Proposed development traffic generation - Weekday AM & PM peak hours

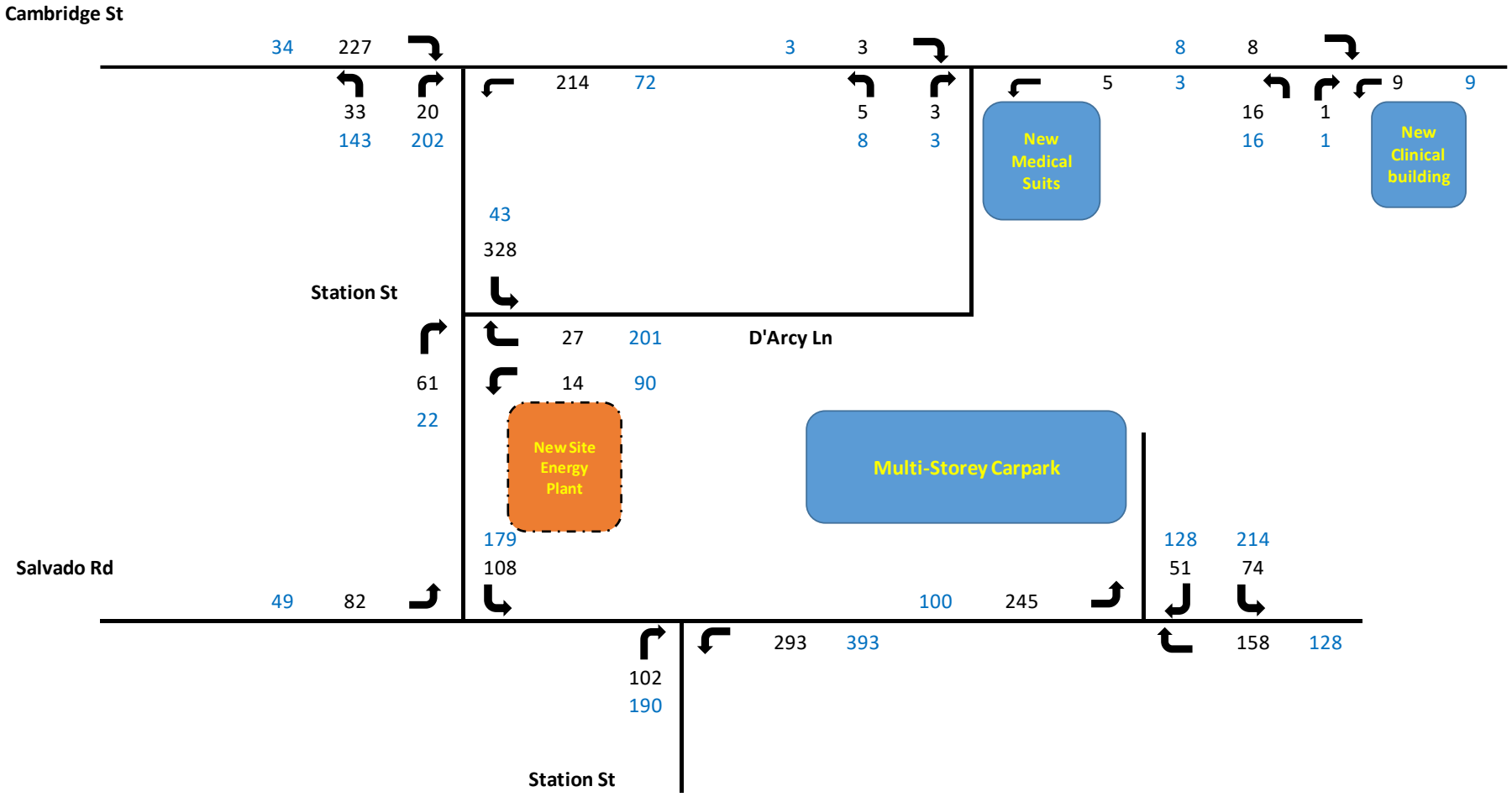

Figure 17: Total post development traffic - Weekday AM & PM peak hours

6.4 Analysis of Intersections and Development Accesses

The traffic operations of the proposed development were assessed using the Vissim traffic microsimulation modelling. The modelling methodology and results are documented in a separate modelling report that should be read in conjunction with this TIA. A summary of the model observations regarding the key intersections and crossovers are provided in the following paragraphs:

Cambridge Street / Station Street Intersection

The microsimulation models indicate that the intersection of Cambridge Street / Station Street will continue to operate satisfactorily in the development scenario and during the weekday AM and PM peak hours with similar level of queues and delays as per existing situation. The queues and delays would increase slightly after the future expansion scenario; however, the additional queues and delays are not expected to be problematic.

Cambridge Street / McCourt Street Intersection

The operation of the Cambridge Street / McCourt Street intersection will not significantly change in the development stage with the proposed future expansions as most of the additional traffic will access and egress the site via Station Street and Salvado Road.

Cambridge Street / D'arcy Lane (Proposed medical suites at ground car park crossover)

According to the updated development plan the medical suite's underground car park does not connect to Cambridge Street. The Cambridge Street crossover would accommodate traffic generation from only 6 bays in front of the building.

The analysis results indicate that the proposed medical suites car park crossover on Cambridge Street will operate satisfactorily during the weekday AM and PM peak hours. The analysis results show minimal delays and queuing at the crossover.

Cambridge Street / Proposed clinical building crossovers

Review of the microsimulation model indicate that both entry and exit crossovers would operate satisfactorily during the AM and PM peak hours. The model observations indicated that the level of traffic movements at the crossovers are relatively low and would not impact the traffic operation of Cambridge Street or result in excessive delays or queues at the crossovers.

Cambridge Street / Access Road to SEP

The new crossover on Cambridge Street (leading to the existing car park) was observed to operate satisfactorily. Very little traffic activity is reported at this crossover as this crossover mainly provides access/ egress to the proposed SEP.

Salvado Road / Car Park Access Roundabout Intersection

The microsimulation modelling and analysis results indicate that the existing roundabout access intersection on Salvado Road will continue to operate satisfactorily for the redevelopment Scenario, however, occasional queues were observed during the AM and PM peak hours at the roundabout intersection on all approaches. The occasional queues were observed to dissipate quickly and did not obstruct the nearby intersections and crossovers.

D'arcy Lane/ Station Street

The microsimulation modelling and analysis indicate that currently this intersection operates satisfactory and within capacity during the AM and PM road network peak hours. The updated development plan would result in more traffic distribution on D'arcy Lane and its intersection with Station Street, However, this intersection would continue to operate satisfactorily during the peak hours. It should be noted that D'arcy Lane is mainly used by staff traffic. Staff usually arrive early, between 6:30am to 8:00am and during the AM road network peak hour (8:00-9:00) the staff traffic is relatively low. Similarly, staff departure in PM is not concentrated during the road network peak hour and is staggered, therefore during the PM peak hours (5:00-6:00) the additional traffic at D'arcy Lane/ Station Street intersection is not significant.

6.5 Impact on Surrounding Roads

The WAPC *Transport Impact Assessment Guidelines* (2016) provides the following 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 development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

As illustrated in **Figure 16** the proposed development will not increase traffic flows near the quoted WAPC threshold on the majority of the roads to warrant further detailed analysis. The proposed development will not increase traffic on any lane on the

surrounding road network by more than 100vph, therefore the impact on the surrounding road network and intersection will not be significant. The section of Station Street between D'arcy Lane and Cambridge Street would have the highest traffic increase during the peak hours, however the current standard of Station Street would be able to accommodate the additional traffic.

6.6 Impact on Neighbouring Areas

The majority of the proposed development traffic would be distributed on Cambridge Street and Salvado Road. The level of traffic increase on local roads further away from the hospital would be minimal and as such the impact on neighbouring areas would not be problematic.

7 Parking

It is our understanding that the parking provision for the proposed development meets the requirement of the Town of Cambridge Local Planning Policy 3.13: Parking.

An Integrated Transport and Parking Strategy was prepared by Urbii for the proposed development to address both the supply and demand management of car parking on site. The *Integrated Transport and Parking Strategy*, suggests a number of initiatives such as parking priority system and parking demand management strategies to reduce the reliance on car parking and encourage more sustainable transport choices for people who have access to these options.

It is considered that the proposed parking provision is adequate to meet the parking demand of the proposed development.

8 Public Transport Access

Details of the available public transport services in this locality are provided in section 3.6 of this report. At present, the Hospital have excellent access to the nearby bus services which provide access to the nearby train stations and wider public transport network within the City.

9 Pedestrian Access

Details of the pedestrian and cyclist facilities in this locality are provided in section 3.7 of the report. The proposed development provides for a pedestrian-friendly greenspace with a north-south connection through the development area between Cambridge Street and Salvado Road.

Furthermore, landscaping provision proposed in the pedestrian zone is to encourage a range of active and passive recreational activities within this space.

10 Conclusions

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of St John of God Health Care Inc (SJGHC) with regards to the proposed development plan for the St John of God Subiaco Hospital (SJGSH) situated at Lot 800 (12) Salvado Road and Lots 147, 148 and 149 (177) Cambridge Street in Subiaco.

The proposed development provides for the following new elements within the subject site:

- New Clinical Block (NCB);
- Site Energy Plant (SEP);
- Medical suites;
- Additional car parking to the existing multi-level car park (addition of two new levels at the multi-level car park); and,
- Additional car parking under SEP in two levels.

It is estimated that the proposed development would generate approximately additional 196 and 173 trips during the road network weekday AM and PM peak hour, respectively. The estimated traffic generation of SJGSH after development assumes that the travel mode share of the campus will be consistent with the existing situation. It is our understanding that implementation of the recommendations proposed in "Integrated Transport and Parking Strategy" prepared by Urbii would reduce the reliance on car mode share and encourage more sustainable transport choices for people who have access to these options. On this basis, the calculated trip generation of the proposed hospital is expected to be conservative.

For the purpose of this project, Transcore developed a microsimulation traffic model using Vissim software to effectively investigate traffic operations of the proposed development. A separate traffic modelling report is also prepared to document the methodology and outcome of the microsimulation models.

Microsimulation modelling and analysis undertaken indicate that the existing standard of the surrounding roads and intersections would be able to accommodate the projected traffic volumes due to the proposed development.

Appendix A

PROPOSED DEVELOPMENT PLAN


CAMBRIDGE STREET
CAMBRIDGE STREET
CONNOLLY STREET
JOSEPH STREET
HATCH LANE
STATION STREET
MC COURT STREET
SALVADO ROAD
SALVADO ROAD
STATION STREET
SWAN STREET
WEXFORD STREET
ST JOSEPHS
NOT PART OF SJGSH SCOPE
MEDICAL SUITES
NEW CLINICAL BLOCK
CHAPEL
SUBIACO MEDICAL CLINIC 1998
NORTH BLOCK
D'ARCY LANE
SEP LINK
CANOPY
FORECOURT
LINK BLOCK 1990
EXISTING ENGINEERING PLANT 1978
AMBULATORY CARE 2005
SITE ENERGY PLANT (SEP)
EXPANSION OF MULTI-STORY CAR PARK
SOUTH BLOCK 1990
NOT PART OF SJGSH SCOPE
SITE PLANT
BENDAT FAMILY COMPREHENSIVE CANCER CENTRE 2009
DEVELOPMENT APPLICATION
Transformation is coming
Silver thomas hanley
ST JOHN OF GOD Subiaco Hospital
ST JOHN OF GOD SUBIACO HOSPITAL
ARCHITECTURAL
3223
SJGSH
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