37-41 Treacy Street, Hurstville
Planning Proposal
Transport Impact Assessment

Client //	The Planning Group NSW and Georges River Council
Office //	NSW
Reference //	N110180
Date //	04/10/16

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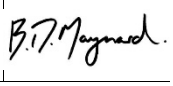
Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	02/09/15	Final report	Andrew Farran	Brett Maynard	Brett Maynard	Brett Maynard
B	28/04/16	Revised report incorporating additional road network analysis	Andrew Farran Ashish Modessa	Brett Maynard	Brett Maynard	Brett Maynard
C	04/10/16	Revised Development Yield	Andrew Farran	Brett Maynard	Brett Maynard	

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1. Introduction

1.1 Background

It is understood that a planning proposal is to be lodged with Hurstville City Council to amend the existing planning controls for the site located at 37-41 Treacy Street in Hurstville.

The planning proposal seeks to rezone the site to a B4 Mixed use zone, increase the permissible height limit and introduce a site specific floor space ratio.

An indicative development yield for the site comprises some 180 residential apartments set above 850sq.m GFA of retail floor space and 1,850sq.m of office floor space. The existing public car park will be maintained on-site, with additional private car parking servicing the site to also be provided.

GTA Consultants was commissioned by The Planning Group (TPG) and Georges River Council (formerly Hurstville City Council) to undertake a transport impact assessment to accompany the planning proposal. Further subsequent work was undertaken to understand the extent to which redevelopment of the 37-41 Treacy Street site was considered in the Hurstville City Centre TMAP 2013. A summary of the TMAP is included in Appendix A.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the planning proposal, including consideration of the following:

i existing traffic and parking conditions surrounding the site
ii suitability of the proposed parking in terms of supply (quantum) and layout
iii service vehicle requirements
iv pedestrian and bicycle requirements
v the traffic generating characteristics of the planning proposal
vi suitability of the proposed access arrangements for the site
vii a broad level assessment of the transport impact of the planning proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- Hurstville Council Development Control Plan (DCP No.2 Hurstville City Centre)
- Guide to Traffic Generating Developments, RMS October 2002
- Hurstville City Centre Transport Management and Accessibility Plan (TMAP), GHD 2013
- 'Traffic and Parking Impact for Proposed Modifications to an Approved Concept Plan (S75w) for a Proposed Mixed Use Development at 21-35 Treacy Street, Hurstville' dated April 2012 prepared by Lyle Marshall and Associates
- Plans prepared by Baker Kavanagh Architects 'Sketch Design – Mixed Use Development: Treacy Street, Hurstville – Option A', plans SK000 to SK008, Revision A (undated)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- other documents and data as referenced in this report.

2. Existing Conditions

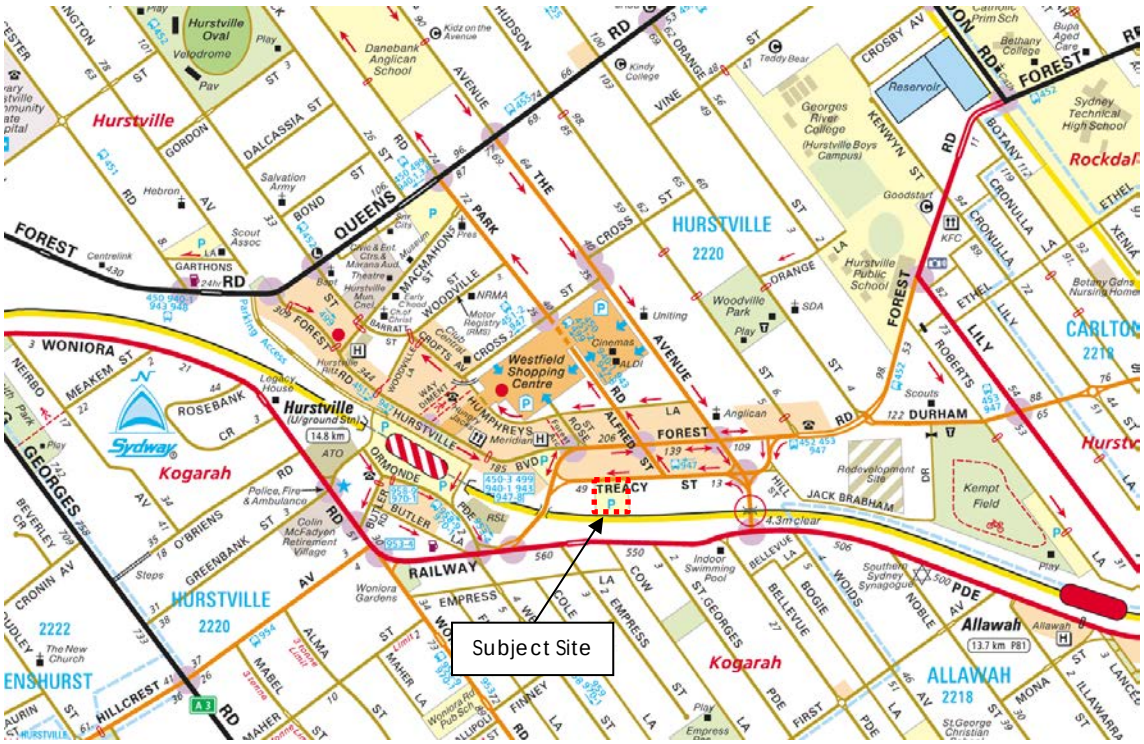
2.1 Subject Site

The subject site is located at 37-41 Treacy Street in Hurstville. The site of approximately 2,500sq.m has a frontage of 82m to Treacy Street. The property is currently not zoned for any specific land use and is described in the Hurstville LEP as a 'Deferred Matter'.

The site is currently used as a public car park catering for 90 car parking spaces. The surrounding land uses are predominantly commercial in nature with the Hurstville Town Centre located approximately 300m to the west of the site.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject Site and Its Environs



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2.2 Road Network

Treacy Street is aligned in an east-west direction and caters for westbound movements only. Forest Road runs parallel to Treacy Street and caters for eastbound movements only. It is noted that to the east and west of the site, the Forest Road corridor is classified as a RMS State Road, whilst in the vicinity of the site it operates as a lower order road.

Alfred Street, The Avenue and Hill Street connect Treacy Street and Forest Road.

Treacy Street and Forest Road are shown in Figure 2.2 and Figure 2.3.

Figure 2.2: Treacy Street – Looking West

Source: Google Maps

Figure 2.3: Forest Road – Looking East

Source: Google Maps

2.3 Car Parking

A desktop review of the existing car parking in the vicinity of the site indicates that the majority of on-street parking is time restricted during business hours. In particular, car parking on Treacy Street is restricted to 30 minutes.

A total of 90 car parking spaces are provided on the site, including 80 standard spaces, two disabled spaces and eight reserved spaces (not available to the public). The publicly accessible parking is restricted to 3-hour parking[1].

2.4 Public Transport

The site is located approximately 300m to the east of Hurstville Train Station and 400m from the Hurstville bus interchange. As such, the site is well serviced by public transport.

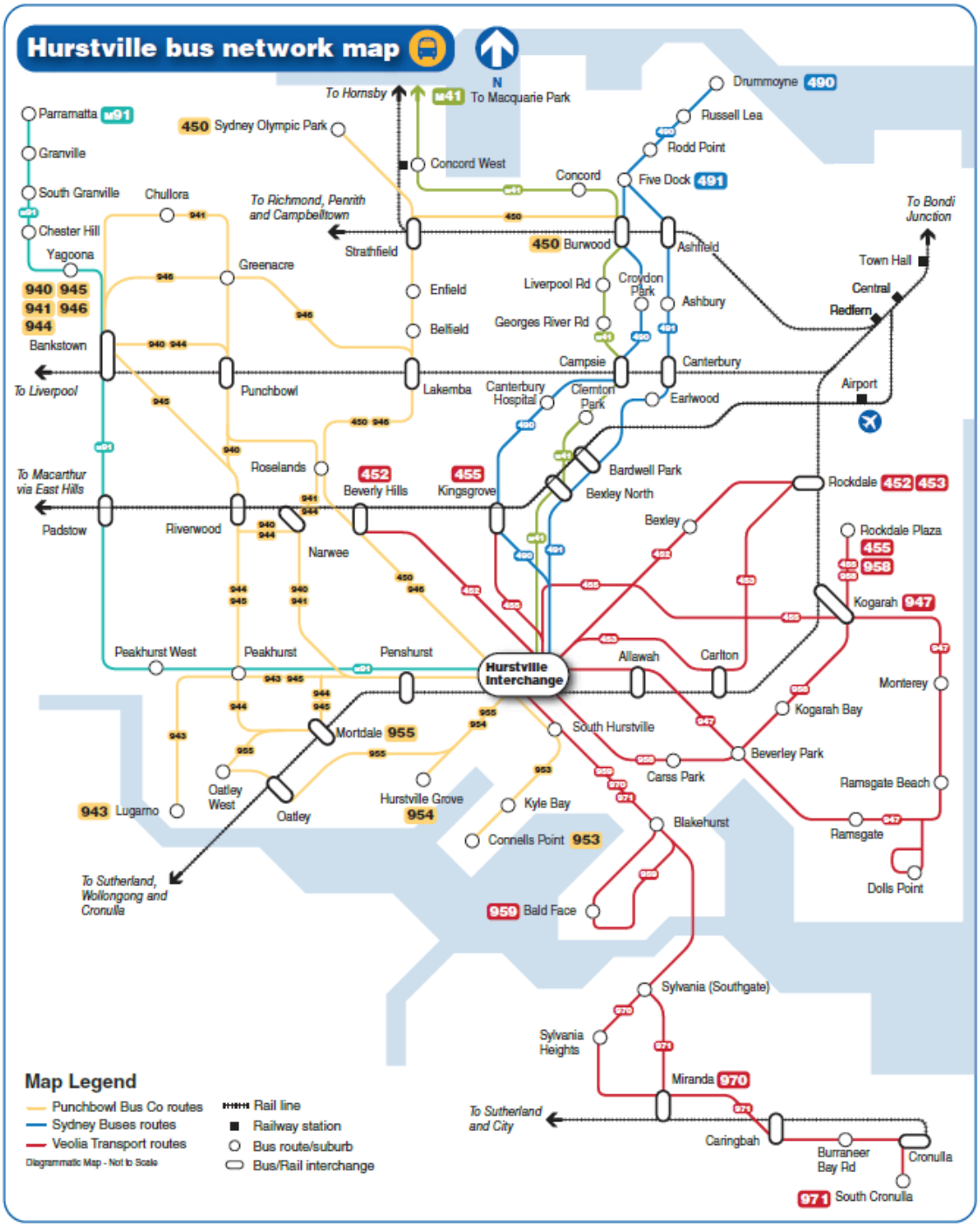
The Hurstville train station is serviced by the Illawarra line and provides direct access to the Sydney CBD, and on to Bondi Junction and the eastern suburbs.

The Hurstville bus interchange is serviced by over 20 bus routes run by the Punchbowl Bus Company, Sydney Buses and Transdev NSW.

A review of the public transport available in the vicinity of the site is summarised in Figure 2.4.

[1] Sourced from the Hurstville City Council website: http://www.hurstville.nsw.gov.au/Parking.html

Figure 2.4: Hurstville Bus Network Map



Source: http://www.sydneybuses.info/news/news-images/Hurstville_Interchange_brochure.pdf (accessed August 2015)

2.5 Active Transport

2.5.1 Pedestrian Infrastructure

Pedestrian paths are generally provided on both sides of each of the roads in the vicinity of the site. Pedestrian zebra crossings are provided across Treacy Street at its intersection with Forest Road, whilst a signalised pedestrian crossing of Forest Road is provided at the intersection.

Good pedestrian links are provided between the site and the Hurstville Train Station and Bus Interchange.

2.5.2 Cycle Infrastructure

There are limited cycling facilities in the vicinity of the site. Forest Road between Treacy Street and Queens Road is designated as a "bicycle friendly road" although no specific on-road facilities are provided.

2.5.3 Local Car Sharing Initiatives

Car share facilities are available within a short walking distance from the site, with three GoGet vehicles located at the Westfield Shopping Centre.

3. Planning Proposal

3.1 Land Uses

The planning proposal seeks to rezone the site to a B4 Mixed use zone, increase the permissible height limit and introduce a site specific floor space ratio.

An indicative development schedule (subject to change) is summarised in Table 3.1, along with the potential development yield considered in the Hurstville City Centre TMAP for Zone 24a, which contains the site. Information obtained from GHD and Hurstville Council indicates that Zone 24a yield was based on redevelopment of the subject site only, recognising that not all sites in the zone would be developed within the TMAP analysis period.

Table 3.1: Development Schedule

Use	Planning Proposal	TMAP (Zone 24a)
Residential	180 dwellings (40 x 1-bedroom, 128 x 2-bedroom, 12 x 3-bedroom)	129 units
Retail	850sq.m GFA	1,432sq.m GFA
Commercial	1,850sq.m GFA	1,432sq.m GFA

Table 3.1 illustrates that additional residential dwellings and commercial floor area is proposed as part of the planning proposal, when compared with the Hurstville City Centre TMAP land uses, however less retail floor area is proposed.

3.2 Car Parking and Vehicle Access

It is proposed to provide 375 car parking spaces, as follows:

- Existing public parking (retained): 90 spaces
- Proposed development (additional): 285 spaces.

Vehicle access to the site is proposed via two driveways to Treacy Street, including one to the car parking areas and one to the on-site loading area.

4. Transport Impact Assessment

4.1 Car Parking

4.1.1 DCP Parking Requirements

The parking provision objective detailed in the Hurstville Council's 'DCP No. 2 Hurstville City Centre' is reproduced below:

"To provide sufficient, safe and convenient parking facilities meeting user requirements including pedestrians, cyclists and vehicles."

The car parking requirements for different development types are set out in Hurstville Council's 'DCP No. 2 Hurstville City Centre'. It is noted that the Amendment No. 5 version of the DCP has been considered in this regard, as this still applies to those sites identified as "deferred matters" on the Land Application Map Appendix 1 of the DCP), which includes the Treacy Street car park site. The Amendment No. 6 version of the DCP became effective as of 24 July 2015 and identifies reduced parking rates for retail and commercial premises (1 space for 50 and 100sq.m respectively rather than 1 space per 30 and 60sq.m). However, a more onerous residential visitor parking requirement of 1 space per 4 dwellings is applicable (no specific rate was included in Amendment No. 5).

A review of the relevant car parking rates and the floor area schedule results in a parking requirement for the planning proposal as summarised in Table 4.1.

Table 4.1: DCP Car Parking Requirements

Description	Use	Size	DCP Parking Rate	Parking Requirement
Residential	1-bedroom	40 dwellings	1 space per dwelling	40
	2-bedroom	128 dwellings	1 space per dwelling	128
	3-bedroom	12 dwellings	2 spaces per dwelling	24
Retail	Shops	850sq.m GFA	1 space/ 30sq.m GFA	28
Commercial	Office	1,850sq.m GFA	1 space/ 60sq.m GFA	31
Total				**251 spaces**

Table 4.1 indicates that the planning proposal is required to provide 251 car parking spaces, excluding the retention of the existing public parking supply.

4.1.2 Guidelines for Reduced Requirements

With respect to reducing the parking requirements, the Hurstville DCP 2012 notes:

"In determining the prescriptive parking requirements for each type of land use, Council has adopted guidelines from the Roads and Traffic Authority Guide to Traffic Generating Developments, October 2002. It must be emphasised, however that Council uses this guide on a discretionary basis only, and may be flexible in establishing parking conditions according to expert reports on the existing parking and traffic conditions in the vicinity of the subject site."

In this regard, justification for a reduced car parking provision below the DCP requirement could be further explored at the Development Application stage.

Such an assessment could consider the following site and land use characteristics:

- public transport availability
- availability of publicly accessible parking
- temporal profile of car parking demands
- preparation of a green travel plan.

4.1.3 Adequacy of Parking Supply

The planning proposal indicates a provision of some 285 car parking spaces (surplus of 34 spaces) and therefore is generally in accordance with the Council DCP requirement.

It is noted that there is no specific DCP parking requirement for residential visitor parking. In this regard, reference could be made to the *Guide to Traffic Generating Developments* (RMS, 2002) which indicates a residential visitor parking rate of 1 space per 7 dwellings, equating to some 26 visitor spaces. If the DCP No. 2 Amendment No. 6 rate of 1 space per 4 dwellings was considered, this would equate to some 45 visitor spaces (noting such a supply is considered excessive and unlikely to be appropriately utilised).

A further review of the adequacy of the car parking provision would be undertaken at the Development Application stage, including consideration of the site characteristics presented above (including public parking component).

4.2 Sustainable Transport

4.2.1 Bicycle Parking

The *NSW Planning Guidelines for Walking and Cycling* (Department of Infrastructure, Planning and Natural Resources, 2004) aims to assist land use planners and related professionals to improve consideration of walking and cycling in their work. The guidelines have been designed to provide a walking and cycling focus to the NSW Government's *Integrating Land Use & Transport Planning* policy package. The *Planning Guidelines for Walking and Cycling* contain suggested bicycle parking provision rates for different land use types.

The suggested bicycle parking provision for the development is summarised in Table 4.2.

Table 4.2: Suggested Bicycle Parking Rates

Land Use Type	Size	Suggested Parking Rate		Suggested Parking Provision [1][3]	
		Resident/Staff (long-term use)	Customers/ visitors (short-term use)	Staff (long-term use)	Customers/ visitors (short-term use)
Residential	180 dwellings	20-30%	5-10%	54	18
Retail	30 staff [1]	3% of staff	5% of staff	1	2
Commercial	120 staff [2]	3% of staff	5% of staff	4	6
Total				**59**	**26**

[1] Assuming a staff member per 30sq.m GFA (approx.).
[2] Assuming a staff member per 15sq.m GFA (approx.).
[3] Adopting the upper range for each of the land uses and type of parking.

As shown in Table 4.2, it is suggested that the proposed development provide some 59 bicycle parking spaces for staff/ residents and up to 26 spaces for customers/ visitors.

4.2.2 Walking Network

The site is well connected to the Hurstville City Centre and associated public transport facilities.

4.3 Loading Facilities

4.3.1 Loading Requirements

The Hurstville DCP 2012 outlines the following:

"For commercial and light industrial developments, the requirements for the unloading and loading of vehicles must be considered".

4.3.2 Proposed Loading Arrangements

A loading area catering for two loading vehicles is proposed on the ground floor of the planning proposal. The loading area will cater for the loading requirements of the commercial and residential land uses.

4.3.3 Site Access Design

Plans for the proposed development indicate two adjacent driveways servicing the car park and loading areas. It is recommended that further consideration be given to the design at the Development Application stage to ensure that the vehicle access considers the following:

- includes some separation between driveways
- inter-visibility is provided between the two ramps
- an appropriate pedestrian solution is provided along the site frontage.

4.4 Traffic Impact Assessment

4.4.1 Traffic Generation

Traffic generation estimates for the planning proposal have been sourced from the Guide to Traffic Generating Developments (RMS, 2002), as well as the RMS Technical Direction TDT/2013-04a dated August 2013. A summary of the anticipated traffic generation for the planning proposal is presented in Table 4.3.

Table 4.3: Traffic Generation Estimate

Land Use	Size	Traffic Generation Rate		Traffic Generation	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Residential	180 dwellings	0.29 movements per dwelling	0.29 movements per dwelling	52	52
Retail [1]	850sq.m GFA	1.4 movements per 100sq.m	5.6 movements per 100sq.m	12	48
Commercial	1,850sq.m GFA	1.6 movements per 100sq.m	1.2 movements per 100sq.m	30	22
Total				**94**	**122**

[1] Sourced from the RMS Guide October 2002.

Table 4.3 indicates that the planning proposal could be anticipated to generate some 94 and 122 movements during the AM and PM peak periods, respectively.

The above traffic generation is in addition to the existing traffic generation of the public car park.

4.4.2 Comparison to Assessment within Hurstville City Centre TMAP

As summarised in Appendix A or this report, extensive transport modelling was undertaken as part of the Hurstville City Centre TMAP to manage travel and shape growth in and around the city centre. This effectively included a cumulative traffic impact assessment for the entire City Centre, which included the site.

A comparison of the traffic generation rates used in the TMAP and those adopted for the land uses that form the planning proposal are provided in Table 4.4.

Table 4.4: Traffic Generation Rate Comparison (TMAP vs Planning Proposal)

Land Use	TMAP Rates		Planning Proposal Rates	
	AM Peak	PM Peak	AM Peak	PM Peak
Residential	0.51 per dwelling	0.475 per dwelling	0.29 per dwelling	0.29 per dwelling
Retail	22.3 per 1,000m^2	43.1 per 1,000m^2	14 per 1,000m^2	56 per 1,000m^2
Commercial	1.975 per 100m^2	1.83 per 100m^2	1.6 per 100m^2	1.2 per 100m^2

Table 4.4 shows that the traffic generation rates used in the TMAP are comparable to what is considered reasonable and have been adopted for the planning proposal, with the exception of the residential rates that are higher.

For comparison purposes, Table 4.4 has been prepared to assess the likely traffic generation of the planning proposal when adopting the TMAP traffic generation rates identified above.

Table 4.5: Zone 24a Traffic Generation Comparison using TMAP Traffic Rates

Land Use	TMAP		Planning Proposal	
	AM Peak Movements/ Hr	PM Peak Movements/ Hr	AM Peak Movements/ Hr	PM Peak Movements/ Hr
Residential	66	61	92	86
Retail	32	62	19	37
Commercial	28	26	37	34
Total	**126**	**149**	**148**	**157**

Table 4.5 shows that the TMAP forecasted land uses for Zone 24a could have been expected to generate 126 to 149 vehicle movements per hour during the weekday peak periods. These values are up to 17 vehicles lower than the traffic generation of the planning proposal (148 and 157 trips per hour in the AM and PM peak hours respectively). Overall, the traffic generation outlined for the planning proposal in Section 4.4.1 is lower than the traffic generation values summarised above in the context of the TMAP comparison.

On the basis of the above there is a negligible difference between the traffic generating characteristics of the site following the proposed rezoning and the future site yield estimated for the TMAP traffic analysis purposes.

4.4.3 Distribution and Assignment

The directional distribution and assignment of traffic generated by the planning proposal will be influenced by a number of factors, including the:

i configuration of the arterial road network in the immediate vicinity of the site
ii existing operation of intersections providing access between the local and arterial road network
iii distribution of households in the vicinity of the site

iv surrounding employment centres, retail centres and schools in relation to the site
v likely distribution of employee's residences in relation to the site
vi configuration of access points to the site.

Having consideration for the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed:

- ingress – via The Avenue and Hill Street
- egress – via Treacy Street to Forest Road.

In addition, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) for each of the land uses is provided in Table 4.6.

Table 4.6: Traffic Distribution

Land Use	Adopted Traffic Distribution Proportions				Adopted Traffic Distribution			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	In	Out	In	Out	In	Out	In	Out
Residential	30%	70%	70%	30%	16	36	36	16
Retail	90%	10%	50%	50%	11	1	24	24
Commercial	90%	10%	10%	90%	27	3	2	20
Total					53	41	63	59

Based on the above, Figure 4.1 and Figure 4.2 have been prepared to show the estimated marginal increase in turning movements in the vicinity of the subject property following full site development.

Figure 4.1: AM Peak Hour Additional Site Generated Traffic Volumes

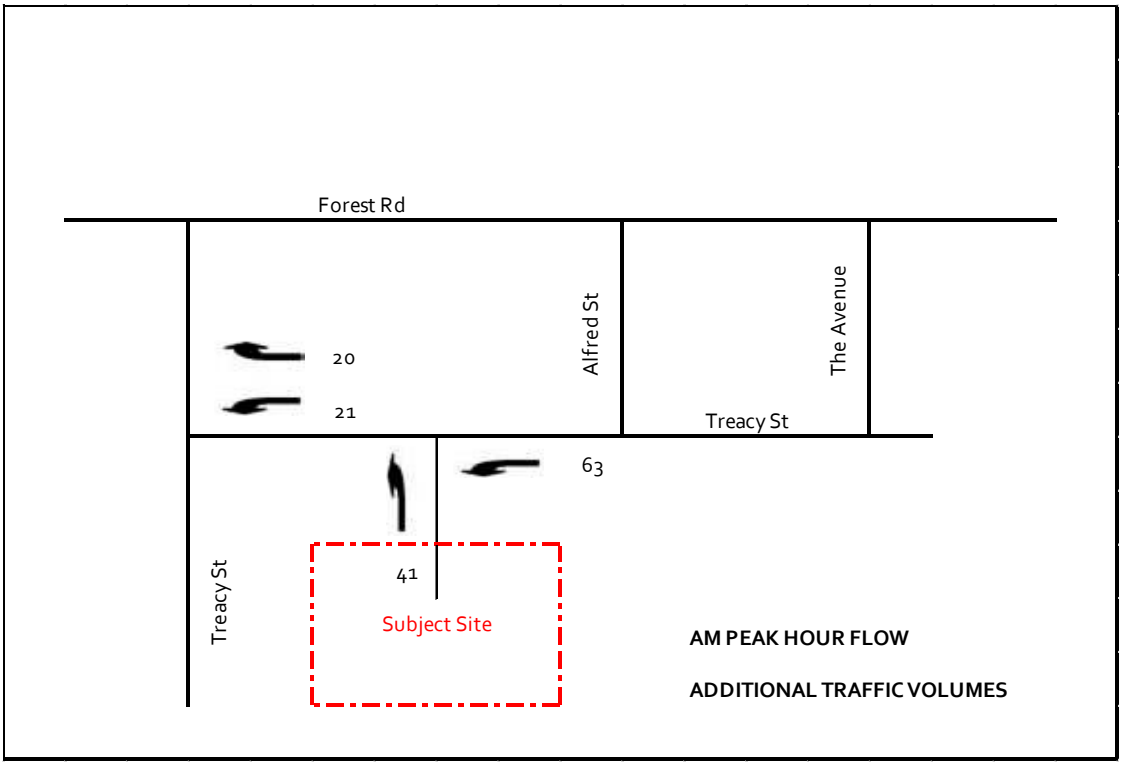
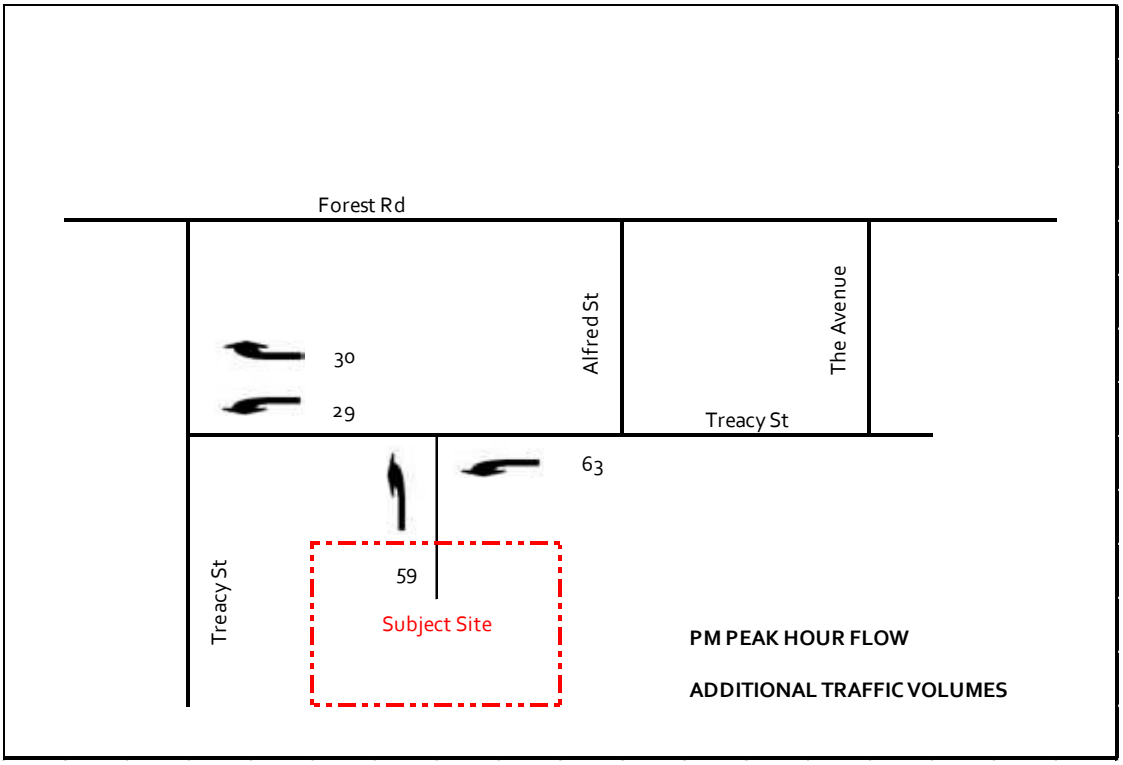


Figure 4.2: PM Peak Hour Additional Site Generated Traffic Volumes



4.4.4 Cumulative Traffic Generation Assessment

To understand the cumulative impact of development occurring in the vicinity of the site, information was gathered from Hurstville Council regarding 23-35 Treacy Street, located east of the subject site and within Zone 24 for the Hurstville City Centre TMAP assessment.

23-35 Treacy Street is currently under construction and is to contain 227 residential units and 1,799sq.m of retail floor area. The development was also considered in the Hurstville City Centre TMAP as Zone 24b.

A summary of the proposed and TMAP land use areas within Zone 24 is provided in Table 4.7.

Table 4.7: Development Schedule

Use	Planning Proposal	23-35 Treacy Street	Total Proposed	TMAP (Zone 24)
Residential	180 dwellings (40 x 1-bedroom, 128 x 2-bedroom, 12 x 3-bedroom)	227 units	407 units	454 units
Retail	850sq.m GFA	1,799sq.m GFA	2,649sq.m GFA	2,290sq.m GFA
Commercial	1,850sq.m GFA	-	1,850sq.m GFA	2,290sq.m GFA

Compared to the proposed developments, Table 4.7 illustrates that the Hurstville City Centre TMAP assessed:

- 47 more residential units
- 359sq.m less retail floor area
- 440sq.m more commercial floor area.

A comparison of the traffic generation of the proposed developments and TMAP forecasts for Zone 24 is provided in Table 4.8, adopting the traffic generation rates used in the Hurstville City Centre TMAP.

Table 4.8: Zone 24 Traffic Generation Comparison using TMAP Traffic Rates

Land Use	TMAP		Proposed Developments	
	AM Peak Mov./ Hr	PM Peak Mov./ Hr	AM Peak Mov./ Hr	PM Peak Mov./ Hr
Residential	232	216	208	193
Retail	51	99	59	114
Commercial	45	42	37	34
Total	**328**	**357**	**304**	**341**

Table 4.8 shows that the proposed developments in Zone 24 generate less vehicle movements per hour during the weekday peak periods than forecasted in the TMAP.

4.4.5 Existing Intersection Operation

Traffic counts and detailed intersection modelling have not been undertaken as part of this planning proposal. However, reference is made to SIDRA modelling completed by Lyle Marshall and Associates (LMA) for a proposed development for the adjacent site at 21-35 Treacy Street[2]. The modelling within the LMA report indicates that "spare" capacity exists at the surrounding intersections.

It is noted that SIDRA INTERSECTION[3] is a computer based modelling package which calculates intersection performance. The commonly used measure of intersection performance, as defined by the RMS, is vehicle delay. SIDRA INTERSECTION determines the average delay that vehicles encounter and provides a measure of the level of service.

Table 4.9 shows the criteria that SIDRA INTERSECTION adopts in assessing the level of service.

Table 4.9: SIDRA INTERSECTION Level of Service Criteria

Level of Service (LOS)	Average Delay per vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

[2] 'Traffic and Parking Impact for Proposed Modifications to an Approved Concept Plan (S75w) for a Proposed Mixed Use Development at 21-35 Treacy Street, Hurstville' dated April 2012 prepared by Lyle Marshall and Associates.

[3] Program used under license from Akcelik & Associates Pty Ltd.

Ingress Movements

Traffic accessing the two development sites will be required to access Treacy Street from the south (one location) via The Avenue to Railway Parade and from the north (two locations) via The Avenue and Hill Street to Forest Road. Each of these routes are via signalised intersections to Forest Road and Railway Parade.

A summary of the existing conditions modelling presented in the LMA report for the intersections to Forest Road is provided in Table 4.10.

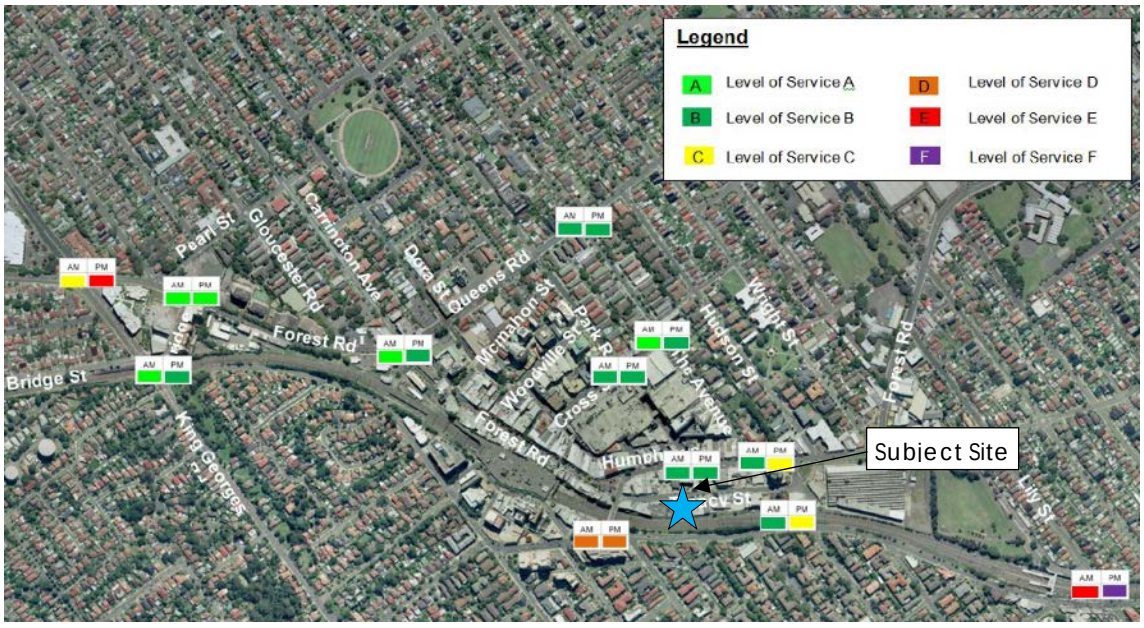
Table 4.10: Existing Intersection Operation

Intersection	Peak Hour	Level of Service	Degree of Saturation
Forest Road/ Hill Street	AM	A	0.31
	PM	A	0.40
Forest Road / The Avenue	AM	B	0.76
	PM	C	0.82
Treacy Street / The Avenue	AM	A	0.39
	PM	B	0.75

The SIDRA modelling undertaken by LMA indicates that the assessed intersections currently operate satisfactorily with some spare capacity to accommodate additional traffic.

Moreover, it is also noted that these findings are consistent with the existing operation of the Forest Road intersections with Alfred Street and The Avenue modelled as part of the Hurstville City Centre TMAP. The results are reproduced in Figure 4.3.

Figure 4.3: Hurstville City Centre TMAP – Existing Conditions Operation (2012)



Base source: Hurstville City Centre TMAP, GHD 2013

Egress Movements

Traffic leaving the site will be required to do so via the Forest Road/ Treacy Street intersection. The intersection is currently priority controlled, with left-turning traffic forming a continuous lane to the south, while right turning traffic is required to give way to north and southbound movements.

A summary of the existing conditions modelling presented in the LMA report for the Forest Road/ Treacy Street intersection is provided in Table 4.11.

Table 4.11: Existing Intersection Operation

Intersection	Peak Hour	Level of Service	Degree of Saturation
Forest Road/ Treacy Street	AM	A	0.62
	PM	A	0.79

The SIDRA modelling undertaken by LMA indicates that the Forest Road / Treacy Street intersection currently operates satisfactorily with some spare capacity to accommodate additional traffic.

4.4.6 Traffic Impacts

Based on the above assessments, the following is noted:

- As it relates to an assessment against existing volumes:
  - The planning proposal is expected to generate approximately 94 and 122 additional vehicle movements during the weekday AM and PM peak hours respectively, over and above what the site currently generates.
  - This equates to approximately 1-2 additional vehicle movements per minute, which given the distribution across access locations, is not anticipated to have a significant impact on the operation of the surrounding road network.
  - Vehicles departing the site and travelling southbound will be able to do so freely in the continuous left turn lane provided at the intersection of Forest Road and Treacy Street. Vehicles turning right will be required to wait for appropriate gaps in the north and southbound traffic streams, which are typically provided by the adjacent signalised intersections to the north and south.
- As it relates to an assessment against the Hurstville City Centre TMAP:
  - The two developments proposed in Zone 24, the planning proposal and 23-35 Treacy Street, generate less traffic than forecasted in the TMAP.
  - The TMAP assessment indicates that the surrounding road network would continue to operate well in 2021 and 2036 based on the TMAP traffic forecasts, with the exception of the Railway Parade intersection with Treacy Street, Ormonde Parade and West Street. This intersection has been identified for upgrades before 2021 to improve capacity, including an additional left turn slip lane in Treacy Street and changes to lane configurations on West Street and Ormonde Parade.
  - For reference, the relevant figures from the TMAP showing the forecast operation of the network is presented in Figures 5.1 and 5.2.

Having regard for the above analysis (including the comparison to the TMAP), the traffic generation of the planning proposal has already been considered as part of the Hurstville City Centre TMAP, with the cumulative impacts and any mitigating measures having been assessed. Therefore, a reassessment of the impacts of the planning proposal is not warranted.

Figure 4.4: 2021 Traffic Conditions – Hurstville City Centre TMAP

Base source: Hurstville City Centre TMAP, GHD 2013

Figure 4.5: 2036 Traffic Conditions – Hurstville City Centre TMAP

Base source: Hurstville City Centre TMAP, GHD 2013

5. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

i The planning proposal seeks to rezone the site to a B4 Mixed use zone, increase the permissible height limit and introduce a site specific floor space ratio.

ii It is proposed to maintain the 90 space car park currently provided on-site.

iii The site generates a DCP parking requirement of 251 spaces.

iv The proposed car parking supply of 285 spaces exceeds the DCP parking requirements and is generally acceptable. Further consideration of residential visitor parking would be required at the Development Application stage.

v It is recommended that the proposed development provides some 59 bicycle parking spaces for staff/residents and up to 26 spaces for customers/ visitors.

vi The site is expected to generate up to 122 additional vehicle movements during the PM peak hour.

vii The anticipated traffic generation is similar to the traffic generating characteristics of the site under the Hurstville City Centre TMAP forecasts (up to 157 additional vehicle movements).

viii As such, the proposed additional traffic generated by the indicative development yield following rezoning of the site (and any mitigating measures) has been adequately considered by the TMAP, with no further quantitative analysis required.

ix There should be adequate capacity in the surrounding road network to cater for the additional traffic generated by the planning proposal based on the results of the existing conditions intersection modelling undertaken by Lyle Marshall and Associates, which are consistent with the existing conditions modelling undertaken for the Hurstville TMAP.

x Intersection modelling completed in the Hurstville TMAP for Year 2021 and 2036 indicate that the surrounding road network would continue to operate satisfactorily. However, upgrade works were identified for the Railway Parade intersection with Treacy Street, Ormonde Parade and West Street to improve capacity for turning movements.

Appendix A

Hurstville City Centre TMAP 2013 Summary

The Hurstville City Centre Transport Management and Accessibility Plan (TMAP) was prepared by GHD in June 2013 for Hurstville City Council. The TMAP was prepared to inform the Hurstville Local Environmental Plan (LEP) and other planning controls to ensure *"a coordinated and efficient approach is taken in the planning of land use, managing the environment and investing in transport infrastructure"* (GHD, 2013).

Action Plans were established in the TMAP to manage travel and shape growth in and around the city centre. Land use scenarios were tested as part of the study including additional development ranging from 0m^2-655,000m^2 Gross Floor Area; for between 7,000 and 17,000 new jobs and between 4,500 and 14,000 new residents.

Extensive transport modelling was undertaken using the following tools to test and gain understanding of the relationship between land use and transport network performance:

- A spreadsheet-based land use model
- Multi-modal bespoke model and strategic highway (EMME) model
- Paramics micro simulation model
- SIDRA Intersection model.

The TMAP acknowledged that the assessment could not focus on improving capacity on the regional road network, given it is a regional issue that will exist with or without any development within Hurstville. Instead the study looked at the potential to influence and change how people currently travel to and from the Hurstville City Centre, and in the future.

A summary of the key findings from TMAP are provided below:

- Preferred land use arrangement is to provide 363,000m^2 of additional GFA for 11,000-14,000 new jobs (55% growth) and 9,500 new residents (104% growth).
- City Centre North (area containing the Council site), along with Eastern and Western City Centre gateways were identified to accommodate a high proportion of the growth.
- King Georges Road and the intersections along the road where identified as being capacity deficient and required upgrades by 2021 with or without development of Hurstville City Centre.
- A designated bus corridor is required by 2021 to the west of the city centre to ensure reliability of bus operations along the western strategic bus corridor (Forest Road and Bridge Street) are not impacted by predicted congestion during the commuter peak periods.
- Capacity deficiencies identified along the regional road network support:
  - developing a transport network around major centre capacity
  - encouraging travel by active and public transport
  - managing growth by integrating land use and transport planning principles.
- Potential to improve collective mode share of public and active transport from 33% and 34% now in the AM and PM peaks to 41% and 49% by 2036 (above the 40% mode share targets).
- Additional capacity is required on future train and bus networks to cater for an additional 3,100 to 3,500 train passengers and 1,800 to 1,900 bus passengers under conservative transport testing scenarios.
- Potential to further improve mode share by adopting further reduced parking provision rates for new development, as well as implementing area-wide parking management practices (time-restrictions, parking costs and enforcement).

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