

ITEM 14. ZETLAND AREA TRAFFIC STUDY

FILE NO: 2029696

DATE: 7/4/05

ATTACHMENTS

Attachment "A" – Study Area Location Plan

Attachment "B" – Impression of Bourke Street 'High St / Boulevard' Proposal

Attachment "C" – Traffic Model update - Redevelopment Sites in Green Square

Attachment "D" – Levels of Land Use and Transport Integration (LUTI)

Attachment "E" – Zetland Area Traffic Study – Final Report

NOTE: PLANS OF THE PREFERRED OPTION CIRCULATED SEPARATELY TO THIS REPORT.

PURPOSE

1. The purpose of this report is to:
 - (a) inform the Council of the *Zetland Area Traffic Study* (noting that the Green Square Taskforce received a briefing regarding this report at its last meeting);
 - (b) advise Council concerning the main issues that have been raised through consultation;
 - (c) advise the Council of the potential urban design consequences of pursuing some of the outcomes of the *Zetland Area Traffic Study*, with respect to both adopted and proposed planning strategies; and
 - (d) propose for consideration by Council a transport management approach for the Zetland and surrounding areas aiming to balance both traffic movement and urban design objectives, to be included as part of the development of an 'integrated transport strategy' for the City of Sydney Local Government Area (LGA).

BACKGROUND

2. In October 2003, Maunsell Australia Pty Ltd was appointed to undertake the *Zetland Area Traffic Study* on behalf of South Sydney Development Corporation (SSDC), the Council and the NSW Roads and Traffic Authority (RTA). The study area primarily includes Zetland and Waterloo. (Refer to **Attachment "A"** for a location plan of the study area).

3. The cost of the study (incl. GST) was \$82,500 with an additional \$10,000 (incl. GST) for further traffic counts. The Council contributed \$52,500, with SSDC and RTA each contributing \$20,000.
4. The aim of the study was to:
 - (a) review previous traffic and transport planning studies undertaken for the Green Square Urban Renewal Area, and the proposed Green Square Town Centre (GSTC) masterplan;
 - (b) update the data using recent traffic count information and current planning approvals or proposals;
 - (c) analyse the road network; and
 - (d) present in some detail a 'traffic management plan' for the study area.
5. The '**traffic management plan – preferred option**' developed by the consultant (refer to Option 1 - A1 sheet circulated separate to this report) aims to identify works necessary to manage the predicted traffic generation arising from redevelopment of the rezoned Green Square Urban Renewal Area, and the proposed GSTC as defined within the latest masterplan submission. This option also seeks to protect the amenity of the local streets of Zetland in the vicinity of the proposed GSTC.
6. The '**traffic management plan – preferred option**' (Option 1 circulated separately to this report) is based on the assumptions that:
 - (a) a mix of employment, service and residential uses will be introduced to the area, minimising the need for motorised travel;
 - (b) long term 'public transport' in the area will include Green Square railway station (including an identification of ways to reduce the impact of the existing pricing impediment on rail patronage), improved cross regional and feeder bus systems, bus priority measures and introduction of public transport information display boards;
 - (c) increased facilities for pedestrians and cyclists to achieve a high degree of accessibility to local services, employment uses and public transport stops; and
 - (d) implementation of a restrictive car parking policy to discourage private vehicle uses without unduly deterring desired development.
7. It is assumed that these measures, applied in combination, will lead to significant increases in public transport use in favour of the private car.
8. It should be noted that the study does not factor in the further contribution to increases in public transport use that could be achieved through the provision of a mass transit system such as light rail, although the Council is pursuing the possibility of a light rail corridor to link the Green Square area to Central train station.

9. It was not within the scope of the study to assess the urban design impacts that may emerge as a result of the implementation of all of the recommended measures. The purpose of the study was singularly to determine the works required to accommodate increased traffic generated by development (allowable within existing and proposed planning instruments) with regard to established traffic and transport planning standards.
10. However, some of the study outcomes are considered to have significant urban design and amenity impacts for the Green Square and surrounding areas. In particular:
 - (a) the study recommends the establishment of either peak only, or permanent 'clearways' on some Council roads to increase traffic capacity. However, encouraging Council roads to perform a regional traffic carrying role is contrary to established planning strategies in the area. The roads most affected include **Epsom Road**, **Joynton Avenue** and **O'Dea Avenue**. Increasing the capacity of Epsom Road (which is recommended to be treated functionally as a 'sub-arterial' road) also implies that its continuation (into **Lenthall Street** in the Randwick LGA) may have a higher role than envisaged by Randwick City Council, who have stated in correspondence to the consultants for the City of Sydney that the '*residential amenity of Lenthall Street cannot be compromised*'; and
 - (b) the study recommends 'clearways' for dual lane capacity along the regional road of **Bourke Street**. This is inconsistent with the proposal to reduce the traffic capacity of Bourke Street to a single lane in each direction and create a 'high street' gateway, which is presently being developed for Council through the *Green Square Draft Public Domain Plans* project (refer to **Attachment "B"**). The 'high street' gateway proposal represents a fundamental element of the *Green Square Draft Public Domain Plans* project, and the urban design objectives of the project would be severely compromised if the proposal did not proceed.
11. This report outlines each of the key study outcomes, and advises Council concerning the possible impacts of these outcomes. The report also recommends a proposed transport management approach to develop alternative strategies in cases where the recommendations of the *Zetland Area Traffic Study* would be likely to result in significant urban design and amenity impacts.

BASIS OF THE TRAFFIC MODEL

12. The study area boundary does not take in the entire Green Square Redevelopment Area. However, the traffic model used for this study allows for traffic generated by:
 - (a) the entire Green Square Redevelopment Area, refined to consider the latest planning submissions for sites including GSTC, Victoria Park, Email, Former CRI, Former ACI, Sydney Gate and other rezoned sites bounded by Lachlan Street, Bourke Street, O'Dea Avenue and South Dowling Street (**Attachment "C"** shows these sites);

- (b) the Airport Masterplan; and
 - (c) the Port Botany Masterplan.
13. The Green Square Redevelopment Area (as defined within the traffic model, which it should be noted, differs from the Green Square redevelopment area, as defined by the zoning, by including the entire Rosebery suburb) is reported to have had 7,927 residents and 25,115 employees in 1996.
 14. The traffic and transport planning for the Green Square Redevelopment Area (as defined within the traffic model) is based on the presumption that the area will accommodate a total of 29,765 residents and 41,578 employees by 2016, which represents the realisation of approximately 90% of full development potential under the planning controls for Green Square, and the proposed GSTC masterplan.
 15. Therefore, the traffic model allows for an increase of 21,838 residents, and 16,463 employees between 1996 and 2016. In other terms, in 2016 the model allows for around 3.75 times as many residents, and around 1.65 times as many employees compared to 1996.
 16. The traffic model developed for the Green Square area in 2016 is based upon achieving considerably higher modal split towards public transport, cycling and walking, and lower modal split towards the private vehicle, compared to that which existed in the area in 1996. Modal split refers to the proportion of trips made by private vehicle, public transport, cycling and walking by persons related to a particular mix of land use.
 17. The traffic model sets different target rates throughout Green Square on a generally sliding scale dependent upon proximity to the Green Square railway station. In broad terms, the upper and lower target rates corresponding to the areas with the closest or furthest proximity from Green Square station are as follows:

(a) Employee Trips (to the area)

Location	Peak Hour Modal Split to Private Vehicle Car Drivers (%)		
	1996	2016	Improvement
Closest to Station	68%	40%	40% reduction (equivalent to North Sydney)
Furthest from Station	69%	64%	7% reduction

(b) Resident Trips (from the area to work, etc. assuming 2 persons per dwelling)

Location	Peak Hour Private Vehicle Trips per Person		
	1996	2016	Improvement
Closest to Station	0.22	0.15	32% reduction
Furthest from Station	0.25	0.22	12% reduction

18. In summary, the growth in vehicle trips allowed for in the traffic model is based on new employees and residents reducing their peak hour private vehicle driver mode split by up to around 30-40% closest to Green Square station and up to around 10% furthest from Green Square station compared to existing employees and residents in the same areas (based on 1996 modal split estimates). The basis for achieving these improvements was set out in two previous transport studies.
19. The two macro transport studies that were undertaken previously for the Green Square area were the *Green Square Redevelopment Area Road Hierarchy and Traffic Management Study* (2000) and *Green Square Transport Accessibility Plan* (2001), both by Masson Wilson Twiney.
20. These studies envisaged that a series of actions would be required to support the improved modal split targets away from private vehicle drivers towards public transport, and recommended a 36 point action plan for different government agencies to undertake. The following broad categories of actions were presented:
 - (a) provision of a mix of employment, service and residential uses in the area, minimising the need for motorised travel;
 - (b) Green Square station services increasing from about 8 trains per peak hour each way to about 16 trains per peak hour each way by 2021, with identification of ways to reduce the impact of the existing pricing impediment on rail patronage, and improved pedestrian access to the train station;
 - (c) improved cross regional and feeder bus systems, bus priority measures and introduction of public transport information display boards;
 - (d) increased facilities for pedestrians and cyclists to achieve a high degree of accessibility to local services, employment uses and public transport stops, including implementation of Council's bicycle plan; and
 - (e) implementation of a restrictive car parking policy to discourage private vehicle uses without unduly deterring desired development.
21. The studies also recommended that a detailed public transport study was required to develop a formal public transport strategy and action plan. To date, no such improvements or study have occurred.
22. The *Zetland Area Traffic Study* has confirmed that even if improved public transport, walking and cycling mode splits are achieved in accordance with the target rates described above, the road network will require a series of major works in order to accommodate the predicted traffic volumes arising from redevelopment having regard to established standards for road and intersection carrying capacities. Significant improvements to public transport services sufficient to achieve target mode split rates beyond those previously envisaged would be required if some of the road works proposed in the study are to be avoided on urban design grounds.

PLANNING ISSUES AND RESPONSES

23. Issues arising out of the study findings are discussed in the following sections in relation to their wider Green Square transport and parking urban strategy context, study outcomes and implications.

Local Streets

24. The role of a **local street** is limited to providing access to residents and their visitors where the priority is residential amenity. Such streets are generally low speed environments, where pedestrians and cyclists have more importance than vehicles. Local streets are usually 100% funded by Council. The recommended traffic carrying capacity set by the RTA for local streets is **300 vehicles / hour**. The local streets immediately surrounding the proposed Town Centre include *Portman Street, Tilford Street, Merton Street, Hansard Street* and the existing portion of *Dunning Avenue* between Epsom Road and Tosh Lane. These streets already form part of a **40km/hr local area speed limit (LASL) zone**.

Urban Strategy

25. The *South Sydney Development Control Plan 1997: Urban Design - Green Square*, provides the following key elements as part of the Urban Strategy for Transport and Parking:
- (a) minimum through traffic within neighbourhoods;
 - (b) protect the established areas of Zetland, Surry Hills and Beaconsfield from through traffic and major increases from redevelopment of the Green Square area;
 - (c) recognition of opportunities to provide pocket parks and a buffer to neighbourhoods against traffic intrusion through selective closures at busier roads or local roads at an early stage;
 - (d) total permeability for motor vehicles is not supported; and
 - (e) protect parking conditions in existing communities.

Study Outcomes

26. Several measures will be required to support the local street function, and prevent through traffic from using these local streets as alternative access to the proposed GSTC, or as through routes from Botany Road and Bourke Street to Joynton Avenue. Traffic counts undertaken in November 2003 indicate that some local streets (such as Hansard Street and Portman Street) are already approaching their recommended traffic capacities. The study has responded to this urban strategy for transport and parking with a series of recommended local area traffic management measures for local streets in the Zetland area. These recommendations include:
- (a) partial closure (left-out only) from Hansard Street at Botany Road, with a possible consideration for a full road closure in the future should the need arise;

- (b) increased on-street car parking along the southern side of Hansard Street through the introduction of angle parking (subject to approval by the Sydney Traffic Committee);
- (c) left-in / left-out treatment on Bourke Street at Portman Street;
- (d) left-in / left-out treatment on Bourke Street at George Street;
- (e) left-in / left-out treatment on Merton Street at Tilford Street;
- (f) increased on-street car parking along the southern side of Tilford Street through the introduction of angle parking (subject to approval by the Sydney Traffic Committee);
- (g) left-in / left-out treatment on Epsom Road at Dunning Avenue (north and south sides);
- (h) left-in / left-out treatment on Bourke Street at the new 'Dunning Avenue extension' proposed as part of the Town Centre; and
- (i) the new lane proposed as part of the Email development should be restricted to left-in only at Joynton Avenue, and one-way westbound movement.

Implications

27. Each of these measures would be expected to support the urban strategy for local streets. The proposed measures as described in (a) to (g) above should be implemented prior to the commencement of any works associated with the proposed GSTC development. The measure proposed in (h) above should be a condition of any adoption of the GSTC masterplan. The measures proposed for the new lane described in (i) above should be a condition of any approval on the Email site.

Collector Streets

28. The role of a **collector street** is to distribute traffic from the local road system onto the regional and state arterial road system. Such streets generally provide local bus routes, and should also provide marked bicycle facilities when they form part of a direct bicycle route. Collector streets are usually 100% funded by Council. The recommended traffic carrying capacity set by the RTA for collector streets is **500 vehicles / hour**. Collector Streets within the study area and surrounding the proposed GSTC include *Elizabeth Street (south of Bourke Street)*, *O'Dea Avenue*, *Epsom Road*, *Gadigal Avenue* ^{Note 1} and *Joynton Avenue*. Traffic counts taken in November 2003 indicate that Elizabeth Street, O'Dea Avenue and Epsom Road are already carrying significantly more traffic than the recommended maximum. For example, O'Dea Avenue is carrying up to 1,100 vehicles / hour and Epsom Road is carrying up to 2,100 vehicles / hour. Although new counts were not taken on Joynton Avenue; previous counts indicate that this route is also carrying significantly more traffic than the recommended maximum during peak periods. New collector streets are also proposed along *Bruce Street* between Lachlan Street and O'Dea Avenue, east-west along the proposed *Boulevard* and from Portman Street to Bourke Road in Alexandria via the proposed *New Cross Street*.

Urban Strategy

29. *South Sydney Development Control Plan 1997: Urban Design - Green Square* provides the following key elements as part of the Urban Strategy for Transport and Parking:
- (a) create new 'north-south' links through Victoria Parks north-south avenue and 'curved road', ^{Note 1}; and
 - (b) create new east-west avenue from Botany Road at the station to Link Road.

Note 1: Gadigal Avenue was allocated the status of a Collector Street in the initial planning undertaken for the area. Part of the philosophy was to provide a north-south connection from the proposed Bruce Street extension to the east-west boulevard, and ultimately Epsom Road, thus relieving some of the pressure on Joynton Avenue. However, changes that occurred to the arrangement of Gadigal Avenue and Defries Avenue just south of O'Dea Avenue as part of the adopted Victoria Park masterplan have compromised the intended role of a north-south collector through Victoria Park. This is because southbound traffic is directed to Defries Avenue, and northbound traffic is directed to Gadigal Avenue. This results in part in a returned demand back onto Joynton Avenue to cater for through traffic movements.

Study Outcomes

30. In order to accommodate the increases in traffic volumes expected from redevelopment in the area, the study has recommended that parking restrictions be placed on Council roads to increase their traffic carrying capacity. The traffic volumes expected along these roads far exceed the recommended maximum for 'collector' streets, and would usually only be expected on 'regional' roads. The following restrictions are proposed on existing Council roads:
- (a) peak hour 'clearway' parking restrictions along Joynton Avenue, O'Dea Avenue (between Joynton Avenue and Gadigal Avenue) and Epsom Road (between Joynton Avenue and Dalmeny Avenue);
 - (b) permanent 'clearway' on Epsom Road (between Botany Road and Joynton Avenue); and
 - (c) permanent 'clearway' on O'Dea Avenue (between Gadigal Avenue and South Dowling Street).
31. Whilst Elizabeth Street is not part of a designated bicycle route, marked bicycle lanes between Joynton Avenue and Bourke Street are proposed, as well as a 'paved threshold' entry treatment at Bourke Street and Elizabeth Street. This will enhance the existing traffic calming works along Elizabeth Street by narrowing the carriageway for vehicles, and identifying the character of this section of Elizabeth Street as being different from that north of Bourke Street.
32. In order to allow for sufficient access to and from the proposed GSTC, the study has confirmed that a new east-west cross street between Botany Road and Bourke Road will need to be created.
33. The study has confirmed that a new north-south collector street between O'Dea Avenue and Lachlan Street will form an important connection in the road system, linking Gadigal Avenue between the Victoria Park site and the ACI site.

Implications

34. The measures described in (a) and (b) above would have negative urban design and amenity impacts. Measure (a) would compromise the streetscape and character of the Joynton Avenue corridor which is lined with heritage fig trees. In particular, large vehicles travelling in the kerbside lane would also conflict with overhanging branches of the heritage fig trees, thus damaging these trees. Measure (b) would make it difficult for Council to activate retail activity along Epsom Road. Increasing the traffic capacity of Epsom Road also creates issues with its continuation into Randwick along Lenthall Street, which is a residential collector street.
35. The proposed measure for collector streets as described in (c) above will most likely be necessary for the operation of the O'Dea Avenue / South Dowling Street / Todman Street intersection.
36. The restriction measures described above for Elizabeth Street south of Bourke Street are likely to enhance the residential character of this section, and improve the amenity in this area.
37. There is a significant amount of uncertainty associated with the implementation of the proposed new cross street between Botany Road and Bourke Street, which forms an important element of the access strategy for the proposed GSTC, and the implementation of the proposed new north-south street between O'Dea Avenue and Lachlan Street. Whilst these new roads have been identified in the Section 94 Contributions Plan for Green Square, the proposed routes traverse numerous privately owned sites, and are fully dependent upon redevelopment of each of the affected sites to be realised. There is therefore no certainty that these routes can be realised, and their timeframes can not be determined.

Regional Roads

38. The role of a **regional road** (sub-arterial) is to support the arterial road network, particularly in peak periods. They are often key bus routes, and have a significant traffic carrying function. Regional roads generally carry anything up to **20,000 vehicles per day**. Whilst regional roads are essentially the responsibility of Council, significant support is provided by RTA through various funding programs, particularly where the roads perform an important 'sub-arterial' function. Regional roads within the study area include *Bourke Street* (between Botany Road and Phillip Street), *Elizabeth Street* (north of Bourke Street), and *Crescent Street*. *Wyndham Street* lies just outside the study area.

Urban Strategy

39. *South Sydney Development Control Plan 1997: Urban Design - Green Square* provides the following key elements as part of the Urban Strategy for Transport and Parking:
 - (a) non-residential traffic generators such as retail uses, district parks, schools and substantial commercial developments to be located on, and served by boundary streets; and

- (b) reserve sufficient easements along boundary thoroughfares for road widening / intersection capacity improvements to carry future regional traffic.
40. The *Green Square Draft Public Domain Plans* were recently completed for Council by McGregor+partners. The plans provide the following key elements as part of the strategy to create an 'equitable public movement web':
- (a) the principal objective of the proposal is to moderate Bourke Street to one through lane in each direction, and reclaim some of the existing road space for pedestrians, bicycles and parking to create a 'high street / boulevard';
 - (b) Bourke Street has been nominated as an appropriate corridor for rejuvenation to create a 'high street / boulevard' for several reasons, the major ones being:
 - (i) it connects the surrounding communities with the proposed *Town Centre*;
 - (ii) the new development is activating the street frontage through a mixture of commercial, retail and residential uses, and the road environment should take steps to support this activation; and
 - (iii) it will become the Green Square 'high street' entrance to the proposed GSTC.
41. The public domain plans informed the road alignments and street configurations adopted in the *Zetland Area Traffic Study*, as the arrangement of local and collector streets had already been developed under the *Green Square Redevelopment Area Road Hierarchy and Traffic Management Study* (Masson Wilson Twiney, 2000) and *DCP 1997: Urban Design – Green Square Amendments*.
42. The alignment, treatment and documentation of new local and collector status streets are generally consistent in both projects, as are the requisite local area traffic management works. The exception to the abovementioned proposed treatment for Bourke Street.

Study Outcomes

43. In order to accommodate the increases in traffic volumes expected from redevelopment in the area, the study has recommended that parking restrictions be placed on regional roads to increase their traffic carrying capacity. The following restrictions are proposed:
- (a) retention of peak hour 'clearway' parking restrictions along Bourke Street between O'Dea Avenue and Danks Street;
 - (b) permanent 'clearway' on Bourke Street between Botany Road and O'Dea Avenue, and Danks Street to Crescent Street; and
 - (c) permanent 'clearway' on Elizabeth Street north of Bourke Street.

44. Previous investigations undertaken as part of the Green Square Redevelopment Road Hierarchy and Traffic Management Study 2000 also recommended that the status of Bourke Street between Botany Road and Crescent Street be upgraded from a regional road to a state arterial road.
45. The above Study presented a proposal to re-open the local street *Short Street* between Hawksley Street and Bourke Street in Waterloo. This would create a road of sub-arterial status acting as a 'relief route' around the proposed Town Centre, and extending the O'Dea Avenue route to form a regional link between South Dowling Street and Elizabeth Street. This *Zetland Area Traffic Study* has provided a more detailed assessment of this proposal, and found that such a proposal would be problematic, and should not be pursued. This is based on the fact that the intersection of O'Dea Avenue and South Dowling Street would be unable to accommodate the additional traffic attracted to the route, even if upgraded to the full extent possible, due mainly to north-south capacity restrictions along South Dowling Street. **It should be noted that the 'traffic management plan – preferred option' (Option 1, circulated separately to this report) retains the existing closure of Short Street.**

Implications

46. The proposed measures for regional roads as described in (a) and (b) above, and the clearway restrictions are in direct conflict with the Bourke Street 'Boulevard / High Street' proposal that has emerged from the *Green Square Draft Public Domain Plans* being prepared for Council by consultants mcgregor+partners. Whilst the Bourke Street 'Boulevard / High Street' proposal would require the support of the RTA to be realised, it has significant benefits for Council in creating a desirable urban environment.
47. The proposed measures for regional roads as described in (c) above will most likely be required.
48. The proposal to leave Short Street closed is a positive outcome for Council. Opening up a local road like Short Street to form a major traffic bypass route would be contrary to the urban strategy for the area.

State Roads

49. The role of a **state road** (arterial) is to maintain regional traffic movements between key generators and to link to freeways/expressways. Therefore, the major priority for state roads is traffic capacity, typically catering for over **20,000 vehicles per day**. The maintenance and development costs of state roads are funded 100% by RTA. State Roads within the study area include *Lachlan Street, McEvoy Street, Botany Road and O'Riordan Street*. The *Eastern Distributor* forms the eastern boundary of the study area.

Urban Strategy

50. *South Sydney Development Control Plan 1997: Urban Design - Green Square* provides the following key elements as part of the Urban Strategy for Transport and Parking:

- (a) support and reliance on the Lachlan Street / McEvoy Street upgrade;
- (b) support for the Eastern Distributor; and
- (c) support for a full interchange at Link Road, Zetland onto the Eastern distributor to improve accessibility, support businesses in the vicinity of Epsom Road, and reduce vehicular intrusion elsewhere.

Study Outcomes

- 51. The study has found that the upgrading of the Lachlan Street / McEvoy Street state arterial route should be the major priority for the Green Square area with respect to state road upgrades. In terms of priority, the study has found that the highest priority is on the section between Elizabeth Street and South Dowling Street.
- 52. A previous study titled *Botany Road and Wyndham Street Southern Arterial Route Corridor Improvement Study* January 2003' by Masson Wilson Twiney examined the option of creating a 'one-way pair' route between Botany Road and Wyndham Street by extending the existing one-way system south of Henderson Road to the Green Square intersection. The study found that the corridor would have more capacity as a one-way system than a two-way system.
- 53. This *Zetland Area Traffic Study* has confirmed that the 'one-way pair' proposal would increase the capacity of the corridor, but that the effects would be relatively localised, in that the road works identified as being required throughout the remainder of the road network would remain unchanged irrespective of whether or not a one-way or two-way system was adopted along the Botany Road and Wyndham Street route. **It should be noted that the 'traffic management plan – preferred option' (Option 1 circulated separately to this report) retains two-way operation along both Botany Road and Wyndham Street.**
- 54. The study has confirmed that reconfiguration of the Green Square intersection (as proposed under the GSTC Masterplan) will be beneficial irrespective of whether the Botany Road and Wyndham Street corridor is maintained as a two-way system, or altered to a one-way pair system.
- 55. The study has recommended that an option of a full interchange at Link Road / Epsom Road not be pursued further. This position is a significant shift from the support given to this interchange in the *South Sydney Development Control Plan 1997: Urban Design - Green Square* strategy.

Implications

- 56. The recommendation as described above which states that the upgrading of the RTA Lachlan Street / McEvoy Street arterial should be the major priority for the Green Square area with respect to state road upgrades has always been acknowledged. There is a need for the RTA to commit to this upgrading as the major priority in terms of road works for the Green Square area.

57. Whilst it is acknowledged that the proposal to create a one-way pair route between Botany Road and Wyndham Street would increase the traffic capacity, there has previously been resistance to this proposal from the former South Sydney City Council on the basis of its negative urban design and amenity impacts. The option of re-alignment of the Green Square intersection with retention of a two-way system on Botany Road and Wyndham Street was seen as a preferred outcome.
58. The recommendation that the option of providing a full interchange at Link Road / Epsom Road not be pursued further represents a significant shift from the support given to this interchange in the *South Sydney Development Control Plan 1997: Urban Design - Green Square* strategy.

Intersections and Crossings

59. Whilst the signalisation of intersections is usually undertaken to improve the level of service, reduce delays or improve safety for vehicular traffic, signalisation of intersections can also be undertaken to assist other modes of transport, including pedestrian and bicycle movement.

Urban Strategy

60. *South Sydney Development Control Plan 1997: Urban Design - Green Square* provides the following key elements as part of the Urban Strategy for Transport and Parking:
 - (a) adequate intersection capacity on boundary thoroughfares to discourage diversion on through traffic onto local streets;
 - (b) ration traffic signal controls to strategic maximum value locations to assist all modes and to maximise levels of service of regional roads; and
 - (c) reservation of sufficient easements along select boundary thoroughfares and critical intersections for road/intersection capacity improvements to carry future regional traffic, provide local access or accommodate future public transport schemes.

Study Outcomes

61. The study has recommended the introduction of new traffic signals at the following locations:
 - (a) the proposed new Cross Street (in the GSTC) and Botany Road (primarily for vehicles but also required for bicycles along this proposed bicycle route);
 - (b) the proposed new Cross Street and O'Riordan Street (primarily for vehicles, but also required for bicycles along this proposed bicycle route);
 - (c) the proposed new Cross Street and Bourke Road at Bowden Street (primarily for vehicles but also required for bicycles along this proposed bicycle route);
 - (d) the proposed new East-West Boulevard and Joynton Avenue (primarily for vehicles but also required for bicycles along this proposed bicycle route);

- (e) the proposed new East-West Boulevard and the proposed Victoria Park Parade extension (primarily for vehicles but also required for bicycles along this proposed bicycle route);
 - (f) the proposed extension of Gadigal Avenue and O'Dea Avenue (primarily for vehicles but also required for bicycles along this proposed bicycle route);
 - (g) the proposed extension of Gadigal Avenue and Lachlan Street (primarily for vehicles but also required for bicycles along this proposed bicycle route);
 - (h) the intersection of Danks Street and Bourke Street (primarily for vehicles but also required for bicycles along this proposed bicycle route); and
 - (i) the intersection of Elizabeth Street, Short Street and Allen Street (primarily for pedestrian and bicycle safety, as this is an existing bicycle route, and experiences high pedestrian volumes associated with students at the nearby Taylors College. However, traffic signals will also assist vehicular safety).
62. The *Green Square Redevelopment Area Road Hierarchy and Traffic Management Study* (2000) also recommended new signals at the following location:
- (a) the intersection of Link Road and Epsom Road. It is noted that this measure is currently being proposed as part of the 'Link' Master Plan dated June 2004 by Dolina Pty Limited under consideration by Council.
63. The *Zetland Area Traffic Study* has recommended the upgrade of existing traffic signals at the following locations:
- (a) the intersection of Lachlan Street, Dacey Avenue and South Dowling Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
 - (b) the intersection of Lachlan Street, McEvoy Street and Bourke Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
 - (c) the intersection of McEvoy Street and Elizabeth Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
 - (d) the intersection of O'Dea Avenue, Todman Avenue and South Dowling Street;
 - (e) the intersection of Dacey Avenue, Crescent Street, Phillip Street and Bourke Street (to allow for the introduction of a bus priority lane between Phillip Street and the former ACI site; would require land dedication from the property on the south-western corner of Phillip Street and Bourke Street);
 - (f) the intersection of Elizabeth Street and Bourke Street;
 - (g) the intersection of Epsom Road and Joynton Avenue;

- (h) the intersection of Epsom Road and Botany Road (including a recommendation to increase the kerb radius on the north eastern corner of the intersection to facilitate ease of truck and bus movement); and
 - (i) the double intersection of Bourke Street with Botany Road and O’Riordan Street as part of the proposed intersection realignment associated with the GSTC proposal.
64. The study has recommended the introduction of new pedestrian and bicycle activated signal crossings for the purpose of providing safe movement along bicycle routes adopted in *South Sydney Bicycle Plan* (2004). These are proposed at the following locations:
- (a) on McEvoy Street (staged) between Hunter Street and Morehead Street, both of which are part of an adopted bicycle route; and
 - (b) on Epsom Road as close as possible to Dunning Avenue on the eastern side, as Dunning Avenue is part of an adopted bicycle route.
65. The study has recommended the relocation of an existing pedestrian crossing in Joynton Avenue to provide a more central crossing point between the Victoria Park site and the new park proposed as part of the Email site development.

Implications

66. Each of the recommendations above is considered to support the urban strategy for the area. However, the recommendations along Bourke Street would require modifications to conform with the Bourke Street ‘high street’ proposal presented within the *Green Square Draft Public Domain Plans* (the Public Domain Plans will be the subject of a separate, later report to Council).
67. Any development approval at the Email site should be conditional upon the recommendation for relocation of an existing pedestrian crossing as described above.

Bicycle Routes

68. The provision of **bicycle routes** throughout the study area aims to provide for cycling as a local mode of travel, encourage longer distance travel and encourage a modal transfer to cycling away from motorised transport. It should be noted that the study does not investigate the design of bicycle routes in detail, but it does nominate routes and specify whether or not the path is proposed on-road or off-road.

Urban Strategy

69. The *South Sydney Bicycle Plan* (2004) contains the following vision:
- (a) to develop and facilitate the implementation of a cycling environment with appropriate facilities and treatments to create a network that is safe, attractive, convenient, connected and coherent.

Study Outcomes

70. The proposed bicycle routes and associated treatments presented within the *Zetland Area Traffic Study* are generally in accordance with the *South Sydney Bicycle Plan* (2004), with the following exceptions:
- (a) marked bicycle lanes on Elizabeth Street between Bourke Street and Joynton Avenue;
 - (b) shared bicycle / pedestrian path on the west side of Joynton Avenue between O'Dea Avenue and the proposed East-West Boulevard; and
 - (c) there is no allowance for on-street cycling on Bourke Street, which is identified as a 'desirable future' treatment in the *South Sydney Bicycle Plan* (2004).

Implications

71. The measures identified in (a) and (b) above are over and above those proposed in the *South Sydney Bicycle Plan* (2004), but are consistent with the intentions of the plan. The 'clearway' proposal for Bourke Street does not allow for the introduction of on-street cycling which is identified as a 'desirable future' treatment in the *South Sydney Bicycle Plan* (2004) and included in the Bourke Street 'Boulevard / High Street' proposal that has emerged from the *Green Square Draft Public Domain Plans*.

STAGING OF WORKS

72. The required timing of various works can not be readily determined, as this is largely dependant upon the extent and pattern of redevelopment, which is driven by market forces. However, based on our understanding of the current operation of the transport network in the area identified through this study, the 'high priority' works are likely to include the following:

Local Streets

- (a) partial closure (left-out only) from Hansard Street at Botany Road, with a possible consideration for a full road closure in the future should the need arise;

Collector Streets

- (b) in order to allow for sufficient access to and from the proposed GSTC, the proposed east-west cross street between Botany Road and Bourke Road is likely to be required prior to full development of the proposed Town Centre;

State Roads

- (c) the study has found that the upgrading of the Lachlan Street / McEvoy Street state arterial route should be the major priority for the Green Square area with respect to state road upgrades. In terms of priority, the study has found that the highest priority is on the section between Elizabeth Street and South Dowling Street;

Intersections and Crossings

- (d) the intersection of Lachlan Street, Dacey Avenue and South Dowling Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
- (e) the intersection of Lachlan Street, McEvoy Street and Bourke Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
- (f) the intersection of McEvoy Street and Elizabeth Street (to improve vehicle capacity in association with the recommended Lachlan Street/ McEvoy Street upgrade);
- (g) the intersection of O'Dea Avenue, Todman Avenue and South Dowling Street; and
- (h) whilst not urgent on the grounds of traffic capacity, resolution of the intersection of Elizabeth Street, Short Street and Allen Street with respect to pedestrian and bicycle safety should be a high priority for Council.

PROPOSAL

73. It is proposed that Council supports the **'traffic management plan – preferred option'** (**Option 1, circulated separately to this report**) with the following exceptions:

- (a) the establishment of either peak only, or permanent 'clearways' on **Epsom Road, Joynton Avenue and O'Dea Avenue** is not supported;
- (b) the establishment of 'clearways' for dual lane capacity along the regional road of **Bourke Street**, is not supported, because it is inconsistent with the proposal to reduce the traffic capacity of Bourke Street to a single lane in each direction and create a 'high street' gateway, which is presently being proposed through the *Green Square Draft Public Domain Plans* project; and
- (c) the recommended intersections along Bourke Street require modifications to conform with the Bourke Street 'high street' proposal presented within the *Green Square Draft Public Domain Plans*.

74. It is also proposed that Council acknowledge that as a result of the proposed exceptions above, parts of the road network will have less traffic carrying capacity than required to accommodate expected peak period traffic volumes according to the analysis undertaken in the study, based on the assumptions made regarding the future levels of public transport services to be provided for the area.
75. Council also acknowledge that further improvements in modal split away from private vehicles and towards public transport will be required to accommodate the demand for trips if the exemptions above are supported as proposed. However, to achieve this, there is a need to develop a public transport strategy to improve the existing levels of 'land use and transport integration' (LUTI), particularly to areas that presently have low LUTI levels, ie: Alexandria, Beaconsfield, Rosebery, the east part of Zetland and the north and east parts of Waterloo. (refer to **Attachment "D"** for distribution of areas with low land use and transport integration). There must be a viable choice to private vehicle use to support an approach that favours urban design outcomes over traffic capacity improvement measures.
76. There is a need for the Council, in conjunction with DIPNR and RTA, to undertake a detailed investigation into the public transport servicing requirements for the Green Square Redevelopment Area to avoid the need for excessive road improvements, as part of the development of an 'Integrated Transport Strategy' for the City of Sydney. The detailed investigations should include an assessment of:
- (a) the contribution that could be made by light rail, considering the envisaged redevelopment of the area and the need to improve the level of public transport use;
 - (b) the development of prioritisation of strategic bus corridors, and of a bus priority program as recommended in the final report of the Ministerial Review of Bus Services in NSW dated February 2004. In doing so, the Green Square Redevelopment Area should be given the highest priority for the development of bus corridors and bus priority measures to support the strategy for reduced private vehicle use in the area;
 - (c) heavy vehicle movement throughout the Green Square area, including the identification of those routes which are considered appropriate for use by heavy vehicles and those routes which should restrict access to heavy vehicles;
 - (d) an appropriate treatment for Joynton Avenue to ensure that the integrity of the heritage fig trees overhanging the corridor is not compromised. (There have been recorded incidents of major damage to fig trees by trucks along this route in the past.); and
 - (e) an appropriate strategy for the amelioration of traffic impacts on Lenthall Street.
77. It is also critical that copies of the Council resolution on this matter be made available to DIPNR and the RTA.

OPTIONS

78. In the absence of a strategy for the provision of improved public transport services for the area, the Council may accept the outcomes of the *Zetland Area Traffic Study* and accept the **'traffic management plan – preferred option' (Option 1)** as a strategy for the management of growth in the area. It is emphasised that the outcomes of the study still assume considerable improvements to the level of public transport use by 2016 compared to existing levels.
79. Council may accept the proposal as recommended in this report which rejects certain elements of *Zetland Area Traffic Study* **'traffic management plan – preferred option' (Option 1)**, due to their associated urban design and amenity impacts, and instead commits Council to investigating improved public transport services in Green Square as an alternative, in conjunction with DIPNR and RTA, as part of the development of an 'integrated transport strategy' for the local government area.
80. Council may amend or reject the recommendations of this report.

CRITICAL DATES

81. Not applicable to this report.

POLICY IMPLICATIONS

82. The proposal put forward in this report aims to support the following relevant policies and strategies:
 - (a) *Strategy for a Sustainable City of South Sydney* (1995), being generally, 'To develop a sustainable environment whereby activities are located close together in the form of an integrated mixture of housing, employment and service activities, and walking, cycling, public transport and sharing private vehicles are the preferred modes of travel';
 - (b) the key elements for Transport and Parking presented in *South Sydney Development Control Plan 1997: Urban Design - Green Square*, as discussed in detail throughout this report;
 - (c) the recommended approach for 'Review of Parking Controls for New Development' as presented in Item 5 to the 26 July 2004 meeting of the Planning Development and Transport Committee, file reference S031099;
 - (d) the 'equitable public movement web' strategy as proposed within the *Green Square Draft Public Domain Plans*, and in particular the Bourke Street 'High Street / Boulevard' proposal; and

- (e) the broad principles of the 'integrated transport strategy', particularly where these relate to the need for improved public transport services, and the provision of on-street parking, which states '*On-street parking provides the daily servicing life blood of the City and brings major economic benefits in the evenings and at weekends. This is recognised by businesses and retailers and has been encouraged in the last few years. Parking is also used by inner city residents going about their weekend activities who would otherwise move their businesses to other suburbs. In some streets parked cars act as a safety barrier between traffic and the footpath. There is no benefit in removing parking.....*'
83. The proposals put forward in this report will have an impact on the development of an 'integrated transport strategy' for the City of Sydney. This report recommends that improvements to 'land use and transport integration' (LUTI) through improved public transport servicing be identified as part of an 'integrated transport strategy', particularly to areas that presently have low LUTI levels, ie. Alexandria, Beaconsfield, Rosebery, the east part of Zetland and the north and east parts of Waterloo (refer Attachment "D"). It also recommends that the Green Square area be given the highest priority in development of strategic bus corridors and bus priority programs from RTA, in consultation with the Ministry of Transport and DIPNR, in implementing the recommendations of the final report of the Ministerial Review of Bus Services in NSW dated February 2004.

FINANCIAL IMPLICATIONS/FUNDING CERTIFICATES

84. The City of Sydney Capital Works Budget for 2004/2005 includes a budget of \$75,000 for the purpose of implementing local works recommended as part of the *Zetland Area Traffic Study*. It is proposed that this budget be used to commence design and implementation of those recommended works on local roads that are the direct responsibility of Council (refer to *Planning Issues and Responses – Local Streets* in this report).
85. The City of Sydney Capital Works Budget for 2004/2005 includes a budget of \$150,000 for the purpose of design and implementation of traffic signals at the intersection of Elizabeth Street / Short Street and Allen Street as recommended under *Intersections and Crossings* in this report). A consultancy was commissioned by Council on 20 July 2004 (project C14605) for a fee of \$8,500 + GST to prepare a design for these works. At this stage, the RTA (through the Sydney Traffic Committee) has indicated it does not endorse the provision of signals at this intersection, and has requested investigation of alternative options, including alterations to the bus route. This is currently taking place, however, it is expected that the State Transit Authority (STA) may not endorse the alternative options due to the impacts on Sydney Bus services, potentially leaving the issue unresolved for the time being. In any case, as Elizabeth Street is a regional road, City of Sydney would apply to the RTA to implement the project through a 50/50 funding agreement, using the remaining \$140,650 from the Capital Works budget for this purpose.

86. On 24 January 2003, the Minister for Roads, Mr Carl Scully, announced an \$80m budget over 10 years towards regional road improvements. Some of the recommended state road, intersection signal works and pedestrian / bicycle signal crossings identified in this report could be funded from this source, but it would require approval from the RTA. One of the recommendations of this report is that copies of the Council resolution on the *Zetland Area Traffic Study* be made available to DIPNR and RTA.

ECONOMIC/SOCIAL/ENVIRONMENTAL IMPACTS

87. This report acknowledges there will be a need to undertake upgrades to the road network to accommodate the growth in private vehicle use brought about by the addition of 21,838 residents, and 16,463 employees between 1996 and 2016. However, the recommendations of this report also acknowledge that some of the proposals put forward in the *Zetland Area Traffic Study* would lead to social / environmental impacts that are inconsistent with existing or proposed urban design strategies in the area.
88. Therefore, the recommendations of this report aim to balance the need to accommodate growth in private vehicle use, with the need and desire to create an equitable road environment where walking, cycling, public transport and sharing private vehicles are the preferred modes of public movement. In doing so, this report identifies the need to develop improved public transport services throughout parts of the study area, as a means of reducing social and environmental impacts.

CONSULTATION

89. Consultation with respect to issues associated with existing conditions and future proposals has included:
- (a) public meeting held in December 2003;
 - (b) written (or e-mail) submissions for the *Zetland Area Traffic Study* from Mark Champion, Janene Theol, Shelley de Cours Lys, David Welch and Terry Lustig – Convenor Kensington Kingsford Precinct Traffic Sub-Committee;
 - (c) a petition received from Hansard Street Zetland residents in May 2004 (40 signatures, 34 supporting full closure of Hansard Street at Botany Road, 5 supporting left-out only from Hansard Street to Botany Road and 1 providing conditional support for closure);
 - (d) a further petition received from Hansard Street Zetland residents in November 2004 (29 signatures, 6 supporting full closure of Hansard Street at Botany Road, and 23 supporting left-out only from Hansard Street to Botany Road);
 - (e) written submissions for the proposed GSTC Masterplan;
 - (f) discussions with key stakeholders (including Randwick City Council); and

- (g) public information session to present the outcomes of the study held on 12 August 2004 at the Green Square Community Facility.
90. The feedback provided through public consultation has been primarily focused on the following major issues:
- (a) that the Green Square area has inadequate public transport services and insufficient planning for future public transport services to accommodate the trips that will be generated as a result of the proposed development density, resulting in an over reliance on private vehicle trips on a road system that can not accommodate the increase in vehicular movement;
 - (b) that the scale of development proposed in Green Square is not adequately supported by good design considerations, and there has been inadequate planning for the traffic and transport impacts on surrounding major roads, intersections and also other roads including local streets in Randwick City;
 - (c) that the local roads in the heritage conservation areas of Zetland require the implementation of traffic calming measures to protect them from through traffic resulting from redevelopment in the area; and
 - (d) that development is continuing in the absence of improvements to the road network or public transport services.
91. The Green Square Taskforce was also briefed on the Zetland Area Traffic Study at its meeting of 10 March 2005. The Green Square Taskforce made the following recommendations:
- (a) that the taskforce does not endorse the introduction of clearway parking restrictions on Council roads and on the regional road of Bourke Street; and
 - (b) that the Taskforce recommend Council, in conjunction with DIPNR and the RTA, undertake detailed investigations into the public transport servicing requirements for the Green Square redevelopment area to avoid the need for clearway parking restrictions on Council roads and Bourke Street, as part of the development of an 'Integrated Transport Strategy' for the City of Sydney. Detailed investigations would include:
 - (i) the development of prioritisation of strategic bus corridors, and of a bus priority program as recommended in the final report of the Ministerial Review of Bus Services in NSW dated February 2004. In doing so, the Green Square Redevelopment Area should be given the highest priority for the development of bus corridors and bus priority measures to support the strategy for reduced private vehicle use in the area; and
 - (ii) an assessment of the contribution that could be made by a mass transit system such as light rail, considering the envisaged redevelopment of the area and the need to improve the level of public transport use.

RELEVANT LEGISLATION

92. Not applicable to this report.

CONCLUSION

93. The strategy put forward in the *Zetland Area Traffic Study* '**traffic management plan – preferred option**' (**Option 1, circulated separately to this report**) is based on an underlying assumption that there will be limited significant improvements to the public transport services in the Green Square area. This report instead proposes that Council work with DIPNR and RTA to undertake a detailed investigation into the public transport servicing requirements for the Green Square redevelopment area to avoid the need for excessive road improvements, as part of the development of an 'Integrated Transport Strategy' for the City of Sydney.

RECOMMENDATION:

Following the report to the Planning Development and Transport Committee on 4 April 2005, and to Council on 11 April 2005, regarding the Zetland Area Traffic Study, it be resolved that:

- (A) the subject report be received and noted;
- (B) the recommendation of the Green Square Taskforce arising from its meeting of 10 March 2005 and stated in the subject report be noted;
- (C) Option 2 of the *Zetland Area Traffic Study* not be supported, as it would involve the 'opening' of Short Street to create a major traffic relief route;
- (D) Option 3 of the *Zetland Area Traffic Study* not be supported, as it would involve the 'one-way pairing' of Botany Road and Wyndham Street;
- (E) the need for the upgrading of the Lachlan Street / McEvoy Street corridor as put forward in the *Zetland Area Traffic Study* be recognised as the major priority for road works in the area;
- (F) the '**traffic management plan – preferred option**' (**Option 1 circulated separately to this report**) be endorsed with the following exceptions:
 - (i) the establishment of either peak only, or permanent 'clearways' on **Epsom Road, Joynton Avenue and O'Dea Avenue** is not supported;
 - (ii) the establishment of 'clearways' for dual lane capacity along the regional road of **Bourke Street**, is not supported, because it is inconsistent with the proposal to reduce the traffic capacity of Bourke Street to a single lane in each direction and create a 'high street' gateway, proposed under the *Green Square Draft Public Domain Plans* project; and

- (iii) the recommended intersections along Bourke Street require modifications to conform with the Bourke Street 'high street' proposal presented within the *Green Square Draft Public Domain Plans*.
- (G) it be acknowledged that, as a result of the proposed exceptions above, parts of the road network will have less traffic carrying capacity than required to accommodate expected peak period traffic volumes according to the analysis undertaken in the study, based on the assumptions made regarding the future levels of public transport services to be provided for the area;
- (H) it be acknowledged that further improvements in modal split away from private vehicles and towards public transport will be required to accommodate the demand for trips if the exemptions above are supported. To achieve this, there is a need to develop a public transport strategy to improve the existing levels of 'land use and transport integration' (LUTI), particularly to areas that presently have low LUTI levels, ie Alexandria, Beaconsfield, Rosebery, the east part of Zetland and the north and east parts of Waterloo;
- (I) City of Sydney, in conjunction with the Department of Infrastructure Planning and Natural Resources (DIPNR) and the NSW Roads and Traffic Authority (RTA), undertake detailed investigations into the public transport servicing requirements for the Green Square redevelopment area to avoid the need for excessive road improvements, as part of the development of an 'Integrated Transport Strategy' for the City of Sydney. Detailed investigations shall include an assessment of:
 - (i) the contribution that could be made by a mass transit system such as light rail, considering the envisaged redevelopment of the area and the need to improve the level of public transport use;
 - (ii) the development of prioritisation of strategic bus corridors, and of a bus priority program as recommended in the final report of the Ministerial Review of Bus Services in NSW dated February 2004. In doing so, the Green Square Redevelopment Area should be given the highest priority for the development of bus corridors and bus priority measures to support the strategy for reduced private vehicle use in the area;
 - (iii) an investigation into heavy vehicle movement throughout the Green Square area, including the identification of those routes which are considered appropriate for use by heavy vehicles and those routes which should restrict access to heavy vehicles;
 - (iv) an appropriate treatment for Joynton Avenue to ensure that the integrity of the heritage fig trees overhanging the corridor is not compromised. There have been recorded incidents of major damage to fig trees by trucks along this route in the past; and
 - (v) an appropriate strategy for the amelioration of traffic impacts on Lenthall Street.

- (J) copies of the *Zetland Area Traffic Study* and the resolutions of Council and the Central Sydney Planning Committee on this matter be made available to DIPNR and the RTA; and
- (K) those people who made submissions on the study be advised of the resolutions of Council and the Central Sydney Planning Committee on this matter.

(SGD) STUART McDONALD
Director Strategic Planning & Project Development

