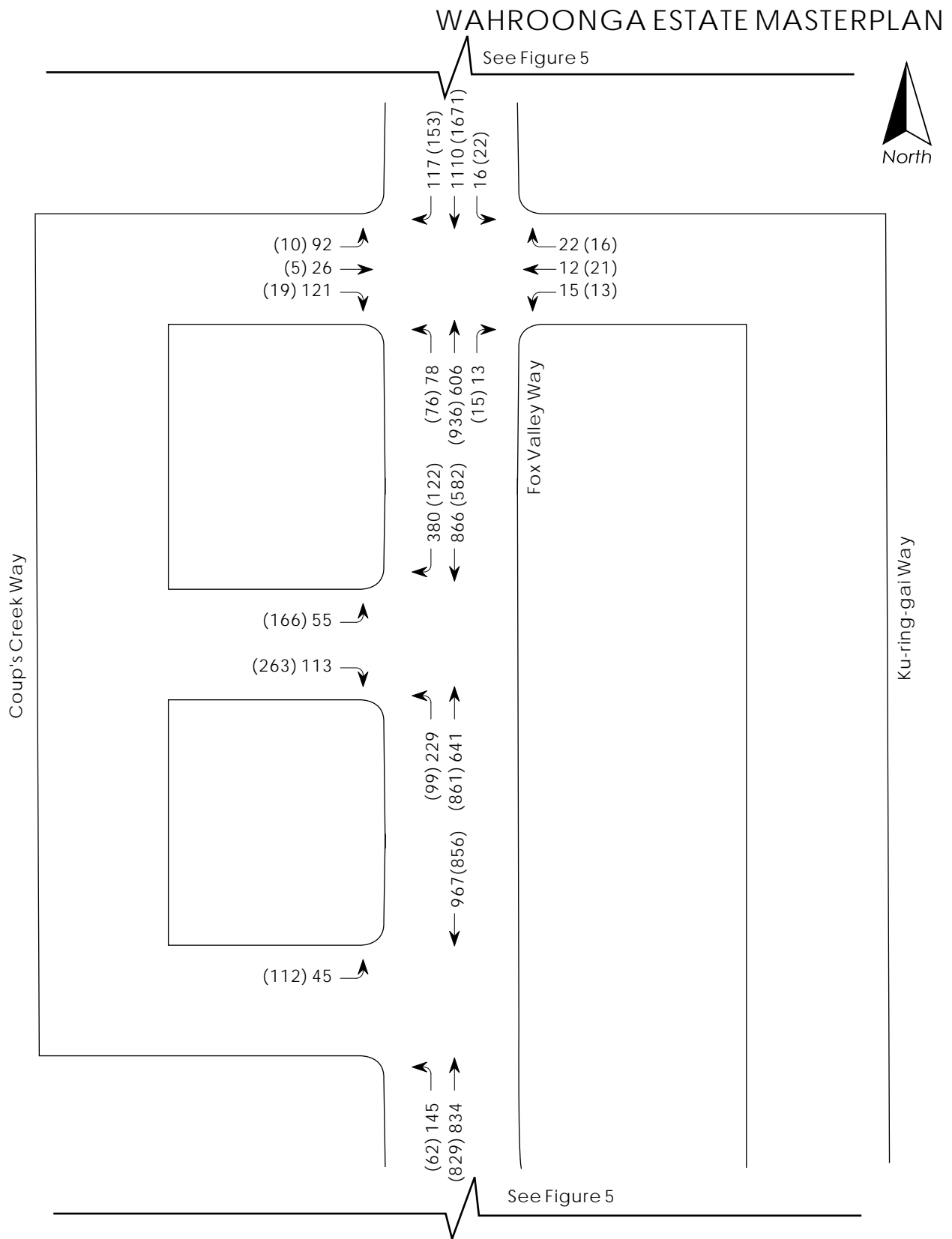
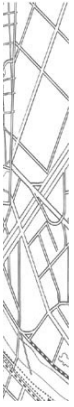


HOSPITAL PRECINCT 2016 FUTURE TRAFFIC FLOWS





Appendix A - Stakeholder Submissions

RDC 08M301

The Director
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Michael File

**SYDNEY ADVENTIST HOSPITAL SITE, WAHROONGA REDEVELOPMENT
(MAJOR PROJECT 07_0166) – DIRECTOR GENERAL'S ENVIRONMENTAL ASSESSMENT
REQUIREMENTS**

Dear Michael,

Further to your letter of 3 March 2008 in relation to the above matter, the following information is submitted for your consideration.

The Environmental Assessment (EA) must comply with and reflect the principles of the NSW State Plan, Urban Transport Statement and draft North Subregional Strategies. These policies share the aims of increasing the use of walking, cycling and public transport, appropriately co-locating new urban development with existing and improved transport services; and improving the efficiency of the road network.

The RTA would like to see the following issues included in Environmental Assessment requirements for the subject site:

General Comments

- The proposed means of vehicular access to/from the site.
- Likely daily and peak hour(s) traffic movements generated by the development and the potential increase in the level and type of traffic associated with the proposal.
- Consideration of the need for the preparation of a local area traffic management plan.
- Speed profiles of connecting streets to be assessed to determine whether LATM schemes may be required.
- An assessment of the likely impact of truck traffic upon nearby residential areas.

- Details of the anticipated route of trucks through the metropolitan and local road network.
- An assessment of the potential increase in toxicity levels of loads transported on arterial and local roads and consequently, the preparation of an incident management strategy for accidents, if relevant.
- The need for transport infrastructure upgrades to support the proposed development, particularly intersection upgrades, if relevant.

Specific Comments

Traffic Issues:

- Existing and future year traffic modelling required on the area bounded by Pennant Hills Road/Pacific Highway/Kissing Point Road/ The Comenarra Parkway required to show impact of proposed development on road network/and key intersections.
- Modelling to incorporate impacts of proposed F3 extension and other proposed RTA improvements for the area. Potential development sites within the study area to be identified and translated into traffic generation rates to assess additional impact on key intersections.
- Upgrades to the following intersections may be required – some of these upgrades will require land acquisition:
 - Fox Valley Road / Existing 2 Sydney Adventist Hospital access points
 - Fox Valley Road / Proposed new Sydney Adventist Hospital access
 - The Comenarra Parkway/Browns Road/Proposed new Sydney Adventist Hospital access
 - Mount Pleasant Ave/ Pennant Hills Road
 - Fox Valley Road / Lucinda Avenue
 - Fox Valley Road / Ada Avenue
 - Pacific Highway with Ada Ave/Lucinda Ave/Fox Valley Rd
 - Kissing Point Road / The Comenarra Parkway

Parking Issues:

- The Sydney Adventist Hospital are proposing an enhanced car pooling/sharing scheme with a reduced on-site parking provision rate as a means of limiting the number of trip generations that will arise from the development. Further information on this car pooling scheme is required. Impacts from the proposed car pooling scheme/reduced on-site parking provision will have on the competition for on-street parking needs assessment.
- Parking Strategy Plan required to protect local streets in the vicinity of the Sydney Adventist Hospital and in particular those streets located just west

of Fox Valley Road/The Comenarra Parkway from parking associated with the proposed development.

Pedestrian Issues:

- In addition to the associated pedestrian issues that this proposal will generate, pedestrian routes between the Sydney Adventist Hospital and the Fox Valley Village Shopping Centre to be assessed with respect to improvements that will be required. Particular emphasis to be paid to the needs for disabled access

Bicycle Issues:

- Review of bicycle facilities in the area, with on and off road bike paths to be reviewed.

Bus Issues:

- Review capacity / constraints of the existing bus routes through the area.
- Identify proposed routes and linkages to the Railway Stations and what effect these additional services will have on the operating performance of the road network.

Any inquiries in relation to this development application can be directed to the nominated Land Use & Transport Planner, Ravi Ravendra on telephone 8849 2540 or facsimile 8849 2918.

Yours sincerely

Doug Moore
Senior Land Use Planner

19 March 2008

Key Issues and Assessment Requirements

Key issues and assessment requirements that Ku-ring-gai Council considers should be included in the Director-General's Environmental Assessment requirements for the major project proposal for the Seventh Day Adventist site at Wahroonga include the following:

The Process

It is important that the process for the consideration of the proposal should be made clear to all parties at all stages of the process.

Details are required of an appropriate and justified level of consultation with at least the following:

- Federal Department of Environment, Heritage, Water and the Arts
- NSW Rural Fire Service
- NSW Department of Environment and Climate Change
- NSW Department of Health
- NSW Department of Education and Training-
- NSW Ministry of Transport
- RTA
- NSW Heritage Council
- Ku-ring-gai Council
- Hornsby Shire Council
- Ryde Council
- Local Aboriginal Land Council
- Aboriginal Heritage Office
- Utility and infrastructure providers
- The public

General Planning

1. The proposal must demonstrate that the development achieves:
 - Consistency with the Metropolitan Strategy and Draft North Subregional Plan
 - The objectives of the Ku-ring-gai Planning Scheme Ordinance and the land-use zones and lot sizes that apply to the land and surrounding land
 - Consistency with legislation including:
 - Environmental Protection and Biodiversity Conservation Act
 - NSW Threatened Species Conservation Act
 - National Parks and Wildlife Act
 - The objectives and requirements of the Department of Environment and Climate Change Priority Action Statements for Blue Gum High Forest and Sydney Turpentine Ironbark Forest

- The requirements of SEPP 19 – Bushland in Urban Areas
 - The requirements of SEPP 55 – Remediation of Land, where relevant
 - The requirements of SEPP (Housing for Seniors or People with a Disability) 2004 (including the Bushfire Risk Evacuation Map)
 - The requirements of SEPP 65 – Design Quality of Residential Flat Development, if relevant.
 - State Environmental Planning Policy No. 53-Metropolitan Residential Development (including the Bushfire Risk Evacuation Map)
 - (Sydney Regional Environment Plan No 20. -Hawkesbury Nepean
 - Planning for Bushfire Protection (2006)
 - State Environmental Planning Policy- Infrastructure
 - Draft State Environmental Planning Policy No. 66 – Integration of Transport and Land Use
- The principles of Ecologically Sustainable Development

Any proposed zoning changes should be based on the Standard LEP template.

2. The proposal must demonstrate that the development addresses applicable plans and documents:
- Ku-ring-gai Planning Scheme Ordinance (including heritage listing of Administration Building)
 - Development Control Plan 43 - Car Parking
 - Development Control Plan 47 - Water Management
 - Development Control Plan 57 - Child Care Centres
 - Development Control Plan 31 - Access
 - Ku-ring-gai Council's Riparian Policy (December 2004)
 - Development Control Plan 40 - Construction and Demolition Waste Management
 - Ku-ring-gai Council's Biodiversity Strategy
 - RTA Guide to Traffic Generating Development
 - If development for staff or trainee accommodation, or residential development that is prohibited is to be included, the following policies should be used as guides:
 - Development Control Plan 38 - Residential Design Manual
 - LEP 194 and DCP 55. Though not applicable to the site, LEP 194 and DCP 55 should be used as a guide for medium density development. Additional consideration of interface impacts will however be required.
 - If commercial/retail development is to be included, DCP 14.

Concept plan details

Clarity

It is noted that the lack of any accompanying plans, the sketchy nature of the project description and the very short timeframe make the provision of a detailed response difficult. Sufficient detail, to the extent possible within a concept plan, must be provided to enable accurate assessment of the proposal. This should include proposed uses, heights, development footprints and intensity, geo-referenced plans at a legible scale, photomontages and view lines, proposed zonings and development controls.

Given the lack of detail in a concept plan proposal, and the flexibility sought by the proponent, it is critical that the proposal includes a Development Control Plan to ensure that future development is subject to enforceable controls to achieve outcomes that satisfy the issues raised below. The DCP must show the maximum building footprint within the site in plan form, and provide controls (in plan form and written) that address the issues raised.

The lack of clarity in the proponent's Preliminary Assessment Report, in regard to what the approval is being sought for should be addressed. The report refers to the need for major project approval for works to be undertaken in the next 5 years, but much of the discussion and justification provided is for works sought over a much longer term.

For instance, while the expansion of the hospital itself, would result in the project being considered as a Major Project under Part 3A of the EP&A Act, it appears that this is not the rationale for seeking such listing. Details of the staging and timing of the works are required.

There are also conflicting statements about the extent of the hospital expansion, as opposed to the expansion of hospital and other medical services combined. Any reasonable assessment of the impacts of the proposal requires a clear understanding of the extent of the potential expansion of the specific uses. For instance, given the bushfire evacuation issue for this site, the potential for increasing the density of people vulnerable under these circumstances requires a reasonable estimate of the number of people who will need support from others to be able to be evacuated. The mix of hospital beds and medical services for outpatients is critical to this assessment. A more detailed breakdown of the proposed uses is required, including the various hospital, medical, church, commercial, retail, and aged care uses.

Site analysis

A comprehensive site analysis is required. It is of concern that the constraints and opportunities analysis provided in the preliminary assessment report fails to consider the location of endangered and critically endangered ecological communities, the location of threatened species habitat, the location of several creeks within the site or forming its boundary with Hornsby Council, linkages to natural areas off site, the presence of indigenous heritage on the site, the width of asset protection zones for differing uses, the location of the land within the site identified as an Evacuation Risk Area under a SEPP, the likely direction of bushfire, the unsatisfactory rating of the Comenarra/Fox Valley intersection, (amongst others) or existing view corridors.

Joint consultants

Any documents to be peer reviewed should be specifically listed. An ecological assessment should be undertaken by an independent expert, selected as agreed between the parties. The following list is recommended, as they have direct knowledge and experience with the local/regional native vegetation communities (including endangered and threatened species) within the Ku-ring-gai LGA:

- Peter Smith of Smith and Smith
- Australian Museum Business Services
- Roger Lembit
- Teresa James

Note however, that it is understood that only the first two of these have significant expertise in both flora and fauna, the latter two in vegetation.

Failing this, the assessment of the impacts on the natural environment should be subject to peer review, funded by the proponent.

Regional Planning

1. The proposal must address:

- Consistency with the Sydney Metropolitan Strategy and Subregional Plan for the North.
- The potential for compromising development under Ku-ring-gai Council's Town Centre Plans and the Metropolitan Strategy through provision of increasing residential, commercial and retail density at a distance from town centres with direct access to rail.
- The regional economic and social impacts of relocating services and training from Cooranbong to Wahroonga. This should include impacts on the community from the intensification of the Wahroonga site and the loss from the Cooranbong site. Details of alternatives considered, their benefits and impacts, and reasons for rejection should be included. Given the environmental constraints of the Wahroonga site, consideration of use of facilities that may become available at the existing UTS campus at Lindfield should be discussed.
- The potential impact of the proposed development on open space provision, recreation, sporting and cultural facilities, and other community, health and other infrastructure and services in the region.
- The potential impact on the health and safety on the residents, school students, patients and staff on the site, and the residents, workers and visitors to the region, from bushfire events, including the exacerbation of the existing difficulty of evacuating people from this area during a bushfire event.
- Details of any proposed public benefits (including direct provision/funding of services such as public transport/ public amenities, potential dedication of environmentally sensitive lands, developer contributions/planning agreements) are required. Arrangements for, responsibility and timing of delivery of public benefits must also be detailed.

2. The proposal must demonstrate how it will minimise greenhouse gas emissions, and how the proposal will provide for adaptation to climate change. For the former,

reliance on BASIX would be inadequate. Transport, special use and commercial/retail development must be specifically addressed. Consideration of adaptation to climate change is especially important in relation to the likely impacts of climate change on bushfire and the heightened importance of increasing the resilience of natural communities.

3. Justification must be provided as to why this proposal should be considered prior to the regional and local planning currently being undertaken for the Principal LEP, due to be submitted to the Department in 2010. This is especially important as it appears that the urgent drivers for the proposal to be considered prior to the Principal LEP are the need for upgraded student accommodation and the Nurses Training Centre. Given that such development is permissible as ancillary uses under the existing zoning and controls in the KPSO, justification is required as to why broader planning initiatives for the Principal LEP should not be considered prior to any approval for increased residential or commercial/retail density or rezoning, including (but not limited to) the following initiatives:

- The employment strategy currently being developed by an independent consultant, jointly employed by the two Councils in the subregion and the Department of Planning. The study will consider the centre hierarchy and appropriate employment provision for each centre (including Fox Valley) and is expected to be on exhibition around April this year.
- The mapping and conservation significance assessment of vegetation remnants within the LGA, including Blue Gum High Forest, (Sydney) Turpentine Ironbark Forest and bio-linkages, currently being undertaken by Ku-ring-gai Council for the Principal LEP.

Natural Environment

A flora and fauna impact assessment in accordance with DEC's *Guidelines for Threatened Species Assessment* is required. Requirements for species impact statements should be sought from the Department of Environment and Climate Change.

As well as species found on site or with potential habitat on site, species likely to occur in the region must be considered. Particular emphasis on those likely to occur in the nearby Lane Cove National Park is critical, given the habitat linkage to Lane Cove National Park.

The impacts from the development (including any bushfire risk management), on the linkage and species that may use it for habitat or movement must be addressed.

The assessment must specifically address the following:

1. *Blue Gum High Forest - a critically endangered ecological community under both NSW and federal legislation*
 - How the proposal addresses the threats to the community including, but not limited to, the following:
 - Impacts of urban development
 - Impacts from clearing and further fragmentation

- This must address the Determination of the Scientific Committee as to what constitutes the community, including the finding that individual trees may be significant, as confirmed by the Land and Environment Court in *Murlan Consulting Pty Ltd v Ku-ring-gai Municipal Council* [2007] NSWLEC 182
- This must also specifically address connectivity to the National Park and to other adjacent and nearby natural areas, such as the Blue Gum High Forest in the abandoned B2 corridor to the north of the site
- Impacts from altered fire regimes – including frequency, intensity and seasonality
- Impacts from mowing, under-scrubbing, canopy thinning and other measures to establish and manage asset protection zones and provide for proposed recreational uses. Given that conservation of these communities on the site is inconsistent with the management of an asset protection zone, these zones should be located within the existing developed footprint
- Impacts from stormwater runoff from the development
- How the proposal addresses the Priority Actions under threatened species legislation, including appropriate zoning for the Critically Endangered Ecological Community, any proposed conservation agreement (and/or land dedication and endowment fund), a plan of management for the community. The plan of management should be provided with the concept plan, given that the requirement for a plan of management for the site was required as a condition of consent for the SEPP Seniors Living development on the site by the Land and Environment Court in 2001 (*Flower and Samios v Ku-ring-gai Council*) but a final Plan has still not been completed.
- Referral to the Commonwealth under the Environmental Protection and Biodiversity Act as a likely controlled action is proposed.

2. (Sydney) Turpentine Ironbark Forest -a critically endangered ecological community under federal legislation and an ecologically endangered community under NSW legislation

- How the proposal addresses the threats to the community including, but not limited to, the following:
 - Impacts of clearing and further fragmentation
 - This must address the Determination of the Scientific Committee as to what constitutes the community, including the finding that the individual trees may be significant,
 - This must also specifically address connectivity to the National Park and to other adjacent and nearby natural areas
 - Impacts from altered fire regimes – including frequency, intensity and seasonality
 - Impacts from mowing, under-scrubbing, canopy thinning and other measures to establish and manage asset protection zones and provide for proposed recreational uses. Given that conservation of these communities on the site is inconsistent with the management of an asset protection zone, these zones should be located within the existing developed footprint
 - Impacts from stormwater runoff from the development
- How the proposal addresses the Priority Actions under threatened species legislation, including appropriate zoning for the community, any proposed conservation agreement (and/or land dedication and endowment fund), a plan of management for the community. The plan of management should be provided with the concept plan.
- Referral to the Commonwealth under the Environmental Protection and Biodiversity Act as a likely controlled action may be required.

3. Impacts on all threatened species with potential habitat on the site, or that have potential to visit the site. A species impact statement should be provided where required, including, but not limited to, those species for which the Land and Environment Court (Flower and Samios v Ku-ring-gai Council) required a Species Impact Statement prior to the 2001 decision not to develop beyond the perimeter road on the SEPP seniors living area on Mt Pleasant Ave.

4. Impact on riparian zones and creek ecosystems:

- East of Fox Valley Rd
 - a. Category 1 and category 2 riparian zones under Council's Riparian Policy and DCP 47
- West of Fox Valley Rd
 - a. Coups Creek, category 1 riparian zone as above
 - b. Category 2 corridor adjacent to the Comenarra
 - c. Riparian corridor adjacent to Mt Pleasant Ave
 - d. Lane Cove River- western boundary.

5. The potential impact on any groundwater dependent ecosystems (including streams) and any measures proposed to mitigate them.

6. The impact on Lane Cove National Park.

7. The impact on habitat linkages via riparian corridors and tree canopy to Lane Cove National Park and to the north of the site.

8. The impact of the loss of a number of hollow-bearing trees on the site, a Key Threatening Process under the Threatened Species Conservation Act (1995)

9. A breakdown of the area of existing vegetation, by type, proposed to be removed for the development is required. Similarly, a breakdown of the area of existing vegetation, by type, proposed to be managed as an APZ is required.

10. The impact of bushrock removal and loss of natural rock outcrops.

11. Impact on the potential of the site as a wildlife refuge in nearby bushfire events.

12. The increased significance of loss of habitat and viability of linkages due to climate change impacts.

13. The potential impacts of the proposed development on bushland reserves adjoining the site, as required by SEPP 19. Potential dedication of part of the site to Lane Cove National Park should be explored.

The Environmental Assessment must also detail any measures proposed to avoid or mitigate any of the above impacts on the natural environment. An assessment of the effectiveness and reliability of the measures and any residual impacts after implementation of such measures must be included.

Land use

As previously noted a more detailed breakdown of the proposed land uses is required. In addition, the proposal must address:

- How the proposed uses respond to existing zonings on site and the surrounding area.
- How the proposal responds to the character and significance of the existing built and natural environment on the site.
- How the proposal justifies variations from the conditions of *Flowers and Samios v Ku-ring-gai Council Land and Environment Court* approval on the site on Mt Pleasant Ave, including:
 - the increase in density at Mt Pleasant Ave, where the approval was based on a reduction in density and height limits
 - The use of Zone B for residential purposes, where the conditions required no development beyond the perimeter road.
- For uses prohibited under the current zonings, how the development responds to:
 - the location within the region, and in relation to existing and proposed infrastructure and services
 - the breakdown of the commercial and retail components
 - the zonings, pattern, character and amenity of development on surrounding sites
 - the objectives under Schedule 9 of the Ku-ring-gai Planning Scheme Ordinance
 - the Draft North Subregional Plan.
- The site should be maintained in single ownership. Further subdivision of the site is inappropriate. A lot consolidation plan is required.

Bushfire Risk

The proposal must address:

Consistency with Planning for Bushfire Protection 2006 and the Ku-ring-gai Bushfire Prone Land Map (recently amended) and the Bushfire Risk Evacuation Map with particular attention to:

- Vehicular (access/egress from the site (including emergency vehicles during an evacuation event).
- Given that a large part of the site is located within a bushfire evacuation risk area, and that the Comenarra Parkway is sometimes cut off during a bushfire:
 - How the proposal will allow for the evacuation of the site, including of the large population of vulnerable people likely to be on the site during a bushfire event.
 - Whether the road network can be upgraded to allow for such an event, and whether funding is proposed to address this.
- Location and adequacy of asset protection zones, including the provision of defensible space.
- Methods of managing the asset protection zones, including any APZ proposed to be located on steep sites, or ecologically sensitive areas.
- Protection and evacuation for Special Fire Protection Purposes such as the hospital, school and staff accommodation (nurses training).
- Adequate asset protection zones given the environmental imperatives listed above. Bushfire planning must take into account the protection and enhancement

of the ecological values of the site. The management of an asset protection zone is not consistent with the protection of a sensitive ecological community or species. Accordingly, APZs should be provided within the existing developed footprint of the site.

- How sensitive ecological areas will be managed to ensure that satisfactory fire regimes are maintained for the long term viability of the vegetation communities.
- Details of how Aboriginal heritage site(s) will be protected in the management of the site for fire.
- Width and location of perimeter road suitable for emergency vehicles given the environmental imperatives listed above. All perimeter roads should be located within the existing developed footprint to minimise erosion and loss of vegetation and habitat.
- Provision of a dedicated emergency water supply.
- How the proposal provides for adaptation given the likely increase in bushfire frequency and intensity due to climate change.
- Any other measures proposed to minimise risk from bushfire, or to allow for orderly and timely evacuation.

A Plan of Management for the Asset Protection Zones and an Emergency Evacuation Plan are required.

Residential uses

The proposal must address:

- Consistency with the Draft North Subregional Plan and the centres hierarchy which provides for Fox Valley as a Neighbourhood Centre.
- The impact on centres planned under the Draft Ku-ring-gai Town Centres LEP, such as Turramurra.
- Provision of housing choice. It is important to note that the supply of residential flat building as form of housing choice in Ku-ring-gai will be adequately catered for under Council's town centre planning.
- Proportion of housing to be affordable with details as to how this is to be achieved.
- Proportion and mix of housing to be sold/ or offered as a 50 year lease – and the proposed arrangements.
- The proportion of housing to be accessible.
- Whether the proposal will provide for flexibility of uses into the future, eg through the design of adaptable lower floors of residential areas (eg for future community or medical uses).

Retail and commercial uses

The scale of the proposal appears to be justified by regarding the site as a Specialised Centre under the Metropolitan Strategy. The concept of a specialised centre is not appropriate for the scale of this development. Nor is the area surrounding the site suitable for redevelopment to complement the uses of the site, because of severe environmental and traffic constraints. In the light of this, the proposal must address:

- Consistency with the North Subregional Plan

- Consistency with the Retail Strategy developed by Hill PDA, and adopted as part of Ku-ring-gai's Town Centre planning process.
- The impact of the additional retail and commercial uses on Fox Valley Neighbourhood Centre
- The impact on centres planned under the Draft Ku-ring-gai Town Centres LEP, such as Turramurra.
- Consistency with the Draft Report on the Ku-ring-gai and Hornsby Subregional Employment Study when available.

Educational and Recreational Uses

The proposal includes a school for K to 12. Given the large number of schools in the subregion, and the environmental constraints of the site, justification is required as to the need for the school expansion. In addition the following are required:

- A comparison of the area proposed for the school with the area allocated to other schools of a similar size, including the amount of outdoor space allocated for school use. Note that standard public school land sizes are approximately 3 hectares for a primary school and 5-6 hectares for a high school, (including buildings, car parking and outdoor recreation space etc). The area allocated appears inadequate to allow for adequate outdoor recreation space
- The estimated initial enrolment, and time to full enrolment of 800 students
- How provision would be made for the school to grow in the future if required.
- Justification for the loss of a remnant of a critically endangered ecological community to provide a school, where there is a site with likely better topographical suitability on the opposite side of Fox Valley Rd (Precincts D and E)

The preliminary assessment report refers to active recreation areas between 10,000 and 40,000 m². These areas and the proposed uses need to be shown in the concept plan. Note that extensive cut and fill to provide such uses, adjacent to sensitive ecological sites cannot be supported. Details of the extent of cut and fill in such areas is required.

Heritage

- A heritage study of the site is required to identify any items, in addition to the heritage listed administration building, that should be listed and retained for their heritage value.
- An investigation of any Aboriginal heritage on or close to the site is required. At least one Aboriginal heritage site is known to occur within the site.
- Demonstration of how the proposal will protect the significance of the items/sites.
- An assessment of the nature and extent of any impacts and proposed mitigation is required.
- A conservation management plan is required.

Character, Amenity and Urban Design

The proposal must address how the development responds to:

- The character and amenity of the surrounding area:
 - Bushland adjoining and nearby
 - 2(c) residential zone with single detached dwellings (up to 2 storeys)
 - Minimum lot size of 929 sq m
 - Large landscaped setbacks
- How the development will be integrated with the bushland while addressing bushfire risk
- Views to the site and of bushland from surrounding areas, including across the valley
- The impact of the loss of natural rock outcrops (Mt Pleasant Ave)
- The impact of visual bulk, and how the proposal integrates with the buildings to be retained.
- The provision of generous deep soil areas to allow for landscaping.
- Street address for new housing.
- Location, connectivity and design of open spaces.
- Design for crime prevention through environmental design.
- Potential for public use of open spaces and other facilities within the site.
- Potential for multiple use of open spaces (eg water harvesting and playing field)
- How the proposal responds to the recent rezoning of the B2 corridor to the south (under LEP 201):
 - Generally zoned 2 (c)
 - The land directly opposite the site on the Comenarra Parkway, zoned for Open Space to maintain existing streetscape qualities. The proposal for Precinct K would appear to be inconsistent with the rezoning.
- Energy and water efficiency. Demonstration that the development will meet the highest standards of energy and water efficiency is required. In this regard innovations, such as co-generation should be explored.
- The amenity required by users of the site.

Amenity considerations must include, but are not limited to: solar access, access to daylight, private and public open space, visual and acoustic privacy, views, safety, site legibility, sense of place.

The environmental assessment must include a photographic assessment which clearly demonstrates the potential visual amenity impacts of the proposal and an assessment of the effectiveness and reliability of the measures and any residual impacts after the implementation of such measures.

DCP 38 for single dwellings, and if medium density is found suitable, LEP 194 and DCP 55 should be used as guides for residential development on the site.

To ensure design quality across the whole site for all buildings and publicly accessible areas, a Design Review Panel should be established to be involved in the design phase, and provide recommendations to the consent authority. The panel should also be involved in ensuring that design quality flows through to the completed works.

Access and Transport

The proposal must address:

- Access to services and infrastructure, and the suitability of the scale/intensity of development to the relatively poor access to frequent and reliable public transport and other core services.
- Consideration of the proposed strategic bus corridor on the Comenarra Parkway
- The strategic sustainability of the development, given the likely increase in vehicle use and subsequent impacts on greenhouse emissions (both in the short term for)
- Local and regional traffic constraints. Impact on the local and regional road systems for both Ku-ring-gai and Hornsby must be addressed. This should include:
 - The impact on the Comenarra/Fox Valley intersection, currently function at Level of Service E/F,
 - The intersections at Pacific Highway/Fox Valley Rd, Comenarra/Pennant Hills Rd and Mt Pleasant Ave/Pennant Hills Rd.
 - The potential need for traffic management measures along new roads, as a degree of rat-running could be expected from motorists attempting to bypass the traffic signals at the intersection of Comenarra Parkway and Fox Valley Road via the new roads.
 - Council's traffic engineer has concerns relating to the new access points to the Comenarra Parkway due to congestion during peak times, which may limit access to/from those roads. There are also safety concerns, particularly for the possible intersection of the Comenarra Parkway and the new road west of Fox Valley Road. It is unlikely that uncontrolled intersections on the Comenarra Parkway will function effectively during peak times, and alternatives (or alternative control modes) should be considered.
- Pedestrian and vehicular (including bicycles, emergency and delivery vehicles) access to local roads and public transport and permeability within the site.
- Access to the school, including access for buses, pedestrians and cyclists.
- Direct access to the Comenarra Parkway for retail/commercial or residential uses should be prohibited.
- Accessibility for people with a disability, for facilities open to the public and for residents of the site.
- Parking provision in accordance with DCP 43. All parking is to be provided for on site.
- Location, number of levels, height and footprint of any multi-deck carpark.
- Details of arrangements, timing and responsibility on the proposed car pooling system and an assessment of its likely success, by a comparison with other carpooling systems located at a distance from town centres or railway stations.
- Arrangements for dedicating roads to Council.

A transport report should be prepared in accordance with RTA's *Guide to Traffic Generating Developments*. Traffic assessment must:

- take into consideration the differences in traffic flow from the different uses;
- be based on figures relevant to an area remote from town centres;
- consider any impact on existing difficulties with speeding on the local roads (eg Lucinda Ave).

Details of provision and timing of dedication of roads to Council is required.

Water Management

An Integrated Water Cycle Management Plan must be submitted that demonstrates the means and adequacy of managing stormwater within the site in accordance with DCP 47. Details of measures addressing water conservation on the site should be included in line with best practice Water Sensitive Urban Design and with BASIX where applicable. Significant quantities of stormwater should be harvested for re-use. Use of a significant portion of harvested water for open space irrigation is required. Details of measures to reduce pollutant loads from stormwater runoff, in line with DCP 47 are required.

In particular details are required to demonstrate that the quality and quantity of stormwater from the developed site will not adversely affect the downstream receiving environment. Specific attention should be paid to any impact of stormwater management on the potential habitat of any threatened species and on any sites of Aboriginal Heritage significance.

Geotechnical Issues

A geotechnical assessment is required to:

- Ensure that the land is capable of supporting the proposed development.
- Consider potential slip hazard on steep slopes and any measures proposed to address this.
- Assess the potential impact on groundwater flows, and downstream ecosystems (including the creeks) and any measures proposed to mitigate them.
- Assess the potential of any development to intersect groundwater flows and the measures proposed to mitigate the impact on the development.

Contamination

Any areas of contamination must be identified. Details of measures to ensure these can be managed as required under State Environmental Planning Policy 55 – Remediation of Land are required where relevant.

Construction Impacts

The proposal must include details of measures to ameliorate potential impacts arising from the construction of the development, including erosion and sedimentation, management of vehicular and pedestrian traffic during construction, waste management and measures to address dust and noise.

Details of staging of the development and methods of ensuring adequate safety, amenity and access for continuing uses are required.

Utilities

Evidence is required that utilities, (eg. electricity, water, sewer, phone) can be adequately provided for the development.

Conflicting objectives

Where conflicting objectives arise in the concept design stage (eg. between environmental protection and bushfire management,) the design should be reworked to achieve a careful balance to ensure the development is ecologically sustainable.

Mr Michael File
Director, Strategic Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Mark Attiwill / Emma Hitchens

Dear Mr File,

**DIRECTOR GENERAL'S REQUIREMENTS
SYDNEY ADVENTIST HOSPITAL SITE, WAHROONGA
MAJOR PROJECT 07-0166**

I refer to your letter dated 3 March 2008 seeking comment on the Director General's Requirements for the proposed concept plan. The Ministry appreciates this opportunity to provide input to the Director General's requirements for environmental assessment of this application.

The Ministry has reviewed the preliminary assessment for the proposal and recommends the following matters be included in the Director General's requirements under the heading ***Transport and Accessibility***:

1. The preparation of a **transport management accessibility plan** (TMAP) for the entire development site. The TMAP should address a range of matters which are listed in the attachment to this letter, together with the requirements of the draft Interim TMAP Guidelines which are available at www.transport.nsw.gov.au;
2. The preparation of a **staging / sequencing plan**;
3. The preparation of a **construction management plan**; and
4. The preparation of a **voluntary planning agreement** which has potential to secure funding for local and regional public transport including road and intersection upgrades; bus priority measures; roadside bus infrastructure and additional bus services. The Ministry would appreciate continued close consultation on the preparation of any such planning agreement.

If you would like to discuss this further, please contact Juliet Grant, Manager Transport Planning, on 9268 2241 or email juliet.grant@transport.nsw.gov.au.

Yours sincerely

Brendan Bruce
Director, Transport Planning

TP08/01198



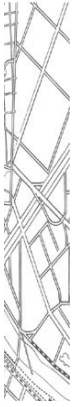
MINISTRY OF TRANSPORT

Transport Management and Accessibility Plan (TMAP) Sydney Adventist Hospital, Wahroonga Redevelopment

The Ministry requests that the following matters are addressed in the TMAP:

1. Undertake detailed accessibility mapping for the locality and determine how best to meet the State Plan target of 25% Journey to Work Trips by public transport (at full development). Consultants preparing the TMAP should seek to achieve the maximum possible mode shift to public transport overtime. The impact of mode shift changes for adjacent key intersections should be modeled and corresponding infrastructure upgrades determined;
2. Transport modeling as part of the TMAP, should address the following matters:
 - Estimate the distribution of generated trips between origins and destinations;
 - Estimate the likely modal split of generated trips ('business as usual' scenario);
 - Assess likely impacts of generated trips based on the likely modal split on existing transport infrastructure, land uses and (urban) environment;
 - Assess likely impacts of generated trips based on the higher modal split on existing public transport provision (is there sufficient capacity to meet these demands), land uses and (urban) environment; and
 - Develop a package of measures to support the higher mode split to non-car modes. This may include infrastructure, services and travel behavior programs/incentives.
3. Based on a community profile, determine the likely transport needs of future residents and capacity of existing services to meet these demands. Subsequently, identify what level of additional infrastructure will be required to satisfy such demands and the likely cost to Government in the short, medium and longer term. Recommend a preferred option package which includes an implementation schedule;
4. The preparation of a transport access guide is recommended as detailed in the *Producing and Using Transport Access Guides* by the Roads and Traffic Authority (RTA) www.rta.nsw.gov.au;
5. Identify and resolve barriers to efficient and safe pedestrian and cycle access. The proposed development should include facilities for the secure storage of bikes. Amenities for cyclists should also be provided. Equally, identify all possible options for pedestrian and cycle connections through the subject site and adjoining neighborhood. The publication entitled *Planning Guidelines for Walking and Cycling* (NSW Government, 2004) is a useful toolkit that can help identify necessary walking and cycling infrastructure;
6. Ensure the proposed development areas facilitate safe and efficient bus access having regard to safer by design principles and bus planning service guidelines; and
7. Adopt a minimalist approach to car parking provision on-site, with a parking rate determined based on the accessibility of the site to public transport. The Ministry is keen to maintain the current level (supply) of on site parking as an effective measure of encouraging greater mode shift to public transport together with increased walking

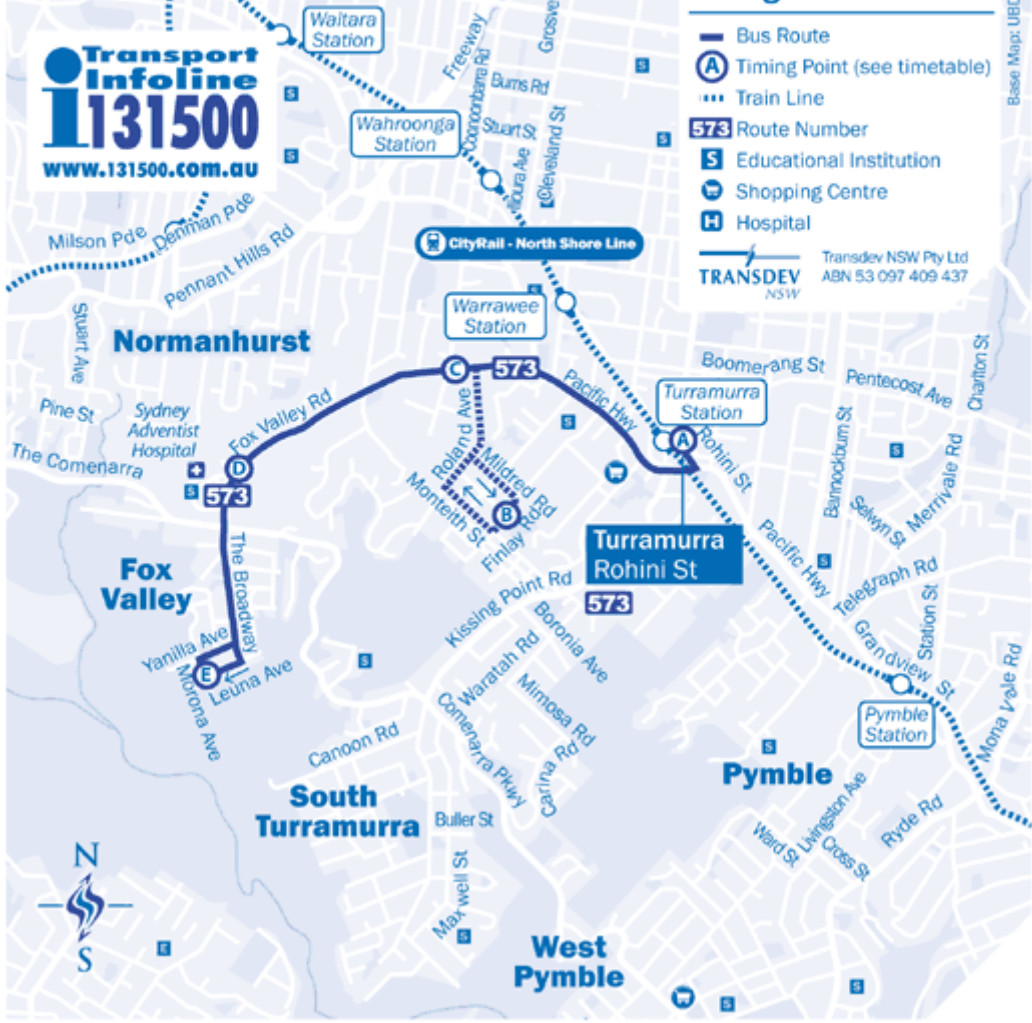
and cycling.



Appendix B - Bus Route Maps



Route Map
573



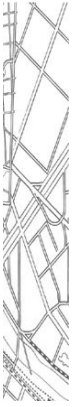


Appendix C - Plan of Proposed Development

PLAN OF PROPOSED DEVELOPMENT

WAHROONGA ESTATE MASTERPLAN





Appendix D - Recommended Intersection Upgrades

D.1 Pennant Hills Road and the Comenarra Parkway

There is limited road reserve width available to provide improvements to this intersection. As stated in Section 2.11 of this report when constructed, the proposed M2-F3 link would result in a marked decrease in north-south traffic volumes on Pennant Hills Road, which would in turn improve existing traffic conditions and reduce overall traffic delays at the intersection.

In the interim if a program for construction of the M2-F3 link is deferred, it is recommended that a left turn slip lane from Pennant Hills Road southbound into The Comenarra Parkway be provided.

Traffic volumes recorded for vehicles turning right into Parkes Street from Pennant Hills Road travelling south to west were low. Intersections to the north and south of this intersection provide the opportunity for this movement to occur. By banning this turning movement, green time could be allocated to other more congested movements, in turn improving the overall performance of the intersection.

Therefore, it is recommended that the right turn movement from Pennant Hills Road into Parkes Street be banned permanently. Consideration could be given to banning this movement during peak periods only.

The resultant intersection configuration is shown in **Figure D-1**.

D.2 The Comenarra Parkway and Fox Valley Road

This intersection represents the best opportunity to improve traffic conditions in the vicinity of the hospital. The land ownership of the hospital along the northern side of The Comenarra Parkway and either side of Fox Valley Road enables widening of both roads on each approach to the intersection.

This would allow significant capacity to be added by providing two lanes in each direction in The Comenarra Parkway between the eastern boundary of the land owned by the hospital and Browns Road in the west.

The recommended intersection configuration is shown in **Figure D-2**.

D.3 Fox Valley Road and Pacific Highway

A third right turn bay from Fox Valley Road into Pacific Highway southbound would provide more queuing space for vehicles turning right into Pacific Highway. This in turn would enable more traffic throughput and reduce overall intersection delay.

It is also recommended that the right turn bay from Pacific Highway southbound be extended to 160m to provide additional queuing space.

These changes are shown in **Figure D-3**.

In addition, it would be possible to increase intersection capacity by replacing the pedestrian crossing on the highway with a pedestrian overbridge.

D.4 The Comenarra Parkway and Kissing Point Road

A significant number of vehicles turn left into Kissing Point Road north from The Comenarra Parkway west, especially during the morning peak period.

To reduce delays to this movement, a left turn slip lane should be provided within the existing wide nature strip on this corner. This would also result in two exclusive eastbound through lanes being created.

The proposed intersection configuration is shown in **Figure D-4**.

It is noted that major periods of congestion at this intersection occur in winter during netball season due to traffic peaks before and after each playing session. The improvement suggested above would assist the operation of the intersection but a better result would be achieved if Kissing Point Road south was widened to provide an additional approach lane.

As this does not directly relate to development of Wahroonga Estate, it is mentioned here only as a matter that might be investigated separately.

D.5 Osborn Road and Pennant Hills Road

As stated in Section 2, traffic turning out of Mt Pleasant Avenue currently experiences delays. In addition, the right turn movement out of Mt Pleasant Avenue is considered dangerous, requiring vehicles to cross three lanes of approaching traffic before entering the northbound stream.

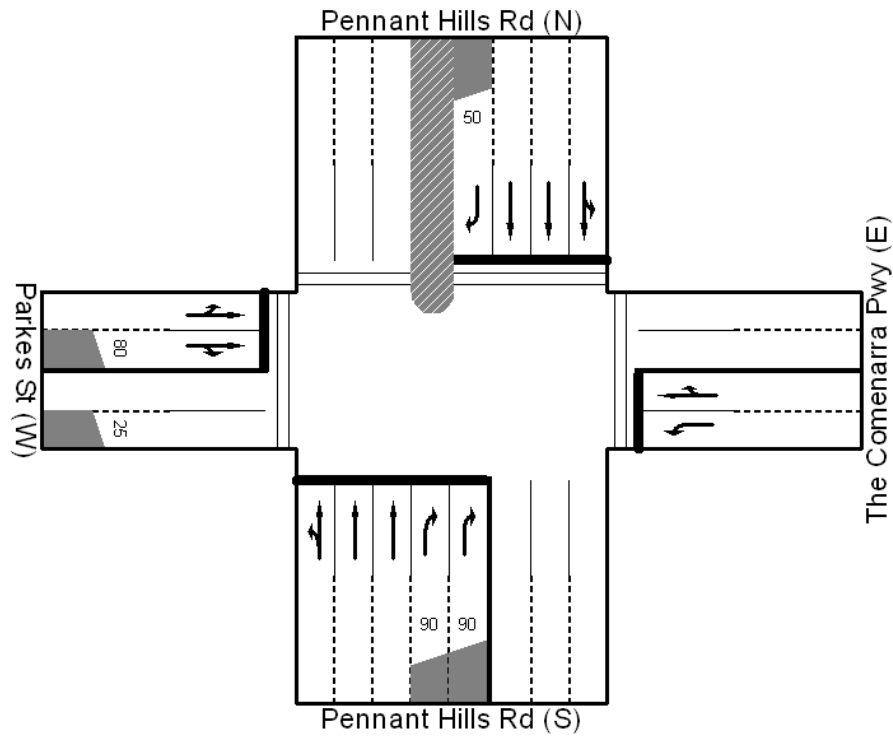
The proposal to connect Osborn Road to Mt Pleasant Avenue in the south would enable existing and future residents' access to a traffic signal controlled intersection for right turns in and right turns out. This will markedly improve the safety for these residents.

It is suggested the difficult right turn movement out of Mt Pleasant Avenue would be banned once the road connection is made.

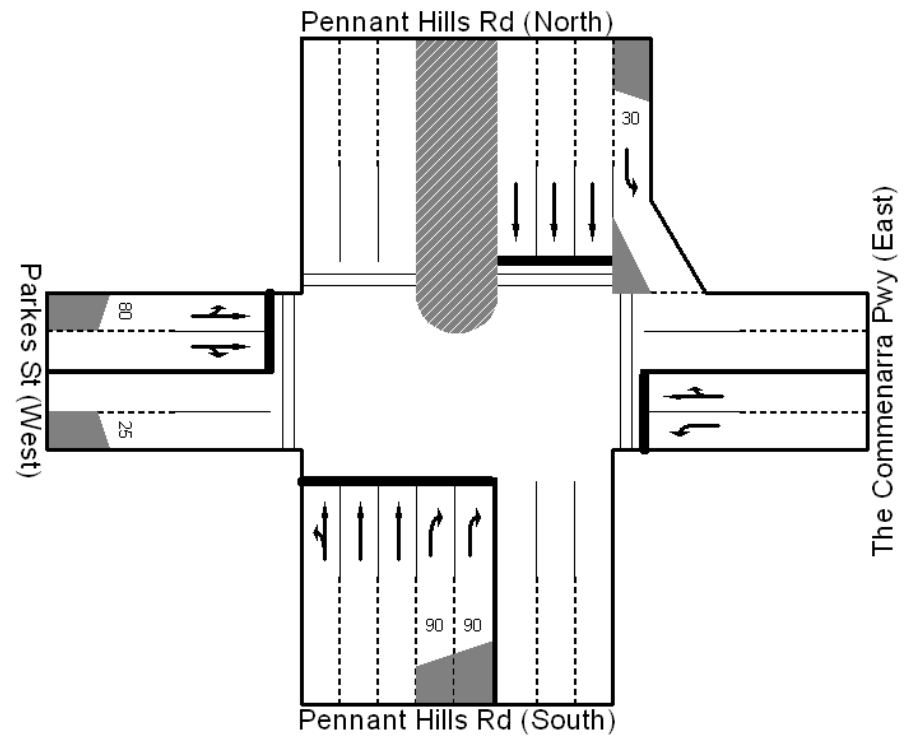
The road connection and future road network is shown in **Figure D-5**.

EXISTING / FUTURE PENNANT HILLS ROAD / COMENARRA PARKWAY CONFIGURATION

WAHROONGA ESTATE MASTERPLAN



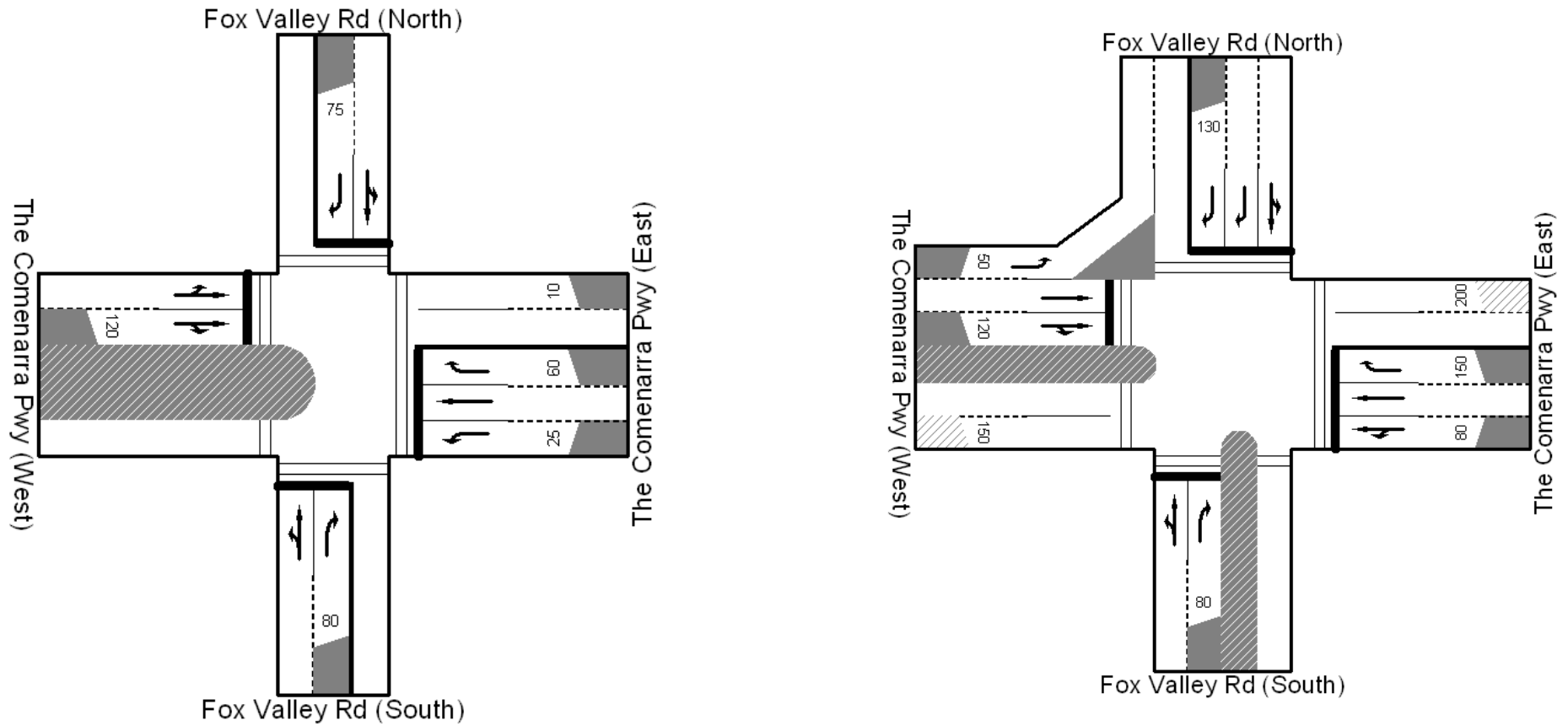
Existing



Future

EXISTING/FUTURE COMENARRA PARKWAY/FOX VALLEY ROAD CONFIGURATION

WAHROONGA ESTATE MASTERPLAN

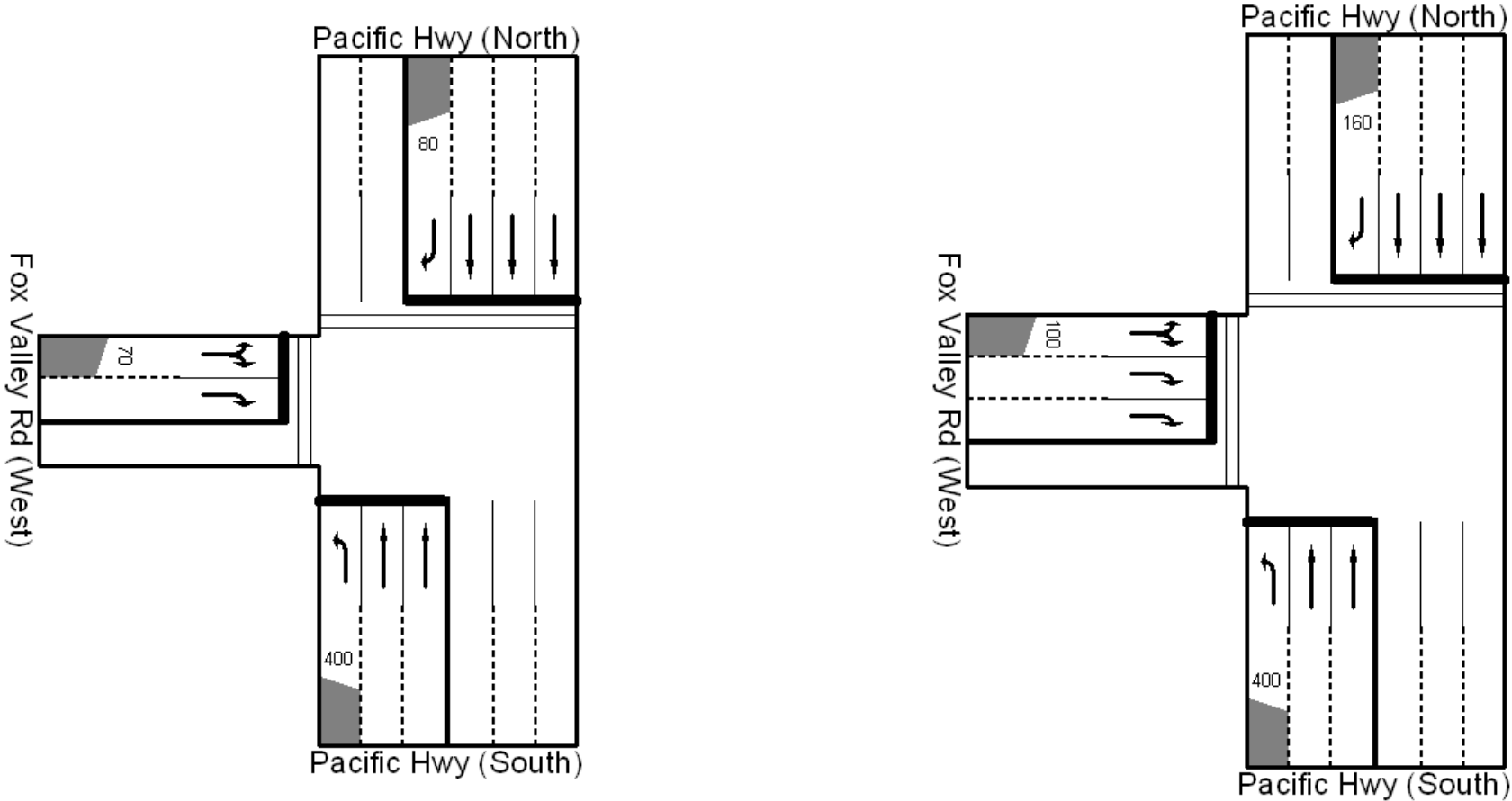


Existing

Future

EXISTING/FUTURE FOX VALLEY ROAD/PACIFIC HIGHWAY CONFIGURATION

WAHROONGA ESTATE MASTERPLAN

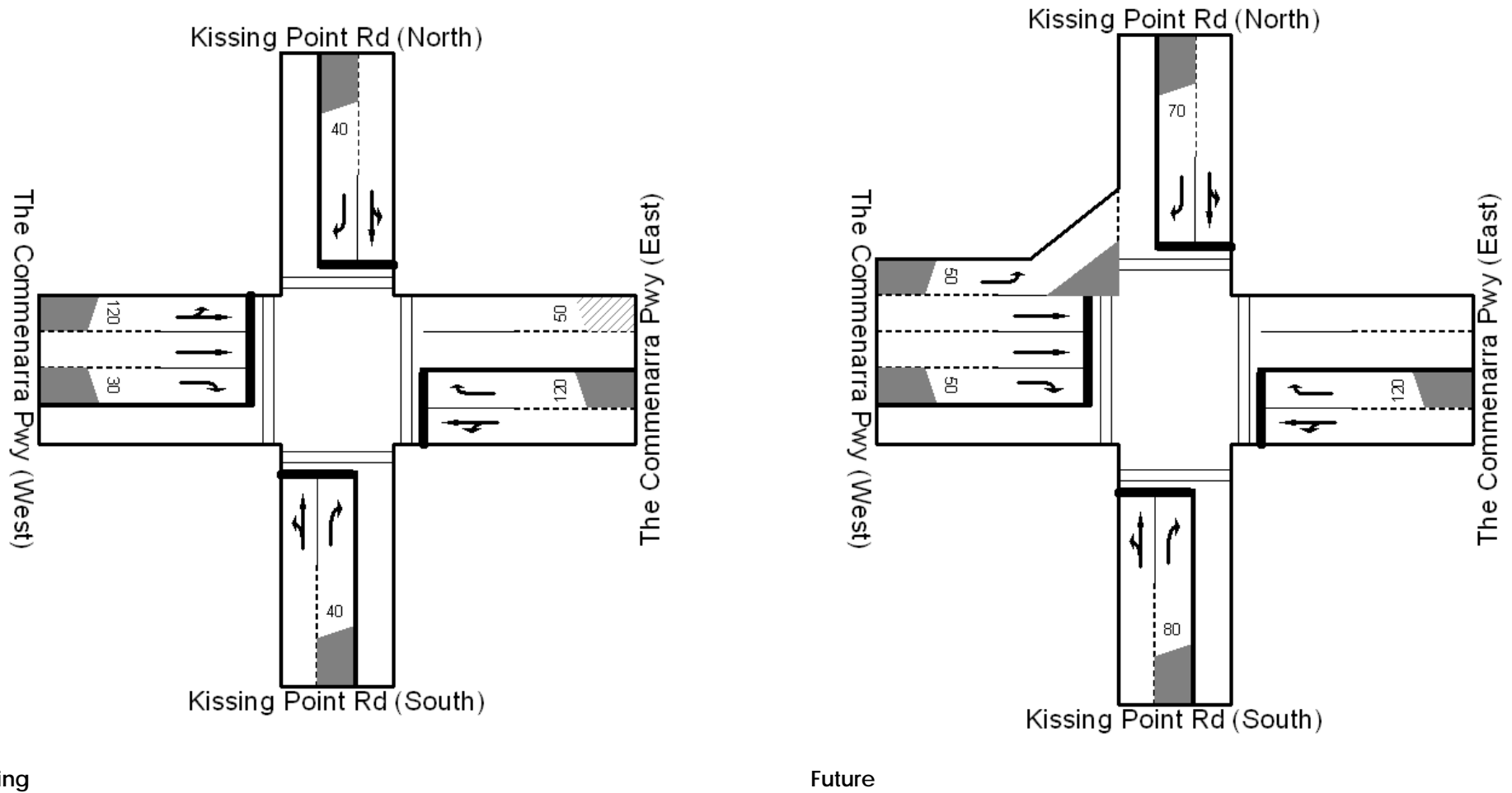


Existing

Future

EXISTING/FUTURE COMENARRA PARKWAY/ KISSING POINT ROAD CONFIGURATION

WAHROONGA ESTATE MASTERPLAN

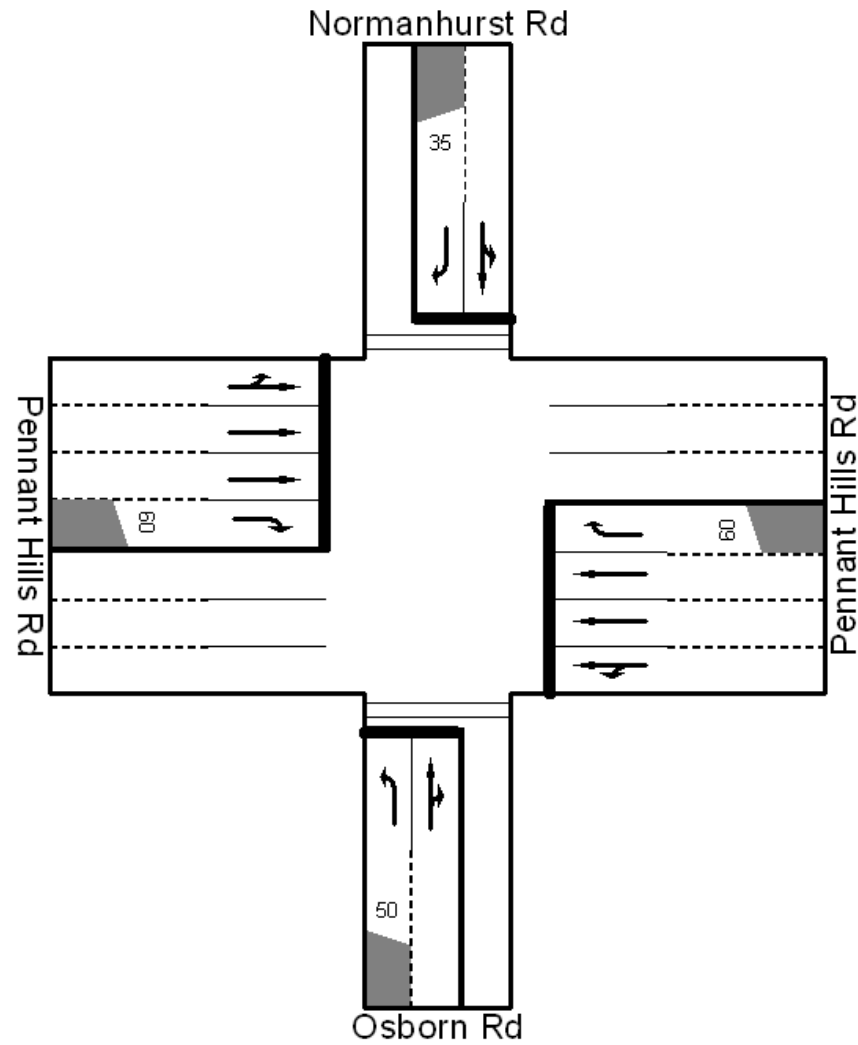


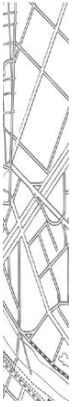
Existing

Future

PENNANT HILLS ROAD/OSBORN ROAD

WAHROONGA ESTATE MASTERPLAN





Appendix E - Director General's Requirements

The Director General's requirements for the concept application included a number of written submissions from key stakeholders including:

- NSW Roads and Traffic Authority
- Ministry of Transport
- Ku Ring Gai Council

A response to each request for additional information or issue raised by authorities stakeholders who made written submissions regarding the original plan has been generally addressed in either this traffic report or the TMAP report.

For ease of reference, the following provides comments on each request for additional information / issue raised in the submissions. Copies of the submissions are provided in **Appendix A** of this report.

E.1 NSW Roads and Traffic Authority Submission

E.1.1 *General Comments*

1. *"The proposed means of vehicular access to / from the site"*

The proposed new road network is generally consistent with that which was proposed in the original application.

At the northern edge of the estate, a new local road connecting to Fox Valley Road would be provided. A dual lane roundabout would control traffic through this new intersection. The existing traffic signals at the main entrance to the hospital will remain but will be upgraded to provide two travel lanes in each direction.

2. *"Likely daily and peak hour(s) traffic movements generated by the development and the potential increase in the level and type of traffic associated with the proposal."*

Consultation with the RTA was undertaken prior to the development of the original traffic report. It was agreed that the assessment should examine impacts of additional traffic on intersections and determine what improvements may be necessary to mitigate any adverse impacts.

This approach has been followed in this report.

Existing and future peak hour traffic flows are shown in Section 2.3 Table 2.1 and Section 4.6 Table 4.11.

Daily traffic volumes are not considered in detail as on roads above collector road level capacity and operation is dictated by peak hourly traffic flows.

3. *“Consideration of the need for the preparation of a local area traffic management plan.”*

The internal road network has been designed to achieve low traffic speeds through designs in accordance with the principles set out in the Australian Model for Residential Development (AMCORD guidelines⁷).

If deemed appropriate, we suggest that a condition of consent be imposed requiring that speed control be considered in the development of the site.

As discussed above in Chapter 4, some form of traffic calming may be appropriate in Lucinda Avenue. This would need to be the subject of a separate investigation having regard to the views of Ku-ring-gai Council, local residents and the school.

4. *“Speed profiles of connecting streets to be assessed to determine whether LATM schemes may be required.”*

As stated above, the new local street network has been planned to provide access whilst maintaining low traffic speeds. At this stage of proceedings the development of a LATM scheme is considered unwarranted. Speed surveys of existing roads are presented in Appendix G of this report.

5. *“An assessment of the likely impact of truck traffic upon nearby residential areas”*

⁷ Commonwealth Department of Housing and Regional Development (1995) *AMCORD (Australian Model Code for Residential Development) – A National Resource Document for Residential Development* Australian Government Publishing Service, Canberra.

The proposed non hospital development consists mainly of housing, small retail outlets and some additional commercial floorspace. These are not expected to be significant generators of additional truck traffic. The greatest potential for additional truck traffic would generated by construction. Future development applications will include a Construction Traffic Management Plan report for review by the RTA or Ku-ring-gai Council.

With limited opportunity for any short cutting by trucks to and from the estate, any impact from hospital generated or construction truck traffic would be confined to Fox Valley Road and the Comenarra Parkway.

The impact of additional truck traffic at ultimate development would be minimal.

6. "Details of the anticipated route of trucks through the metropolitan and local road network."

As indicated above, trucks would use Comenarra Parkway and Fox Valley Road.

7. "An assessment of the potential increase in toxicity levels of loads transported on arterial and local roads and consequently, the preparation of an incident management strategy for accidents, if relevant."

Sensitive diagnostic and therapeutic materials are presently transported to and from the hospital under normal protocols for the transport of such materials. Volumes of these are likely to increase pro rata with expansion of the hospital. However because quantities are relatively low, truck numbers would increase at a significantly lower rate.

E.1.2 Specific Comments

Traffic Issues:

1. "Existing and future year modelling required on the area bounded by Pennant Hills Road / Pacific Highway / Kissing Point Road / The Comenarra Parkway required to show impact of proposed development on road network and key intersections."

Existing and future year traffic flows and intersection performance are shown in Table 4.11 and Table 4.12 of this report.

2. "Modelling to incorporate impacts of proposed F3 connection and other proposed RTA improvements for the area. Potential development sites within the study area to be identified and translated into traffic generation rates to assess additional impact on key intersections."

The impacts of the proposed F3- M2 link have been assessed in Section 4.8 of this report.

3. *“Upgrades to the following intersections may be required – some of these upgrades will require land acquisition:*

- *Fox Valley Road / Existing 2 Sydney Adventist Hospital access points*
- *Fox Valley Road / Proposed new Sydney Adventist Hospital access*
- *The Comenarra Parkway / Browns Road / Proposed new Sydney Adventist Hospital access (now deleted)*
- *Mount Pleasant Avenue / Pennant Hills Road*
- *Fox Valley Road / Lucinda Avenue*
- *Fox Valley Road / Ada Avenue*
- *Pacific Highway / Ada Avenue / Lucinda Avenue / Fox Valley Road*
- *Kissing Point Road / The Comenarra Parkway*

The details of intersection upgrades proposed are provided in **Appendix D** of this.

Parking Issues

1. “The Sydney Adventist Hospital are proposing an enhanced car pooling / sharing scheme with a reduced parking provision rate as a means of limiting the number of trips generations that will arise from the development. Further information on this car pooling scheme is required. Impacts of the proposed car pooling scheme / reduced on site parking provision will have on the competition for on street parking needs assessment.”

The general principles of the car sharing scheme are provided in Section 5.2 of this report. The financial viability of the scheme will be supported through strata fees which will provide a major incentive for staff to use the scheme.

The on street network within the site would be protected through parking restrictions during business hours. In the evenings, the on street network would provide some visitor parking for surrounding residents. The surrounding topography and limited on street parking opportunities to the west, south and east will act as a natural barrier to overflow on street parking.

It is also noted the parking needs study undertaken for the hospital masterplan recommends increased on site parking provision to cope with existing and future parking demands to further reduce the likelihood for overflow parking.

The proposed car pooling / sharing scheme builds on an existing operation which has proven to be successful for those living off site. The proposed new / expanded complimentary uses such the school, ancillary retail and recreational areas will reduce the need for private vehicle usage by residents.

2. *"Parking Strategy Plan required to protect local streets in the vicinity of the Sydney Adventist Hospital and in particular those streets located just west of Fox Valley Road / The Comenarra Parkway from parking associated with the proposed development."*

The detailed parking assessment report for the hospital expansion undertaken by Parking Consultants International includes a parking strategy plan.

E.1.3 Bicycle Issues:

1. *"Review of bicycle facilities in the area, with on and off road bike paths to be reviewed."*

A review of existing bicycle facilities is provided in Section 2.10 of this report.

The proposed internal road network will provide footpath facilities for the use by cyclists to travel throughout the site.

E.1.4 Bus Issues

1. *"Review capacity / constraints of the existing bus routes through the area."*
2. *"Identify proposed routes and linkages to the Railway Stations and what effect these additional services will have on the operating performance of the road network."*

These matters are considered in the TMAP report⁸ for the development of the estate.

E.2 Ku-ring-gai Council Submission

Access and Transport

1. *"Access to services and infrastructure, and the suitability of the scale of the scale / intensity of development to the relatively poor access to frequent and reliable public transport and other core services."*

The capacity of the existing transit operations in the vicinity of the site and the opportunities to provide improvements are discussed in detail in the TMAP report.

2. *"Consideration of the proposed strategic bus corridor on the Comenarra Parkway."*

The benefits of this corridor have been assessed and included in the TMAP report.

⁸ Wahroonga Estate Traffic Management and Accessibility Plan (TMAP) Report – Halcrow MWT November 2008

3. *"The strategic sustainability of the development, given the likely increase in vehicle use and subsequent impacts on greenhouse emissions (both in the short term for)"*

The site exhibits high levels of self sufficiency which will be further enhanced with the increased development and additional complimentary uses. It would be more sustainable to develop the hospital and related facilities on the site than to rebuild it on another site closer to a public transport node.

4. *"Local and regional traffic constraints. Impact on the local and regional road systems for both Ku Ring Gai and Hornsby must be addressed. This should include:*
 - *The impact on the Comenarra Parkway / Fox Valley Road intersection, currently function at Level of Service E/F.*
 - *The intersections at Pacific Highway / Fox Valley Road, Comenarra Parkway / Pennant Hills Road and Mt Pleasant Avenue / Pennant Hills Road.*
 - *The potential need for traffic management measures along new roads, as a degree of rat - running could be expected from motorists attempting to bypass the traffic signals at the intersection of Comenarra Parkway and the new road west of Fox Valley Road.*
 - *Council's traffic engineer has concerns relating to the new access points to the Comenarra Parkway due to congestion during peak times, which may limit access to / from those roads. There are also safety concerns, particularly for the possible intersection of the Comenarra Parkway and the new road west of Fox Valley Road. It is unlikely that uncontrolled intersections on the Comenarra Parkway will function effectively during peak times, and alternatives (or alternative control modes) should be considered."*

Intersection improvements are discussed in this report.

The development proposes a road connection to Osborne Avenue to alleviate pressure on the Pennant Hills Road / Mount Pleasant intersection and provide an opportunity for existing and new residents to utilise a traffic signal controlled intersection to gain access to Pennant Hills Road.

The proposed road connection to Comenarra Parkway west of Fox Valley Road has been omitted from the current proposal. The road connection to the east of Fox Valley Road makes use of an existing intersection (Ku Ring Gai Way) and proposes a separate right turn bay to improve turning conditions. This priority controlled intersection would operate at a satisfactory level of service in the future.

5. *"Pedestrian and vehicular (including bicycles, emergency and delivery vehicles) access to local roads and public transport and permeability within the site."*

The proposed internal road system will afford good access and permeability for pedestrians and cyclists. This provision of pedestrian and facilities for cyclists is discussed further in the TMAP report.

6. *“Access to the school, including access for buses, pedestrians and cyclists.”*

Access to the school from Fox Valley Road would be via a new dual lane roundabout which would assist buses turning right into and out of the access road. A large proportion of the student population is expected to live locally and the off street pathways proposed will provide appropriate routes to walk or cycle to and from the school.

7. *“Parking provision in accordance with DCP 43. All parking is to be provided for on site.”*

The development of the estate proposes parking rates generally below the requirements of DCP 43. Reasons for this are set out in Chapter 5 of this report.

8. *“Location, number of levels, height and footprint of any multi deck car park.”*

Hospital parking is addressed in the separate parking report. Parking for other development would be low in scale and best assessed with each individual application.

9. *“Details of arrangements, timing and responsibility on the proposed car pooling system and an assessment of its likely success, by a comparison with other car pooling systems located at a distance from town centres or railway stations.”*

The success of the Go-Get™ car share scheme is clear with the service expanding into a number of town centres such as Chatswood, North Sydney and St Leonards. However the proposed car share arrangement which will include a number of vehicle types will provide added flexibility to residents and will be more attractive to a greater number of potential users.

Whilst a determination of the financial viability of the scheme is beyond the scope of this report, the scheme will have the added benefit of being supported by strata levies on all dwellings on the site to underpin the cost of the scheme.

10. "A transport report should be prepared in accordance with RTA's Guide to Traffic Generating Developments. Traffic assessment must:

- take into consideration the differences in traffic flow from different uses;
- be based on figures relevant to an area remote from town centres; and
- consider any impact on existing difficulties with speeding on the local roads (eg Lucinda Avenue)."

This traffic report has been prepared using the methodology specified in the RTA's Guide to Traffic Generating Developments.

Speed surveys of Lucinda Avenue and Ada Avenue were undertaken as part of the data collection for this report. Table 6.1 Table below summarised the 85th percentile speed at Lucinda Avenue and Ada Avenue by direction.

Table 6.1 Lucinda Avenue / Ada Avenue Speed Survey Results

Road Section	85 th Percentile Speed (over a week)	
	Northbound	Southbound
Lucinda Ave between Mahratta Ave and Eastbourne Ave	60 km/hr	67 km/hr
Ada Ave between Rhonda Close and Gilda Ave	48 km/hr	48 km/hr

A copy of these speed surveys are also provided in **Appendix F** of this report.

The Lucinda Avenue speed survey does suggest an existing speed problem on a road with a 50km/hr speed limit. This suggests that a traffic calming study should be undertaken by Council irrespective of the outcome of this Concept Plan application.

E.3 Ministry of Transport

The following matters were to be addressed in the TMAP:

1. Undertake detailed accessibility mapping for the locality and determine how best to meet the State Plan target of 25% Journey to Work Trips by public transport (at full development). Consultants preparing the TMAP should seek to achieve the maximum possible mode shift to public transport overtime. The impact of mode shift changes for adjacent key intersections should be modelled and corresponding infrastructure upgrades determined;

The estate includes the Sydney Adventist Hospital, an employment centre for some 2,500-3000 workers. A summary of the 2006 journey to work transit (bus / train) and 'other' (walking / cycling) modes for the travel zone which includes the estate is summarised below:

Travel Description	Transit (Bus / Train)	Other (Walking / Cycling)
Travel from zone	24%	13%
Travel to zone	6%	11%
Travel within zone	4%	52%

From the above table it can be seen that travel from the zone by transit is already in line with State Plan targets. The proportion of workers travelling by transit to the zone can be improved and these improvement measures are discussed in the TMAP report. A further important item to note is that the zone exhibits high levels of self containment with more than half of the work trips completed by either walking or cycling which is high for such a large employment centre.

2. Transport modelling as part of the TMAP, should address the following matters:
 - Estimate the distribution of generated trips between origins and destinations;
 - Estimate the likely modal split of generated trips ('business as usual' scenario);
 - Assess likely impacts of generated trips based on the likely model split on existing transport infrastructure, land uses and (urban) environment;
 - Assess likely impacts of generated trips based on the higher modal split on existing public transport provision (is there sufficient capacity to meet these demands), land uses and (urban) environment; and
 - Develop a package of measures to support the higher mode split to non-car modes. This may include infrastructure, services and travel behaviour programs/incentives.
3. Based on a community profile, determine the likely transport needs of future residents and capacity of existing services to meet these demands. Subsequently, identify what level of additional infrastructure will be required to satisfy such demands and the likely cost to Government in the short, medium and longer term. Recommend a preferred option package which includes an implementation schedule;
4. The preparation of transport access guide is recommended as detailed in the Producing and Using Transport Access Guides by the Roads and Traffic Authority (RTA) www.rta.nsw.gov.au;
5. Identify and resolve barriers to efficient and safe pedestrian and cycle access. The proposed development should include facilities for the secure storage of bikes. Amenities for cyclists should also be provided. Equally, identify all possible options for pedestrian and cycle connections through the subject site and adjoining neighbourhood. The publication entitled Planning Guidelines for Walking and Cycling (NSW Government, 2004) is a useful toolkit that can help identify necessary walking and cycling infrastructure;
6. Ensure the proposed development areas facilitate safe and efficient bus access having regard to safer by design principles and bus planning service guidelines; and

7. Adopt a minimalist approach to car parking provision on-site, with a parking rate determined based on the accessibility of the site to public transport. The Ministry is keen to maintain the current level (supply) of on site parking as an effective measure of encouraging greater mode shift to public transport together with increased walking and cycling.

These items are addressed in the TMAP report.



Appendix F - Lucinda Avenue Speed Surveys

Daily Speed Summary

Count Number 3068 **Ref :** MWT
Street ADA AVENUE, WAHROONGA : From FOX VALLEY ROAD to PACIFIC HIGHWAY : NORTH BOUND
Location Between Rhonda Close and Gilda Avenue, House No.27, around tree *Carriageway*

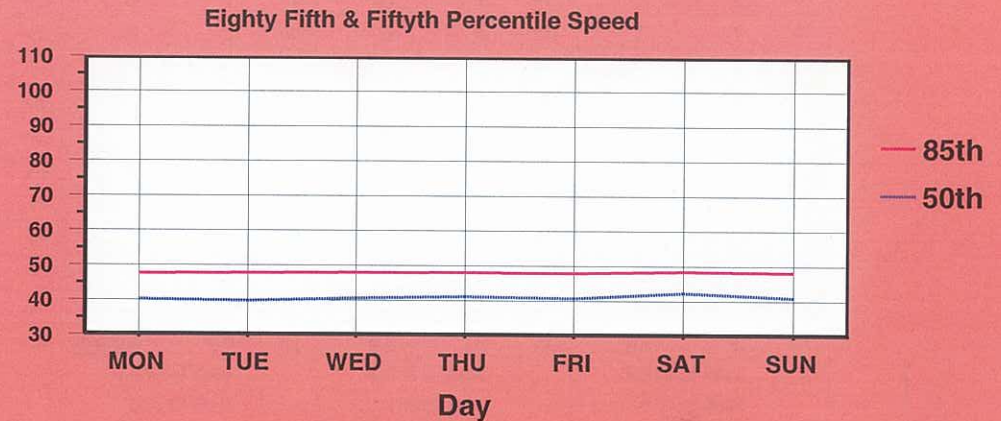
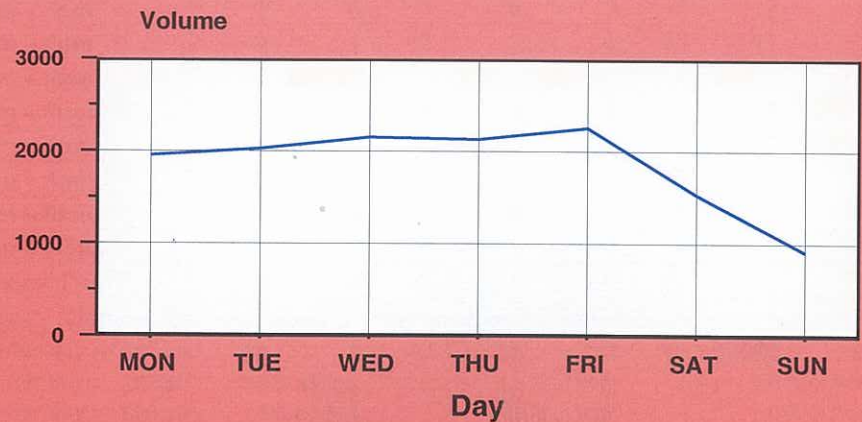
Start Date 27-MAY-08
Start Time 1400
Duration 7 DAYS
Interval 1 HOUR

Weekly Mean Speed 40
Weekly 85th Percentile Speed 48
Five Day AADT 2101
Seven Day AADT 1850

Day	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	Total	Mean	85pct
MONDAY	6	13	66	875	926	60	3	2	0	0	0	0	1951	39.9	47.5
TUESDAY	6	12	101	911	897	93	2	2	0	0	0	0	2024	39.7	47.7
WEDNESDAY	5	7	84	911	1034	95	7	2	3	0	1	0	2149	40.4	47.9
THURSDAY	5	8	74	854	1082	95	7	2	1	0	0	0	2128	40.6	48.0
FRIDAY	6	17	75	948	1105	85	13	1	1	0	1	0	2252	40.3	47.9
SATURDAY	7	8	47	510	871	83	6	0	0	0	0	0	1532	41.3	48.4
SUNDAY	5	5	38	369	442	50	2	0	0	0	0	0	911	40.3	48.1

5 Day Total	28	57	400	4499	5044	428	32	9	5	0	2	0	10504
5 Day Percentage		1	4	43	48	4							

7 Day Total	40	70	485	5378	6357	561	40	9	5	0	2	0	12947
7 Day Percentage		1	4	42	49	4							



Daily Speed Summary

Count Number 3068 **Ref :** MWT
Street ADA AVENUE, WAHROONGA : From PACIFIC HIGHWAY to FOX VALLEY ROAD : SOUTH BOUND
Location Between Rhonda Close and Gilda Avenue, House No.27, around tree *Carriageway*

Start Date 27-MAY-08
Start Time 1400
Duration 7 DAYS
Interval 1 HOUR

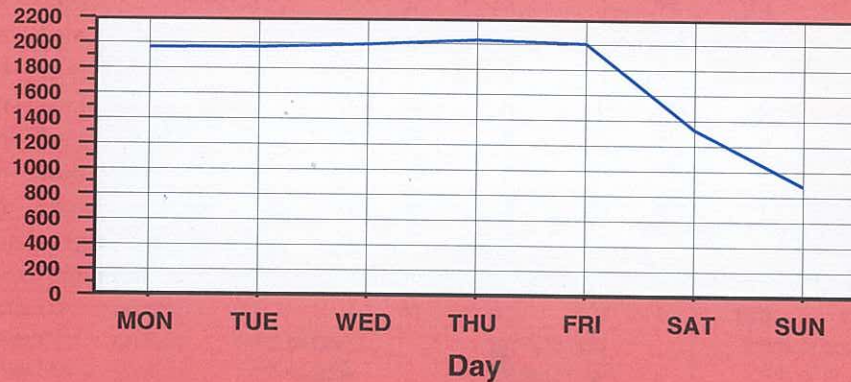
Weekly Mean Speed 42
Weekly 85th Percentile Speed 48
Five Day AADT 1995
Seven Day AADT 1742

Day	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	Total	Mean	85pct
MONDAY	1	10	50	671	1147	80	3	3	1	0	0	0	1966	41.4	48.2
TUESDAY	3	7	63	676	1123	91	3	2	1	1	0	0	1970	41.3	48.2
WEDNESDAY	1	11	36	638	1192	108	4	3	0	3	0	0	1996	42.0	48.5
THURSDAY	2	10	45	655	1197	118	3	2	1	0	0	0	2033	41.8	48.5
FRIDAY	3	14	48	636	1185	108	12	0	1	1	0	0	2008	41.8	48.5
SATURDAY	1	12	37	382	778	110	9	1	1	0	0	0	1331	42.3	49.0
SUNDAY	0	6	41	299	477	61	3	0	0	0	0	0	887	41.3	48.6

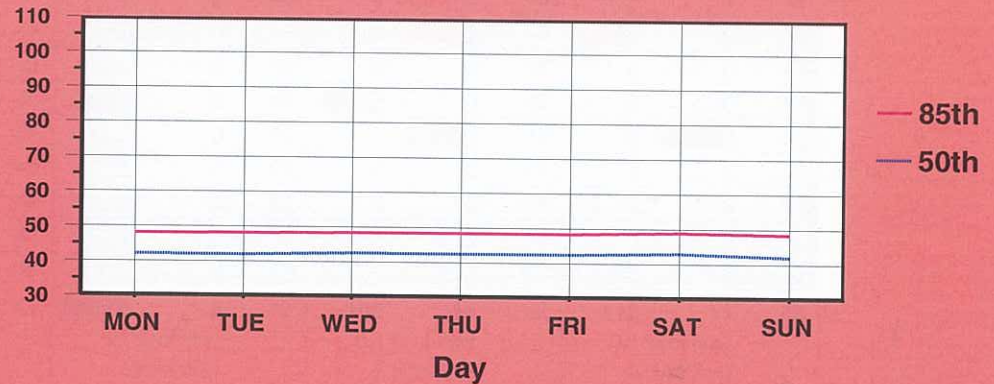
5 Day Total	10	52	242	3276	5844	505	25	10	4	5	0	0	9973
5 Day Percentage		1	2	33	59	5							

7 Day Total	11	70	320	3957	7099	676	37	11	5	5	0	0	12191
7 Day Percentage		1	3	32	58	6							

Volume



Eighty Fifth & Fiftyth Percentile Speed



Count Number **3067** Ref : **MWT**
 Street **LUCINDA AVENUE, WAHROONGA : From FOX VALLEY ROAD to PACIFIC HIGHWAY : NORTH BOUND**
 Location **Between Mahratta Avenue and Eastbourne Avenue, House No.57c, ELP PY 15168** Carriageway

Start Date **27-MAY-08**
 Start Time **1400**
 Duration **7 DAYS**
 Interval **1 HOUR**

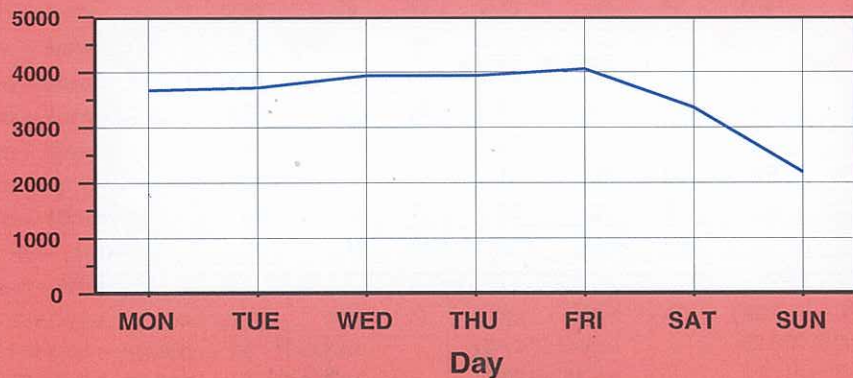
Weekly Mean Speed **53**
 Weekly 85th Percentile Speed **60**
 Five Day AADT **3859**
 Seven Day AADT **3549**

Day	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	Total	Mean	85pct
MONDAY	2	4	12	99	1199	1853	448	48	2	2	2	0	3671	52.6	59.7
TUESDAY	2	7	18	99	1364	1789	396	30	6	1	3	0	3715	51.9	59.3
WEDNESDAY	0	14	6	127	1333	1895	496	46	3	4	3	1	3928	52.4	59.8
THURSDAY	1	7	17	106	1301	1973	467	49	6	2	0	0	3929	52.4	59.7
FRIDAY	2	7	27	105	1388	2006	448	58	3	5	2	0	4051	52.3	59.5
SATURDAY	4	11	17	95	963	1737	449	64	12	2	1	2	3357	53.1	60.6
SUNDAY	1	4	7	50	576	1156	341	44	9	3	0	0	2191	53.9	62.0

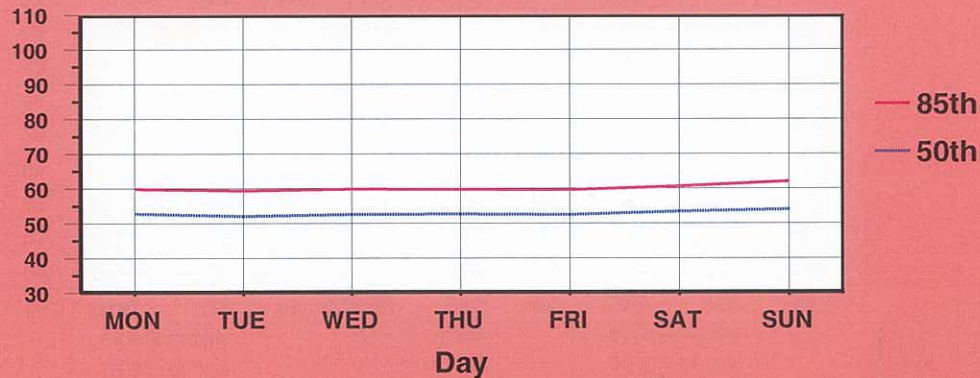
5 Day Total	7	39	80	536	6585	9516	2255	231	20	14	10	1	19294
5 Day Percentage				3	34	49	12	1					

7 Day Total	12	54	104	681	8124	12409	3045	339	41	19	11	3	24842
7 Day Percentage				3	33	50	12	1					

Volume



Eighty Fifth & Fiftyth Percentile Speed



Count Number 3067 **Ref :** MWT
Street LUCINDA AVENUE, WAHROONGA : From PACIFIC HIGHWAY to FOX VALLEY ROAD : SOUTH BOUND
Location Between Mahratta Avenue and Eastbourne Avenue, House No.57c, ELP PY 15168 *Carriageway*

Start Date 27-MAY-08
Start Time 1400
Duration 7 DAYS
Interval 1 HOUR

Weekly Mean Speed 58
Weekly 85th Percentile Speed 67
Five Day AADT 2246
Seven Day AADT 2066

Day	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120	Total	Mean	85pct
MONDAY	6	3	3	21	225	1049	734	114	9	1	1	0	2166	58.1	67.3
TUESDAY	3	4	7	29	299	1074	714	105	11	3	2	2	2253	57.6	67.0
WEDNESDAY	0	2	3	31	262	1064	766	125	10	6	0	1	2270	58.2	67.4
THURSDAY	0	4	8	36	285	1058	766	113	14	3	2	2	2291	57.9	67.3
FRIDAY	2	4	6	23	275	1039	762	117	15	3	2	0	2248	58.1	67.4
SATURDAY	1	9	11	40	253	906	617	104	10	0	4	0	1955	57.4	67.2
SUNDAY	4	4	2	11	180	550	428	79	14	1	0	0	1273	58.0	67.7

5 Day Total	11	17	27	140	1346	5284	3742	574	59	16	7	5	11228
5 Day Percentage				1	12	47	33	5	1				

7 Day Total	16	30	40	191	1779	6740	4787	757	83	17	11	5	14456
7 Day Percentage				1	12	47	33	5	1				

