

**FLORA AND FAUNA ASSESSMENT FOR THE
COMMERCIAL ROAD REZONING, ROUSE HILL**

Flora and Fauna Assessment

For:

ROUSE HILL COMMERCIAL ROAD DEVELOPMENT CO PTY LTD

November 2008

Final Report

Cumberland Ecology
PO Box 2474, Carlingford Court 2118

Report No. 8109RP1

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology

Approved by: David Robertson

Position: Project Director

Signed: 

Date: 27 November, 2008

Table Of Contents

EXECUTIVE SUMMARY

1. INTRODUCTION

1.1	Purpose	1.1
1.2	Background	1.1

2. METHODS

2.1	Database Analysis	2.1
2.2	Flora Survey	2.1
2.3	Fauna Survey and Habitat Assessment	2.2

3. RESULTS

3.1	Flora Survey	3.1
3.1.1	General	3.1
3.1.2	Vegetation Communities	3.4
3.2	Fauna Survey and Habitat Assessment	3.5
3.2.1	Amphibians	3.5
3.2.2	Reptiles	3.5
3.2.3	Birds	3.5
3.2.4	Mammals	3.6
3.2.5	Wildlife Corridors	3.7

4. IMPACT ASSESSMENT

4.1	Impact of Development	4.1
4.2	Vegetation Communities	4.1
4.3	Threatened Flora Species	4.2
4.4	Threatened Fauna Species	4.2

Table Of Contents

5. CONCLUSION

Table Of Appendices

A. FLORA SURVEY RESULTS B. FAUNA SPECIES LIST C. ASSESSMENTS OF SIGNIFICANCE

List of Figures

1.1	LOCATION OF THE SUBJECT SITE	1.2
3.1	VEGETATION ON THE SUBJECT SITE	3.8

List of Tables

3.1	THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA	3.9
-----	---	-----

List of Tables

A.1	PLANT SPECIES IDENTIFIED IN THE FLORA SURVEY	A.1
B.1	FAUNA SPECIES LIST FROM THE DEC ATLAS OF NSW WILDLIFE; SEARCHED WITHIN BAULKHAM HILLS LGA	B.1

List of Photographs

3.1	EXOTIC-DOMINATED GRASSLAND ON THE SUBJECT SITE	3.2
3.2	LANDSCAPED VEGETATION WITHIN CARPARK	3.3
3.3	DRAINAGE LINE DOMINATED BY EXOTIC VEGETATION	3.3
3.4	NATIVE-DOMINATED GRASSLAND	3.4
3.5	REMNANT WOODLAND TREES AND DEGRADED UNDERSTOREY	3.5

Executive Summary

INTRODUCTION

The purpose of this report is to assess the flora and fauna values of the Commercial Road, Rouse Hill property under the *Environmental Planning and Assessment Act 1979* and predict impacts of the proposed retail rezoning on the flora and fauna of the subject site.

The vegetation on the subject site consists of grasslands, partially inundated drainage lines, landscaped areas and a patch of remnant woodland trees. Most of the vegetation is dominated by exotic species, or remains in a degraded state.

METHODS

Surveys of the subject site were carried out for flora (23rd October 2008) and fauna (15th October, 2008). The fauna survey included assessment of potential habitat, e.g. hollow-bearing trees, for threatened species which may use the site.

Background research was also conducted, including consultation of the Atlas of NSW Wildlife, to determine Endangered Ecological Communities and threatened species likely to occur in the study area.

RESULTS

The majority of the vegetation of the study area consists of exotic grassland with associated exotic herbaceous species. Native-dominated grassland exists in areas of the site. Two drainage lines run through the subject site, which are heavily over-grown with weeds and aquatic species.

An area of remnant woodland trees exists on site. This area would have historically represented River-flat Eucalypt Forest, an endangered ecological community. The understorey of this area is highly degraded due to weed invasion and heavy grazing. As such, this area was determined to not constitute River-flat Eucalypt Forest.

No threatened flora or fauna species were found in the survey. Areas partially inundated with water, the drainage lines and small dam may provide marginal habitat for threatened fauna species, however the removal of this vegetation was not judged to pose a significant threat to any threatened species.

IMPACT ASSESSMENT

The area of remnant woodland trees does not represent an endangered ecological community, due to its highly degraded state. In addition, the majority of the trees are located adjacent to the subject site, and would not be affected by the proposed retail rezoning. The removal of the trees from the subject site would not constitute a significant threat to any EEC.

No threatened flora or fauna species were found in the survey. The wooded area was not found to provide suitable habitat for any threatened fauna species, as no tree hollows were present. The partially inundated drainage lines and dam may provide some marginal habitat for threatened fauna species, however habitat of greater quality is available close to the site, and the removal of these features of the subject site does not amount to a significant threat to any threatened fauna species.

CONCLUSIONS

The extent of habitat for threatened species on site is marginal, and habitat of greater quality is available off site. The proposed development will not have a significant impact on any threatened ecological community, flora or fauna species.

Introduction

1.1 Purpose

The purpose of this report is to assess the value of flora and fauna, and predict the potential impacts on flora and fauna of the proposed retail rezoning of the property on Commercial Road, Rouse Hill.

The objectives of this report are to:

- Describe the vegetation communities on the subject land;
- Describe fauna habitats and fauna usage of the subject land;
- Assess the likelihood of threatened species occurring on the subject land;
- Formally assess the impacts of the proposed development concept in terms of Section 5A of the *Environmental Planning and Assessment Act 1979*.
- Assess the ecological constraints and opportunities for development on the subject land; and
- Where relevant, to suggest mitigation measures to reduce the impacts of the proposed development concept on flora and fauna.

1.2 Background

The subject site forms a parcel of land on Commercial Rd, Rouse Hill, currently managed by Rouse Hill Commercial Road Development Co Pty Ltd. A retail rezoning of the land has been proposed, which will open the land for future development. The location of the subject site is shown in **Figure 1.1**.

The subject site consists of areas of exotic grassland, a former carpark area with associated landscaped vegetation, drainage channels, and a small area of woodland trees. A small semi-permanent dam is also present towards the northern corner of the site. As a result of the proposed retail rezoning of the subject site, the vegetation on the site may be cleared in its entirety.



Figure 1.1

Location of the Subject Site within Rouse Hill, Baulkham Hills LGA

Cumberland Ecology

Methods

2.1 Database Analysis

The Atlas of NSW Wildlife ¹ was consulted to identify threatened flora and fauna species listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) previously recorded in the Baulkham Hills Local Government Area or which have been recorded within 5km of the subject site. Species for which the subject land may provide habitat were identified as requiring an Assessment of Significance under the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2.2 Flora Survey

A one-day field assessment was carried out on Tuesday 23rd October, 2008. During the survey, the following tasks were carried out:

- An overall assessment of the vegetation on the site;
- A targeted survey for threatened plant species as listed under the TSC Act which may occur on the subject site; and
- Assessment of the wooded areas located along the north-eastern boundary, particularly the northern corner of the site, in regards to whether they constitute any endangered ecological communities listed under the TSC Act.

Based on the results of the survey, the likely impact of the proposed development concept on the vegetation on the subject site was assessed, with particular reference to threatened plant species and endangered ecological communities listed under the TSC Act. Plant species nomenclature conforms to Harden²⁻⁵

2.3 Fauna Survey and Habitat Assessment

A one-day diurnal fauna survey and habitat assessment was conducted on Wednesday 15th October, 2008. During the fauna survey, the following tasks were undertaken:

- An overall assessment of the habitat values of the subject site for all fauna groups, with particular focus given to assessing the potential occurrence of threatened species as listed under relevant Commonwealth and NSW legislation;
- A targeted search for threatened fauna species known to occur in the Baulkham Hills LGA; and
- An inventory of all fauna species observed at the subject site during the survey.

On completion of the survey, an assessment was undertaken of the potential impacts on fauna groups of the proposed development concept, with particular focus given to potential impacts on threatened fauna species.

Results

3.1 Flora Survey

3.1.1 General

The majority of the vegetation on the subject site is exotic-dominated grassland. These areas comprise a diverse array of exotic grass and herb species, dominated by Couch (*Cynodon dactylon*), Kikuyu (*Pennisetum clandestinum*), Paspalum (*Paspalum dilatatum*), Buffalo Grass (*Stenotaphrum secundatum*), Prairie Grass (*Bromus catharticus*), Perennial Ryegrass (*Lolium perenne*), Fire Weed (*Senecio madagascariensis*), Flat-weed (*Hypochaeris radicata*), Plantain (*Plantago lanceolata*), Common Vetch (*Vicia sativa*) and *Lotus angustissimus*. The full list of species recorded in the flora survey is provided in Appendix A. Within these areas some scattered native groundcover species occur, including *Einadia hastata*, *Glycine microphylla*, *Glycine tabacina* and *Hypericum graminum*. An example of this vegetation is shown in **Photograph 3.1**.

Landscaped areas are associated with the carpark along the western edge of the subject site adjacent to the larger off-site carpark, and around the dwellings on the subject site (see **Photograph 3.2**). These areas consist of mostly native planted tree and shrub species, such as Red Mahogany (*Eucalyptus resinifera*), Mugga Ironbark (*Eucalyptus sideroxylon*), Lemon-scented Gum (*Corymbia citriodora*), *Allocasuarina littoralis*, Blueberry Ash (*Elaeocarpus reticulatus*), and Cootamundra Wattle (*Acacia baileyana*), among others.

Two drainage lines run parallel through the centre of the site, with an associated array of mostly exotic aquatic and semi-aquatic species, including Slender Knotweed (*Persicaria decipiens*), *Cyperus eragrostis*, *Juncus tenuis*, and Broad-leafed Cumbungi (*Typha orientalis*). These areas are also densely vegetated with Blackberry (*Rubus fruticosus*), Large-leafed Privet (*Ligustrum lucidum*), Small-leafed Privet (*Ligustrum sinense*), and many of the species present within the adjacent exotic grassland. These drainage lines are shown in **Figure 3.1** and **Photograph 3.3**.

A stand of remnant Sydney Red Gum (*Eucalyptus tereticornis*) and Grey Box (*Eucalyptus moluccana*) trees exist in the north-western corner of the subject site (**Figure 3.1**), probably remnant of the historical vegetation community of River-flat Eucalypt Forest, listed as endangered under the TSC Act. Within this area of trees some native

groundcover species remain, although the understorey has been highly disturbed by grazing (observed during the site visit). This area will be addressed below.

Native-dominated grassland exists in patches within the area along the western edge of the subject site, in the area adjacent to the remnant trees mentioned above (see **Figure 3.1, Photograph 3.4**). These areas are currently grazed by sheep (observed during the flora survey). Dominant grass species include *Microlaena stipoides* and *Aristida ramosa*, along with *Dichelachne micrantha*, *Themeda australis* and *Austrodanthonia caespitosa*. Exotic grasses and herbs are present within this area (see Appendix A), however they are less prevalent than in the more disturbed areas of the subject site.



Photograph 3.1 **Exotic-dominated grassland on the subject site**



Photograph 3.2 **Landscaped vegetation within carpark**



Photograph 3.3 **Drainage line dominated by exotic vegetation**



Photograph 3.4 **Native-dominated grassland**

3.1.2 ***Vegetation Communities***

i. *River-flat Eucalypt Forest (RFEF)*

An area of remnant trees that would have once formed part of the vegetation community *River-flat Eucalypt Forest of the NSW North Coast, Sydney Basin and South East Corner bioregion* exists in the north-western corner of the subject site. The majority of the extent of this patch of remnant trees is outside of the extent of the subject site, with only a narrow strip of around 3-4m located within. This area is highly degraded, and no longer represents the historical vegetation community (See **Photograph 3.5**).

The ground vegetation associated with these trees is heavily grazed, however some native herb and grass species remain (see Appendix A). A total of 17 native species remain in the patch (including canopy Eucalypts), 15 of which are listed as characteristic species of the community under the TSC Act Final Determination⁷. Species which have persisted are in low densities, with the exception of *Solanum prinophyllum* which possesses sharp spines capable of deterring grazers. The total extent of the wooded area, including area located off-site, is approximately 5545m².



Photograph 3.5 **Remnant woodland trees and degraded understorey**

3.2 Fauna Survey and Habitat Assessment

3.2.1 Amphibians

The site provides suitable habitat for a range of common amphibian species known to occur in the wider locality. During the survey period, only one amphibian species (*Crinia signifera*) was recorded. However, given that the site supports areas periodically inundated with water, and a small dam it is likely that a number of additional common amphibian species would find suitable forage, shelter and breeding habitat at the subject site.

Targeted searches combined with habitat assessment indicate that the subject site would not provide suitable habitat for any of the threatened amphibian species known to occur in the wider locality. Further, similar habitat to that which occurs at the subject site is also commonly found throughout the wider locality. It is therefore highly unlikely that the proposed development concept for the site would result in any significant impacts on amphibian species. Threatened amphibian species which occur within the Baulkham Hills LGA and may occur on the subject site are listed in **Table 3.1**.

3.2.2 *Reptiles*

No reptiles were detected during the survey. Despite the absence of records, it is likely that the subject site would provide habitat for a number of common reptile species. The majority of the subject site supports rank grassland providing suitable habitat for grassland dependent species. The small areas of forest habitat along the boundaries of the subject site may also support additional common reptiles which are known to occur in this habitat type.

The proposed development concept will result in the removal of all suitable habitat for reptiles at the subject site. However, given that habitats at the site also commonly occur in the wider locality it is unlikely that the development will result in any significant impacts on reptiles in the wider area. No threatened reptile species are known to occur in the Baulkham Hills LGA, according to the Atlas of NSW Wildlife¹.

3.2.3 *Birds*

A search of the Atlas of NSW Wildlife database indicates that a number of threatened bird species have been recorded in the Baulkham Hills LGA. During the survey period, none of these threatened species were detected at the subject site. Habitat assessment indicates that the site would provide suitable habitat for a range of common birds known to occur in rank grassland and small patches of forest habitat. In particular, common aggressive species such as the Noisy Miner, Pied Currawong and Australian Magpie (all of which were recorded during the survey) are known to occupy small patches of forest habitat with heavily disturbed understory such as occurs in the eastern section of the subject site. These species actively exclude many of the smaller passerines that occur in larger areas of forest with a more intact understory. The forest areas of the subject site are therefore unlikely to provide suitable habitat for any of the threatened bird species known to occur in the wider locality.

During the survey period, Latham's Snipe (a migratory wader) was recorded in the inundated grassy areas of the subject site, indicating that these areas provide suitable forage habitat for birds dependent on such freshwater habitats. However, given the degraded nature of the vegetation in these areas of the site, and that similar habitats would also occur in other parts of the locality, it is unlikely that the proposed development concept would result in the removal of significant habitat for freshwater wetland-dependent birds.

Threatened bird species which occur within the Baulkham Hills LGA and may occur on the subject site are listed in **Table 3.1**.

3.2.4 *Mammals*

No native mammal species were recorded during the survey period, although several European Rabbits were seen. In addition, habitat assessment indicates that the heavily degraded rank grasslands of the site are likely to provide habitat for the introduced House

Mouse and Black Rat. The small areas of forest habitat in the eastern section of the site may also provide some habitat for common, adaptable arboreal mammals such as the Common Brushtail Possum. Given the small area of forest habitat, the absence of hollow-bearing trees, surrounding development and the heavily degraded nature of vegetation at the subject site, it is unlikely that any of the threatened mammal species known to occur in the wider locality would occur at the site. The proposed development concept will not therefore result in any significant impacts on native terrestrial or arboreal mammals.

A number of small insectivorous (microchiropteran) bats are known to occur in the wider locality of the subject site, including a number of threatened species as listed in Commonwealth and NSW legislation. Some of these species are dependent on caves or similar habitat for roosting and breeding, and these habitat features do not occur at the subject site. Others are known to roost and breed in tree hollows, under decorticated bark and amongst vegetation. Habitat assessment indicates that the subject site may provide some limited roost habitat for these species. It is likely that any of the microchiropteran bats known to occur in the wider locality may forage at the subject site, however it is unlikely that the site would provide any significant roost or breeding habitat for these species. Similar forage habitat to that which occurs at the subject site can also be commonly found in the wider locality. It is therefore unlikely that the proposed development concept would result in any significant impacts on microchiropteran bats.

The Grey-headed Flying Fox (listed as Vulnerable under Commonwealth and NSW legislation) is known to occur in the wider locality and may infrequently forage at the subject site during the blossoming period of trees that occur here. However, there are no roosting and breeding colonies located at or near the subject site, and suitable forage habitat for the Grey-headed Flying-fox occurs throughout the wider locality. It is therefore unlikely that the proposed development concept would result in any significant impacts on the Grey-headed Flying-fox at the subject site or in the wider locality.

Threatened mammal species which occur within the Baulkham Hills LGA and may occur on the subject site are listed in **Table 3.1**.

3.2.5 Wildlife Corridors

Forest and grassland communities at the subject site do not currently provide any suitable fauna habitat corridor. Although there is a greater area of native vegetation to the east of the subject site, this habitat is separated from the site by residential properties. All other boundaries of the subject site abut main roads and urban development. It is therefore unlikely that the subject site would provide any significant wildlife corridor values. However, habitat at the site may currently function as part of a disjunct habitat corridor or “stepping stone” for a range of common mobile species, particularly birds and bats.

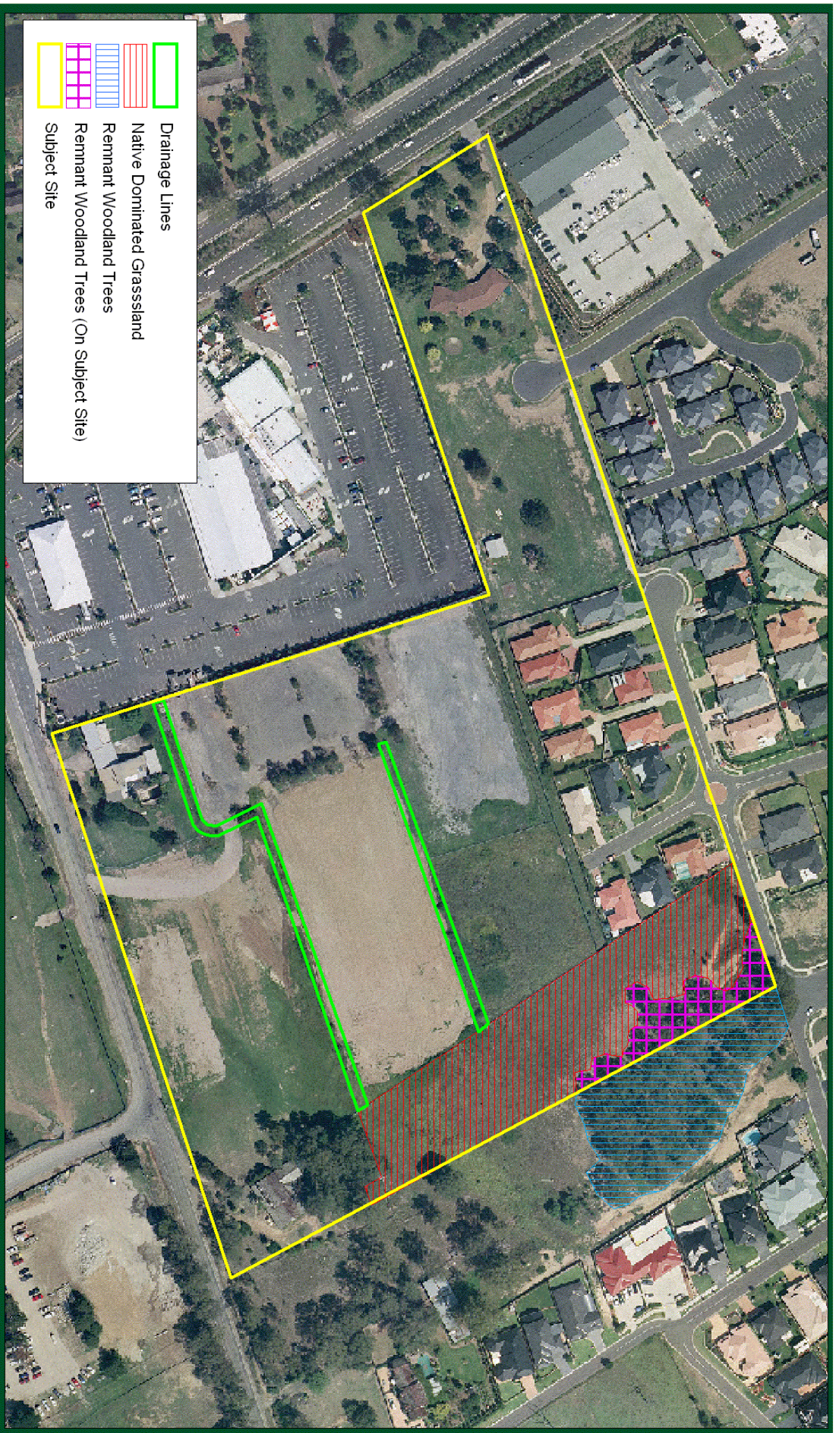


Figure 3.1

Vegetation on the Subject Site

Cumberland Ecology



Table 3.1 THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA

Family	Scientific Name	Common Name	Within 5km?	Conservation Status	Likelihood of occurrence	Assessment of Significance needed?
Amphibia						
Myobatrachidae	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	No	V	Burrows in sandy soil, unlikely to occur on the subject site.	No
	<i>Pseudophryne australis</i>	Red-crowned Toadlet	Yes	V	Shelters under rocks and dense vegetation, associated with sandstone soils. No suitable habitat is available on the subject site. Unlikely to occur on the subject site.	No
Aves						
Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	Yes	V	Inhabits a variety of timbered habitats. Could occur on the subject site.	Yes
	<i>Pandion haliaetus</i>	Osprey	No	V	Depends on open water, particularly near the coast. Extent of open water on the subject site unlikely to provide habitat for this species. Unlikely to occur on the subject site.	No
Anatidae	<i>Stictonetta naevosa</i>	Freckled Duck	No	V	Requires dense aquatic vegetation for breeding and cover. No suitable habitat is available on the subject site. Unlikely to occur on the subject site.	No
Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	No	V	Requires dense aquatic vegetation for foraging/hunting. No suitable habitat is available on the subject site. Unlikely to occur on the subject site.	No
	<i>Ixobrychus flavicollis</i>	Black Bittern	No	V	Requires dense aquatic vegetation for foraging/hunting. No suitable habitat is available on the subject site. Unlikely to occur on the subject site.	No

Table 3.1 THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA

Family	Scientific Name	Common Name	Within 5km?	Conservation Status	Likelihood of occurrence	Assessment of Significance needed?
Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Yes	V	May occur in open woodlands within urban areas. May occur on the subject site.	Yes
	<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	Yes	V	Inhabits open forests and woodlands, however no nest sites or suitable food trees (<i>Allocasuarina sp</i>) occur on site. Unlikely to occur on the subject site.	No
Climacteridae	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	Yes	V	Occurs in open Eucalypt forest and woodlands, foraging in the understorey for insects. Degraded understorey unlikely to provide adequate resources. Unlikely to occur on the subject site.	No
	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Yes	V	Occurs in box woodland, however have large home ranges and normally inhabit only large remnant patches. Unlikely to occur on the subject site.	No
Petroicidae	<i>Xanthomyza phrygia</i>	Regent Honeyeater	Yes	E1	Generalist forager on Eucalypts, occasionally in dry open forest on the coast. Requires a shrubby understorey for insect foraging. Unlikely to occur on the subject site.	No
	<i>Melanodryas cucullata</i>	Hooded Robin	Yes	V	Requires structurally diverse habitats, featuring a well defined understorey. Unlikely to occur on the subject site.	No
Psittacidae	<i>Lathamus discolor</i>	Swift Parrot	Yes	E1	Migratory species, feeding mainly on Eucalypt nectar. Extent of the potential habitat on the subject site unlikely to attract the species, considering the larger areas of habitat located nearby (e.g. Caddies Creek). Unlikely to occur on the subject site.	No

Table 3.1 THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA

Family	Scientific Name	Common Name	Within 5km?	Conservation Status	Likelihood of occurrence	Assessment of Significance needed?
	<i>Polytelis swainsonii</i>	Superb Parrot	No	V	Normally occurs in inland NSW in a variety of habitat types. Does not breed in the area, and only marginal foraging habitat occurs on site.	No
Strigidae	<i>Ninox connivens</i>	Barking Owl	Yes	V	Inhabits Eucalypt woodlands. Roosts along creek lines in dense vegetation, and forages over a large home range. Extent of vegetation on the subject site is unlikely to attract the species, considering the larger areas of habitat located nearby (e.g. Caddies Creek). Unlikely to occur on the subject site.	No
	<i>Ninox strenua</i>	Powerful Owl	Yes	V	Inhabits woodland. Roosts in dense vegetation, and has a large home range. May occur in fragmented landscapes, however the small extent of the habitat on site compared to the large areas of habitat located close by would be unlikely to attract the species. Unlikely to occur on the subject site.	No
Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	Yes	V	Roosts and breeds in moist, forested gullies. Unlikely to occur on the subject site.	No
	<i>Tyto tenebricosa</i>	Sooty Owl	No	V	Occurs in rainforest and moist Eucalypt forest. No suitable habitat is available on the subject site. Unlikely to occur on the subject site.	No
Gastropoda						
Camaenidae	<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	Yes	E1	Primarily inhabits Cumberland Plains Woodland, inhabiting the ground-layer. The ground layer on the site	No

Table 3.1 THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA

Family	Scientific Name	Common Name	Within 5km?	Conservation Status	Likelihood of occurrence	Assessment of Significance needed?
					is highly degraded, and unlikely to support the species. Unlikely to occur on the subject site.	
Mammalia						
Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Yes	V	No den sites occur, however may forage in open woodland. Extent of the vegetation on site is unlikely to support sufficient prey to attract the species. Unlikely to occur on the subject site.	No
Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Yes	V	Roosts in tree hollows. No suitable roost sites are available on site, however suitable foraging habitat may occur on site. May visit the subject site.	Yes
Molossidae	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	Yes	V	Roosts in tree hollows and man-made structures. Suitable roost sites are not available on site, however they may occur close by. Suitable foraging habitat may occur on site. May occur on the subject site.	Yes
Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider	Yes	V	Den in large tree hollows, live in family groups in high-rainfall mature forests. No suitable habitat present on the subject site. Unlikely to occur on the subject site.	No
	<i>Petaurus norfolkensis</i>	Squirrel Glider	No	V	Occurs in Blackbutt/Bloodwood forest east of the Great Dividing Range. Requires abundant tree hollows for shelter. No suitable habitat present on the subject site. Unlikely to occur on the subject site.	No
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	No	V	Requires a greater home range than is provided on site. Not detected during fauna survey. Unlikely to occur on	No

Table 3.1 THREATENED FAUNA RECORDED IN THE BAULKHAM HILLS LGA

Family	Scientific Name	Common Name	Within 5km?	Conservation Status	Likelihood of occurrence	Assessment of Significance needed?
					the subject site.	
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Yes	V	Not known to roost on the subject site, however marginal foraging habitat occurs, and the species may occasionally visit the site.	Yes
Vespertilionidae	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Yes	V	Roosts in tree hollows, under bark and in man-made structures. Suitable roost sites are not available on site, however they may occur close by. Suitable foraging habitat may occur on site. May occur on the subject site.	Yes
	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	Yes	V	Roosts primarily in caves and tunnels, however will disperse to hunt in forested areas. Suitable foraging habitat may occur on site. May occur on the subject site.	Yes
	<i>Myotis adversus</i>	Large-footed Myotis	Yes	V	Roosts close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forages over streams and ponds. No suitable roost sites are available on site, however suitable foraging habitat may occur on site. May occur on the subject site.	Yes
	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Yes	V	Roosts in tree hollows or buildings. Forages in a variety of habitats. No suitable roost sites are available on site, however suitable foraging habitat may occur on site. May occur on the subject site.	Yes

Impact Assessment

4.1 Impact of Development

As a result of the proposed retail rezoning, potentially all vegetation on the subject site will be removed. The majority of this vegetation is exotic-dominated, and of no great conservation significance. Other vegetation on site may hold some limited conservation value. Native-dominated grassland occurs to the north-west of the site, which may provide foraging habitat for common bird species. The periodically inundated drainage lines and small dam may provide some habitat for aquatic bird species. The removal of these areas is not predicted to impact significantly upon threatened flora, fauna or ecological communities.

The subject site contains no threatened plant species and provides no significant habitat for any threatened fauna species. The proposed development concept is projected to have a limited effect on the flora and fauna of the local area, as habitat of better quality is present outside of the subject site.

4.2 Vegetation Communities

The remnant trees in the north-western corner of the subject site probably represent a historical vegetation community of River-flat Eucalypt forest, an endangered ecological community listed under the *TSC Act*. This area has been heavily degraded through grazing, and now no longer represents the historical vegetation community. Some native species remain, though they are in low densities. The proposal will remove only a small area of this wooded area, as the majority of the trees lie outside of the subject site boundary.

A proposed council road adjacent to the site will reduce the extent of the remnant trees significantly, so trees within the subject site will become an isolated strip approximately 3-4m wide, of total area 1541m². If the narrow strip were to remain as an isolated strip following the construction of the proposed council road it would be unlikely to remain viable as an ecological community, due to increased edge-effects and loss of many of the native species currently only present within land to be occupied by the road. Note that many of the native species listed in Appendix A as occurring within this patch do not occur within the extent of the subject site.

The remnant trees no longer represent an endangered ecological community, and their removal as part of the proposed development concept will not significantly reduce the extent of any EEC. This is both because the area to be removed is very small and of a highly degraded nature, and because following the construction of the council road adjacent the extent to be removed will exist only as a strip of trees lacking many of the native species which currently exist in the entire patch.

4.3 Threatened Flora Species

No flora species listed as threatened are present in the study area. There will be no impact on threatened flora species associated with this development.

4.4 Threatened Fauna Species

The species determined in **Table 3.1** as likely to occur on the subject site were subject to Assessments of Significance under Section 5A of the EP&A Act (7 part test). The Assessments of Significance and individual conclusions regarding the potential impacts of development on these species can be found in Appendix C. From these Assessments, it can be concluded that the proposed development concept will have no significant impact on the habitat of any threatened fauna species that could potentially occur on the subject site.

No hollow-bearing trees exist on site, so the proposed development concept will not remove habitat for threatened fauna species. Some aquatic vegetation will be lost, however this is not likely to represent habitat for any threatened bird or frog species. Habitat of better quality exists in the local area, for example along Caddies Creek, approximately 300m from the subject site.

Conclusion

Native vegetation present on the site consists of areas of native-dominated grassland, and an area of remnant woodland trees representative of the historical vegetation community River-flat Eucalypt Forest, an endangered ecological community listed under the NSW *TSC Act*. This patch of woodland trees has a highly degraded understorey, and as such does not represent the historical vegetation community. The removal of this vegetation will therefore not impact upon any EEC. No threatened plant species are present within the subject site.

No hollow-bearing trees are present on the subject site, however areas of the site may provide marginal aquatic habitat for some threatened fauna species. The removal of these habitat resources is predicted to have no significant effect on the fauna species which may occasionally utilize these resources (see Appendix C). The proposed retail rezoning of the subject site, which may involve the later clearing of vegetation from the subject site, is therefore not likely to have any significant effect on the flora or fauna of the subject site.

References

1. DECC (NSW) (2008) **Atlas of NSW Wildlife**
<http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp>
2. Harden, G. J. (1990) **Flora of New South Wales Volume 1** New South Wales University Press, Kensington.
3. Harden, G. J. (1991) **Flora of New South Wales Volume 2** New South Wales University Press, Kensington.
4. Harden, G. J. (1992) **Flora of New South Wales Volume 3** New South Wales University Press, Kensington.
5. Harden, G. J. (1993) **Flora of New South Wales Volume 4** New South Wales University Press, Kensington.
6. NSW NPWS (2001) **Threat Abatement Plan for Predation by the Red Fox (*Vulpes vulpes*)** NSW National Parks and Wildlife Service, Hurstville.
7. NSW Scientific Committee (2004) **River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing** Department of Environment and Conservation (NSW), Hurstville, NSW.
8. NSW Scientific Committee (2005) **Gang-gang cockatoo - vulnerable species listing** NSW NPWS, Hurstville.

Appendix A

Flora Survey Results

This species list does not include species located within landscaped areas. The species listed are only those detected in the survey, and do not represent all species present on the subject site.

Table A.1 PLANT SPECIES IDENTIFIED IN THE FLORA SURVEY

Family	Species name	Common name	Exotic grassland	Wooded areas	Native grassland	Drainage lines
Monocots						
Commelinaceae	<i>Commelina cyanea</i>			+		
Cyperaceae	<i>Cyperus eragrostis</i> *		+			+
	<i>Juncus tenuis</i> *				+	+
Lilaceae	<i>Asparagus asparagoides</i> *	Bridal Creeper		+		
Lomandraceae	<i>Lomandra filliformis</i>				+	
	<i>Lomandra multiflora</i>			+		
Poaceae	<i>Aristida vagans</i>			+	+	
	<i>Avena barbata</i> *	Bearded Oat	+			
	<i>Briza minor</i> *	Shivery Grass	+			+
	<i>Briza subaristata</i> *		+		+	
	<i>Bromus catharticus</i> *	Prairie Grass	+			
	<i>Bromus hordeaceaceus</i> *	Silky Broome	+			
	<i>Cynodon dactylon</i> *	Couch	+			
	<i>Dichelachne micrantha</i>			+	+	
	<i>Erharta erecta</i> *		+	+	+	+
	<i>Lachnagrostis filiformis</i> *	Blown Grass	+			+
	<i>Lolium perenne</i> *	Perrenial Rye Grass	+			

Table A.1 PLANT SPECIES IDENTIFIED IN THE FLORA SURVEY

Family	Species name	Common name	Exotic grassland	Wooded areas	Native grassland	Drainage lines
	<i>Microlaena stipoides</i>			+	+	
	<i>Paspalum dilatatum</i> *	Paspalum	+		+	
	<i>Pennisetum clandestinum</i> *	Kikuyu	+			+
	<i>Austrodanthonia caespitosa</i>			+	+	
	<i>Sporobolus africanus</i> *	Parramatta Grass			+	
	<i>Stenotaphrum secundatum</i> *	Buffalo Grass	+			
	<i>Themeda australis</i>	Kangaroo Grass		+	+	
	<i>Vulpia myuros</i> *	Rat's Tail Fescue	+			
Typhaceae	<i>Typha orientalis</i>	Broad-leaved Cumbungi				+
Dicots						
Trees						
Myrtaceae	<i>Eucalyptus molucanna</i>	Grey Box		+		
	<i>Eucalyptus tereticornis</i>	Sydney Red Gum		+		
Shrubs and Herbs						
Apiaceae	<i>Daucus carota</i> *	Wild Carrot	+			
Asclepiadaceae	<i>Araujia sericifera</i> *	Moth Vine	+			+
	<i>Gomphocarpus fruticosus</i> *	Cotton Bush	+			
Asteraceae	<i>Bidens pilosa</i> *	Farmer's Friend	+			
	<i>Cirsium vulgare</i> *	Spear Thistle	+			
	<i>Conyza sp.</i> *	A Fleabane	+			
	<i>Euchiton sphaericum</i>		+			

Table A.1 PLANT SPECIES IDENTIFIED IN THE FLORA SURVEY

Family	Species name	Common name	Exotic grassland	Wooded areas	Native grassland	Drainage lines
	<i>Gamochaeta purpurea</i> *	Purple Cudweed	+	+		
	<i>Hypochaeris radicata</i> *	Flat-weed	+			
	<i>Latua seriola</i> *	Prickly Lettuce	+			
	<i>Ozothamnus diosmifolius</i>	Everlasting		+		
	<i>Senecio madagascariensis</i> *	Fire Weed	+	+		
	<i>Sonchus sp.</i> *	Sowthistle	+			+
Caryophyllaceae	<i>Ceratium glomeratum</i> *	A Chickweed	+			
	<i>Minuartia mediterranea</i> *	Slender Sandwort	+			
	<i>Paronychia brasiliiana</i> *	Brazilian Whitlow	+			
	<i>Petrorhagia dubia</i> *		+			
Chenopodiaceae	<i>Einadia hastata</i>	Ruby Saltbush	+	+		
	<i>Einadia nutans</i>	Native Seaberry	+	+		
Convolvulaceae	<i>Wahlenbergia gracilis</i>				+	
	<i>Dichondra repens</i>	Kidney Weed		+	+	
	<i>Hypericum graminium</i>		+			
Euphobiaceae	<i>Poranthera microphylla</i>			+	+	
Fabaceae	<i>Acacia podalyriifolia</i> *			+		
	<i>Glycine microphylla</i>			+		
	<i>Glycine tabacina</i>			+		
	<i>Lotus angustissimus</i> *		+		+	
	<i>Trifolium dubium</i> *		+			+

Table A.1 PLANT SPECIES IDENTIFIED IN THE FLORA SURVEY

Family	Species name	Common name	Exotic grassland	Wooded areas	Native grassland	Drainage lines
	<i>Vicia sativa</i> *	Common Vetch	+			+
Lobeliaceae	<i>Pratia purpurescens</i>	White Root		+		
Malvaceae	<i>Modiola caroliniana</i> *	Carolina Mallow				+
	<i>Sida rhombifolia</i> *	Paddy's Lucern	+			
Oleaceae	<i>Ligustrum lucidum</i> *	Large-leaved Privet		+		+
	<i>Ligustrum sinense</i> *	Small-leaved Privet		+		+
Phytolaccaceae	<i>Phytolacca octandra</i> *	Inkbush		+		
Plantaginaceae	<i>Plantago lanceolata</i> *	Plantane	+			+
Polygonaceae	<i>Persicaria deippiens</i>	Slender Knotweed				+
	<i>Polygonum aviculare</i> *	Wireweed	+			
	<i>Rumex conglomeratus</i> *	Clustered Dock				+
Primulaceae	<i>Anagalis arvensis</i> *	Scarlet Pimpernell				+
Rosaceae	<i>Rubis fruticosus</i> *	Blackberry				+
Scrophulariaceae	<i>Veronica plebia</i>	Speedwell			+	
Solanaceae	<i>Cestrum nocturnum</i> *	Cestrum		+		
	<i>Solanum americanum</i> *		+			
	<i>Solanum prinophyllum</i>			+		
	<i>Solanum pseudocapsicum</i> *	Pseudocapsicum		+		
Verbenaceae	<i>Verbena bonariensis</i> *	Purpletop	+			+

Key: * Indicates exotic species.

Appendix B

Fauna Species List

This fauna species list is an indication of the species present in the locality, and which may be present in the study area, although are not likely on the subject site.

Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE; SEARCHED WITHIN BAULKHAM HILLS LGA

Family Name	Scientific Name	Common Name	Legal Status	Count
Amphibia				
Bufonidae	<i>Bufo marinus</i> *	Cane Toad	U	1
Hylidae	<i>Litoria caerulea</i>	Green Tree Frog	P	1
	<i>Litoria dentata</i>	Bleating Tree Frog	P	2
	<i>Litoria fallax</i>	Eastern Dwarf Tree Frog	P	20
	<i>Litoria latopalmata</i>	Broad-palmed Frog	P	4
	<i>Litoria lesueuri</i>	Lesueur's Frog	P	2
	<i>Litoria peronii</i>	Peron's Tree Frog	P	21
	<i>Litoria phyllochroa</i>	Leaf-green Tree Frog	P	2
	<i>Litoria verreauxii</i>	Verreaux's Frog	P	18
Myobatrachidae	<i>Crinia signifera</i>	Common Eastern Froglet	P	79
	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	3
	<i>Limnodynastes dumerilii</i>	Eastern Banjo Frog	P	3
	<i>Limnodynastes peronii</i>	Brown-striped Frog	P	30
	<i>Limnodynastes tasmaniensis</i>	Spotted Grass Frog	P	5
	<i>Pseudophryne australis</i>	Red-crowned Toadlet	V	34
	<i>Pseudophryne bibronii</i>	Bibron's Toadlet	P	5
	<i>Uperoleia laevisgata</i>	Smooth Toadlet	P	13
Aves				
Acanthizidae	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	P	3
	<i>Acanthiza lineata</i>	Striated Thornbill	P	49
	<i>Acanthiza nana</i>	Yellow Thornbill	P	26
	<i>Acanthiza pusilla</i>	Brown Thornbill	P	68
	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill	P	5
		Chestnut-rumped		
	<i>Calamanthus pyrrhopygius</i>	Heathwren	P	3
	<i>Gerygone mouki</i>	Brown Gerygone	P	59
	<i>Gerygone olivacea</i>	White-throated Gerygone	P	11
	<i>Origma solitaria</i>	Rockwarbler	P	11

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Accipitridae	<i>Sericornis frontalis</i>	White-browed Scrubwren	P	246
	<i>Sericornis magnirostris</i>	Large-billed Scrubwren	P	1
	<i>Smicrornis brevirostris</i>	Weebill	P	10
	<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk	P	2
	<i>Accipiter fasciatus</i>	Brown Goshawk	P	8
	<i>Accipiter novaehollandiae</i>	Grey Goshawk	P	9
	<i>Aquila audax</i>	Wedge-tailed Eagle	P	11
	<i>Aviceda subcristata</i>	Pacific Baza	P	10
	<i>Circus assimilis</i>	Spotted Harrier	P	1
	<i>Elanus axillaris</i>	Black-shouldered Kite	P	6
	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	P	4
	<i>Haliastur sphenurus</i>	Whistling Kite	P	2
	<i>Hieraaetus morphnoides</i>	Little Eagle	P	2
	<i>Lophoictinia isura</i>	Square-tailed Kite	V	1
	<i>Milvus migrans</i>	Black Kite	P	2
	<i>Pandion haliaetus</i>	Osprey	V	1
Aegothelidae	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar	P	35
Alaudidae	<i>Alauda arvensis*</i>	Eurasian Skylark	U	1
Alcedinidae	<i>Alcedo azurea</i>	Azure Kingfisher	P	6
	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	P	114
	<i>Todiramphus sanctus</i>	Sacred Kingfisher	P	18
Anatidae	<i>Anas castanea</i>	Chestnut Teal	P	12
	<i>Anas gracilis</i>	Grey Teal	P	2
	<i>Anas platyrhynchos*</i>	Mallard	U	4
	<i>Anas superciliosa</i>	Pacific Black Duck	P	37
	<i>Aythya australis</i>	Hardhead	P	2
	<i>Chenonetta jubata</i>	Australian Wood Duck	P	49
	<i>Cygnus atratus</i>	Black Swan	P	2
	<i>Stictonetta naevosa</i>	Freckled Duck	V	1
Anhingidae	<i>Anhinga melanogaster</i>	Darter	P	2
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	P	3
	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	10
Ardeidae	<i>Ardea alba</i>	Great Egret	P	5

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Artamidae	<i>Ardea intermedia</i>	Intermediate Egret	P	1
	<i>Ardea pacifica</i>	White-necked Heron	P	2
	<i>Botaurus poiciloptilus</i>	Australasian Bittern	V	1
	<i>Bubulcus ibis</i>	Cattle Egret	P	13
	<i>Egretta novaehollandiae</i>	White-faced Heron	P	12
	<i>Ixobrychus flavicollis</i>	Black Bittern	V	5
	<i>Nycticorax caledonicus</i>	Nankeen Night Heron	P	2
	<i>Artamus cyanopterus</i>	Dusky Woodswallow	P	11
		White-breasted		
	<i>Artamus leucorhynchus</i>	Woodswallow	P	1
	<i>Artamus personatus</i>	Masked Woodswallow	P	2
		White-browed		
	<i>Artamus superciliosus</i>	Woodswallow	P	3
	<i>Cracticus nigrogularis</i>	Pied Butcherbird	P	6
Cacatuidae	<i>Cracticus torquatus</i>	Grey Butcherbird	P	76
	<i>Gymnorhina tibicen</i>	Australian Magpie	P	107
	<i>Strepera graculina</i>	Pied Currawong	P	101
	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	P	67
	<i>Cacatua sanguinea</i>	Little Corella	P	10
	<i>Cacatua tenuirostris</i>	Long-billed Corella	P	12
	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V	14
		Yellow-tailed Black-		
	<i>Calyptorhynchus funereus</i>	Cockatoo	P	23
	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V	37
Campephagidae	<i>Eolophus roseicapillus</i>	Galah	P	54
		Black-faced Cuckoo-		
	<i>Coracina novaehollandiae</i>	shrike	P	64
		White-bellied Cuckoo-		
	<i>Coracina papuensis</i>	shrike	P	6
	<i>Coracina tenuirostris</i>	Cicadabird	P	13
	<i>Lalage tricolor</i>	White-winged Triller	P	1
Caprimulgidae	<i>Eurostopodus mystacalis</i>	White-throated Nightjar	P	8
Charadriidae	<i>Vanellus miles</i>	Masked Lapwing	P	52
Cisticolidae	<i>Cisticola exilis</i>	Golden-headed Cisticola	P	5

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Climacteridae	<i>Climacteris picumnus</i>	Brown Treecreeper	V	1
		White-throated		
	<i>Cormobates leucophaea</i>	Treecreeper	P	106
Columbidae	<i>Chalcophaps indica</i>	Emerald Dove	P	2
	<i>Columba leucomela</i>	White-headed Pigeon	P	6
	<i>Columba livia*</i>	Rock Dove	U	8
	<i>Geopelia humeralis</i>	Bar-shouldered Dove	P	9
	<i>Geopelia placida</i>	Peaceful Dove	P	13
	<i>Leucosarcia melanoleuca</i>	Wonga Pigeon	P	14
	<i>Macropygia amboinensis</i>	Brown Cuckoo-Dove	P	12
	<i>Ocyphaps lophotes</i>	Crested Pigeon	P	43
	<i>Phaps chalcoptera</i>	Common Bronzewing	P	16
	<i>Streptopelia chinensis*</i>	Spotted Turtle-Dove	U	76
Coraciidae	<i>Eurystomus orientalis</i>	Dollarbird	P	18
Corcoracidae	<i>Corcorax melanorhamphos</i>	White-winged Chough	P	7
Corvidae	<i>Corvus coronoides</i>	Australian Raven	P	109
Cuculidae	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	P	34
	<i>Cacomantis variolosus</i>	Brush Cuckoo	P	4
		Horsfield's Bronze-		
	<i>Chalcites basalis</i>	Cuckoo	P	1
	<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo	P	8
	<i>Cuculus pallidus</i>	Pallid Cuckoo	P	6
	<i>Cuculus saturatus</i>	Oriental Cuckoo	P	3
	<i>Eudynamys orientalis</i>	Pacific Koel	P	21
	<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo	P	7
Dicaeidae	<i>Dicaeum hirundinaceum</i>	Mistletoebird	P	25
Dicruridae	<i>Dicrurus bracteatus</i>	Spangled Drongo	P	1
	<i>Grallina cyanoleuca</i>	Magpie-lark	P	83
	<i>Monarcha melanopsis</i>	Black-faced Monarch	P	8
	<i>Monarcha trivirgatus</i>	Spectacled Monarch	P	1
	<i>Myiagra cyanoleuca</i>	Satin Flycatcher	P	6
	<i>Myiagra inquieta</i>	Restless Flycatcher	P	12
	<i>Myiagra rubecula</i>	Leaden Flycatcher	P	11

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
	<i>Rhipidura albiscapa</i>	Grey Fantail	P	109
	<i>Rhipidura leucophrys</i>	Willie Wagtail	P	67
	<i>Rhipidura rufifrons</i>	Rufous Fantail	P	20
		Chestnut-breasted		
Estrildidae	<i>Lonchura castaneothorax</i>	Mannikin	P	1
	<i>Lonchura punctulata*</i>	Nutmeg Mannikin	U	8
	<i>Neochmia modesta</i>	Plum-headed Finch	P	1
	<i>Neochmia temporalis</i>	Red-browed Finch	P	332
	<i>Stagonopleura bella</i>	Beautiful Firetail	P	1
	<i>Taeniopygia bichenovii</i>	Double-barred Finch	P	15
	<i>Taeniopygia guttata</i>	Zebra Finch	P	2
Eupetidae	<i>Cinclosoma punctatum</i>	Spotted Quail-thrush	P	2
	<i>Psophodes olivaceus</i>	Eastern Whipbird	P	81
Falconidae	<i>Falco berigora</i>	Brown Falcon	P	6
	<i>Falco cenchroides</i>	Nankeen Kestrel	P	4
	<i>Falco longipennis</i>	Australian Hobby	P	6
	<i>Falco peregrinus</i>	Peregrine Falcon	P	2
	<i>Falco subniger</i>	Black Falcon	P	1
Fringillidae	<i>Carduelis carduelis*</i>	European Goldfinch	U	1
Hirundinidae	<i>Cheramoeca leucosterna</i>	White-backed Swallow	P	2
	<i>Hirundo neoxena</i>	Welcome Swallow	P	62
	<i>Petrochelidon ariel</i>	Fairy Martin	P	2
Laridae	<i>Larus novaehollandiae</i>	Silver Gull	P	5
Maluridae	<i>Malurus cyaneus</i>	Superb Fairy-wren	P	173
	<i>Malurus lamberti</i>	Variegated Fairy-wren	P	57
	<i>Stipiturus malachurus</i>	Southern Emu-wren	P	1
Meliphagidae	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill	P	196
	<i>Anthochaera carunculata</i>	Red Wattlebird	P	45
	<i>Anthochaera chrysoptera</i>	Little Wattlebird	P	49
	<i>Entomyzon cyanotis</i>	Blue-faced Honeyeater	P	1
	<i>Lichenostomus chrysops</i>	Yellow-faced Honeyeater	P	136
	<i>Lichenostomus fuscus</i>	Fuscous Honeyeater	P	10
	<i>Lichenostomus leucotis</i>	White-eared Honeyeater	P	33

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
	<i>Lichenostomus melanops</i>	Yellow-tufted Honeyeater	P	72
		White-plumed		
	<i>Lichenostomus penicillatus</i>	Honeyeater	P	9
	<i>Manorina melanocephala</i>	Noisy Miner	P	111
	<i>Manorina melanophrys</i>	Bell Miner	P	344
	<i>Meliphaga lewinii</i>	Lewin's Honeyeater	P	117
		Brown-headed		
	<i>Melithreptus brevirostris</i>	Honeyeater	P	4
		Black-chinned		
		Honeyeater (eastern		
	<i>Melithreptus gularis gularis</i>	subspecies)	V	1
	<i>Melithreptus lunatus</i>	White-naped Honeyeater	P	36
	<i>Myzomela sanguinolenta</i>	Scarlet Honeyeater	P	10
	<i>Philemon citreogularis</i>	Little Friarbird	P	1
	<i>Philemon corniculatus</i>	Noisy Friarbird	P	36
		White-cheeked		
	<i>Phylidonyris niger</i>	Honeyeater	P	53
	<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	P	27
	<i>Xanthomyza phrygia</i>	Regent Honeyeater	E1	1
Menuridae	<i>Menura novaehollandiae</i>	Superb Lyrebird	P	11
Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	P	4
Motacillidae	<i>Anthus australis</i>	Australian Pipit	P	2
Muscicapidae	<i>Turdus merula*</i>	Eurasian Blackbird	U	36
	<i>Zoothera lunulata</i>	Bassian Thrush	P	2
	<i>Zoothera sp.</i>	unidentified ground thrush	P	4
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	P	14
Oriolidae	<i>Oriolus sagittatus</i>	Olive-backed Oriole	P	35
	<i>Sphecotheres vieilloti</i>	Australasian Figbird	P	1
Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	P	85
	<i>Falcunculus frontatus</i>	Eastern Shrike-tit	P	11
	<i>Pachycephala pectoralis</i>	Golden Whistler	P	107
	<i>Pachycephala rufiventris</i>	Rufous Whistler	P	23
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote	P	112
	<i>Pardalotus striatus</i>	Striated Pardalote	P	18

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Passeridae	<i>Passer domesticus</i> *	House Sparrow	U	44
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican	P	4
Petroicidae	<i>Eopsaltria australis</i>	Eastern Yellow Robin	P	244
	<i>Melanodryas cucullata</i>	Hooded Robin	V	1
	<i>Microeca fascinans</i>	Jacky Winter	P	5
	<i>Petroica boodang</i>	Scarlet Robin	P	3
	<i>Petroica goodenovii</i>	Red-capped Robin	P	1
	<i>Petroica phoenicea</i>	Flame Robin	P	3
	<i>Petroica rosea</i>	Rose Robin	P	14
Phalacrocoracidae	<i>Phalacrocorax carbo</i>	Great Cormorant	P	6
	<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant	P	8
	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	P	6
Phasianidae	<i>Coturnix ypsilophora</i>	Brown Quail	P	6
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth	P	37
	<i>Tachybaptus</i>			
Podicipedidae	<i>novaehollandiae</i>	Australasian Grebe	P	11
Psittacidae	<i>Alisterus scapularis</i>	Australian King-Parrot	P	38
	<i>Barnardius zonarius</i>	Australian Ringneck	P	1
	<i>Barnardius zonarius barnardi</i>	[Mallee Ringneck]	P	1
	<i>Glossopsitta concinna</i>	Musk Lorikeet	P	12
	<i>Glossopsitta pusilla</i>	Little Lorikeet	P	6
	<i>Lathamus discolor</i>	Swift Parrot	E1	11
	<i>Northiella haematogaster</i>	Blue Bonnet	P	1
	<i>Platycercus adscitus eximius</i>	Eastern Rosella	P	97
	<i>Platycercus elegans</i>	Crimson Rosella	P	76
	<i>Polytelis swainsonii</i>	Superb Parrot	V	2
	<i>Psephotus haematonotus</i>	Red-rumped Parrot	P	25
	<i>Trichoglossus chlorolepidotus</i>	Scaly-breasted Lorikeet	P	10
	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	P	77
Ptilonorhynchidae	<i>Ptilonorhynchus violaceus</i>	Satin Bowerbird	P	86
	<i>Sericulus chrysocephalus</i>	Regent Bowerbird	P	1
Pycnonotidae	<i>Pycnonotus jocosus</i> *	Red-whiskered Bulbul	U	79

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Rallidae	<i>Fulica atra</i>	Eurasian Coot	P	5
	<i>Gallinula tenebrosa</i>	Dusky Moorhen	P	24
	<i>Gallirallus philippensis</i>	Buff-banded Rail	P	1
	<i>Lewinia pectoralis</i>	Lewin's Rail	P	1
	<i>Porphyrio porphyrio</i>	Purple Swampphen	P	14
	<i>Porzana tabuensis</i>	Spotless Crake	P	1
Scolopacidae	<i>Gallinago hardwickii</i>	Latham's Snipe	P	2
Strigidae	<i>Ninox boobook</i>	Southern Boobook	P	28
	<i>Ninox connivens</i>	Barking Owl	V	3
	<i>Ninox strenua</i>	Powerful Owl	V	46
Sturnidae	<i>Acridotheres tristis*</i>	Common Myna	U	79
	<i>Sturnus vulgaris*</i>	Common Starling	U	37
Sylviidae	<i>Acrocephalus australis</i>	Australian Reed-Warbler	P	5
Threskiornithidae	<i>Platalea flavipes</i>	Yellow-billed Spoonbill	P	1
	<i>Platalea regia</i>	Royal Spoonbill	P	1
	<i>Plegadis falcinellus</i>	Glossy Ibis	P	1
	<i>Threskiornis molucca</i>	Australian White Ibis	P	1
	<i>Threskiornis spinicollis</i>	Straw-necked Ibis	P	1
Turnicidae	<i>Turnix varia</i>	Painted Button-quail	P	3
Tytonidae	<i>Tyto alba</i>	Barn Owl	P	7
	<i>Tyto novaehollandiae</i>	Masked Owl	V	7
	<i>Tyto tenebricosa</i>	Sooty Owl	V	7
Zosteropidae	<i>Zosterops lateralis</i>	Silvereye	P	299
Gastropoda				
		Cumberland Plain Land		
Camaenidae	<i>Meridolum corneovirens</i>	Snail	E1	16
Helicidae	<i>Helix aspersa*</i>	Brown gardensnail	U	8
			Legal	
	Scientific Name	Common Name	Status	Count
Mammalia				
Acrobatidae	<i>Acrobates pygmaeus</i>	Feathertail Glider	P	5
Bovidae	<i>Bos taurus*</i>	European cattle	U	8

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Canidae	<i>Canis lupus familiaris</i> *	Dog	U	10
	<i>Canis lupus</i> *	Dingo, domestic dog	U	20
	<i>Vulpes vulpes</i> *	Fox	U	38
Dasyuridae	<i>Antechinus flavipes</i>	Yellow-footed Antechinus	P	1
	<i>Antechinus sp.</i>	Unidentified Antechinus	P	1
	<i>Antechinus stuartii</i>	Brown Antechinus	P	36
	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	2
Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	2
Equidae	<i>Equus caballus</i> *	Horse	U	6
Felidae	<i>Felis catus</i> *	Cat	U	13
Leporidae	<i>Oryctolagus cuniculus</i> *	Rabbit	U	63
Macropodidae	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	P	19
	<i>Macropus sp.</i>	kangaroo	P	1
	<i>Wallabia bicolor</i>	Swamp Wallaby	P	52
Molossidae	<i>Mormopterus "Species 2"</i>	Undescribed Freetail Bat	P	13
		Little Northern Freetail-bat		
	<i>Mormopterus loriae</i>	bat	P	4
	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V	16
	<i>Mormopterus norfolkensis/sp 1</i>	Unidentified Mastiff-bat	P	1
	<i>Tadarida australis</i>	White-striped Freetail-bat	P	25
Muridae	<i>Mus musculus</i> *	House Mouse	U	14
	<i>Rattus fuscipes</i>	Bush Rat	P	19
	<i>Rattus rattus</i> *	Black Rat	U	40
	<i>Rattus sp.</i>	rat	P	2
Peramelidae	<i>Isoodon/Perameles sp.</i>	unidentified Bandicoot	P	4
	<i>Perameles nasuta</i>	Long-nosed Bandicoot	P	5
Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider	V	92
	<i>Petaurus breviceps</i>	Sugar Glider	P	61
	<i>Petaurus norfolkensis</i>	Squirrel Glider	V	1
Phalangeridae	<i>Trichosurus caninus</i>	Short-eared Possum	P	1
	<i>Trichosurus sp.</i>	brush-tail possum	P	9
	<i>Trichosurus vulpecula</i>	Common Brushtail	P	41

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
		Possum		
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	V	6
Pseudocheiridae	<i>Petauroides volans</i>	Greater Glider	P	3
	<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	P	73
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	17
	<i>Pteropus scapulatus</i>	Little Red Flying-fox	P	1
Suidae	<i>Sus scrofa</i> *	Pig	U	1
Tachyglossidae	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	P	10
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	P	43
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat	P	25
	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	4
	<i>Miniopterus schreibersii</i>			
	<i>oceanensis</i>	Eastern Bentwing-bat	V	28
	<i>Myotis adversus</i>	Large-footed Myotis	V	1
	<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	P	6
	<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat	P	17
	<i>Nyctophilus sp.</i>	long-eared bat	P	6
	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	6
	<i>Scotorepens orion</i>	Eastern Broad-nosed Bat	P	10
	<i>Vespadelus darlingtoni</i>	Large Forest Bat	P	5
	<i>Vespadelus pumilus</i>	Eastern Forest Bat	P	2
	<i>Vespadelus regulus</i>	Southern Forest Bat	P	5
	<i>Vespadelus sp.</i>	Unidentified Eptesicus	P	1
	<i>Vespadelus vulturnus</i>	Little Forest Bat	P	51
Vombatidae	<i>Vombatus ursinus</i>	Common Wombat	P	13
Reptilia				
Agamidae	<i>Amphibolurus muricatus</i>	Jacky Lizard	P	3
	<i>Physignathus lesueurii</i>	Eastern Water Dragon	P	16
	<i>Pogona barbata</i>	Bearded Dragon	P	6
Boidae	<i>Morelia spilota spilota</i>	Diamond Python	P	1
		Eastern Snake-necked		
Chelidae	<i>Chelodina longicollis</i>	Turtle	P	7
Elapidae	<i>Cacophis squamulosus</i>	Golden-crowned Snake	P	2
	<i>Demansia psammophis</i>	Yellow-faced Whip Snake	P	1

**Table B.1 FAUNA SPECIES LIST FROM THE DECC ATLAS OF NSW WILDLIFE;
SEARCHED WITHIN BAULKHAM HILLS LGA**

Family Name	Scientific Name	Common Name	Legal Status	Count
Gekkonidae	<i>Furina diadema</i>	Red-naped Snake	P	1
	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake	P	12
	<i>Pseudonaja textilis</i>	Eastern Brown Snake	P	2
	<i>Diplodactylus vittatus</i>	Wood Gecko	P	6
	<i>Oedura lesueurii</i>	Lesueur's Velvet Gecko	P	3
	<i>Phyllurus platurus</i>	Broad-tailed Gecko	P	13
	<i>Underwoodisaurus milii</i>	Thick-tailed Gecko	P	6
Scincidae	<i>Acritoscincus platynota</i>	Red-throated Skink	P	1
	<i>Anomalopus swansoni</i>	Punctate Worm-skink	P	1
	<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink	P	10
	<i>Ctenotus robustus</i>	Robust Ctenotus	P	7
	<i>Ctenotus taeniolatus</i>	Copper-tailed Skink	P	19
	<i>Egernia cunninghami</i>	Cunningham's Skink	P	4
	<i>Egernia whitii</i>	White's Skink	P	2
	<i>Eulamprus quoyii</i>	Eastern Water-skink	P	32
	<i>Eulamprus tenuis</i>	Barred-sided Skink	P	5
	<i>Lampropholis delicata</i>	Dark-flecked Garden Sunskink	P	40
	<i>Lampropholis guichenoti</i>	Pale-flecked Garden Sunskink	P	24
	<i>Lampropholis sp.</i>	unidentified grass skink	P	4
	<i>Lygisaurus foliorum</i>	Tree-base Litter-skink	P	6
	<i>Saiphos equalis</i>	Three-toed Skink	P	8
	<i>Saproscincus mustelinus</i>	Weasel Skink	P	1
	<i>Tiliqua scincoides</i>	Eastern Blue-tongue	P	9
Typhlopidae	<i>Ramphotyphlops nigrescens</i>	Blackish Blind Snake	P	1
Varanidae	<i>Varanus varius</i>	Lace Monitor	P	9

Appendix C

Assessments of Significance

C.1 Fauna Species

C.1.1 Square-tailed Kite (*Lophoictinia isura*)

Background

The Square Tailed Kite is a medium sized raptorial bird species, specialised as a predator on passerine bird nestlings and canopy insects. It is characterised by its broadly barred "fingertips" on its wings. This species inhabits a variety of timbered habitats, but shows particular preference to wooded waterways. The Square-tailed Kite is listed as Vulnerable on Schedule 2 of the TSC Act. The species was listed mainly due to its ecological specialisation and poor recovery potential. It is also listed as Migratory under the EPBC Act. Migratory means that the family or species is subject to international agreements.

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The Square-tailed Kite breeds from July to November. The large, loose nest consists of sticks, 15-25 m up in leafy trees. It is not likely that this species nests on the subject site due to the lack of watercourses and it was not observed nesting there at the time of the site inspection. Although the species may forage over the study area from time to time, it is not likely that the proposed development concept will have an adverse impact on the life cycle of the species such that a viable local population is placed at risk of extinction.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

There are no endangered populations of the Square-tailed Kite listed under the TSC Act.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The area of potential habitat to be removed as part of the proposed action is limited to a small number of *Eucalyptus* trees and expanse of exotic pasture which would provide suboptimal foraging habitat.

The proposal will not further fragment or isolate the potential habitat for this species that occurs on the subject land as potential habitat exists only as an isolated patch of remnant trees. The nearby bushland at Caddies Creek provides higher quality habitat in the locality.

The habitat that will be removed as a result of the proposal cannot be considered important for this species, due to its isolated nature and as it is not known if the species occurs in the study area. The nearby bushland at Caddies Creek provides higher quality habitat in the locality.

(e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).*

No critical habitat for this species has currently been identified by the Director-General of the DECC.

(f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

A recovery plan has not been prepared for this species.

No threat abatement plans are relevant to this species.

(g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

The proposal constitutes the key threatening process of Clearing of native vegetation. However, this process is not likely to affect this species as the proposed action will only result in the removal of a small strip of trees from the already isolated vegetation. Higher quality habitat in the locality exists at Caddies Creek only 300m from the subject site.

The following key threatening processes may be increased by the proposal:

- Predation by feral cats; and

- Ecological consequences of high frequency fires.

As this species spends the majority of its time in the canopy, the threat of predation by feral cats can be considered to be low. Habitat can be changed if there is a high frequency of fire; however, this is not likely to increase as the subject land is already isolated and likely to be subject to a low fire threat.

Conclusion

The species is not known to occur and has not been detected in the study area. The species inhabits woodland surrounding watercourses. Such habitat is not located within the study site, so the proposal is not likely to have an adverse effect on a local population of this species. There will be clearing of potential habitat, however absence of a watercourse in the vicinity of the area to be cleared and the presence of higher quality habitat at the nearby Caddies Creek makes it very unlikely that the subject site is significantly important to the species in the locality. No significant impact on this species is likely.

C.1.2 Gang-gang Cockatoo

Background

The range of the Gang-gang Cockatoo once stretched from Adelaide to southern Queensland, however this has now contracted to an area concentrated on the western slopes of the Great Dividing Range. The current distribution of this species is patchy, with non-breeding flocks sometimes converging on coastal woodlands, outside their normal breeding range. The Gang-gang Cockatoo is listed as Vulnerable in Part 1 of Schedule 1 of the TSC Act⁸. The Gang-gang Cockatoo is also listed as Endangered under the EPBC Act.

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The Gang-gang Cockatoo occurs in temperate eucalypt woodland and open forest. A small amount of potential habitat exists in the subject land, however the area set to be affected by the proposed action only constitutes marginal habitat. As the species has not been detected within the study area, and the species favours old growth forests for nesting and roosting, the removal of trees as part of the proposed action is unlikely to have an adverse effect on the species such that a viable local population is placed at risk of extinction.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

There are no endangered populations of the Gang-gang Cockatoo listed under the TSC Act.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The area of potential habitat to be removed as part of the proposed action is limited to a small number of *Eucalypt* trees which may provide foraging habitat.

The proposal will not further fragment or isolate the potential habitat for this species that occurs on the subject land as potential habitat consists of isolated trees. Compared to the higher quality habitat at Caddies Creek only 300m from the study site, the size of the habitat to be removed as a result of the proposed action is not significant.

The habitat that will be removed as a result of the proposal cannot be considered important for this species, due to its isolated nature and as it is not known if the species occurs in the study area. Potential habitat of better quality at Caddies Creek only 300m from the study site.

- (e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).*

No critical habitat for this species has currently been identified by the Director-General of the DECC.

- (f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

No threat abatement plans are relevant to this species.

- (g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

The proposal constitutes the key threatening process of clearing of native vegetation. However, this process is not likely to affect this species as other higher quality potential habitat exists close to the subject site at Caddies Creek.

The following key threatening processes may be increased by the proposal:

- Predation by feral cats; and
- Competition and grazing by the feral European rabbit.

As this species spends the majority of its time in the canopy, the threat of predation by feral cats can be considered to be low. The main threat is a loss of habitat, which besides habitat clearance, can occur through over-grazing by feral rabbits preventing the regeneration of habitat. The area of habitat to be affected by the proposed action is not significant in the locality as there is a quality area of bushland at Caddies Creek only 300m from the subject site.

Conclusion

The species is not known to occur and has not been detected on the subject land. Potential habitat does occur on the subject site but is also contained outside the proposed development area and so the proposal is not likely to have an adverse effect on a local population of this species. Clearing of potential habitat will occur associated with the proposed development, however the area to be affected is not of value for the species, and the higher quality potential habitat at Caddies Creek is more likely to contribute to the viability of this species in the locality. No significant impact is likely on this species and no Species Impact Statement is required.

C.1.3 Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*), Eastern Freetail-bat (*Mormopterus norfolkensis*), Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Large-footed Myotis (*Myotis adversus*), Greater Broad-nosed Bat (*Scoteanax rueppellii*), Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*), Greater Broad-nosed Bat (*Scroteanax ruepellii*)

Background

Microchiropteran bats are a diverse group of bats ranging in size from 3-40 grams, but which have in common several aspects of their ecology. Six threatened microchiropteran bat species have been recorded in the Baulkham Hills LGA and have the potential to occur on the subject land. These bat species can be addressed collectively, due to their common potential use of the study area as roosting habitat. Additionally, most of these species

prefer roosting trees associated with water, for example streams and ponds, near which these species forage. The Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*) differs from the other bats in this group in that it does not usually use tree hollows as roosting habitat. These species are listed as Vulnerable in Part 1 of Schedule 2 of the TSC Act.

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The proposed development will involve the removal of trees which have the potential to form hollows and provide potential habitat for microchiropteran bat species. However, the removal of this narrow strip of remnant trees is not likely to have an adverse effect on these species in this locality. These species are highly mobile and not likely to be impacted by the removal of these trees.

A viable population of Eastern Bentwing Bat is not likely to be affected by the proposed development as the species would only use the study area for foraging.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

There are no populations of these microchiropteran bat species listed as endangered under the TSC Act.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*
- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*
- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and*
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and*

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The proposed development will result in the removal of the edge of an isolated patch of remnant trees. *Eucalyptus* trees have the potential to form hollows and provide foraging and nesting habitat. However, no hollow bearing trees were observed, hence the likelihood of the proposed development adversely affecting habitat of these species is not significant.

The proposal will not further fragment or isolate the potential habitat for these species.

The habitat to be removed consists of the edge of an isolated patch of remnant trees. No hollow bearing trees were found, hence this is unlikely to constitute important habitat for these species.

(e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

No critical habitat for these species has currently been identified by the Director-General of the DECC.

(f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

Recovery plans have not been prepared for these species.

No threat abatement plans are relevant to these species.

(g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The proposal constitutes the key threatening process of clearing of native vegetation. However, these processes are not likely to affect these species as other potential habitat exists outside the subject site and will not be subject to clearance.

The key threatening process of competition from feral honeybees may be increased by the proposal. Although *Eucalyptus* trees have the potential to form hollows, the likelihood that the proposal will decrease roosting habitat through competition with feral honeybees for future tree hollows is not significant.

Conclusion

Potential roosting and foraging habitat for the majority of these species occurs in areas to be removed as part of the proposed action. However, the extent of potential habitat to be removed will be small, and better quality habitat exists in the locality at Caddies Creek. No significant impact is likely on this species and no Species Impact Statement is required.

C.1.4 Koala (*Phascolarctos cinereus*)

Background

The Koala has a disjunct distribution within eucalypt woodlands and forests over much of the eastern portion of Australia from north-east Queensland to South Australia and extending west of the Great Dividing Range, where it is concentrated mainly along inland rivers. It mainly occurs on the central and northern coast in NSW, where it feeds on a variety of *Eucalyptus* species. The Koala is listed as Vulnerable on Schedule 2 of the TSC Act.

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The Koala has not been recorded in the study area, however potential habitat is present in the isolated patch of remnant trees, where the preferred feed tree Forest Red Gum (*Eucalyptus tereticornis*) is present. The proposed action involves the removal of several trees, including several *E. tereticornis* specimens. However, these trees survive as part of a small isolated patch of remnant vegetation. The lack of any corridors connecting this patch to nearby habitat is likely to deter access of Koalas to the trees to be removed as part of the proposed action. Therefore the proposed development will not have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

There are endangered populations of Koala listed on the TSC Act, however, the ranges of these populations do not cover the locality.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*
- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
 - (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The area of potential habitat to be removed as part of the proposed action is limited to a small number of *Eucalyptus* trees which are unlikely to provide potential foraging habitat.

The small strip of trees to be removed as part of the proposed action will not further fragment or isolate the potential habitat for this species that occurs on the subject land.

The habitat that will be removed as a result of the proposal cannot be considered important for this species, due to its isolated nature and as it is not known if the species occurs in the study area. Potential habitat of better quality occurs within 300m of the subject land.

(e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).*

No critical habitat for this species has currently been identified by the Director-General of the DECC.

(f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

A recovery plan has been drafted for the Koala. The main objective of this plan is to reverse the decline of the species in the state and maintain healthy and breeding populations in their current range. Specific Objectives of the recovery plan that are applicable to this proposal are:

- 1. To conserve Koalas in their existing habitat; and
- 2. To rehabilitate and restore Koala habitat and populations.

The proposal involves the removal of a narrow strip of trees from the edge of an isolated patch of remnant trees, an area of potential habitat containing the preferred feed tree *Eucalyptus tereticornis*. The trees to be removed as part of the proposed action only provide a small area of potential habitat compared with the habitat located within 300m at Caddies Creek which is being managed in the long term.

The Red Fox Threat Abatement Plan is relevant to this species⁶. The following objectives of the plan are relevant to the proposal:

- Ensure that fox control programmes undertaken for conservation purposes in New South Wales focus on those threatened species which are most likely to be impacted by fox predation; and
- Ensure that fox control programmes are effective in minimising the impacts of fox predation on targeted threatened species.

The Koala is not a priority species for conservation from fox predation according to the threat abatement plan. However, it is a species that may be preyed upon by foxes and is likely to benefit from fox control.

The proposed development may exacerbate the potential impacts from foxes on this species if control is not undertaken to deter foxes from the area. However, fox control on the subject land is considered inappropriate due to the proximity of residential areas and ineffective due to the high probability of reintroduction from neighbouring properties.

- (g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

The proposal constitutes the key threatening process of Clearing of Native Vegetation. However, this process is not likely to affect this species as the vegetation to be cleared represents a very small proportion of potential habitat for the Koala compared to the potential habitat provided in the study area.

The following key threatening processes may be increased by the proposal:

- Predation by feral cats;
- Predation by the European red fox;
- Ecological consequences of high frequency fire;

There is a direct threat of predation from foxes and cats. Habitat can be changed if there is a high frequency of fire; however, this is not likely to increase as the subject land is already isolated and likely to be subject to a low fire threat.

Conclusion

This species has not been recorded on the subject land. Some of the trees to be removed represent a preferred tree species for the Koala, however the isolated nature of the trees is likely to prevent them from being used by the species. The nearby bushland at Caddies Creek which is already being managed is of higher quality. No significant impact of the proposed action is likely on this species and no Species Impact Statement is required.

C.1.5 Grey-headed Flying-fox (*Pteropus poliocephalus*)

Background

The Grey-headed Flying-fox is the largest bat in Australia, distributed along the east coast from Bundaberg in Queensland to Melbourne, Victoria. It occurs as far west as the western slopes of the Great Dividing Range in northern NSW. It occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps. Grey-headed Flying-foxes migrate according to the availability of native fruits, nectar and pollen. They roost in large "camps" which are generally within 20km of a food source. The Grey-headed Flying-fox is listed as Vulnerable on Schedule 2 of the TSC Act and Vulnerable under the EPBC Act.

- (a) *In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

The Grey-headed Flying-fox has not been detected in the study area but may use the study area for foraging. The species roosts in known camps and therefore the study area will only be used for foraging. Insignificant areas of foraging habitat will be removed from the subject site compared to the total range used by the species and the large area of quality bushland being managed at the nearby Caddies Creek.

- (b) *In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,*

There are no endangered populations of the Grey-headed Flying-fox listed under the TSC Act.

- (c) *In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable.

- (d) *In relation to the habitat of a threatened species, population or ecological community:*

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The area of potential habitat to be removed as part of the proposed action is limited to a small number of *Eucalypt* trees which may provide potential foraging habitat.

The proposal will not further fragment or isolate the potential habitat for this species that occurs on the subject land. The nearby bushland of higher quality at Caddies Creek provides greater potential foraging habitat.

The habitat that will be removed as a result of the proposal cannot be considered important for this species, due to its isolated nature and the mobility of this species. Potential habitat of better quality occurs at Caddies Creek where a plan of management is being implemented.

(e) *Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).*

No critical habitat for this species has currently been identified by the Director-General of the DECC.

(f) *Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

A recovery plan has not been prepared for this species.

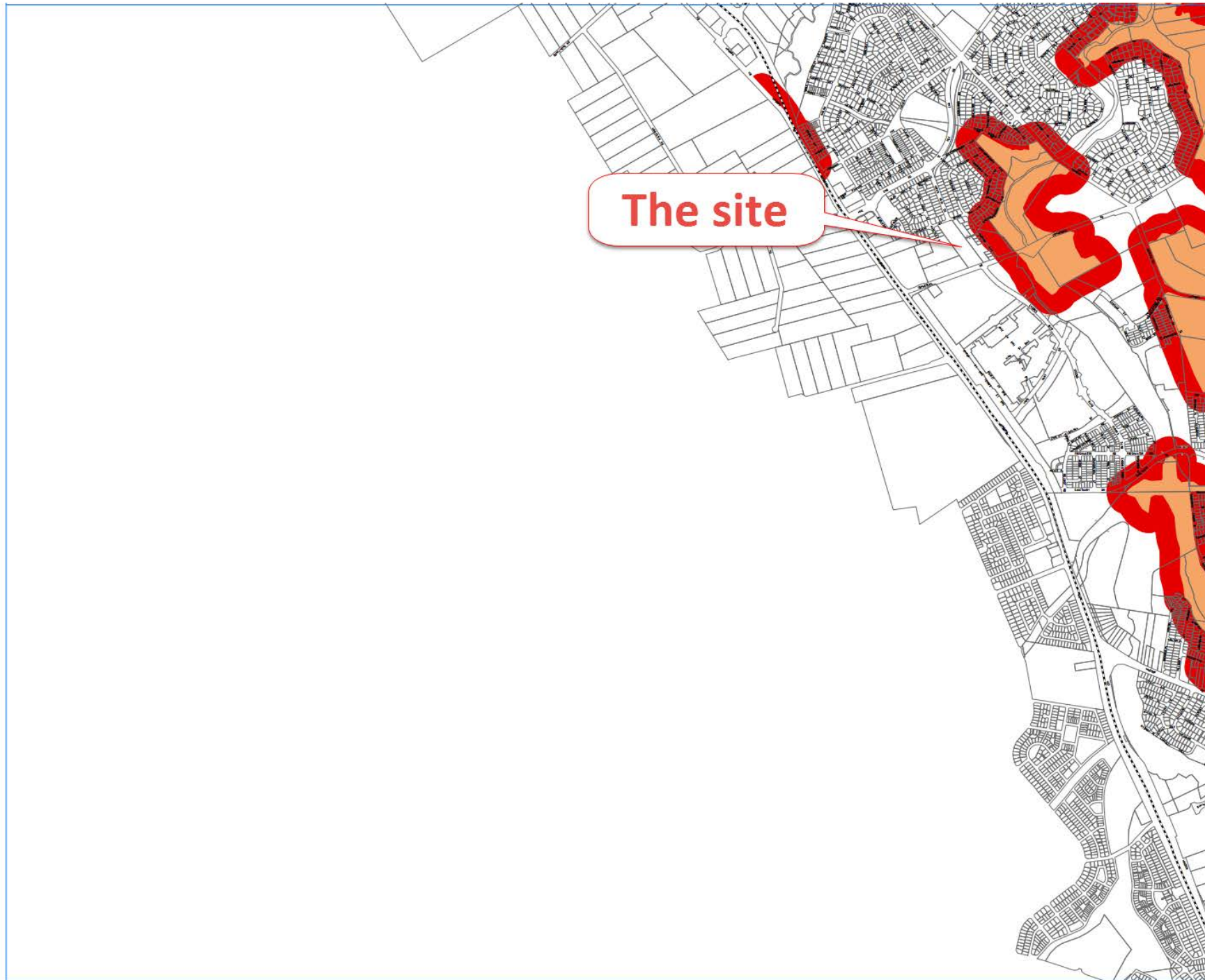
The Red Fox Threat Abatement Plan is relevant to this proposal but not to this species due to the mobility of the species.

(g) *Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

The proposal constitutes the key threatening process of Clearing of native vegetation. However, this process is not likely to affect this species as only a small strip of the existing bushland is to be affected and other potential habitat of higher quality exists within 300m at Caddies Creek.

Conclusion

The subject site only provides potential foraging habitat of a negligible area as part of the total range for this highly mobile species. As such, the proposal is not likely to have an adverse effect on a local population of this species and no species impact statement is necessary.

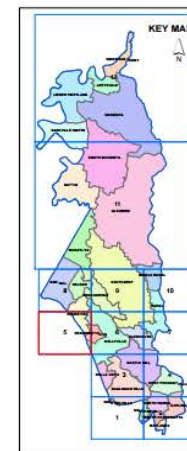
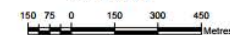


THE HILLS
SHIRE COUNCIL

**SHEET 5
BUSHFIRE PRONE LAND MAP
2012**



SCALE: 1:8,000



Bushfire Prone Land	
	BPFL Vegetation Category 1
	BPFL Vegetation Category 2
	BPFL Vegetation Buffer - 150m and 30m

RFS CERTIFICATION 8/05/2012

NOTE:
THIS LOCAL ENVIRONMENTAL PLAN MAY BE SUBJECT TO AMENDMENT BY SUBSEQUENT LOCAL ENVIRONMENTAL PLANS. ANY PERSON USING THIS PLAN SHOULD CONTACT COUNCIL, SO AS TO ENSURE THAT ANY INFORMATION SHOWN HAS NOT BEEN SUBJECT TO AMENDMENT.
THE HILLS SHIRE COUNCIL DOES NOT GIVE ANY GUARANTEES CONCERNING THE ACCURACY, COMPLETENESS OR CORRECTNESS OF THE TEXTUAL INFORMATION HELD IN OR GENERATED FROM ITS DATABASE.
BASE CADASTRIC COPYRIGHT LAND & PROPERTY INFORMATION NEW SLP. CADASTRIC UPDATE INCLUDING COUNCIL GENERATED DATA IS SUBJECT TO THIS COPYRIGHT.



**PLANNING PROPOSAL
PROPOSED MIXED-USE RESIDENTIAL AND
RETAIL/COMMERCIAL DEVELOPMENT
LOT 5 COMMERCIAL ROAD, ROUSE HILL

TRANSPORT & ACCESSIBILITY
ASSESSMENT**

28 August 2015
Ref: 15018

Prepared by

John Coady Consulting Pty Ltd
Townplanning and Traffic Consultants

*7/19A-21 Addison Road, Manly NSW 2095
PO Box 528, Manly NSW 1655
Tel: (02) 9977 4622; Fax (02) 9977 4022
Mobile: 04111 24333
Email: john@johnco.com.au*

Table of Contents

1. INTRODUCTION	1
2. PUBLIC TRANSPORT	7
3. PEDESTRIANS AND CYCLING.....	10
4. HOME TRAVEL PLAN	12
5. PARKING	14
6. TRAFFIC	17
7. CONCLUSION	32

APPENDIX A TRAFFIC COUNT DATA

**APPENDIX B TRAFFIC FLOW DIAGRAMS ADOPTED FOR THE PURPOSES
OF THE SIDRA ANALYSIS**

LIST OF ILLUSTRATIONS

FIGURE 1	LOCATION
FIGURE 2	SITE
FIGURE 3	ROAD HIERARCHY
FIGURE 4	EXISTING TRAFFIC AND PARKING CONTROLS
FIGURE 5A	EXISTING TRAFFIC FLOWS
FIGURE 5B	REASSIGNED EXISTING TRAFFIC FLOWS.
FIGURE 6	TRAFFIC ASSIGNMENT.

1. Introduction

This report has been prepared to accompany a planning proposal to The Hills Shire Council for a proposed mixed-use residential and retail/commercial development on the site at Lot 5 Commercial Road, Rouse Hill (Figures 1 and 2).

The proposed development site is located opposite the future northern wing of the Rouse Hill Town Centre, approximately 300m north of the existing Town Centre development. It has a total site area of 20242m². However, a strip along the eastern side of the site is to be dedicated to Council for the purposes of road construction. The road, which is to be constructed as part of the proposed development, will provide an extension of Green Hills Drive from Carnoustie Street through to Commercial Road with four-way intersections at both ends. This new section of Green Hills Drive will provide a substantial improvement in pedestrian, cyclist, public transport and motorist access to Rouse Hill Town Centre and the future Rouse Hill Railway Station. That railway station, which will form part of the North West Rail Link connecting Rouse Hill Railway Station with Chatswood Railway Station, is currently under construction and due for completion in 2019.

The Green Hills Drive Extension will occupy 6634m² (33%) of the total site area. The total developable site area is therefore 13608m², with frontages to Commercial Road, to the proposed Green Hills Drive Extension and to Carnoustie Street.

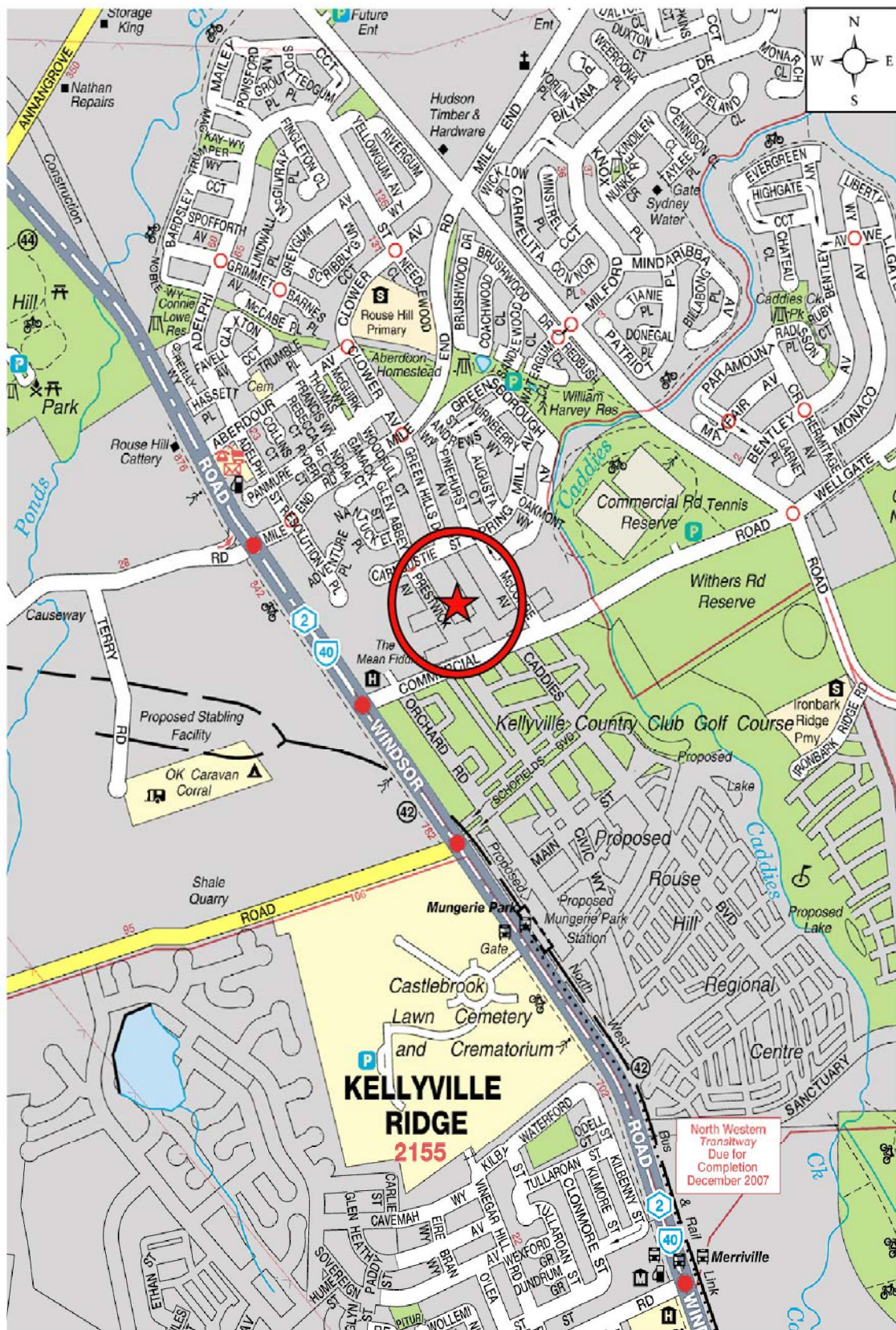
A concept plan for the proposed development is reproduced in the following pages. It comprises:

- a total of 7 residential flat buildings containing a total of 333 apartments comprising 82 x 1-bedroom, 218 x 2-bedroom, and 33 x 3-bedroom apartments
- a total of 1684m² retail/commercial floorspace over 2 storeys.

It is anticipated that the proposed development will be served by a total of 431 off-street parking spaces in basement carpark beneath the residential flat buildings

Vehicular access for the proposed development is proposed via a combined entry/exit driveway off the Green Hills Drive Extension.

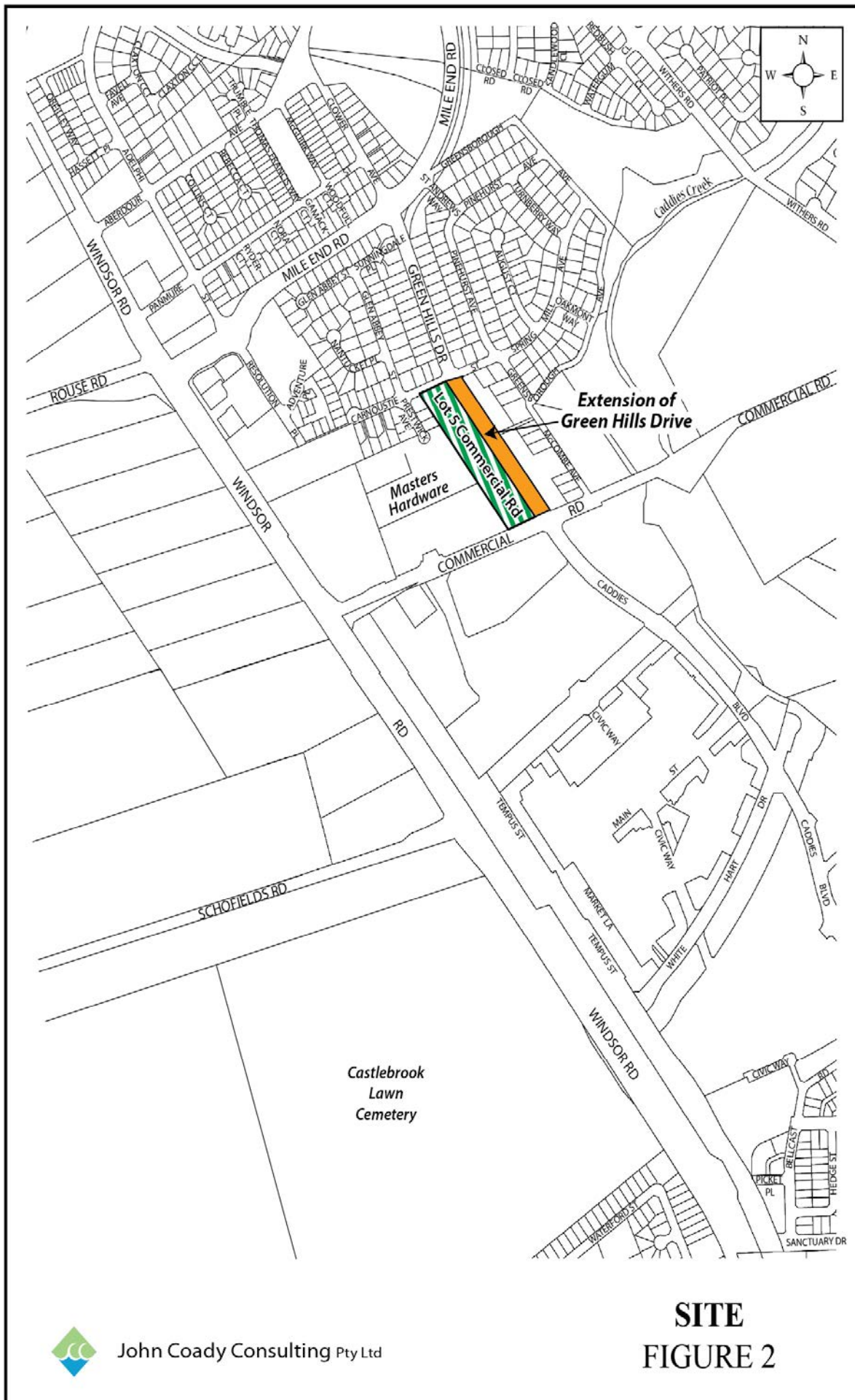
The purpose of this report is to assess the accessibility of the proposed development and its traffic and parking implications.



**LOCATION
FIGURE 1**



John Coady Consulting Pty Ltd



4.2 Architectural concept



View from southeast

Lot 5 Commercial Road Rouse Hill | Urban Design Report



4.3 Key statistics of the proposed masterplan

An area schedule of propose development is provided adjacent. Development provides:

- **A Floor Space Ratio of 2.3:1 across the site excluding the proposed road.**
- **33% of site dedicated for the new road which will provide a significant benefit to the local community. Plus additional communal open spaces for the site occupants.**
- **25% of the site as built footprint only (38% of the developed site)**
- **Maximum building heights - 12 storeys at centre of site, set back from views.**

Building Envelope	GBA (sqm)	Storeys	HOB (3.1m floor to floor, 4m ground)	GFA (sqm)
A	700	3	10.2	1,574
B	751	7	22.6	3,940
C (excluding attic)	685	6	19.5	3,084
C (attic)	521	2	25.7	782
D	691	12	38.1	6,215
E	691	12	38.1	6,216
F (excluding attic)	603	6	19.5	2,713
F (attic)	452	2	25.7	678
G	703	9	35.0	4,744
Commercial Podium (G)	990	2	7.1	1,684
Total	5,110			31,631
Total Commercial GFA				1,684
Total Residential GFA				29,947
Total number of apartments*				333

* based on 90sqm GFA / apartment

Site areas and FSR	Site Area	FSR
Total site (incl. road)	20,242	1.56
Site excluding SP2 land (incl. other road)	16,740	1.89
Site excl. road	13,608	2.32

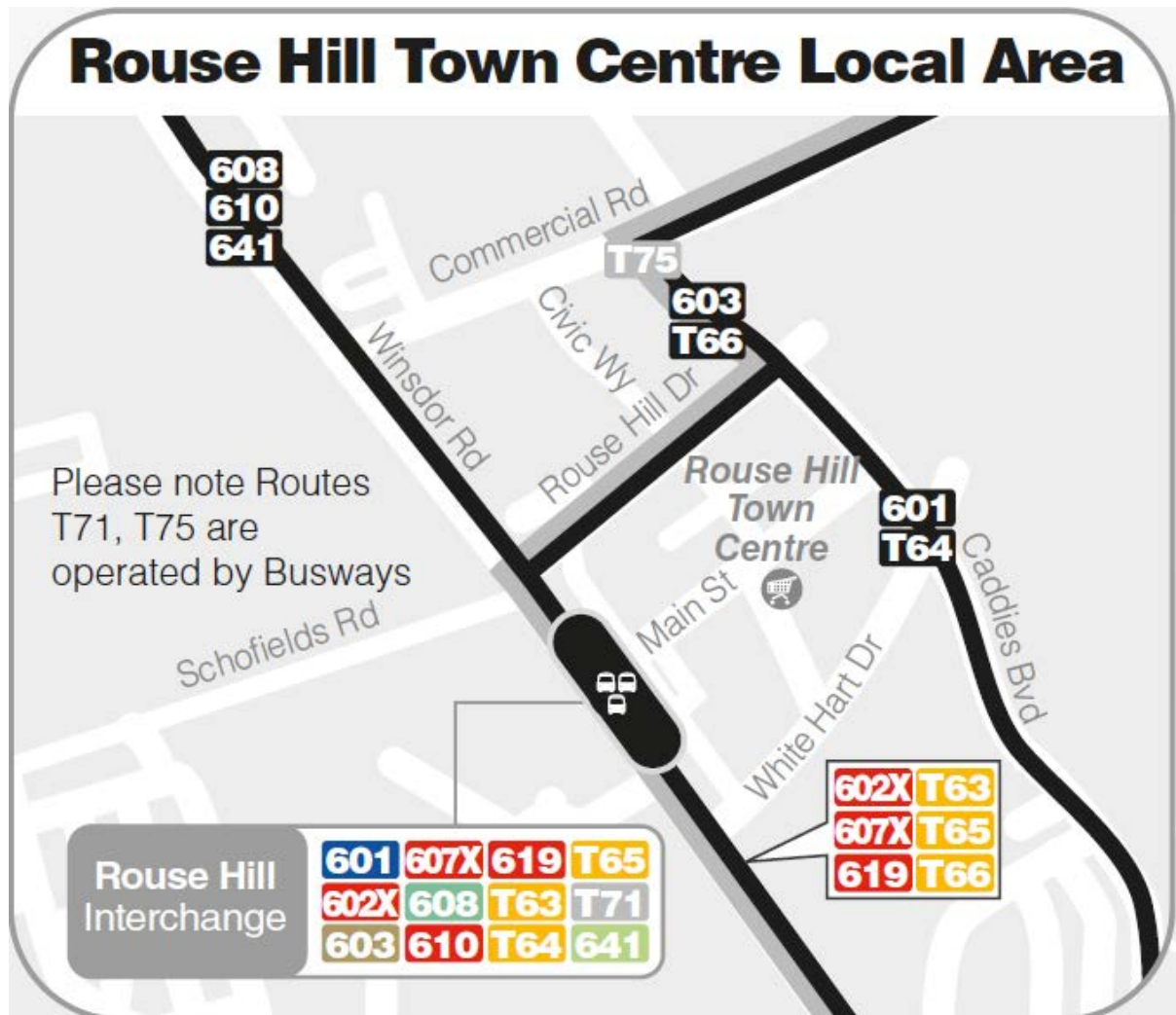
2. Public Transport

The proposed development site enjoys a high level of public transport accessibility via a number of bus services which run along Windsor Road, Commercial Road and Mile End Road, and which serve the Rouse Hill Regional Centre located approximately 300m to the south of the site. In the future, the site will also have public transport service via the Rouse Hill Railway Station in the Regional Centre which forms part of the North West Rail Link which will connect the Rouse Hill Regional Centre with Chatswood. The site therefore enjoys convenient access to all of the public transport services, both existing and planned, which currently serve the Regional Centre and which will do so in the future.

Bus services operated by Hills Bus which run along Windsor Road, Commercial Road and Mile End Road and serve the Rouse Hill Regional Centre are illustrated on the schematic map reproduced in the following pages and comprise:

Route 601	A daily service between Parramatta and Rouse Hill Town Centre.
Route 603	Rouse Hill Town Centre to Parramatta via Kellyville, Glenhaven, Castle Hill & East Baulkham Hills. Service operates daily.
Route 607X	Rouse Hill Town Centre to City via North West T-Way and M2 Busway. Service operates daily.
Route 608	Windsor to Rouse Hill Town Centre via McGraths Hill and Windsor Road. Service operates Monday – Friday.
Route 610 & 610X	Rouse Hill Town Centre to City via Beaumont Hills, Kellyville, Castle Hill, Baulkham Hills, M2 Busway and Lane Cove Tunnel.
Route 617X	Rouse Hill to City via Beaumont Hills, North West T-way and M2 Busway. Service operates Monday to Friday.
Route 619	Rouse Hill Town Centre to Macquarie Park via North-West T-Way, Kellyville, Castle Hill, Baulkham Hills and M2 Busway. Service operates daily.
Route 641	Rouse Hill to Round Corner, Dural via Annangrove Road. Service operates Monday to Friday.
Route 746	Riverstone to Box Hill via Windsor Road.
Route T65	Parramatta to Rouse Hill Town Centre via Westmead and North-West T-Way (stops at all T-Way Stations between Parramatta and Rouse Hill). Service operates daily.
Route T66	Parramatta to Rouse Hill via Westmead and North-West T-Way (stops at all TWay Stations between Parramatta and Rouse Hill). Service operates daily.
Route T75	Blacktown to Rouse Hill/Riverstone via Parklea. Service operates daily.

The proposed development site is located within a walking distance of approximately 230m to bus stops in Commercial Road (see Figure 4 in Chapter 6).





3. Pedestrians and Cycling

Pedestrian activity in the area is largely accommodated on footpaths which form part of the road network serving the site. As a consequence of the new Masters Hardware Store development, long concrete pathways have been constructed in Commercial Road while new concrete footpaths can be expected to be constructed along the Green Hills Drive Extension as part of this development proposal.

Designated cycle routes which serve and pass through the area are shown on the *Rouse Hill On-Road Off-Road Cycleway Plan* reproduced in the following pages. As can be observed, the proposed development site is conveniently located in respect of the designated off-road cycleway which runs along the western side of Windsor Road, and the designated on-road cycleway located on Mile End Road.

Rouse Hill on road off road cycleways



For more Tracks and Trails information visit www.thehills.nsw.gov.au

THE HILLS
Sydney's Garden Shire

4. Home Travel Plan

The following Home Travel Plan has been prepared in the interests of providing guidance to future residents of the proposed development in order to reduce car trips and encourage the use of sustainable transport.

However, in circumstances where completion of the residential development proposal is some years away at which time specific details of travel options might have changed, the preparation of a detailed Home Travel Plan at this stage is not warranted. The Home Travel Plan and its detail is more appropriately prepared just prior to occupation of the building at a time when current travel arrangements can be specified. Notwithstanding, in order to provide guidance for the preparation of a Home Travel Plan for occupants of the proposed apartment buildings, the following “generic” Home Travel Plan is proposed.

HOME TRAVEL PLAN

Provide Information on Public Transport Services

The proposed development site currently enjoys a high level of public transport accessibility in the form of bus services which run along Windsor Road and Commercial Road and which serve Rouse Hill Regional Centre. The pending completion of the North West Rail Link to Rouse Hill Railway Station will provide future residents with access to railway travel. The Home Travel Plan will provide the following information on those public transport services.

Railway Service

- a copy of the Sydney Rail Network map showing the extent of the rail service throughout the Sydney Metropolitan Service and the location of Rouse Hill Railway Station on the North West Rail Link Railway Line
- details of up to date train timetables for Rouse Hill Railway Station
- a map showing the shortest and safest pedestrian route between the site and Rouse Hill Railway Station.

Bus Services

- details of conveniently accessible bus services including:
 - service number
 - origin/destination

- travel route along streets in the vicinity of the site
- nearest bus stop
- bus service timetables
- a map showing the shortest and safest pedestrian route between the site and the nearest bus stops.

Bicycle Access

The Home Travel Plan will identify:

- the location of designated bicycle parking spaces for residents and their visitors in the proposed development
- a map showing cycleways conveniently accessible to the site, and demonstrating how those cycleways connect with the regional bicycle network.

The Home Travel Plan will provide information on the most convenient and safest Pedestrian Routes connecting the site with prominent destinations in the vicinity including a map showing the most convenient and safest Pedestrian Route connecting the Site with Rouse Hill Railway Station, Rouse Hill Shopping Centre, schools in the area, and open space/recreational facilities in the area.

Implementation

Just prior to the initial occupation of the residential apartments, the “generic” Home Travel Plan will be finalised with the inclusion of relevant information such as train and bus timetables, illustrations showing the shortest and most convenient routes between the site and the full range of destinations encompassed by the Plan, etc.

Hard copies of the Home Travel Plan will be produced for distribution to new owners/tenants of the residential apartments.

A website will also be established for the building, and the Home Travel Plan will be included on that website. The Body Corporate of the building will be responsible for updating the Home Travel Plan on, at least, an annual basis.

5. Parking

Table 1 in Clause 2.1 of Part C Section 1 of *The Hills Development Control Plan (DCP) 2012* (the “DCP”) specifies the parking requirements for the residential, retail and commercial components of the proposed development. A further guide to the appropriate parking provision to serve the proposed development is provided by the RTA Guidelines¹. The parking requirement for the proposed development calculated in accordance with those two guides is:

PARKING REQUIREMENTS		
	The Hills DCP	RTA Guidelines*
RESIDENTIAL		
Resident		
82 x 1-bedroom	1 space per unit = 82spaces	0.6 space per unit = 49 spaces
218 x 2-bedroom	2 spaces per unit = 436paces	0.9 space per unit = 196 spaces
33 x 3-bedroom	2 spaces per unit = 66 spaces	1.40 spaces per unit = 46 spaces
Sub Total Resident	584 spaces	291 spaces
Visitor	2 spaces per 5 units = 133 spaces	1 space per 5 units = 67 spaces
TOTAL RESIDENTIAL	717 spaces	358 spaces
RETAIL		
842m ² GLFA	1 space per 18.5m ² = 46 spaces	6.1 spaces per 100m ² GLFA = 52 spaces
COMMERCIAL		
842m ² GLFA	1 space per 25m ² = 34 spaces	1 space per 40m ² GLFA = 21 spaces
TOTAL RETAIL & COMMERCIAL	80 spaces	73 spaces
TOTAL	797 spaces	431 spaces

*For the purposes of this table the RTA Guidelines **residential** parking requirement is based on the rates specified for Metropolitan Sub-Regional Centres

**For the purposes of this table it has been assumed that 50% of the retail/commercial floorspace will be retail and 50% will be commercial.

As can be observed, the parking requirement for the proposed development calculated in accordance with the DCP is nearly double the requirement calculated in accordance with the RTA Guidelines. A discrepancy of this magnitude demands further examination. In this respect it is noted that:

- it is relevant that the parking requirements specified by the RTA Guidelines for residential flat buildings and retail/commercial floorarea are derived from surveys of residential flat buildings and retail/commercial developments located within the Sydney Metropolitan Area. In contrast, the basis for the parking requirements specified by the DCP is not disclosed by the DCP

¹ RTA “Guide to Traffic Generating Developments. Section 5 – Parking Requirements for Specific Landuses” October 2002

- the RTA Guidelines specify parking requirements for high density residential flat buildings located in Metropolitan Regional (CBD) Centres and Metropolitan Sub-Regional Centres. Although the proposed development is located immediately adjacent to the northern boundary of the Rouse Hill Regional Centre, the higher parking requirement specified by the Guidelines for high density residential flat buildings in Metropolitan Sub-Regional Centres has been adopted
- while the RTA Guidelines recommend that the minimum number of off-street visitor parking spaces is 1 space for every 5 units, it notes that “.... *Council’s may wish to reduce this requirement for buildings located in close proximity to public transport, or where short term unit leasing is expected.*” By virtue of its convenient location to public transport services and to the Rouse Hill Regional Centre, the proposed development could be considered to be in this category. In this respect, it is particularly relevant that the residential visitor parking requirement specified by the DCP is extraordinarily high at 2 spaces per 5 units. It is submitted that this particularly high parking requirement for visitor parking is not warranted, and represents a massive waste of resources

It can be reasonably concluded that the parking requirement specified by the Hills DCP for the proposed development is substantially excessive and therefore inconsistent with established State Government policy which promotes sustainable development, particularly in circumstances where the residential component of the proposed development is high density, the site is conveniently located in respect of the Rouse Hill Regional Centre, and has convenient access to all public transport services which currently serve the Regional Centre and which are planned to serve the Regional Centre in the future, in particular Rouse Hill Railway Station which forms part of the South West Rail Link proposal.

Relevantly, Objective 3J-1 of *SEPP 65 – Apartment Design Guide* which came into force on 17th July 2015 states that:

Objective 3J-1

Carparking is provided based on proximity to public transport in Metropolitan Sydney and centres in regional areas.

Design Criteria

1. For development in the following locations:
 - on sites that are within 800m of a railway station or light rail stop in the Sydney Metropolitan Area, or

- on land zoned, and sites within 400m of land zoned, P3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre.

The minimum carparking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments, or the carparking requirement prescribed by the relevant Council, whichever is less.

The carparking needs for a development must be provided off-street.

That Objective and the accompanying Design Criteria supports the proposition that the parking requirement specified by the RTA Guidelines should be preferred over the higher parking requirement calculated in accordance with Council's DCP.

Further, Clause 30 of SEPP 65 says:

30. Standards that cannot be used as grounds to refuse development consent or modification of development consent

- (1) If an application for the modification of a development consent or a development application for carrying out of development to which this Policy applies satisfies the following design criteria, the consent authority must not refuse the application because of those matters:
 - a) If the carparking for the building will be equal to, or greater than, the recommended minimum amount of carparking specified in Part 3J of the Apartment Design Guide.....

It is therefore recommended that the proposed development should be required to satisfy the parking requirements calculated in accordance with the RTA Guidelines, that is provision of 431 parking spaces to serve the proposed development.

6. Traffic

Existing and Proposed Road Network

The classifications assigned to the road network serving the site by the RMS (Figure 3) identify the following classified State and Regional Roads in the vicinity of the site:

State Roads	Regional Roads
Windsor Road	Schofields Road
	Annangrove Road

By virtue of its immediate access to Windsor Road, the proposed development site therefore enjoys convenient access to the higher order road network which serves and passes through the area. Although not included in the RMS classification, Commercial Road, Mile End Road and Withers Road perform an important sub-arterial/collector road function for the area, as will Green Hills Drive when the Green Hills Drive Extension is constructed as part of the proposed development.

The existing road network adjoining the proposed development site has the following characteristics:

Commercial Road	4 lane divided carriageway
Carnoustie Street	2 lane carriageway

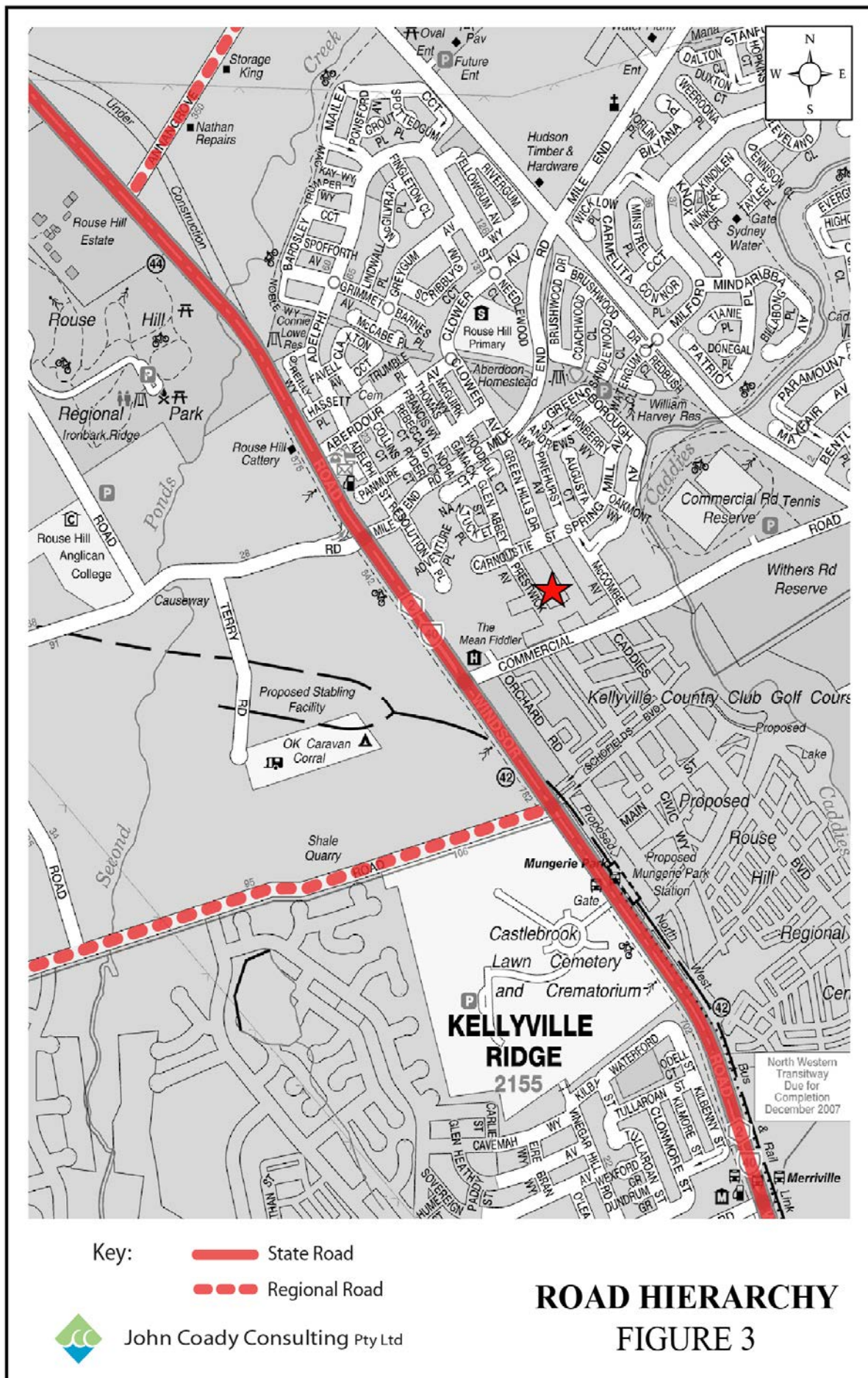
The Green Hills Drive Extension is expected to have the same carriageway characteristics as the existing section of that road to the north of Carnoustie Street as follows:

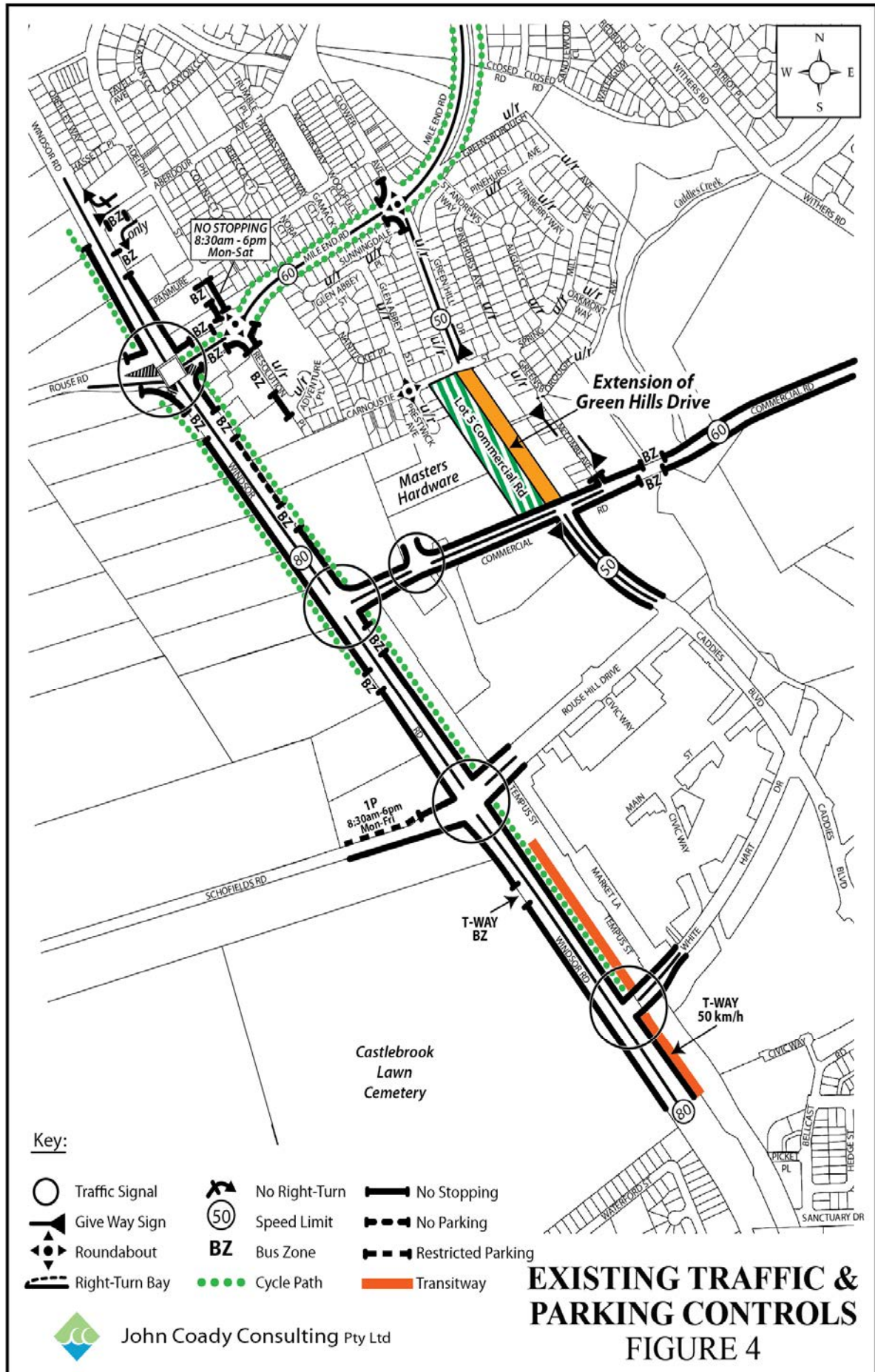
Green Hills Drive Extension	4 lane divided carriageway
-----------------------------	----------------------------

It is anticipated that construction of the Greenhills Drive Extension will involve the following intersection treatment:

Green Hills Drive/Commercial Road/Caddies Boulevard	Traffic signal control
Green Hills Drive/Carnoustie Street	Roundabout control

The existing traffic and parking control on the road network serving the site are shown on Figure 4.





Existing Traffic Conditions

To provide an indication of existing traffic conditions on the road network serving the site, a count of traffic activity was conducted during the AM and PM peak periods on Tuesday, 28th July 2015 at the following intersections:

Windsor Road/Commercial Road
Commercial Road/Masters Hardware Access
Commercial Road/Caddies Boulevard
Commercial Road/McCombe Avenue
Green Hills Drive/Carnoustie Street

The detailed results of those traffic counts are included as Appendix A to this report, while the weekday AM and PM peak period traffic flows through those intersections are summarised on Figure 5A. As shown on Figure 5A, the weekday AM peak period is assumed to be between 8.15 – 9.15am while the weekday peak period is assumed to be between 5.30 – 6.30pm.

Reassigned Existing Traffic Conditions

Vehicular access between Commercial Road and areas to the north is currently available via a route comprising McCombe Avenue – Greensborough Avenue – Carnoustie Street – Green Hills Drive – Mile End Road. Construction of the Green Hills Drive Extension will make that circuitous route redundant with direct access between Commercial Road and Mile End Road via Green Hills Drive. It will result in a relocation of existing traffic flows from the McCombe Avenue – Carnoustie Street – Green Hills Drive route to the more direct Green Hills Drive and Green Hills Drive Extension, and could also attract additional traffic from the existing traffic flows in the area because of the significantly improved Level of Service provided by the Green Hills Drive Extension. Reassignment of existing traffic flows from the McCombe Avenue route to the Green Hills Drive Extension route is illustrated on Figure 5A. As can be observed, weekday peak period traffic flows along the Green Hills Drive Extension, reassigned from the McCombe Avenue route, are in the order of 100 vtp/h in each direction.

In order to take into account the possible transfer of other traffic to the new route and likely growth in background traffic activity in the area, the traffic assessment in this report also addresses post-development traffic conditions taking into account both the reassigned existing traffic flows and the potential for additional traffic demand as a consequence of other traffic transfer and background traffic growth. An allowance 100 vtp/h in each direction

during both the weekday AM and PM peak hour was made to allow for this additional traffic demand.

Projected Traffic Generation Potential

An indication of the traffic generation potential of the proposed development is provided by the typical traffic generation rates specified by the RTA Guidelines² for the residential and retail/commercial components of the proposed development. For the purposes of calculating the traffic generation potential of the residential component of the proposed development, the weekday peak period traffic generation rates specified by the RTA Guidelines for *high density residential flat buildings in Metropolitan Sub-Regional Centres* were adopted.

The weekday peak period traffic generation potential of the proposed development is calculated on the table below.

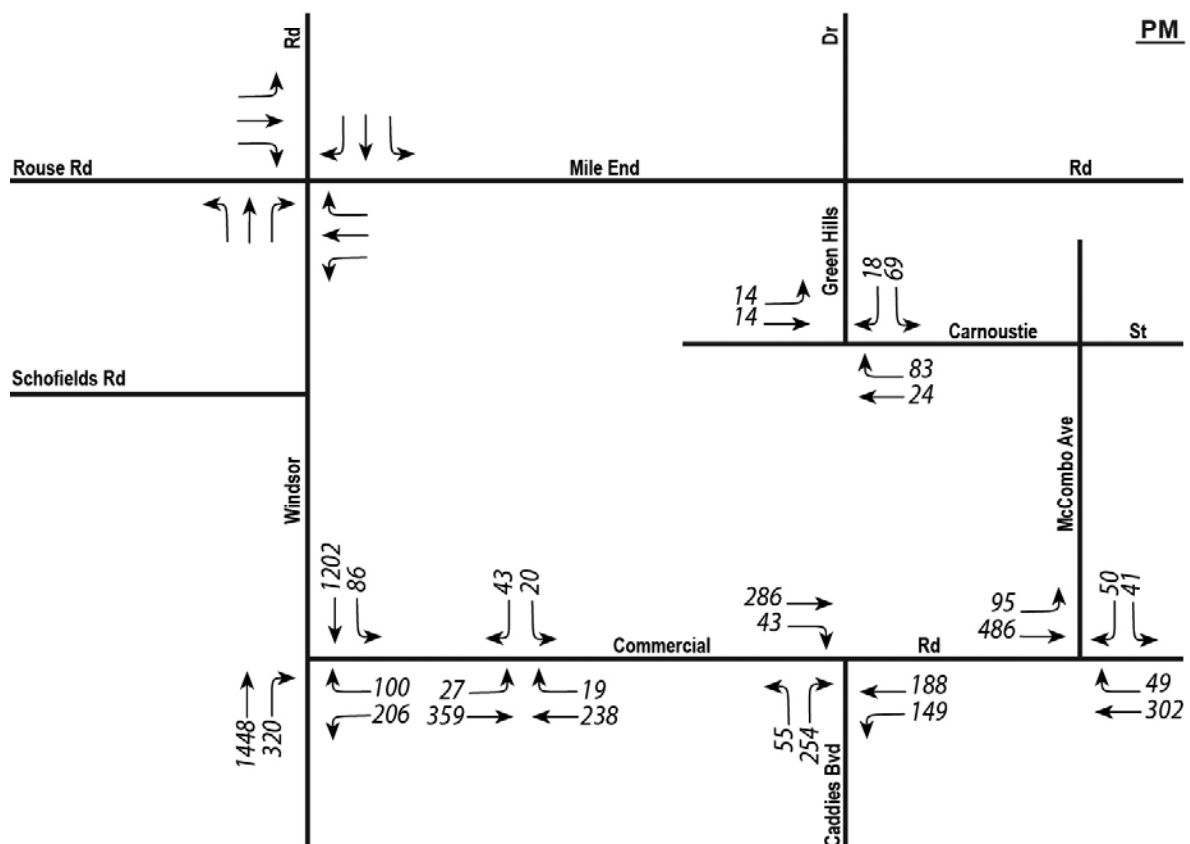
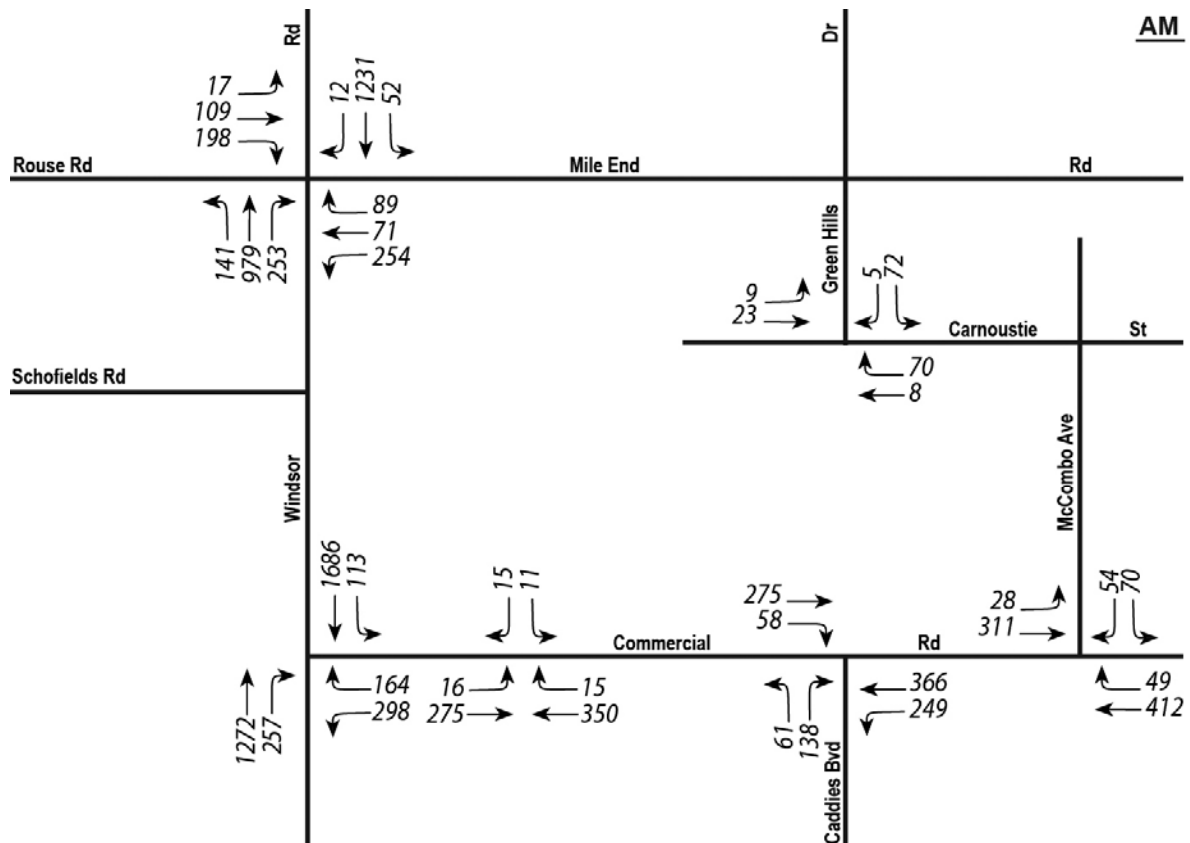
PROJECTED TRAFFIC GENERATION POTENTIAL							
			TOTAL	AM		PM	
				IN	OUT	IN	OUT
Residential	333 units	0.29 vtph per unit	100	20	80	80	20
Retail	842m ²	AM – 5.0 vtph per 100m ²	40	20	20		
		PM – 12.5 vtph per 100m ²	110			55	55
Commercial	842m ²	2 vtph per 100m ²	20	15	5	5	15
Total			160/230	55	105	140	90

While there is no reliable way to accurately assign that projected traffic generation potential to the road network serving the site, it has been assigned to the road network serving the site taking into account existing traffic flows on that road network. The assignment adopted for the purposes of this assessment is:

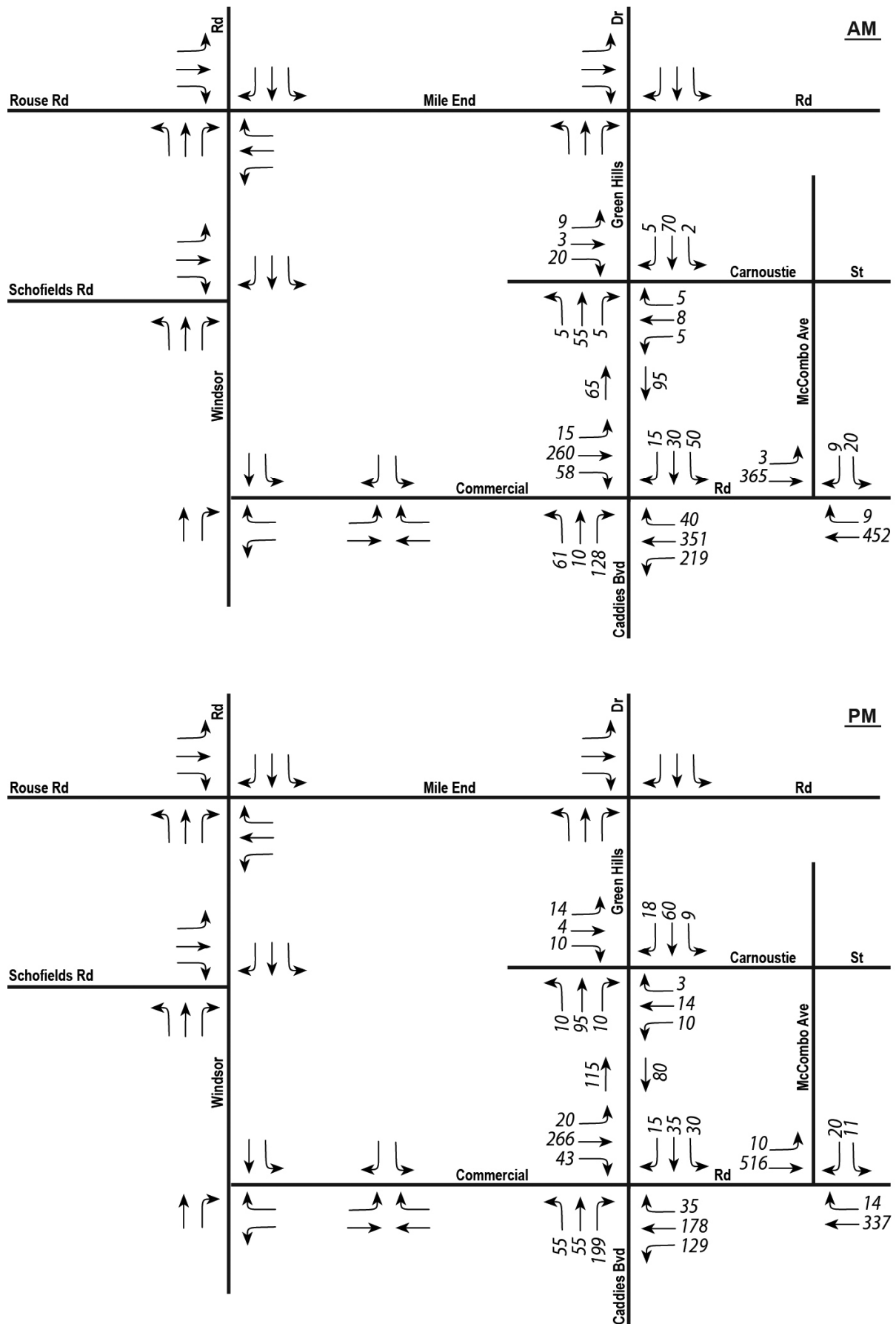
North on Green Hills Drive	30%
East on Mile End Road	10%
North on Windsor Road (via Mile End Road)	15%
West of Rouse Road	5%
South on Green Hills Drive Extension	70%
South on Caddies Boulevard	30%
East on Commercial Road	5%
South on Windsor Road (via Commercial Drive)	30%
West of Schofields Road (via Commercial Road)	5%

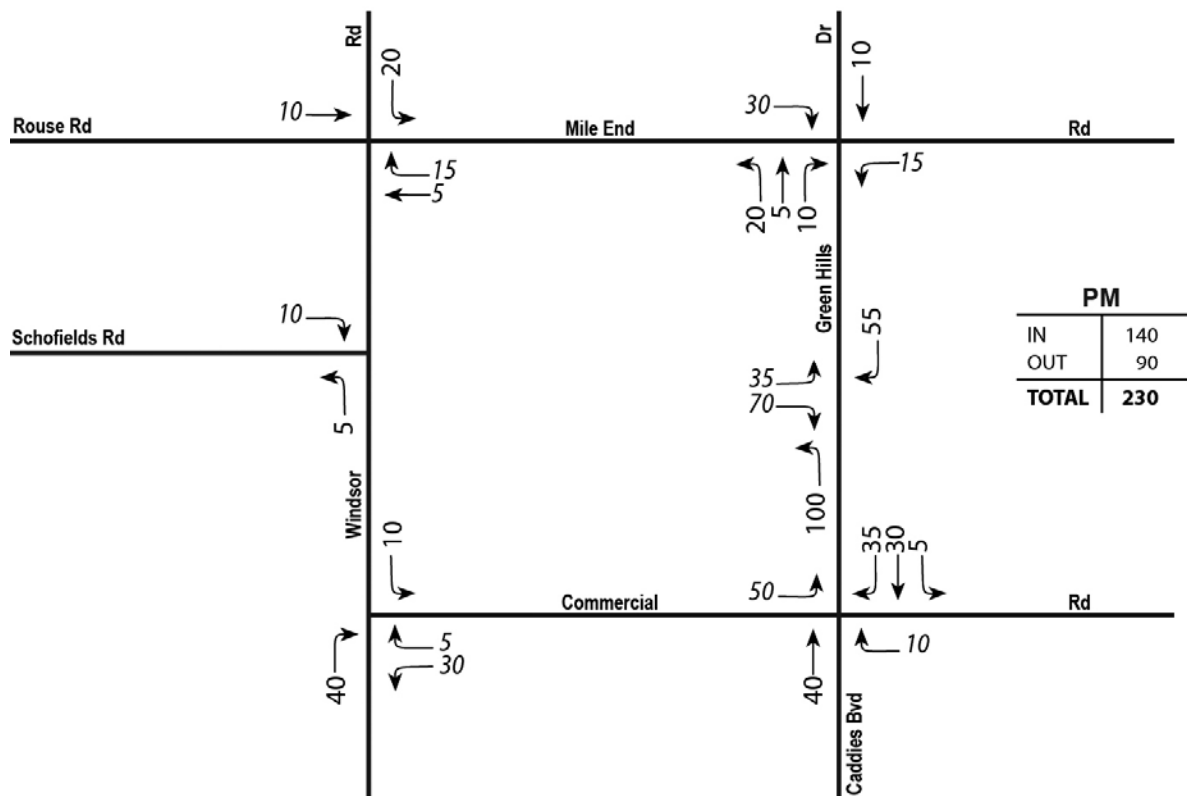
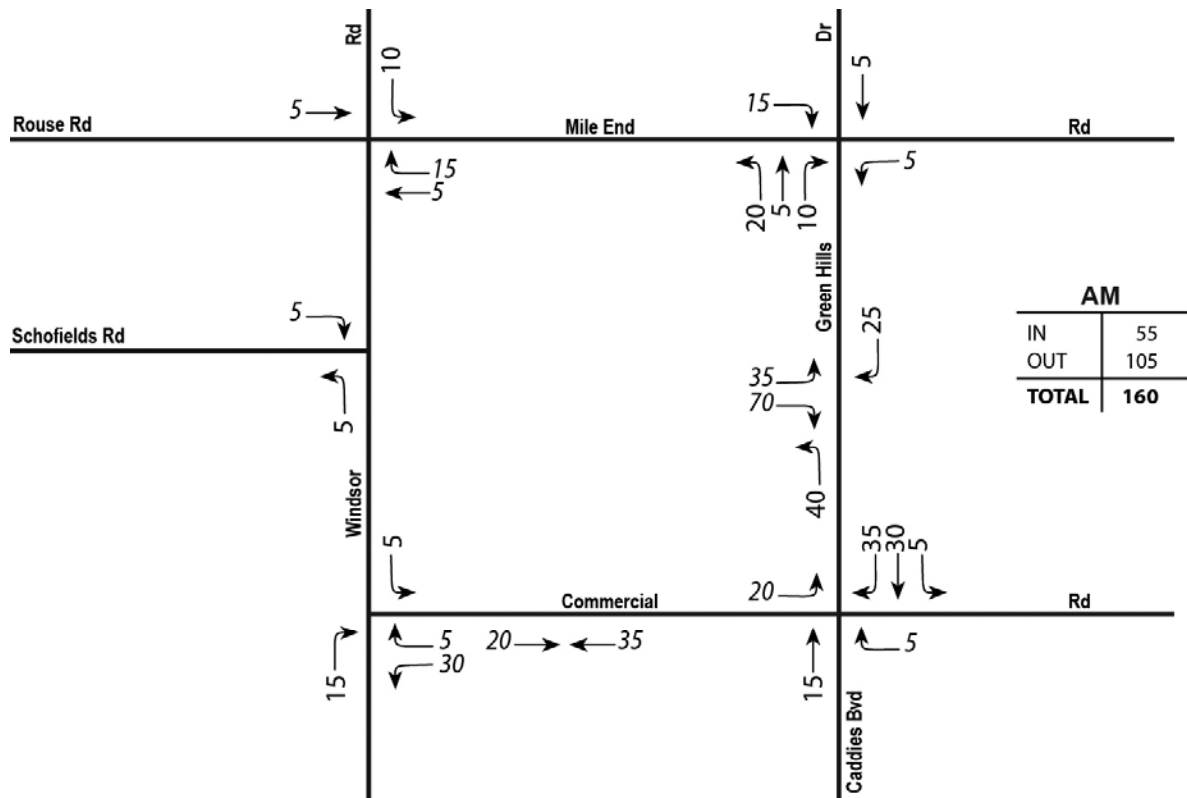
The additional traffic demand on the road network serving the site as a consequence of the proposed development is shown on Figure 6.

² RTA “Guide to Traffic Generating Developments. Section 3 – Landuse Traffic Generation” October 2002



EXISTING TRAFFIC FLOWS
FIGURE 5A





TRAFFIC ASSIGNMENT
FIGURE 6

Traffic Implications – Road Network Capacity

Reference to Figure 6 indicates that the main traffic implications of the proposed development in terms of road network capacity concern the effect of the additional traffic demand generated by the proposed development on the operating performance of the Commercial Road/Green Hills Drive Extension/Caddies Boulevard and Commercial Road/Windsor Road intersections. That effect can be assessed using the SIDRA traffic model, and criteria for the interpret

For the purposes of the analysis the following intersection configurations have been assumed:

Commercial Road/Green Hills Drive – traffic signal control

Green Hills Road/Carnoustie Avenue – single lane roundabout

Commercial Road/Windsor Road – traffic signal control (existing)

The results of the SIDRA analysis of key intersections on the road network serving the site are set out in the schedule reproduced in the following pages under the following traffic conditions:

Existing Traffic Conditions - As identified by the count of traffic activity at the various intersections conducted as part of this assessment (Figure 5A).

Post-Development Traffic Conditions - With the existing traffic conditions reassigned to take into account construction of the Green Hills Drive Extension (Figure 5B), plus the additional traffic demand on the road network serving the site as a consequence of the proposed development (Figure 6).

Post-Development (Background Traffic Growth) Conditions – Existing traffic conditions reassigned to take into account construction of the Green Hills Drive development, plus an additional 100 vtp/h in both directions on the Green Hills Drive Extension to take into account additional traffic transferring to the new road from other routes in the area and background traffic growth, plus the additional traffic demand on the road network serving the site as a consequence of the proposed development (Figure 6).

The traffic flows through the various intersections adopted for the purposes of the SIDRA analysis are shown on diagrams reproduced in Appendix B. The intersection configuration adopted for the Commercial Road/Green Hills Drive/Caddies Boulevard, Green Hills Drive/Carnoustie Street, and site access/Green Hills Drive Extension intersections for the purposes of the SIDRA analysis are shown on the three pages following the SIDRA results schedule.

The results of the SIDRA analysis confirm satisfactory intersection operation at all intersections analysed under each traffic activity condition, confirming that the proposed development has no unacceptable traffic implications in terms of road network capacity.

Traffic-Related Environmental Effect

The proposed development has no unacceptable traffic-related environmental effect because nearly all of the traffic that it generates will approach/depart the site on the higher order road network which serves and passes through the area comprising Windsor Road, Commercial Road, Mile End Road and Green Hills Drive (on completion of the Green Hills Drive Extension).

Existing Conditions

	Traffic Control	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)
Windsor Rd-Mile End Rd	Signals	C	37	C	35
Windsor Rd-Commercial Rd	Signals	A	14	B	18
Commercial Rd-Masters Access	Signals	A	5	A	6
Commercial Rd-Caddies Blvd	Give-way	C	34	B	27
Commercial Rd-McCombe Ave	Give-way	A	13	B	15
Carnoustie St-Green Hills Dr	Give-way	A	5	A	5

Average delay for the worst movement is reported for roundabout and, sign controlled intersections

Post Development Conditions

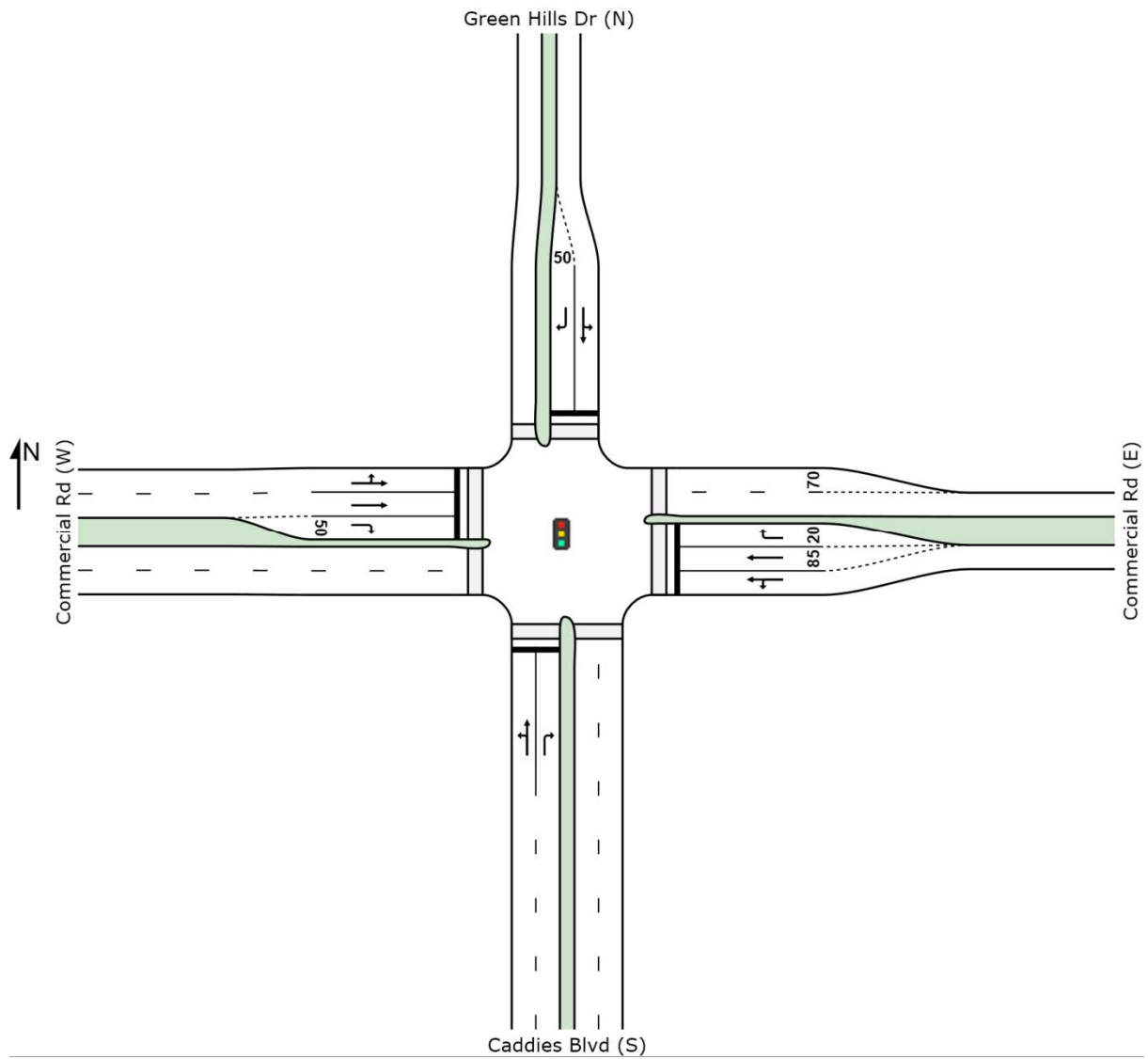
	Traffic Control	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)
Windsor Rd-Mile End Rd	Signals	C	38	C	36
Windsor Rd-Commercial Rd	Signals	B	15	B	26
Commercial Rd-Masters Access	Signals	A	5	A	6
Commercial Rd-Caddies Blvd	Signals	B	16	B	18
Commercial Rd-McCombe Ave	Give-way	A	13	B	15
Carnoustie St-Green Hills Dr	Roundabout	A	7	A	5
Green Hills Dr-Access	Stop	A	8	A	9

Average delay for the worst movement is reported for roundabout and, sign controlled intersections

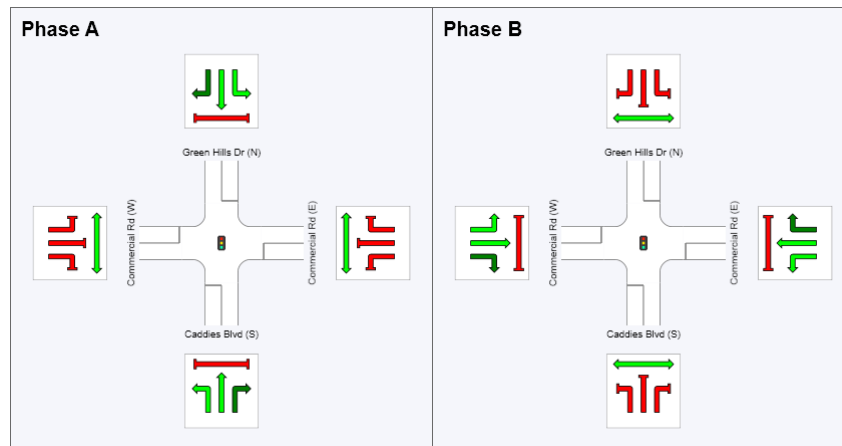
Post Development (with background traffic growth) Conditions

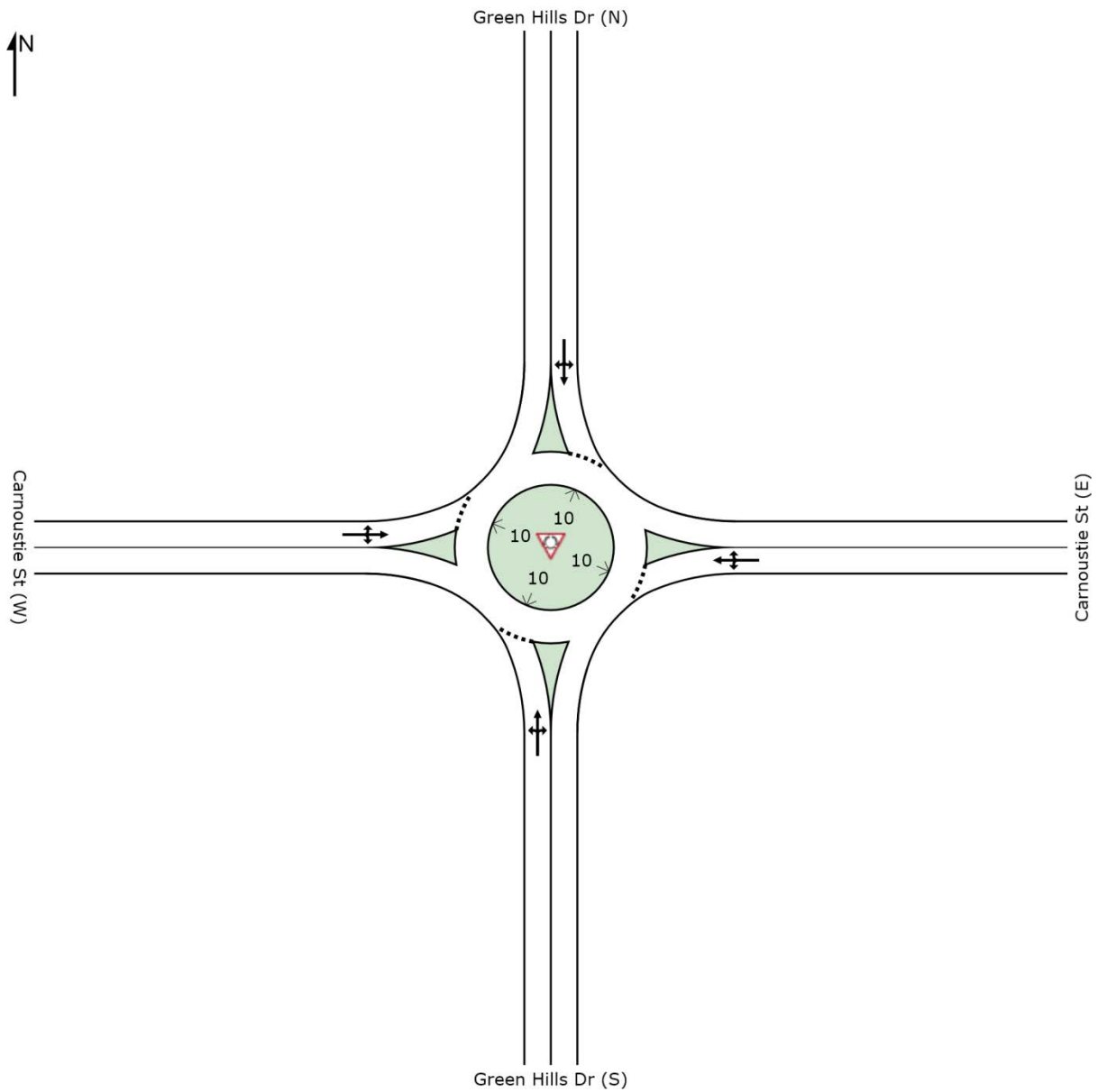
	Traffic Control	AM Peak Hour		PM Peak Hour	
		Level of Service	Average Delay (sec)	Level of Service	Average Delay (sec)
Windsor Rd-Mile End Rd	Signals	C	39	C	42
Windsor Rd-Commercial Rd	Signals	B	20	C	32
Commercial Rd-Masters Access	Signals	A	5	A	6
Commercial Rd-Caddies Blvd	Signals	B	17	B	19
Commercial Rd-McCombe Ave	Give-way	B	16	B	17
Carnoustie St-Green Hills Dr	Roundabout	A	8	A	8
Green Hills Dr-Access	Stop	A	9	A	10

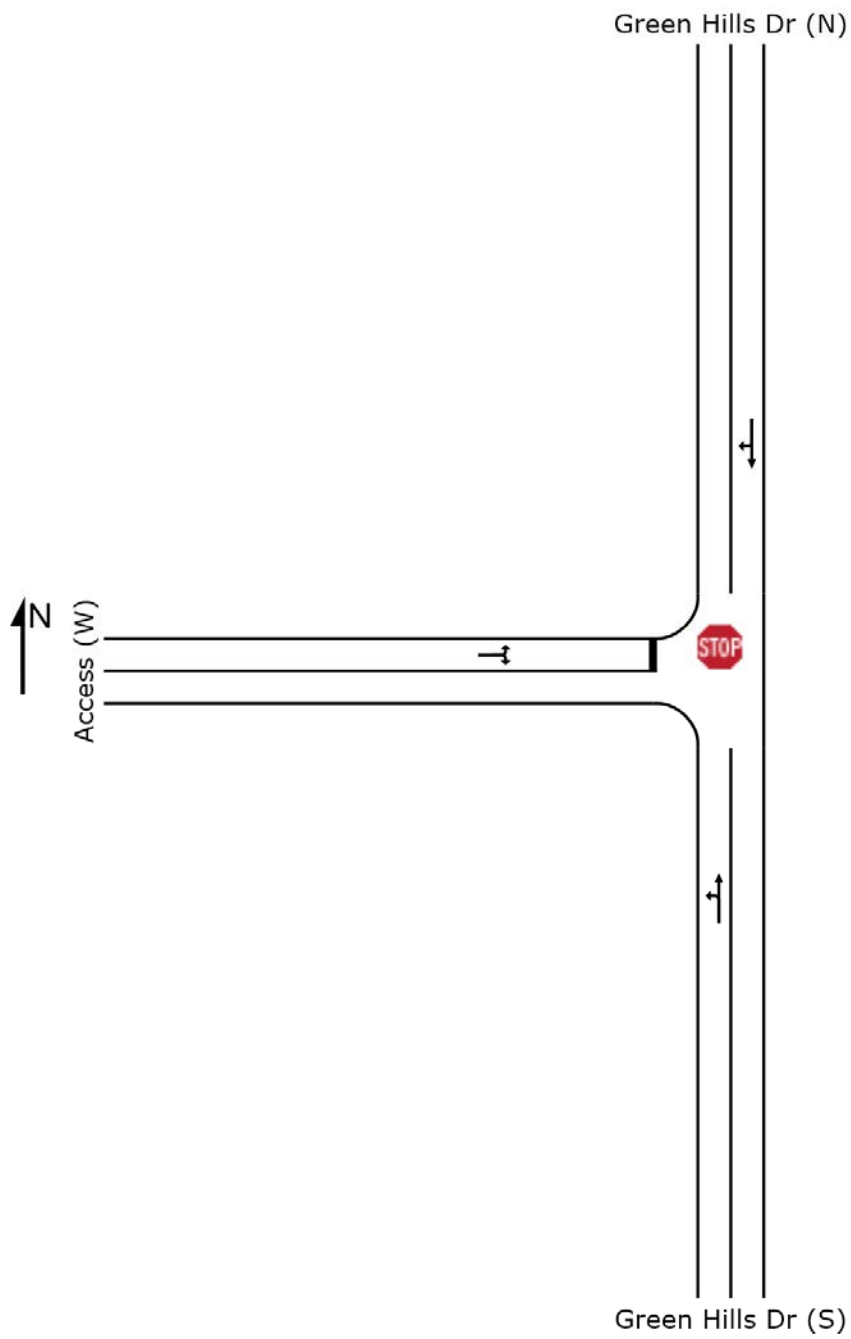
Average delay for the worst movement is reported for roundabout and, sign controlled intersections



Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)







Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
B	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals³ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

³ The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.

7. Conclusion

The foregoing assessment leads to a conclusion that:

- the proposed development site is located opposite the future northern wing of the Rouse Hill Town Centre, approximately 300m north of the existing Town Center development
- in that location, the proposed development enjoys convenient access to all of the public transport services, both existing and planned, which currently serve Rouse Hill Regional Centre and which will do so in the future. In this respect, the proposed development site enjoys a high level of public transport accessibility via a number of bus services which run along Windsor Road, Commercial Road and Mile End Road, and which serve the Rouse Hill Regional Centre. In the future, the site will also have public transport service via the Rouse Hill Railway Station in the Regional Centre which forms part of the North West Rail Link which will connect the Rouse Hill Regional Centre with Chatswood Railway Station.
- construction of the Green Hills Drive Extension as part of the proposed development will provide a substantial improvement in pedestrian, cyclist, public transport and motorist access to Rouse Hill Town Centre and the future Rouse Hill Railway Station which will form part of the North West Rail Link connecting the Rouse Hill Railway Station with Chatswood Railway Station.
- the proposed development site is conveniently located in respect of the designated off-road cycleway which run along the western side of Windsor Road and through the Rouse Hill Town Centre, and the designated on-road cycleway located on Mile End Road
- because of the relatively large scale of the proposed development, it is appropriate that it be subject to a Home Travel Plan which has the objective of reducing travel by private car and encouraging the use of sustainable transport. A “generic” Home Travel Plan is included as Chapter 4 of this report
- there is a substantial discrepancy between the off-street parking requirement for the proposed development calculated in accordance with the Hills DCP and that calculated in accordance with the RTA Guidelines. In circumstances where the requirements specified by the RTA Guidelines are based on surveys of existing residential flat

buildings and retail/commercial developments while the basis of the parking requirement specified by the DCP is not disclosed, the parking requirement specified by the RTA Guidelines for Metropolitan Sub-Regional Centres is preferred. That conclusion is reinforced by the recent changes to SEPP 65 which prevents a Consent Authority refusing consent to an Application on parking grounds if it satisfies the parking requirement calculated in accordance with the RTA Guidelines. The parking requirement for the proposed development calculated in accordance with the RTA Guidelines is 431 off-street parking spaces comprising 291 resident parking spaces, 67 resident visitor parking spaces, and 73 spaces for the retail/commercial component of the proposed development. This off-street parking provision is considered to be adequate to serve the proposed development

- the proposed development site enjoys convenient access to the higher order road network which serves and passes through the area comprising Windsor Road, Commercial Road and Mile End Road. The intersections on the road network serving the site likely to be most affected by traffic generated by the proposed development are the intersections of Commercial Road/Green Hills Drive/Caddies Boulevard, Green Hill Drive/Carnoustie Street and Windsor Road/Commercial Road.
- existing traffic conditions at key intersections on the road network serving the site were identified by a count of traffic activity at those intersections during the weekday AM and PM peak periods, and the results of those counts are summarised on Figure 5A
- construction of the Green Hills Drive Extension as part of the proposed development will result in a transfer of traffic activity from an existing route comprising McCombe Avenue – Greensborough Avenue – Carnoustie Street – Green Hills Drive, to the more direct Green Hills Drive – Green Hills Drive Extension, and that reassignment of existing traffic flows is indicated on Figure 5B. The reassignment of existing traffic flows suggests that during the weekday AM and PM peak periods, two-way traffic flows on the Green Hills Drive Extension will be in the order of 100 vtpd in each direction
- to take into account the potential for even more traffic to transfer to the new route, and for some growth in background traffic activity on the road network in the area, weekday peak period traffic flows on the Green Hills Drive Extension were increased by an additional 100 vtpd in each direction for assessment purposes

- the traffic generation potential of the proposed development calculated in accordance with the RTA Guidelines is 160 vtpd during the weekday AM peak period, and 230 vtpd during the weekday PM peak period
- the SIDRA analysis was conducted for the following traffic conditions:

Existing Traffic Conditions - As identified by the count of traffic activity at the various intersections conducted as part of this assessment (Figure 5A).

Post-Development Traffic Conditions - With the existing traffic conditions reassigned to take into account construction of the Green Hills Drive Extension (Figure 5B), plus the additional traffic demand on the road network serving the site as a consequence of the proposed development (Figure 6).

Post-Development (Background Traffic Growth) Conditions – Existing traffic conditions reassigned to take into account construction of the Green Hills Drive development, plus an additional 100 vtpd in both directions on the Green Hills Drive Extension to take into account additional traffic transferring to the new road from other routes in the area and background growth, plus the additional traffic demand on the road network serving the site as a consequence of the proposed development (Figure 6).

- the results of the SIDRA analysis are summarised in the SIDRA analysis schedule included in Chapter 6 revealing that all intersections operate satisfactorily under existing and projected post-development traffic demand
- in these circumstances, it can be concluded that the proposed development has no unacceptable effect in terms of road network capacity
- the proposed development has no unacceptable traffic-related environmental effect because nearly all of the traffic that it generates will approach/depart the site on the higher order road network which serves and passes through the area comprising Windsor Road, Commercial Road, Mile End Road and Green Hills Drive (on completion of the Green Hills Drive Extension)
- it can therefore be concluded that the proposed development has no unacceptable traffic implications.

Appendix A
Traffic Count Data



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client

: John Coady Consulting

Job No/Name

: 5700 ROUSE HILL Commercial Rd

Day/Date

: Tuesday 28th July 2015

PEDS		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0715						0	
0715 - 0730			Not Required			0	
0730 - 0745						0	
0745 - 0800						0	
0800 - 0815						0	
0815 - 0830						0	
0830 - 0845						0	
0845 - 0900						0	
Per End	0	0	0	0	0	0	0

PEAK HR	0	0	0	0	0	0	0
---------	---	---	---	---	---	---	---

Lights		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0715	473	21	11	61	31	255	852
0715 - 0730	451	19	11	44	38	261	824
0730 - 0745	447	10	20	76	28	241	822
0745 - 0800	463	24	22	62	60	305	936
0800 - 0815	408	20	45	77	53	314	917
0815 - 0830	366	18	40	71	73	332	900
0830 - 0845	432	38	41	71	65	295	942
0845 - 0900	420	24	22	70	54	261	851
Per End	3460	174	212	532	402	2264	7044

Heavies		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0715	8	1	1	1	3	20	34
0715 - 0730	18	1	8	1	2	14	44
0730 - 0745	15	2	1	4	6	21	49
0745 - 0800	13	1	2	4	2	15	37
0800 - 0815	14	3	2	3	3	14	39
0815 - 0830	20	5	5	3	3	25	61
0830 - 0845	11	4	6	3	3	14	41
0845 - 0900	15	1	3	3	3	17	39
Per End	114	18	28	19	25	140	344

Combined		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0715	481	22	12	62	34	275	866
0715 - 0730	469	20	19	45	40	275	868
0730 - 0745	462	12	21	80	34	262	871
0745 - 0800	476	25	24	66	62	320	973
0800 - 0815	422	23	47	80	56	328	956
0815 - 0830	386	23	45	74	76	357	961
0830 - 0845	443	42	47	74	68	309	983
0845 - 0900	435	25	25	70	57	278	890
Per End	3574	192	240	551	427	2404	7388

Lights		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0800	1834	74	64	243	157	1062	3434
0715 - 0815	1769	73	98	259	179	1121	3499
0730 - 0830	1684	72	127	286	214	1192	3575
0745 - 0845	1669	100	148	281	251	1246	3695
0800 - 0900	1626	100	148	289	245	1202	3610

Heavies		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0800	54	5	12	10	13	70	164
0715 - 0815	60	7	13	12	13	64	169
0730 - 0830	62	11	10	14	14	75	186
0745 - 0845	58	13	15	13	11	68	178
0800 - 0900	60	13	16	9	12	70	180

Combined		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Windsor Rd	Commercial	Commercial	Windsor Rd	TOT	
0700 - 0800	1888	79	76	253	170	1132	3598
0715 - 0815	1829	80	111	271	192	1185	3668
0730 - 0830	1746	83	137	300	228	1267	3761
0745 - 0845	1727	113	163	294	262	1314	3873
0800 - 0900	1686	113	164	298	257	1272	3790

PEAK HR	1669	100	148	281	251	1246	3695
---------	------	-----	-----	-----	-----	------	------

PEAK HR	58	13	15	13	11	68	178
---------	----	----	----	----	----	----	-----

PEAK HR	1727	113	163	294	262	1314	3873
---------	------	-----	-----	-----	-----	------	------

R.O.A.R. DATA**Reliable, Original & Authentic Results**

Ph.88196847, Fax 88196849.

Mobile.0418239019



Client : John Coady Consulting
 Job No/Name : 5700 ROUSE HILL Commercial Rd
 Day/Date : Tuesday 28th July 2015

PEDS		NORTH		EAST		SOUTH		PEDS		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT	Peak Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1545							0	1530 - 1630	0		0		0		0
1545 - 1600							0	1545 - 1645	0		0		0		0
1600 - 1615				Not Required			0	1600 - 1700	0		0		0		0
1615 - 1630							0	1615 - 1715	0		0		0		0
1630 - 1645							0	1630 - 1730	0		0		0		0
1645 - 1700							0	1645 - 1745	0		0		0		0
1700 - 1715							0	1700 - 1800	0		0		0		0
1715 - 1730							0	1715 - 1815	0		0		0		0
1730 - 1745							0	1730 - 1830	0		0		0		0
1745 - 1800							0								
1800 - 1815							0								
1815 - 1830							0								
Per End	0			0			0	PEAK HR	0		0		0		0

Combined		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1545	329	19	28	49	47	383	855
1545 - 1600	436	24	32	61	58	431	1042
1600 - 1615	356	26	31	58	51	404	926
1615 - 1630	369	26	27	50	61	446	979
1630 - 1645	348	22	31	57	61	438	957
1645 - 1700	437	27	25	62	46	450	1047
1700 - 1715	354	19	47	67	60	396	943
1715 - 1730	439	28	27	69	72	463	1098
1730 - 1745	327	18	30	51	71	395	892
1745 - 1800	301	17	31	59	94	396	898
1800 - 1815	279	26	22	45	70	336	778
1815 - 1830	295	25	17	51	85	321	794
Per End	4270	277	348	679	776	4859	11209

PEDS		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1545							0
1545 - 1600							0
1600 - 1615				Not Required			0
1615 - 1630							0
1630 - 1645							0
1645 - 1700							0
1700 - 1715							0
1715 - 1730							0
1730 - 1745							0
1745 - 1800							0
1800 - 1815							0
1815 - 1830							0
Per End	0			0		0	0

Heavies		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1545	9	0	2	1	2	15	29
1545 - 1600	15	1	3	3	21	44	44
1600 - 1615	13	0	2	5	2	20	42
1615 - 1630	12	1	5	3	0	17	38
1630 - 1645	11	0	2	1	3	9	26
1645 - 1700	6	0	1	2	0	16	25
1700 - 1715	8	1	7	0	0	11	27
1715 - 1730	8	0	0	1	0	13	22
1730 - 1745	4	0	0	0	0	7	11
1745 - 1800	2	1	1	0	0	10	14
1800 - 1815	6	0	0	0	1	6	13
1815 - 1830	4	0	0	0	0	4	8
Per End	98	4	21	16	11	149	299

Lights		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1545	320	19	26	48	45	368	826
1545 - 1600	421	23	31	58	55	410	998
1600 - 1615	343	26	29	53	49	384	884
1615 - 1630	357	25	22	47	61	429	941
1630 - 1645	337	22	29	56	58	429	931
1645 - 1700	431	27	24	60	46	434	1022
1700 - 1715	346	18	40	67	60	385	916
1715 - 1730	431	28	27	68	72	450	1076
1730 - 1745	323	18	30	51	71	388	881
1745 - 1800	299	16	30	59	94	386	884
1800 - 1815	273	26	22	45	69	330	765
1815 - 1830	291	25	17	51	85	317	786
Per End	4172	273	327	663	765	4710	10910

Combined		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1630	1490	95	118	218	217	1664	3802
1545 - 1645	1509	98	121	226	231	1719	3904
1600 - 1700	1510	101	114	227	219	1738	3909
1615 - 1715	1508	94	130	236	228	1730	3926
1630 - 1730	1578	96	130	255	239	1747	4045
1645 - 1745	1557	92	129	249	249	1704	3980
1700 - 1800	1421	82	135	246	297	1650	3831
1715 - 1815	1346	89	110	224	307	1590	3666
1730 - 1830	1202	86	100	206	320	1448	3362
Per End	1578	96	130	255	239	1747	4045

Heavies		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1630	49	2	10	12	7	73	153
1545 - 1645	51	2	10	12	8	67	150
1600 - 1700	42	1	10	11	5	62	131
1615 - 1715	37	2	15	6	3	53	116
1630 - 1730	33	1	10	4	3	49	100
1645 - 1745	26	1	8	3	0	47	85
1700 - 1800	22	2	8	1	0	41	74
1715 - 1815	20	1	1	1	1	36	60
1730 - 1830	16	1	1	0	1	27	46
Per End	33	1	10	4	3	49	100

Lights		NORTH		EAST		SOUTH	
Time Per	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	Windsor Rd	Commercial Rd	TOT
1530 - 1630	1441	93	108	206	210	1591	3649
1545 - 1645	1458	96	111	214	223	1652	3754
1600 - 1700	1468	100	104	216	214	1676	3778
1615 - 1715	1471	92	115	230	225	1677	3810
1630 - 1730	1545	95	120	251	236	1698	3945
1645 - 1745	1531	91	121	246	249	1657	3895
1700 - 1800	1399	80	127	245	297	1609	3757
1715 - 1815	1326	88	109	223	306	1554	3606
1730 - 1830	1186	85	99	206	319	1421	3316
Per End	1545	95	120	251	236	1698	3945



R.O.A.R. DATA
 Reliable, Original & Authentic Results
 Ph.88196847, Fax 88196849.
 Mobile.0418239019

Client : John Coady Consulting
 Job No/Name : 5700 ROUSE HILL Commercial Rd
 Day/Date : Tuesday 28th July 2015

PEDS	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Peak Per						
0700 - 0800	0		0	0	0	0
0715 - 0815	0		0	0	0	0
0730 - 0830	0		0	0	0	0
0745 - 0845	0		0	0	0	0
0800 - 0900	0		0	0	0	0

PEDS	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Time Per						
0700 - 0715						0
0715 - 0730			Not required			0
0730 - 0745						0
0745 - 0800						0
0800 - 0815						0
0815 - 0830						0
0830 - 0845						0
0845 - 0900						0
Per End	0		0	0	0	0

PEAK HR	0	0	0	0	0	0
---------	---	---	---	---	---	---

Combined	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Time Per						
0700 - 0715	50	3	0	1	1	81
0715 - 0730	51	4	1	3	1	65
0730 - 0745	40	2	2	1	1	92
0745 - 0800	86	12	3	0	2	99
0800 - 0815	70	5	4	1	3	114
0815 - 0830	94	7	3	3	5	112
0830 - 0845	111	4	5	7	7	124
0845 - 0900	66	8	6	2	3	91
Per End	568	45	24	18	23	778

Heavies	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Time Per						
0700 - 0715	4	0	0	0	0	6
0715 - 0730	3	0	0	0	0	10
0730 - 0745	8	0	0	0	0	2
0745 - 0800	3	0	0	0	0	4
0800 - 0815	8	0	0	0	0	6
0815 - 0830	8	0	0	0	0	8
0830 - 0845	6	0	0	0	0	11
0845 - 0900	3	0	0	0	0	3
Per End	43	0	0	0	0	50

Lights	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Time Per						
0700 - 0715	46	3	0	1	1	75
0715 - 0730	48	4	1	3	1	55
0730 - 0745	32	2	2	1	1	90
0745 - 0800	83	12	3	0	2	95
0800 - 0815	62	5	4	1	3	108
0815 - 0830	86	7	3	3	5	104
0830 - 0845	105	4	5	7	7	113
0845 - 0900	63	8	6	2	3	88
Per End	525	45	24	18	23	728

Combined	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Peak Per						
0700 - 0800	227	21	6	5	5	337
0715 - 0815	177	18	6	4	4	266
0730 - 0830	196	19	9	2	6	305
0745 - 0845	250	24	10	4	10	325
0800 - 0900	275	16	12	11	15	350

Heavies	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Peak Per						
0700 - 0800	18	0	0	0	0	22
0715 - 0815	14	0	0	0	0	16
0730 - 0830	19	0	0	0	0	12
0745 - 0845	19	0	0	0	0	18
0800 - 0900	22	0	0	0	0	25

Lights	WEST		NORTH		EAST	
	Commercial	Pd	Masters	Commercial	Pd	TOT
Peak Per						
0700 - 0800	209	21	6	5	5	315
0715 - 0815	163	18	6	4	4	240
0730 - 0830	177	19	9	2	6	293
0745 - 0845	231	24	10	4	10	307
0800 - 0900	253	16	12	11	15	325

PEAK HR	253	16	12	11	15	325
---------	-----	----	----	----	----	-----

PEAK HR	22	0	0	0	0	25
---------	----	---	---	---	---	----

PEAK HR	253	16	12	11	15	325
---------	-----	----	----	----	----	-----



R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : John Coady Consulting
Job No/Name : 5700 ROUSE HILL Commercial Rd
Day/Date : Tuesday 28th July 2015

PEDS		WEST Commercial Pd	NORTH Masters	EAST Commercial Pd	TOT
Time Per	Peak Per				
1530 - 1545	1530 - 1630	0	0	0	0
1545 - 1600	1545 - 1645	0	0	0	0
1600 - 1615	1600 - 1700	0	0	0	0
1615 - 1630	1615 - 1715	0	0	0	0
1630 - 1645	1630 - 1730	0	0	0	0
1645 - 1700	1645 - 1745	0	0	0	0
1700 - 1715	1700 - 1800	0	0	0	0
1715 - 1730	1715 - 1815	0	0	0	0
1730 - 1745	1730 - 1830	0	0	0	0
1745 - 1800					
1800 - 1815					
1815 - 1830					
Per End		0	0	0	0
PEAK HR		0	0	0	0

PEDS		WEST Commercial Pd	NORTH Masters	EAST Commercial Pd	TOT
Time Per	Peak Per				
1530 - 1545					0
1545 - 1600			Not required		0
1600 - 1615					0
1615 - 1630					0
1630 - 1645					0
1645 - 1700					0
1700 - 1715					0
1715 - 1730					0
1730 - 1745					0
1745 - 1800					0
1800 - 1815					0
1815 - 1830					0
Per End		0	0	0	0

Lights		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1545	1530 - 1545	65	8	14	87
1545 - 1600	1545 - 1600	64	14	6	84
1600 - 1615	1600 - 1615	62	11	7	80
1615 - 1630	1615 - 1630	72	12	10	94
1630 - 1645	1630 - 1645	59	13	15	87
1645 - 1700	1645 - 1700	64	16	12	92
1700 - 1715	1700 - 1715	68	11	14	93
1715 - 1730	1715 - 1730	86	11	13	110
1730 - 1745	1730 - 1745	81	6	11	98
1745 - 1800	1745 - 1800	104	6	11	121
1800 - 1815	1800 - 1815	90	8	10	108
1815 - 1830	1815 - 1830	82	7	11	100
Per End		897	123	143	1163

Heavies		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1545	1530 - 1545	1	0	0	1
1545 - 1600	1545 - 1600	4	0	0	4
1600 - 1615	1600 - 1615	2	0	0	2
1615 - 1630	1615 - 1630	1	0	0	1
1630 - 1645	1630 - 1645	2	1	0	3
1645 - 1700	1645 - 1700	0	0	0	0
1700 - 1715	1700 - 1715	1	0	0	1
1715 - 1730	1715 - 1730	0	1	0	1
1730 - 1745	1730 - 1745	0	0	0	0
1745 - 1800	1745 - 1800	1	0	0	1
1800 - 1815	1800 - 1815	1	0	0	1
1815 - 1830	1815 - 1830	0	0	0	0
Per End		13	1	0	14

Lights		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1545	1530 - 1545	66	8	14	88
1545 - 1600	1545 - 1600	68	14	15	97
1600 - 1615	1600 - 1615	64	11	9	84
1615 - 1630	1615 - 1630	73	12	14	99
1630 - 1645	1630 - 1645	61	14	15	90
1645 - 1700	1645 - 1700	64	16	12	92
1700 - 1715	1700 - 1715	69	11	14	94
1715 - 1730	1715 - 1730	86	11	14	111
1730 - 1745	1730 - 1745	81	6	11	98
1745 - 1800	1745 - 1800	105	6	11	122
1800 - 1815	1800 - 1815	91	8	10	109
1815 - 1830	1815 - 1830	82	7	11	100
Per End		910	124	144	1178

Heavies		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1630	1530 - 1630	8	0	0	8
1545 - 1645	1545 - 1645	9	1	0	10
1600 - 1700	1600 - 1700	5	1	0	6
1615 - 1715	1615 - 1715	4	1	0	5
1630 - 1730	1630 - 1730	3	1	0	4
1645 - 1745	1645 - 1745	1	0	0	1
1700 - 1800	1700 - 1800	2	0	1	3
1715 - 1815	1715 - 1815	2	0	1	3
1730 - 1830	1730 - 1830	2	0	0	2
Per End		45	3	1	49

Lights		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1630	1530 - 1630	263	45	28	336
1545 - 1645	1545 - 1645	257	50	30	337
1600 - 1700	1600 - 1700	257	52	29	338
1615 - 1715	1615 - 1715	263	52	25	340
1630 - 1730	1630 - 1730	277	51	25	353
1645 - 1745	1645 - 1745	299	44	27	370
1700 - 1800	1700 - 1800	339	34	25	398
1715 - 1815	1715 - 1815	361	31	23	415
1730 - 1830	1730 - 1830	357	27	19	403
Per End		339	34	25	398

Lights		WEST Commercial	NORTH Masters	EAST Commercial	TOT
Time Per	Peak Per				
1530 - 1630	1530 - 1630	271	45	28	344
1545 - 1645	1545 - 1645	266	51	30	347
1600 - 1700	1600 - 1700	262	53	29	344
1615 - 1715	1615 - 1715	267	53	25	345
1630 - 1730	1630 - 1730	280	52	25	357
1645 - 1745	1645 - 1745	300	44	27	371
1700 - 1800	1700 - 1800	341	34	25	399
1715 - 1815	1715 - 1815	363	31	23	417
1730 - 1830	1730 - 1830	359	27	19	405
Per End		341	34	25	399

Reliable, Original & Authentic Results

Reliable, Original & Authen-
Ph.88196847, Fax 88196849.

Client : John Coady Consulting
Job No/Name : 5700 ROUSE HILL Commercial Rd
Day/Date : Tuesday 28th July 2015

PEAK HR	0	0	0	0
---------	---	---	---	---

Combined	WEST		SOUTH		EAST	
	Commercial		Caddies Blve		Commercial	
	I	R	L	R	L	R
Time Per						TOT
0700 - 0715	43	2	12	24	37	73
0715 - 0730	58	3	10	21	53	55
0730 - 0745	45	7	11	29	39	85
0745 - 0800	61	13	15	33	48	102
0800 - 0815	71	6	18	36	42	95
0815 - 0830	84	13	23	39	44	91
0830 - 0845	76	22	14	29	76	106
0845 - 0900	44	17	6	34	87	74
Per End	482	83	109	245	426	681
						2026

[illegible][illegible][illegible]



R.O.A.R. DATA

Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : John Coady Consulting
Job No/Name : 5700 ROUSE HILL Commercial Rd
Day/Date : Tuesday 28th July 2015

PEDS		WEST		SOUTH		EAST		PEDS		WEST		SOUTH		EAST	
Time Per	Commercial	Caddies Blve		Commercial		Commercial		Peak Per	Commercial	Caddies Blve		Commercial		Commercial	
1530 - 1545		Not required						1530 - 1630							
1545 - 1600								1545 - 1645							
1600 - 1615								1600 - 1700							
1615 - 1630								1615 - 1715							
1630 - 1645								1630 - 1730							
1645 - 1700								1645 - 1745							
1700 - 1715								1700 - 1800							
1715 - 1730								1715 - 1815							
1730 - 1745								1730 - 1830							
1745 - 1800															
1800 - 1815															
1815 - 1830															
Per End		0		0		0									
								PEAK HR		0		0		0	

Lights		WEST		SOUTH		EAST		Combined		WEST		SOUTH		EAST	
Time Per	Commercial	Caddies Blve		Commercial		Commercial		Time Per	Commercial	Caddies Blve		Commercial		Commercial	
1530 - 1545	60	25	13	54	89	67	308	1530 - 1545	62	25	13	58	94	72	324
1545 - 1600	54	20	10	56	55	57	252	1545 - 1600	56	20	10	57	56	61	260
1600 - 1615	57	15	18	66	53	56	265	1600 - 1615	59	15	19	72	56	62	283
1615 - 1630	72	16	6	72	52	42	260	1615 - 1630	73	17	8	72	56	47	273
1630 - 1645	48	10	16	66	40	59	239	1630 - 1645	49	10	17	67	41	63	247
1645 - 1700	52	13	20	62	51	57	255	1645 - 1700	53	13	20	64	53	62	265
1700 - 1715	61	16	12	67	69	74	299	1700 - 1715	61	16	12	70	70	77	306
1715 - 1730	70	11	14	60	41	42	238	1715 - 1730	70	11	14	63	42	42	242
1730 - 1745	62	9	16	81	41	53	262	1730 - 1745	62	9	16	83	42	53	265
1745 - 1800	76	16	15	57	31	58	253	1745 - 1800	77	16	16	59	33	58	259
1800 - 1815	70	8	13	50	37	34	212	1800 - 1815	71	8	13	52	38	34	216
1815 - 1830	76	10	10	57	34	43	230	1815 - 1830	76	10	10	60	36	43	235
Per End	758	169	163	748	593	642	3073	Per End	769	170	168	777	617	674	3175

Lights		WEST		SOUTH		EAST		Combined		WEST		SOUTH		EAST	
Time Per	Commercial	Caddies Blve		Commercial		Commercial		Time Per	Commercial	Caddies Blve		Commercial		Commercial	
1530 - 1630	243	76	47	248	249	222	1085	1530 - 1630	250	77	50	259	262	242	1140
1545 - 1645	231	61	50	260	200	214	1016	1545 - 1645	237	62	54	268	209	233	1063
1600 - 1700	229	54	60	266	196	214	1019	1600 - 1700	234	55	64	275	206	234	1068
1615 - 1715	233	55	54	267	212	232	1053	1615 - 1715	236	56	57	273	220	249	1091
1630 - 1730	231	50	62	255	201	232	1031	1630 - 1730	233	50	63	264	206	244	1080
1645 - 1745	245	49	62	270	202	226	1054	1645 - 1745	246	49	62	280	207	234	1078
1700 - 1800	269	52	57	265	182	227	1052	1700 - 1800	270	52	58	275	187	230	1072
1715 - 1815	278	44	58	248	150	187	965	1715 - 1815	280	44	59	257	155	187	982
1730 - 1830	284	43	54	245	143	188	957	1730 - 1830	286	43	55	254	149	188	975
PEAK HR	243	76	47	248	249	222	1085	PEAK HR	250	77	50	259	262	242	1140



R.O.A.R. DATA
 Reliable, Original & Authentic Results
 Ph.88196847, Fax 88196849.
 Mobile.0418239019

Client : John Coady Consulting
 Job No/Name : 5700 ROUSE HILL Commercial Rd
 Day/Date : Tuesday 28th July 2015

PEDS		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0715									
0715 - 0730			Not required						
0730 - 0745									
0745 - 0800									
0800 - 0815									
0815 - 0830									
0830 - 0845									
0845 - 0900									
Per End	0	0	0	0	0	0	0	0	0

PEAK HR	0	0	0	0	0	0	0	0	0
----------------	----------	----------	----------	----------	----------	----------	----------	----------	----------

Lights		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0715	59	7	19	9	1	84	179		
0715 - 0730	64	5	22	8	6	80	185		
0730 - 0745	52	5	28	15	4	99	203		
0745 - 0800	82	10	20	18	4	112	245		
0800 - 0815	78	13	20	10	3	108	232		
0815 - 0830	108	4	17	28	14	115	286		
0830 - 0845	101	11	17	32	32	164	357		
0845 - 0900	63	10	13	12	23	135	256		
Per End	607	65	156	132	87	837	1944		

Heavies		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0715	7	0	0	0	0	0	6	13	
0715 - 0730	5	0	0	0	0	0	5	11	
0730 - 0745	11	0	0	0	0	0	5	16	
0745 - 0800	1	0	0	0	0	0	5	6	
0800 - 0815	9	0	0	0	0	0	8	17	
0815 - 0830	11	0	0	0	0	0	6	17	
0830 - 0845	4	0	0	0	0	0	11	15	
0845 - 0900	3	0	0	0	0	0	8	11	
Per End	51	0	0	0	0	0	55	106	

Combined		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0715	66	7	19	9	1	90	192		
0715 - 0730	69	5	22	8	6	86	196		
0730 - 0745	63	5	28	15	4	104	219		
0745 - 0800	83	10	20	18	4	117	252		
0800 - 0815	87	13	20	10	3	116	249		
0815 - 0830	119	4	17	28	14	121	303		
0830 - 0845	105	11	17	32	32	175	372		
0845 - 0900	66	10	13	12	23	143	267		
Per End	658	65	156	132	87	952	2050		

Lights		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0800	257	27	89	50	15	375	813		
0715 - 0815	198	20	70	41	14	291	634		
0730 - 0830	212	28	68	43	11	319	681		
0745 - 0845	268	27	57	56	21	335	764		
0800 - 0900	287	28	54	70	49	387	875		

Heavies		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0800	24	0	0	0	0	22	46		
0715 - 0815	17	0	0	0	0	16	33		
0730 - 0830	21	0	0	0	0	18	39		
0745 - 0845	21	0	0	0	0	19	40		
0800 - 0900	24	0	0	0	0	25	49		

Combined		WEST		NORTH		EAST		TOT	
Time Per	Commercial	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av	Commercial	McCombe Av
0700 - 0800	281	27	89	50	15	397	859		
0715 - 0815	215	20	70	41	14	307	667		
0730 - 0830	233	28	68	43	11	337	720		
0745 - 0845	289	27	57	56	21	354	804		
0800 - 0900	311	28	54	70	49	412	924		

PEAK HR	287	28	54	70	49	387	875		
----------------	------------	-----------	-----------	-----------	-----------	------------	------------	--	--



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849.

Mobile.0418239019

Client

: John Coady Consulting

Job No/Name : 5700 ROUSE HILL Commercial Rd

Day/Date : Tuesday 28th July 2015

PEDS		WEST	NORTH	EAST	TOT
Peak Per		Commercial	McCombe Av	Commercial	
1530 - 1630	1630	0	0	0	0
1545 - 1645	1645	0	0	0	0
1600 - 1700	1700	0	0	0	0
1615 - 1715	1715	0	0	0	0
1630 - 1730	1730	0	0	0	0
1645 - 1745	1745	0	0	0	0
1700 - 1800	1800	0	0	0	0
1715 - 1815	1815	0	0	0	0
1730 - 1830	1830	0	0	0	0
PEAK HR		0	0	0	0

PEDS		WEST	NORTH	EAST	TOT
Time Per		Commercial	McCombe Av	Commercial	
1530 - 1545	1545				0
1545 - 1600	1600		Not required		0
1600 - 1615	1615				0
1615 - 1630	1630				0
1630 - 1645	1645				0
1645 - 1700	1700				0
1700 - 1715	1715				0
1715 - 1730	1730				0
1730 - 1745	1745				0
1745 - 1800	1800				0
1800 - 1815	1815				0
1815 - 1830	1830				0
Per End		0	0	0	0

Combined		WEST	NORTH	EAST	TOT
Time Per		Commercial	McCombe Av	Commercial	
1530 - 1545	1545	94	20	18	134
1545 - 1600	1600	87	25	19	131
1600 - 1615	1615	103	22	14	139
1615 - 1630	1630	105	28	17	150
1630 - 1645	1645	107	30	24	161
1645 - 1700	1700	110	24	14	148
1700 - 1715	1715	89	39	21	149
1715 - 1730	1730	112	31	11	154
1730 - 1745	1745	132	27	15	174
1745 - 1800	1800	125	23	13	161
1800 - 1815	1815	107	23	13	143
1815 - 1830	1830	122	22	9	153
Per End		1293	314	188	1795

Heavies		WEST	NORTH	EAST	TOT
Time Per		Commercial	McCombe Av	Commercial	
1530 - 1545	1545	5	0	0	5
1545 - 1600	1600	5	0	0	5
1600 - 1615	1615	7	0	0	7
1615 - 1630	1630	2	0	0	2
1630 - 1645	1645	2	0	0	2
1645 - 1700	1700	1	0	0	1
1700 - 1715	1715	4	0	0	4
1715 - 1730	1730	1	0	0	1
1730 - 1745	1745	2	0	0	2
1745 - 1800	1800	2	0	0	2
1800 - 1815	1815	4	0	0	4
1815 - 1830	1830	3	0	0	3
Per End		37	0	0	37

Lights		WEST	NORTH	EAST	TOT
Time Per		Commercial	McCombe Av	Commercial	
1530 - 1545	1545	89	20	16	125
1545 - 1600	1600	82	25	19	126
1600 - 1615	1615	96	22	14	132
1615 - 1630	1630	103	28	17	148
1630 - 1645	1645	105	30	24	159
1645 - 1700	1700	109	24	14	147
1700 - 1715	1715	85	39	21	145
1715 - 1730	1730	111	31	11	153
1730 - 1745	1745	130	27	15	172
1745 - 1800	1800	123	23	13	159
1800 - 1815	1815	103	23	13	139
1815 - 1830	1830	120	22	9	151
Per End		1256	314	188	1758

Combined		WEST	NORTH	EAST	TOT
Peak Per		Commercial	McCombe Av	Commercial	
1530 - 1630	1630	389	95	68	552
1545 - 1645	1645	402	105	74	581
1600 - 1700	1700	425	104	69	598
1615 - 1715	1715	411	121	76	608
1630 - 1730	1730	418	124	70	612
1645 - 1745	1745	443	121	61	625
1700 - 1800	1800	458	120	60	638
1715 - 1815	1815	476	104	52	632
1730 - 1830	1830	486	95	50	631
PEAK HR		418	124	70	612

Heavies		WEST	NORTH	EAST	TOT
Peak Per		Commercial	McCombe Av	Commercial	
1530 - 1630	1630	19	0	0	19
1545 - 1645	1645	16	0	0	16
1600 - 1700	1700	12	0	0	12
1615 - 1715	1715	9	0	0	9
1630 - 1730	1730	8	0	0	8
1645 - 1745	1745	8	0	0	8
1700 - 1800	1800	9	0	0	9
1715 - 1815	1815	9	0	0	9
1730 - 1830	1830	10	0	0	10
PEAK HR		8	0	0	8

Lights		WEST	NORTH	EAST	TOT
Peak Per		Commercial	McCombe Av	Commercial	
1530 - 1630	1630	370	95	68	533
1545 - 1645	1645	386	105	74	565
1600 - 1700	1700	413	104	69	586
1615 - 1715	1715	402	121	76	599
1630 - 1730	1730	410	124	70	604
1645 - 1745	1745	435	121	61	617
1700 - 1800	1800	449	120	60	629
1715 - 1815	1815	467	104	52	623
1730 - 1830	1830	476	95	50	621
PEAK HR		410	124	70	604



R.O.A.R. DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : John Coady Consulting
Job No/Name : 5700 ROUSE HILL Commercial Rd
Day/Date : Tuesday 28th July 2015

PEDS Peak Per	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
0700 - 0800	0	0	0	0	0	0
0715 - 0815	0	0	0	0	0	0
0730 - 0830	0	0	0	0	0	0
0745 - 0845	0	0	0	0	0	0
0800 - 0900	0	0	0	0	0	0

WEST		NORTH		EAST	
Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
0700 - 0715					0
0715 - 0730		Not required			0
0730 - 0745					0
0745 - 0800					0
0800 - 0815					0
0815 - 0830					0
0830 - 0845					0
0845 - 0900					0
Per End	0	0	0	0	0

PEAK HR	0	0	0	0	0	0
---------	---	---	---	---	---	---

Combined	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0715	11	1	0	14	12	39
0715 - 0730	4	2	2	16	8	35
0730 - 0745	4	7	2	17	12	45
0745 - 0800	2	1	1	22	14	40
0800 - 0815	9	4	2	16	13	46
0815 - 0830	7	4	0	30	20	64
0830 - 0845	7	1	3	26	37	77
0845 - 0900	1	2	1	21	31	57
Per End	45	22	11	162	147	403

Heavies	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0715	0	0	0	0	0	0
0715 - 0730	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0
0815 - 0830	0	0	0	0	0	0
0830 - 0845	0	0	0	0	0	0
0845 - 0900	0	0	0	0	0	0
Per End	0	0	0	0	0	0

Lights	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0715	11	1	0	14	12	39
0715 - 0730	4	2	2	16	8	35
0730 - 0745	4	7	2	17	12	45
0745 - 0800	2	1	1	22	14	40
0800 - 0815	9	4	2	16	13	46
0815 - 0830	7	4	0	30	20	64
0830 - 0845	7	1	3	26	37	77
0845 - 0900	1	2	1	21	31	57
Per End	45	22	11	162	147	403

Combined	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0800	21	11	5	69	46	159
0715 - 0815	10	10	5	55	34	120
0730 - 0830	15	12	5	55	39	131
0745 - 0845	18	9	3	68	47	150
0800 - 0900	23	9	5	72	70	187

Heavies	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0800	0	0	0	0	0	0
0715 - 0815	0	0	0	0	0	0
0730 - 0830	0	0	0	0	0	0
0745 - 0845	0	0	0	0	0	0
0800 - 0900	0	0	0	0	0	0

Lights	WEST		NORTH		EAST	
	Carnoustie St	Green Hills Dr	Carnoustie St	Green Hills Dr	Carnoustie St	TOT
Time Per	I	R	I	R	I	TOT
0700 - 0800	21	11	5	69	46	159
0715 - 0815	10	10	5	55	34	120
0730 - 0830	15	12	5	55	39	131
0745 - 0845	18	9	3	68	47	150
0800 - 0900	23	9	5	72	70	187

PEAK HR	23	9	5	72	70	8	187
---------	----	---	---	----	----	---	-----

PEAK HR	0	0	0	0	0	0	0
---------	---	---	---	---	---	---	---

PEAK HR	23	9	5	72	70	8	187
---------	----	---	---	----	----	---	-----



R.O.A.R. DATA
 Reliable, Original & Authentic Results
 Ph.88196847, Fax 88196849.
 Mobile.0418239019

Client : John Coady Consulting
 Job No/Name : 5700 ROUSE HILL Commercial Rd
 Day/Date : Tuesday 28th July 2015

PEDS		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1630	0	0	0	0	0	0	0	0
1545 - 1600	1545 - 1645	0	0	0	0	0	0	0	0
1600 - 1615	1600 - 1700	0	0	0	0	0	0	0	0
1615 - 1630	1615 - 1715	0	0	0	0	0	0	0	0
1630 - 1645	1630 - 1730	0	0	0	0	0	0	0	0
1645 - 1700	1645 - 1745	0	0	0	0	0	0	0	0
1700 - 1715	1700 - 1800	0	0	0	0	0	0	0	0
1715 - 1730	1715 - 1815	0	0	0	0	0	0	0	0
1730 - 1745	1730 - 1830	0	0	0	0	0	0	0	0
1745 - 1800									
1800 - 1815									
1815 - 1830									
Per End		0	0	0	0	0	0	0	0
PEAK HR		0	0	0	0	0	0	0	0

Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

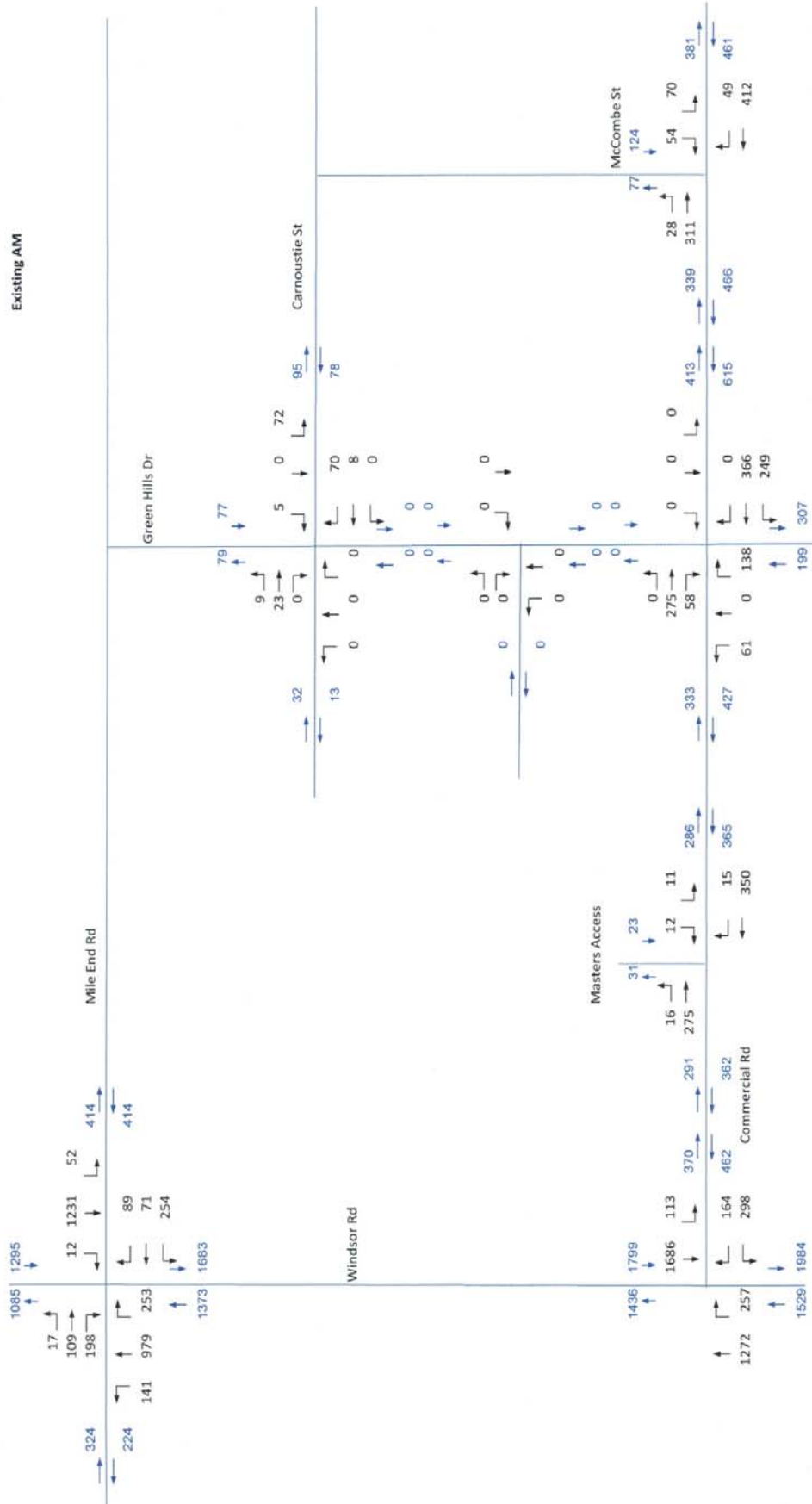
Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

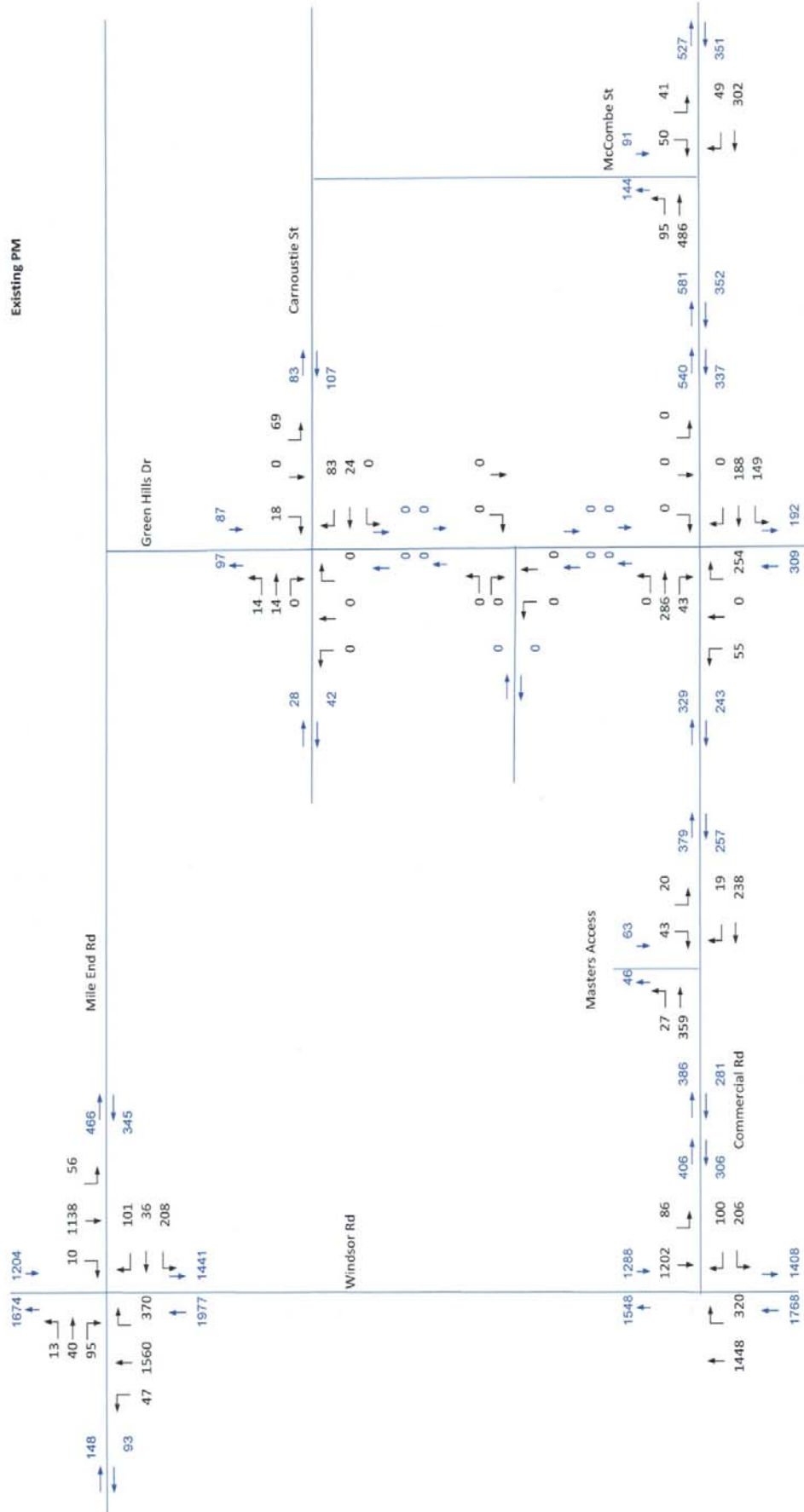
Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65
1800 - 1815	1800 - 1815	5	2	2	17	18	6	50	50
1815 - 1830	1815 - 1830	2	1	0	13	20	4	40	40
Per End		37	39	49	257	295	71	748	748

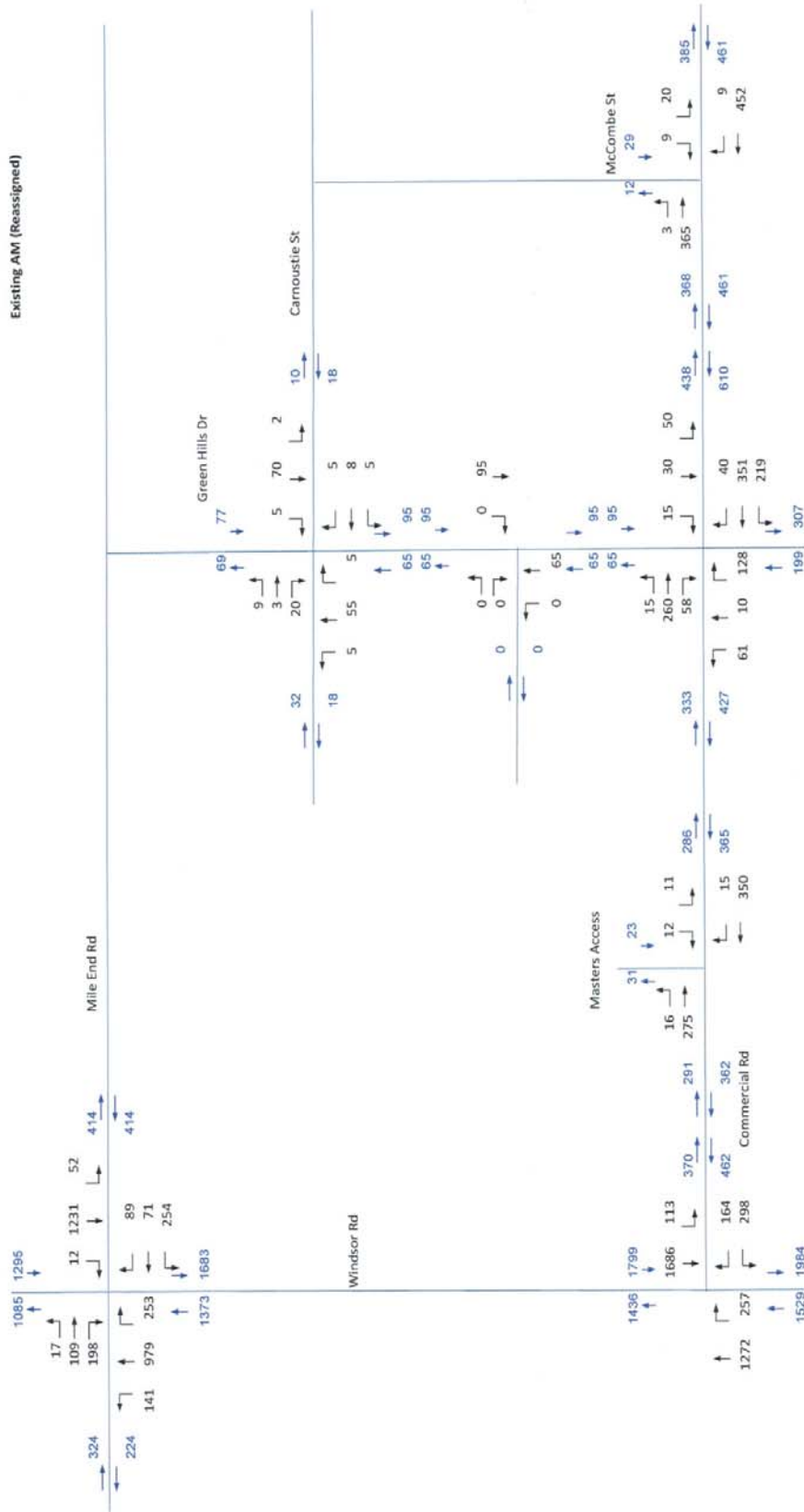
Lights		WEST		NORTH		EAST		TOT	
Time Per	Peak Per	Carnoustie	Green Hills	Green Hills	Green Hills	Carnoustie	Carnoustie	Carnoustie	Carnoustie
1530 - 1545	1530 - 1545	3	4	11	49	21	12	100	100
1545 - 1600	1545 - 1600	5	5	9	21	27	4	71	71
1600 - 1615	1600 - 1615	2	3	3	19	30	4	61	61
1615 - 1630	1615 - 1630	1	0	0	17	27	3	48	48
1630 - 1645	1630 - 1645	3	2	0	26	27	6	64	64
1645 - 1700	1645 - 1700	3	2	2	18	21	5	51	51
1700 - 1715	1700 - 1715	2	4	3	24	34	4	71	71
1715 - 1730	1715 - 1730	4	5	3	14	25	9	60	60
1730 - 1745	1730 - 1745	3	5	8	24	19	8	67	67
1745 - 1800	1745 - 1800	4	6	8	15	26	6	65	65

Appendix B
Traffic Flow Diagrams Adopted for the purposes of the SIDRA Analysis

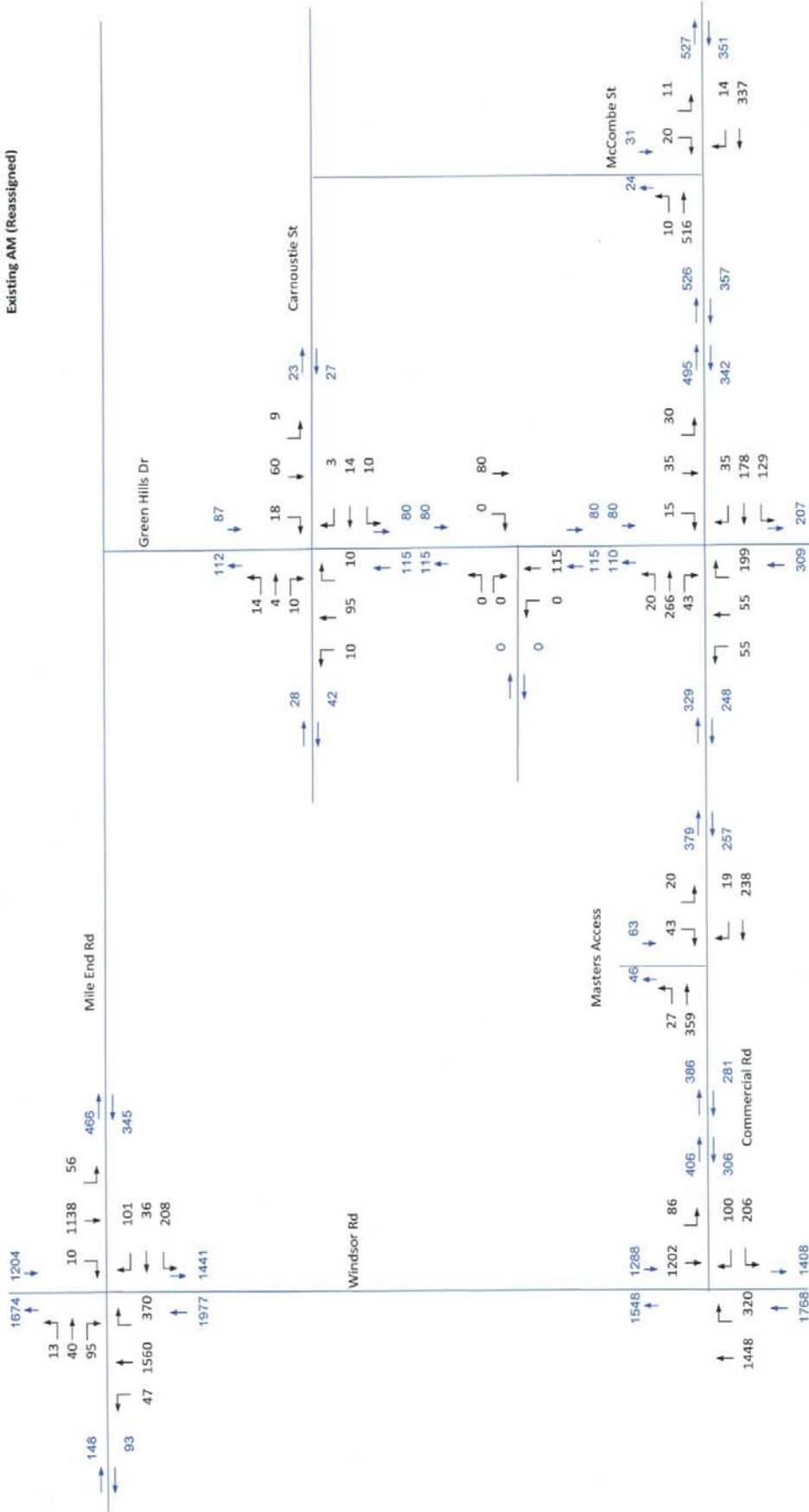


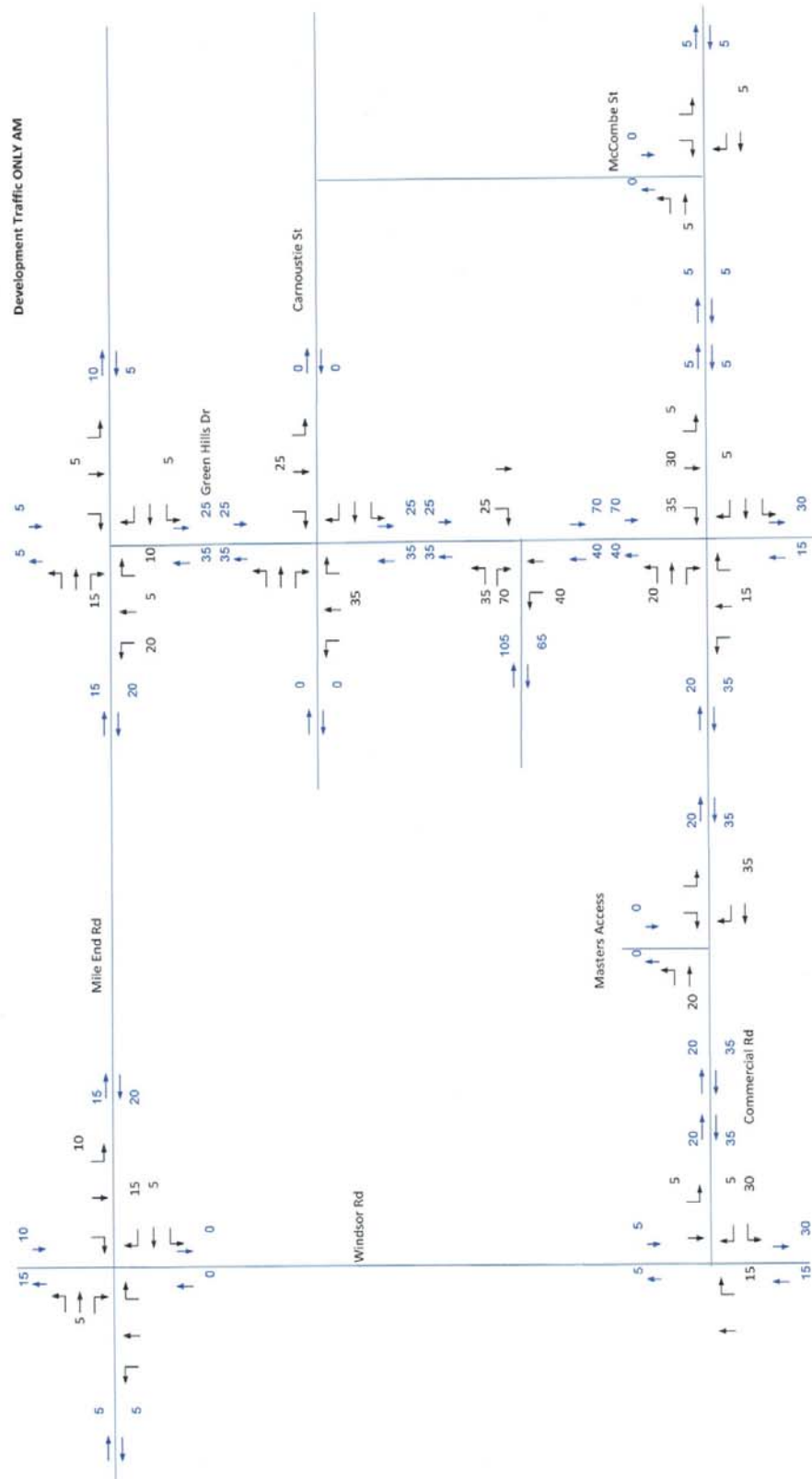


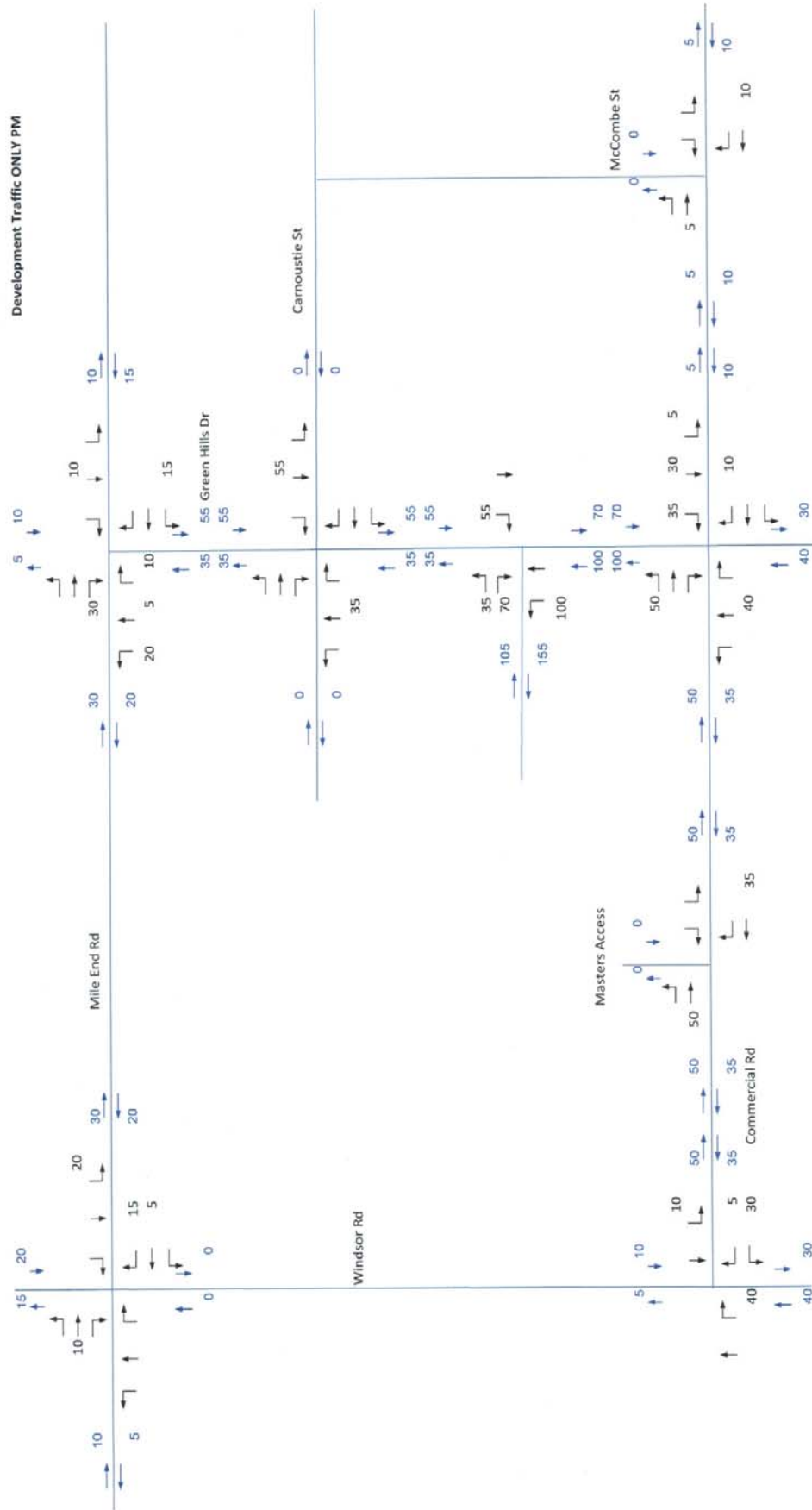
Existing AM (Reassigned)

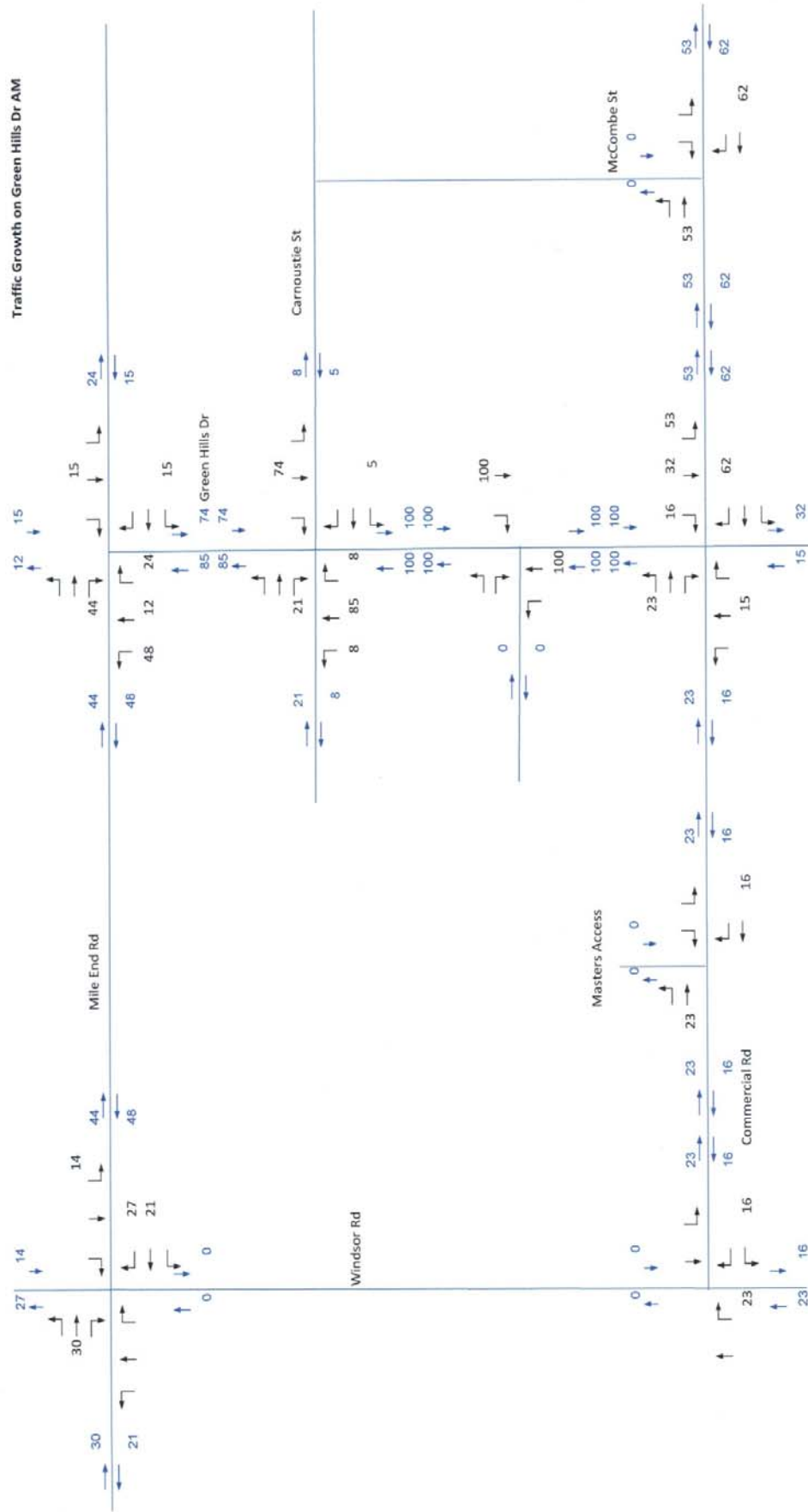


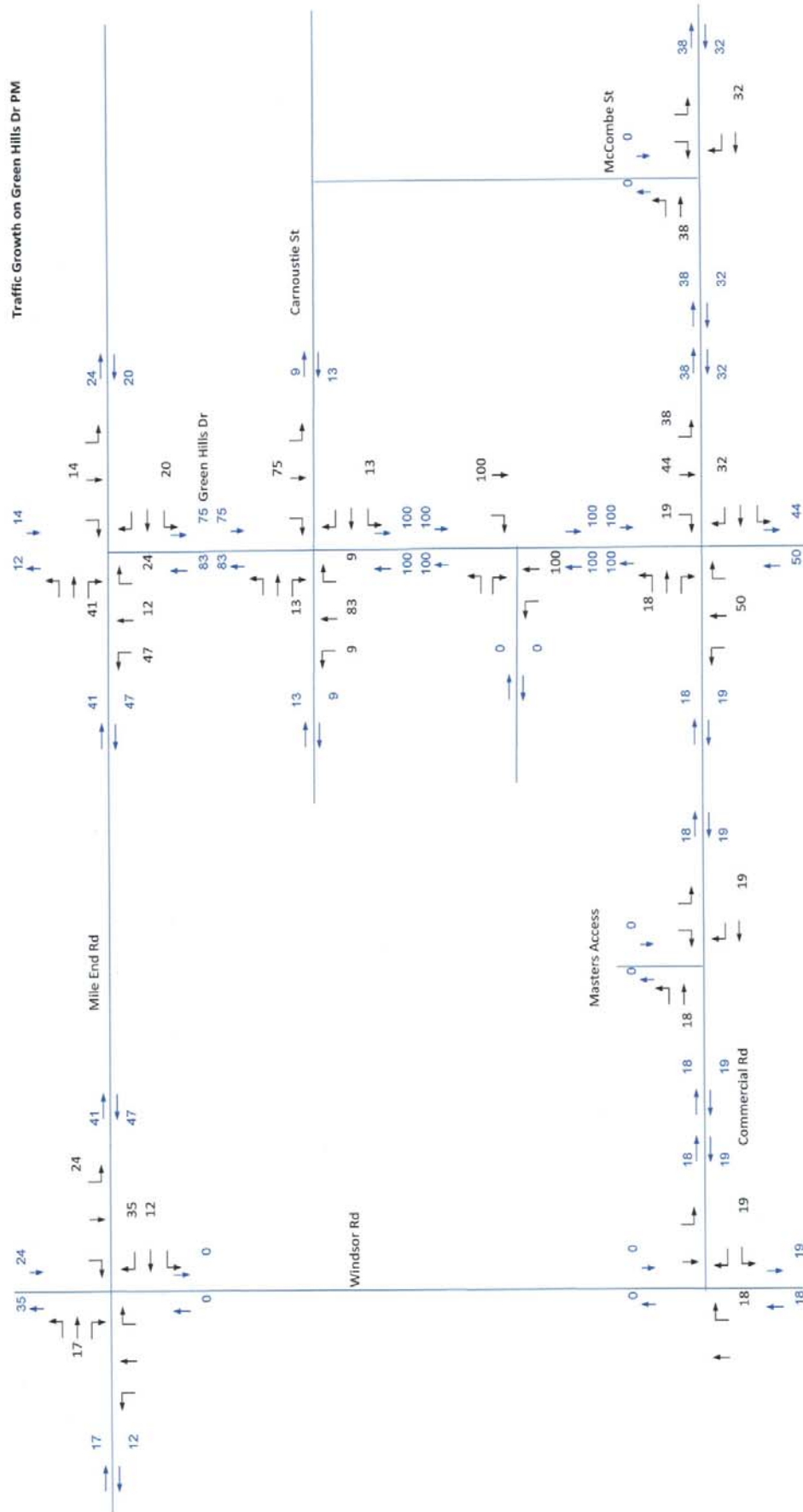
Existing AM (Reassigned)

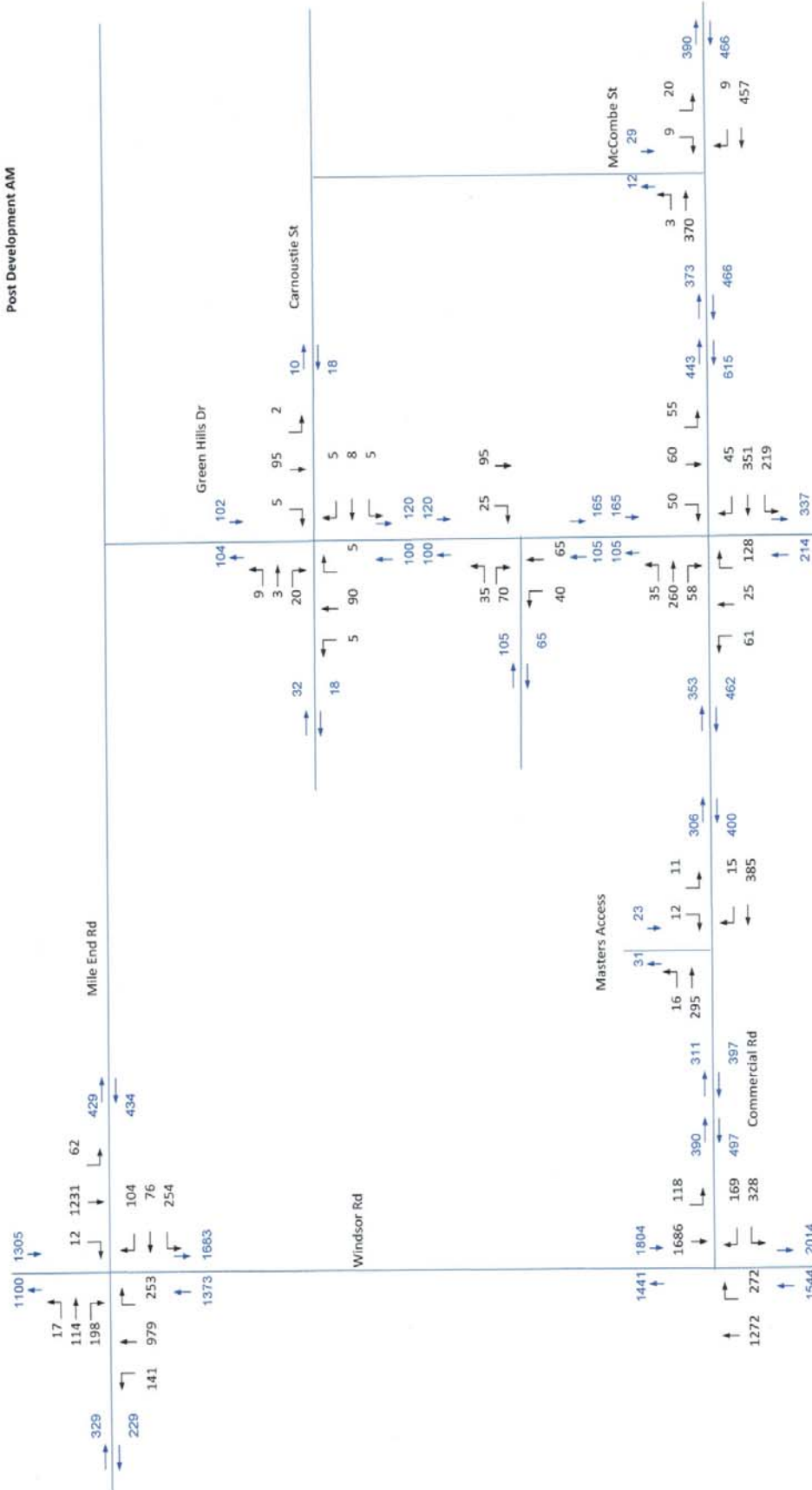




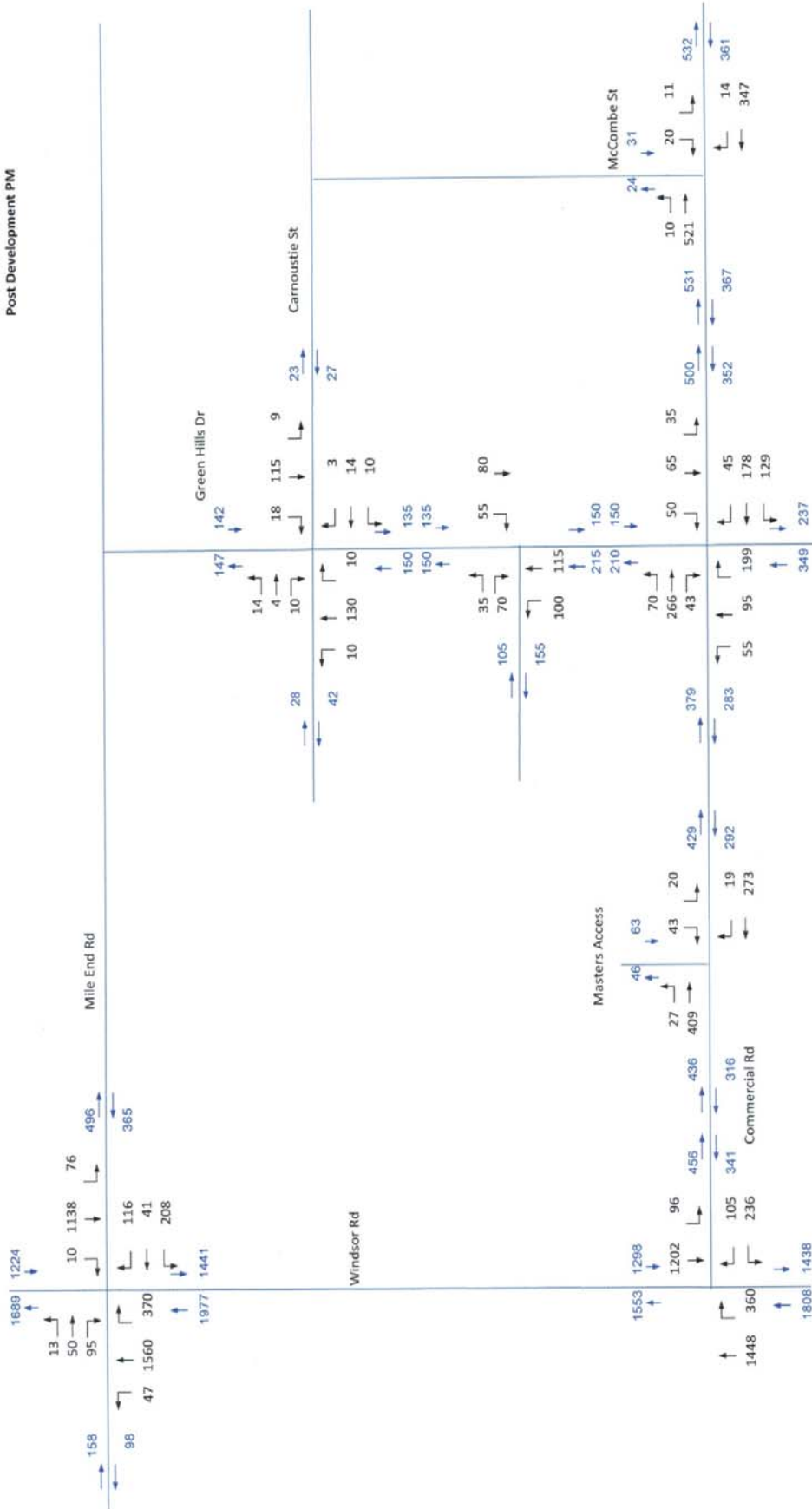




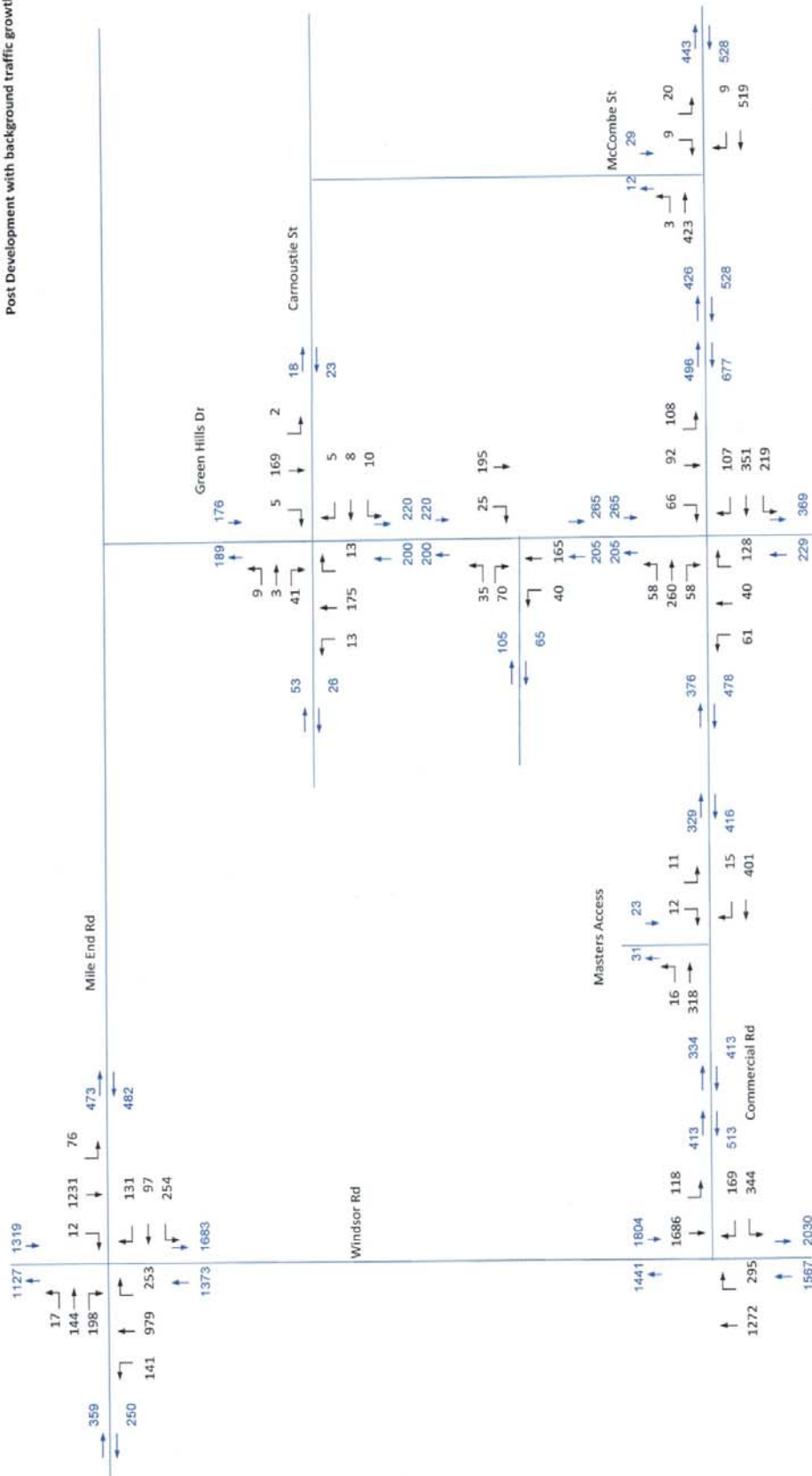




Post Development PM



Post Development with background traffic growth AM



Post Development with background traffic growth PM

