

# City of Ryde

## Application – Macquarie Park Corridor Growth Model (for applications with Floor Space increases over the existing site or green fields site of 1000 m<sup>2</sup> or more)

Your application should be lodged and fees paid so that there is sufficient time for the model to be prepared and validated by Council in combination with the supporting Traffic Impact Study (TIS). See back of form for full conditions regarding the use of the model and Council's requirements to facilitate a timely review that will minimise any impacts on the development review timeline.

### Applicant Details

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Mobile: \_\_\_\_\_ Fax: \_\_\_\_\_

### Location Details

Street Name: \_\_\_\_\_

Suburb: \_\_\_\_\_

### Reason for Requesting Model Information

---

---

---

Note: Council will forward an information 'kit' containing the following within '5' working days upon receipt of this application with corresponding payment verified :

1. Traffic Impact Assessment Process for Macquarie Park Development Applications.
2. Paramics Model for the Macquarie Park Corridor.
3. Macquarie Park Corridor Paramics Model User Manual.

I hereby request permission to use Council's Macquarie Park Corridor Growth Model to facilitate the review impacts of the proposed development of the adjoining road network

I agree to comply with Council's conditions as set out on the next page

First Application (primary review)

Second Application (second review as directed by Council officers)

**Applicants Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

#### Privacy Notification

In completing this form you will be prompted to supply information that is personal information for the purposes of the Privacy and Personal Information Act 1998. The supply of this information is voluntary. If you cannot provide, or do not wish to provide the information sought, the Council may be unable to process your request. Council is required under the Act to inform you about how your personal information is being collected and used. If you require further information please contact Council's Customer Service Centre on 9952 8222 and ask for an information sheet to be forwarded to you

### Office Use Only

Receipt Type **TXXXXX (First Application); TXXXXX (Second Application)**

First Application - **\$XXXX (GST incl)** – Account No: 1.47.10229.2235

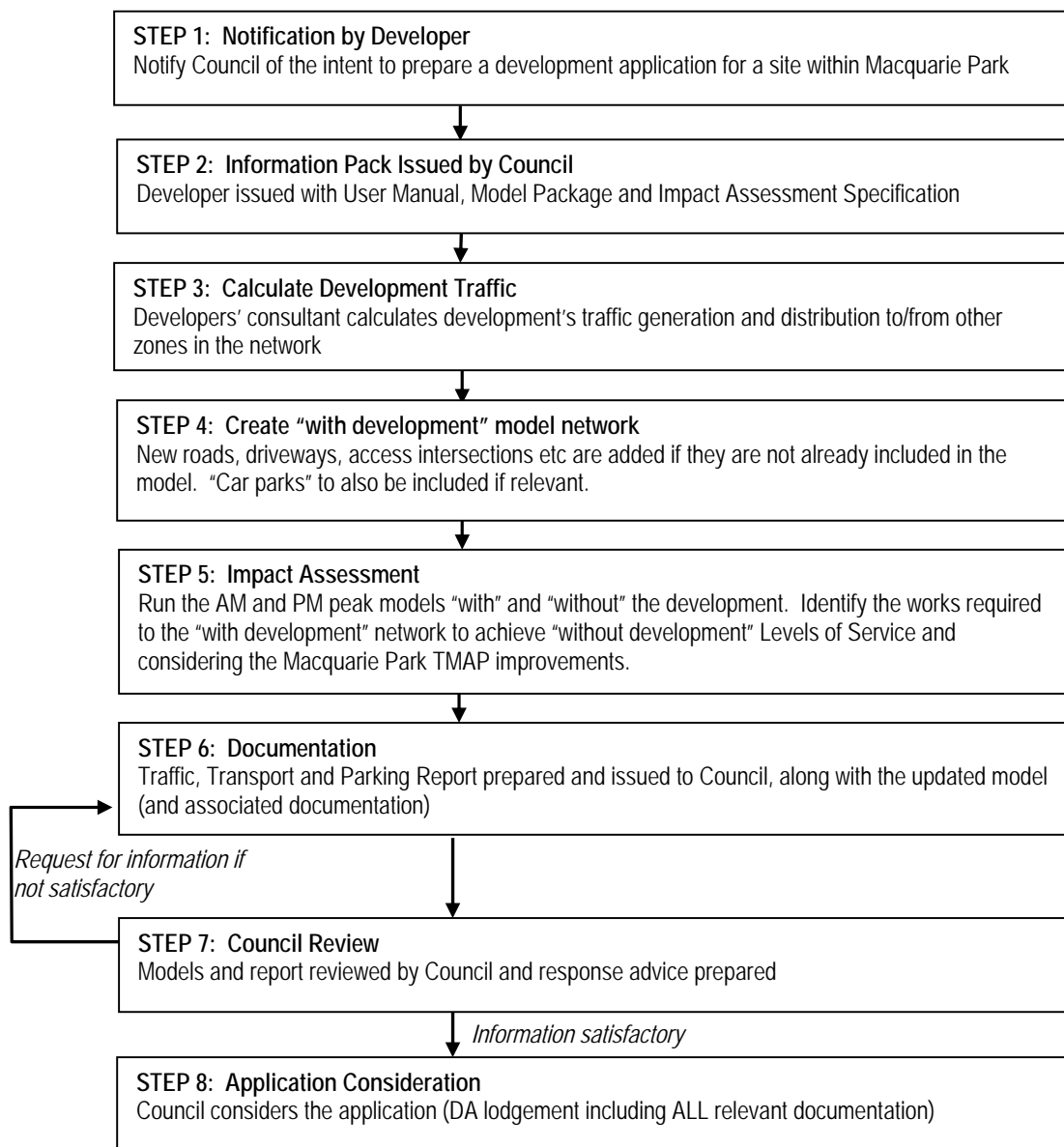
Second Application - **\$XXXX (GST incl)** Account No: 1.47.10229.2235

Every Subsequent Applications - **\$XXXX (GST incl)** – Account No: 1.47.10229.2235

## **Conditions of Approval for the use of the Macquarie Park Corridor Growth Model**

1. All Fees and Charges are to be paid in FULL prior to Council providing the Paramics Model and associated documentation.
2. The applicant shall provide all necessary files/documentation as stipulated in the “Traffic Impact Assessment Process for Macquarie Park Development Applications” (Reference Document No.1)
3. All modelling works undertaken are to utilise Paramics Microsimulation software (in accordance with Reference Document No.2) and aaSIDRA..
4. Separate application forms are required for each development application.
5. Multiple development sites shall have separate application forms and are subject to the Fees and Charges as stipulated on the bottom of the application form.
6. The generated paramics model shall comply with the “Macquarie Park Corridor Paramics Model User Manual”
7. Note if there are more than one (1) application requesting modelling information the distribution of modelling information packs will be undertaken on a progressive time line (please speak to Council’s Access Team in regards to this Condition).
8. All inquiries regarding the modelling process are to be made in writing.

## Flow Chart (Overall Process)



# City of Ryde

## Application – Macquarie Park Corridor Growth Model (for Reference Group Members for applications with Floor Space increases over the existing site or green fields site of 1000 m<sup>2</sup> or more)

Your application should be lodged and fees paid so that there is sufficient time for the model to be prepared and validated by Council in combination with the supporting Traffic Impact Study (TIS). See back of form for full conditions regarding the use of the model and Council's requirements to facilitate a timely review that will minimise any impacts on the development review timeline.

### Applicant Details

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Mobile: \_\_\_\_\_ Fax: \_\_\_\_\_

### Location Details

Street Name: \_\_\_\_\_

Suburb: \_\_\_\_\_

### Reason for Requesting Model Information

\_\_\_\_\_  
\_\_\_\_\_

Note: Council will forward an information 'kit' containing the following within '5' working days upon receipt of this application with corresponding payment verified :

1. Traffic Impact Assessment Process for Macquarie Park Development Applications.
2. Paramics Model for the Macquarie Park Corridor.
3. Macquarie Park Corridor Paramics Model User Manual.

I hereby request permission to use Council's Macquarie Park Corridor Growth Model to facilitate the review impacts of the proposed development of the adjoining road network

I agree to comply with Council's conditions as set out on the next page

First Application (primary review)

Second Application (second review as directed by Council officers)

**Applicants Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

#### Privacy Notification

In completing this form you will be prompted to supply information that is personal information for the purposes of the Privacy and Personal Information Act 1998. The supply of this information is voluntary. If you cannot provide, or do not wish to provide the information sought, the Council may be unable to process your request. Council is required under the Act to inform you about how your personal information is being collected and used. If you require further information please contact Council's Customer Service Centre on 9952 8222 and ask for an information sheet to be forwarded to you

### Office Use Only

Receipt Type **TXXXXX (First Application); TXXXXX (Second Application)**

First Application - **\$XXXX (GST incl)** – Account No: 1.47.10229.2235

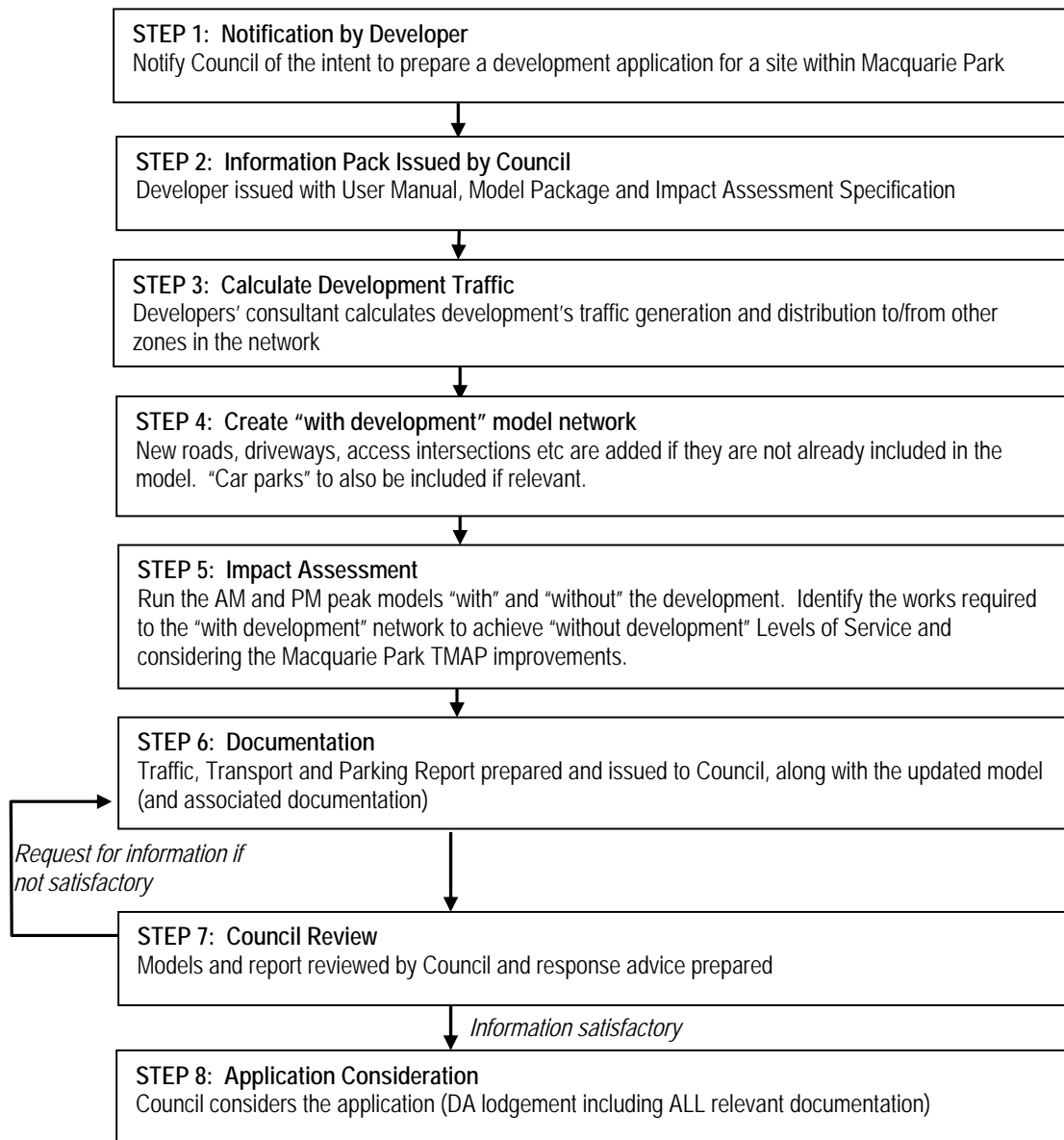
Second Application - **\$XXXX (GST incl)** - Account No: 1.47.10229.2235

Every Subsequent Applications - **\$XXXX (GST incl)** – Account No: 1.47.10229.2235

## **Conditions of Approval for the use of the Macquarie Park Corridor Growth Model**

1. All Fees and Charges are to be paid in FULL prior to Council providing the Paramics Model and associated documentation.
2. The applicant shall provide all necessary files/documentation as stipulated in the “Traffic Impact Assessment Process for Macquarie Park Development Applications” (Reference Document No.1)
3. All modelling works undertaken are to utilise Paramics Microsimulation software (in accordance with “Macquarie Park Corridor Paramics Model User Manual” (Reference Document No.2)) and aaSIDRA..
4. Separate application forms are required for each development application.
5. Multiple development sites shall have separate application forms and are subject to the Fees and Charges as stipulated on the bottom of the application form.
6. The generated paramics model shall comply with the “Macquarie Park Corridor Paramics Model User Manual”
7. Note if there are more than one (1) application requesting modelling information the distribution of modelling information packs will be undertaken on a progressive time line (please speak to Council’s Access Team in regards to this Condition).
8. All inquiries regarding the modelling process are to be made in writing.

## Flow Chart (Overall Process)



# TRAFFIC IMPACT ASSESSMENT PROCESS FOR MACQUARIE PARK CORRIDOR DEVELOPMENT APPLICATIONS (REFERENCE DOCUMENT No. 1)

FOR  
CITY OF RYDE

**BITZIOS**  
consulting

traffic engineering ■ transport planning

GOLD COAST: (07) 5562 5377  
BRISBANE: (07) 3255 1811  
POSTAL ADDRESS: PO Box 5102, Q Super Centre, Mermaid Waters, Q 4218  
EMAIL: [admin@bitziosconsulting.com.au](mailto:admin@bitziosconsulting.com.au)

Project No: P0415    Version: 002    Date: January 2009

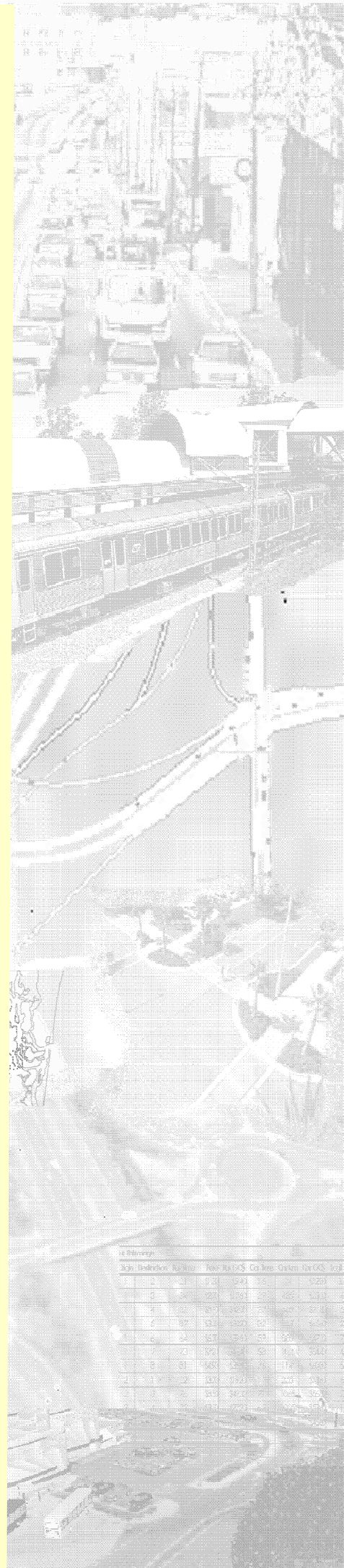


Table 1: Summary of Data									
Category	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9
1	10	20	30	40	50	60	70	80	90
2	10	20	30	40	50	60	70	80	90
3	10	20	30	40	50	60	70	80	90
4	10	20	30	40	50	60	70	80	90
5	10	20	30	40	50	60	70	80	90
6	10	20	30	40	50	60	70	80	90
7	10	20	30	40	50	60	70	80	90
8	10	20	30	40	50	60	70	80	90
9	10	20	30	40	50	60	70	80	90
10	10	20	30	40	50	60	70	80	90

## DOCUMENT CONTROL SHEET

### Issue History

Report Number	Prepared by	Reviewed by	Issued by	Date
P0415.001 Traffic Impact Assessment Process for Macquarie Park Corridor Development Applications	Damien Bitzios	Arthur Vlahogenis	Damien Bitzios	18 September 2008
P0415.002 Traffic Impact Assessment Process for Macquarie Park Corridor Development Applications	Arthur Vlahogenis	Damien Bitzios	Damien Bitzios	5 January 2009



# CONTENTS

	Page
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 BACKGROUND	1
1.2 PURPOSE	1
1.3 APPLICABLE DEVELOPMENT	1
1.4 ASSOCIATED REFERENCES	1
1.5 OTHER DETAILS	1
<b>2. OVERALL PROCESS .....</b>	<b>2</b>
<b>3. STEP 1 – NOTIFICATION BY DEVELOPER .....</b>	<b>3</b>
<b>4. STEP 2 – INFORMATION PACK ISSUED BY COUNCIL .....</b>	<b>3</b>
<b>5. STEP 3 – CALCULATE DEVELOPMENT TRAFFIC .....</b>	<b>3</b>
5.1 TRAFFIC GENERATION	3
5.2 TRAFFIC DISTRIBUTION	3
<b>6. STEP 4: CREATE “WITH DEVELOPMENT” PARAMICS NETWORK .....</b>	<b>4</b>
6.1 GENERAL	4
6.2 CODING INTERNAL ROADS AND ACCESSES	4
6.3 ZONE AND CAR PARK CODING FOR THE DEVELOPMENT	5
6.4 UPDATING THE DEMANDS FILES	5
<b>7. STEP 5: IMPACT ASSESSMENT .....</b>	<b>5</b>
7.1 RUNNING THE MODELS	5
7.2 COMPARISON OF LINK FLOWS	5
7.3 DELAY COMPARISON	5
7.4 QUEUE COMPARISON	6
7.5 CODING AND RUNNING IMPROVEMENT WORKS	6
7.6 AASIDRA ANALYSIS	6
<b>8. STEP 6 – DOCUMENTATION AND SUBMISSION TO COUNCIL .....</b>	<b>7</b>
8.1 REPORT	7
8.2 MODELS	7

## Tables

Table 5.1: Traffic Generation Table

Table 5.2: Traffic Distribution Table

## Figures

Figure 2.1: Traffic Modelling and Impact Assessment Process

## 1. INTRODUCTION

### 1.1 BACKGROUND

The Draft Inner North Subregional Strategy sets out a vision for the management and development of key areas within a 25 year development horizon until 2031. Within this framework Macquarie Park has been identified as a "Specialised Centre" which is a clustering of high technology businesses and a campus type working environment and amenities.

It is likely that at 2031 the floor space will be in the order of some 2,400,000 sqm which represents a 70% increase in floor space over the current floor space which is in the order of 1,400,000 sqm.

To manage traffic demand Council's Macquarie Park Traffic Study which was developed in conjunction with a Steering Committee with representatives from RTA, TIDC, Macquarie University, Ministry of Transport and members of the Macquarie Park Land Owners Forum. The study identified the traffic infrastructure improvements required to support development in Macquarie Park under LEP2008. As part of this study, a Paramics micro-simulation model was created for the existing road network. This model is being actively maintained and updated as developments are approved within Macquarie Park and is therefore a "live" model.

The City of Ryde (CoR) is requesting that all new development within Macquarie Park be coded into the model as part of the application process to enable consistent assessment the incremental impacts of each development as well as assessing the access location and form of the proposal.

### 1.2 PURPOSE

This report outlines the processes to be used by developers and their consultants for assessing the traffic impacts of their developments in Macquarie Park using the Macquarie Park Corridor Paramics Model (MPCPM).

This does not remove the need to assess the other transport aspects/impacts of the development such as public transport, walking, cycling, site manoeuvring and parking requirements.

### 1.3 APPLICABLE DEVELOPMENT

The processes contained in this report are applicable to any development which is within the Macquarie Park Corridor Development Control Plan boundary.

### 1.4 ASSOCIATED REFERENCES

Macquarie Park Corridor Paramics Model User Guide

Macquarie Park Corridor Paramics Model (Current Version)

Macquarie Park Corridor Paramics Model Zoning System MapInfo files (Current Version)

### 1.5 OTHER DETAILS

The models have been developed using Q-Paramics version 6.4.1 and this is the version of Paramics to use for any modifications to the model.

## 2. OVERALL PROCESS

Figure 2.1 outlines the overall traffic impact assessment process to be followed using the MPCPM for development applications in Macquarie Park. The following sections provide the specific details required under each step.

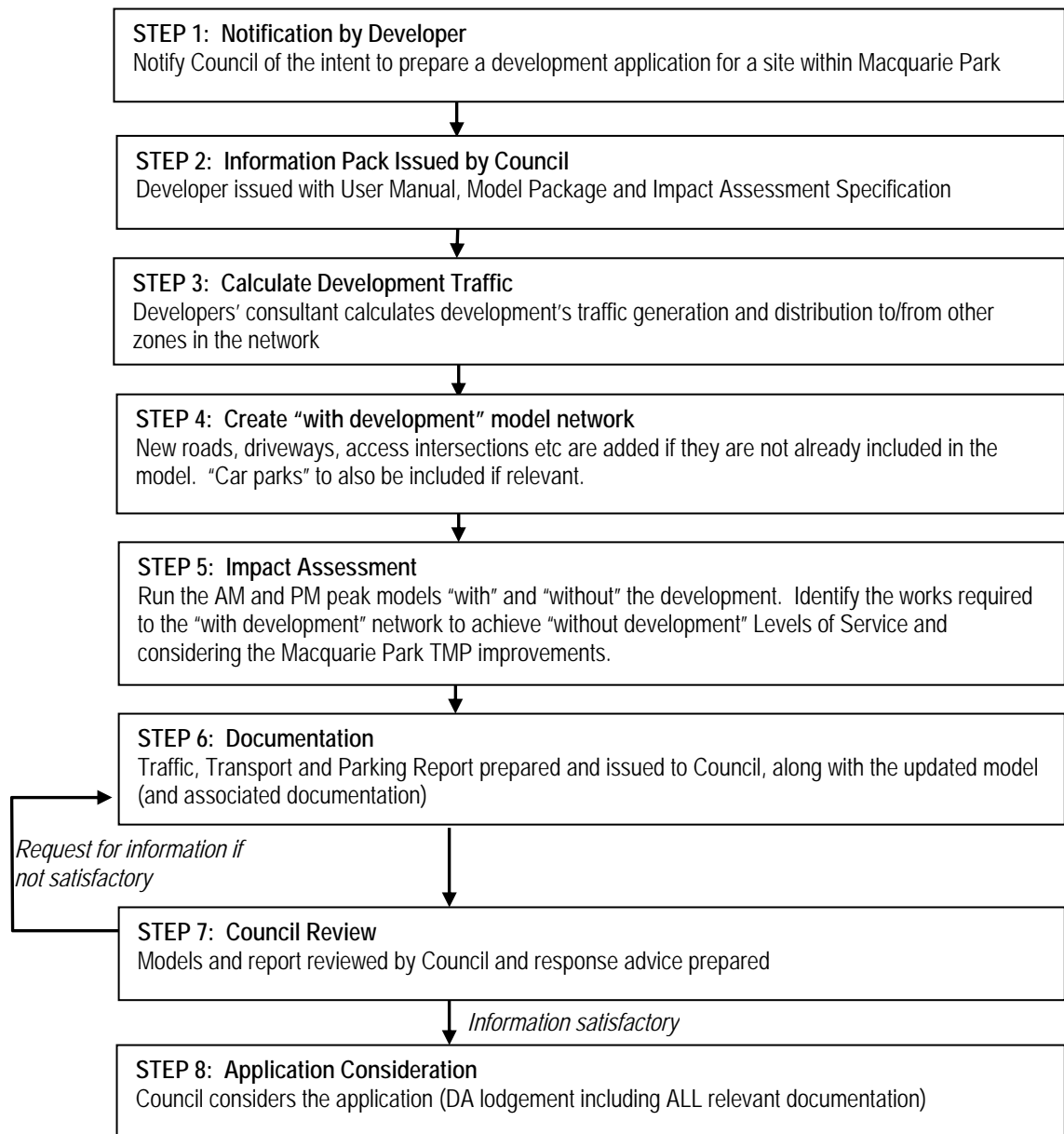


Figure 2.1: Traffic Modelling and Impact Assessment Process

### 3. STEP 1 – NOTIFICATION BY DEVELOPER

Developer's intending to submit an application to Council for development within the Macquarie Park Corridor complete the *on-line application form* to receive the Macquarie Park Corridor Paramics Model (Development Assessment) Information Pack.

### 4. STEP 2 – INFORMATION PACK ISSUED BY COUNCIL

The information pack will be issued by CoR via a CD mailed to the nominated address in the *on-line application form*.

### 5. STEP 3 – CALCULATE DEVELOPMENT TRAFFIC

#### 5.1 TRAFFIC GENERATION

The development peak 1 hour traffic generation for the morning and evening peak periods is to be calculated in accordance with the *RTA Guide to Traffic Generating Developments*. For development types which are not covered by this publication, traffic generation rates/volumes are to be calculated by first principles using actual data of a similar development in a similar location where possible.

The outputs required at this stage of the assessment should allow for completion of Table 5.1.

**Table 5.1: Traffic Generation Table**

Component	AM Peak IN	AM Peak OUT	PM peak IN	PM Peak OUT
Development component 1				
Development component 2				
Etc.....				
<b>TOTAL</b>				

*Notes:*

1. *IN refers to trips into the development and OUT is for trips out from the development*
2. *AM Peak is 7:45AM to 8:45AM*
3. *PM Peak is 4:45PM to 5:45PM*

#### 5.2 TRAFFIC DISTRIBUTION

There are 80 zones in the current MPCPM.

The distribution of traffic to and from the new zone created for the subject development shall be in accordance with the distribution for the current model zone within which the development site sits, unless detailed justification can be provided to substantiate the use of an alternative distribution pattern.

The traffic distribution calculations should allow for completion of Table 5.2.

Table 5.2: Traffic Distribution Table

Zone	Trips AM Peak	Trips AM Peak	Trips PM Peak	Trips PM Peak
	From Development To Zone	To Development From Zone	From Development To Zone	To Development From Zone
1				
2				
3				
Etc...				
TOTAL				

## 6. STEP 4: CREATE “WITH DEVELOPMENT” PARAMICS NETWORK

### 6.1 GENERAL

Any new Paramics network versions created using the MPCPM are to be saved with the file name conventions shown in the MPCPM User Manual.

Any network modifications to versions of the MPCPM are to be undertaken in accordance with the conventions specified in the Macquarie Park Paramics Model User Manual.

Apart from the items listed below, no other files or parameters in versions of the MPCPM are to be modified without prior approval of Council.

### 6.2 CODING INTERNAL ROADS AND ACCESSES

All roads proposed within the development which could be used by through traffic should be coded into the model. There is no need to code any driveways internal to the development which are solely intended to be used by development traffic.

Each access point from the development onto the road network should be coded into the Paramics model. The form of access and allowable movements should be consistent with the intent of the Macquarie Park TMP.

Specific coding requirements for links and nodes associated with new accesses to new developments (i.e. where accesses are not already shown in the model include):

- the number of additional nodes used should be minimised;
- any new links should be a minimum of 20.0m long and be reflective of the dimensions, grades and speed characteristics expected on the link;
- priority definitions should be based on the number of traffic streams that the approach movement must yield to, as follows:

- 0 opposing movements – MAJOR
- 1 opposing movement – MEDIUM; and
- 2 or more opposing movements – MINOR.

### 6.3 ZONE AND CAR PARK CODING FOR THE DEVELOPMENT

The new zone(s) for the development is to be allocated the next zone number available.

The zone is to be coded in the model with a boundary which matches the site boundary as closely as possible. Should a new zone cross an existing coded zone (i.e. the zone in the supplied model within which it sits) then the zone points in this larger zone are to be modified such that they do not cross the new development-specific zone.

Release rates (if used) onto the links upon which the new zone sits are to be reflective of the likely split in traffic to each of these links.

Car parks should only be coded for zones/developments where multiple car parks are present and they have alternative access locations.

### 6.4 UPDATING THE DEMANDS FILES

A new row and column will need to be added to the demands files (one for the AM Model and one for the PM Model) for the development site and filled with the Trip data from Table 5.2.

The zone in the “as supplied” MPPM that the development site is located in will need to have its demands reduced by subtracting the volumes calculated for each zone to zone movement for the development site zone.

If this calculation results in the previous (now balance area) individual zone to zone demands having movements which are less than zero, then these should be changed to zero.

The above process should be undertaken for both the AM and PM peak models.

The models have two demands files per period (i.e. demands.1 and demands.2) to allow for a warm-up period. The revised demands matrices created will therefore need to be copied into both of these files.

## 7. STEP 5: IMPACT ASSESSMENT

### 7.1 RUNNING THE MODELS

Both the “without development” (i.e. as supplied) and “with development” models will need to be run and a variety of data extracted to determine the impacts of the development. The outputs required are outlined below.

The modelling, and hence the impact assessment, will only need to be undertaken for the current year of the model.

### 7.2 COMPARISON OF LINK FLOWS

Link flows for each peak hour only are to be compared for the “with” and “without” development models. Any links on which the peak hour volume in either the AM or PM peaks increases by more than 5% of the “without development” volume should be identified.

### 7.3 DELAY COMPARISON

Any links with traffic volume increases greater than 5% need to be reviewed to determine the increase in delay on these links due to the development. This is to be documented by producing for each link the “without development”, “with development” and “delay increase” travel times.

## 7.4 QUEUE COMPARISON

The maximum queue lengths on any of the links where volumes are increased greater than 5% are also to be identified and highlighted where there is an increase in queue lengths.

## 7.5 CODING AND RUNNING IMPROVEMENT WORKS

Improvement works will need to be determined to achieve the following objectives in the network;

- no increase in delay on any link in the with development scenario compared to the without development scenario;
- no increase in queue on any link in the with development scenario compared to the without development scenario; and
- the new development zone(s) do not have any residual queues in them at the end of the peak hour (i.e. all of the traffic generated by the new zone is able to be released into the network in each peak hour).

The “with development” model network will need to be progressively upgraded and run until the above objectives are achieved. The infrastructure upgrades added to the network to achieve the above objectives are to be consistent with the Macquarie Park TMP.

## 7.6 AASIDRA ANALYSIS

Any intersections where:

- the development accesses directly onto a road where a level of intersection control beyond a priority controlled intersection is required (i.e. roundabout or signals); and/or
- any existing controlled intersection where the development traffic approaching the intersection is greater than 5% of the “without development” traffic approaching the intersection (in either the base year or the 10 year development horizon);

are also to be assessed using aaSIDRA to confirm the traffic infrastructure upgrades required at these locations due to the development. Both AM peak and PM peak traffic volume scenarios are to be assessed using traffic volumes extracted from the Paramics model where relevant/available.

For signalised intersections, this analysis is also to consider the impacts of additional pedestrian demands/crossing time requirements at any crossings within the signalised intersection.

## 8. STEP 6 – DOCUMENTATION AND SUBMISSION TO COUNCIL

### 8.1 REPORT

The traffic impact assessment report can be included as part of the broader traffic and transport impact assessment report and should contain at least the following:

- development details;
- rates and assumptions used to calculate development traffic generation;
- the traffic generation summary table (i.e. similar to Table 5.1);
- the traffic distribution summary table (i.e. similar to Table 5.2);
- screenshots of the additional coding for the “with development” model, annotated with descriptions of what has been coded, including new nodes, links, zones and car parks;
- the link, delay and queue comparison summaries outlined in Section 7 before and after any infrastructure upgrades have been included;
- the aaSIDRA inputs, any non-default parameters used and aaSIDRA outputs clearly showing the additional traffic infrastructure works generated by the development;
- a summary list of the works proposed to be constructed or contributed to as part of the development; and
- any other details/assumptions relevant for reviewing the consultant’s modelling and outputs.

### 8.2 MODELS

The “with development” models are to be submitted to council with the report.

The MapInfo GIS Paramics zone table included with the model package is also to be submitted with the report, as modified to include the development’s zone and to re-shape the previous zone within which the development was located in the “as supplied” model.

Any aaSIDRA models created for the assessment of the impacts are also to be submitted for review.