

**PROPOSED ALTERATIONS
AND ADDITIONS
23 SCRIVENER STREET, WARWICK FARM**

***Assessment of Traffic and
Parking Implications***

July 2008

Reference 0816

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1. INTRODUCTION

This report has been prepared on behalf of Independent Print Media Group Pty Ltd (IPMG) as an accompaniment to a Part 3A Application to the Department of Planning for the undertaking of various alterations and additions to an existing warehouse and distribution facility at 23 Scrivener Street, Warwick Farm (Figure 1).

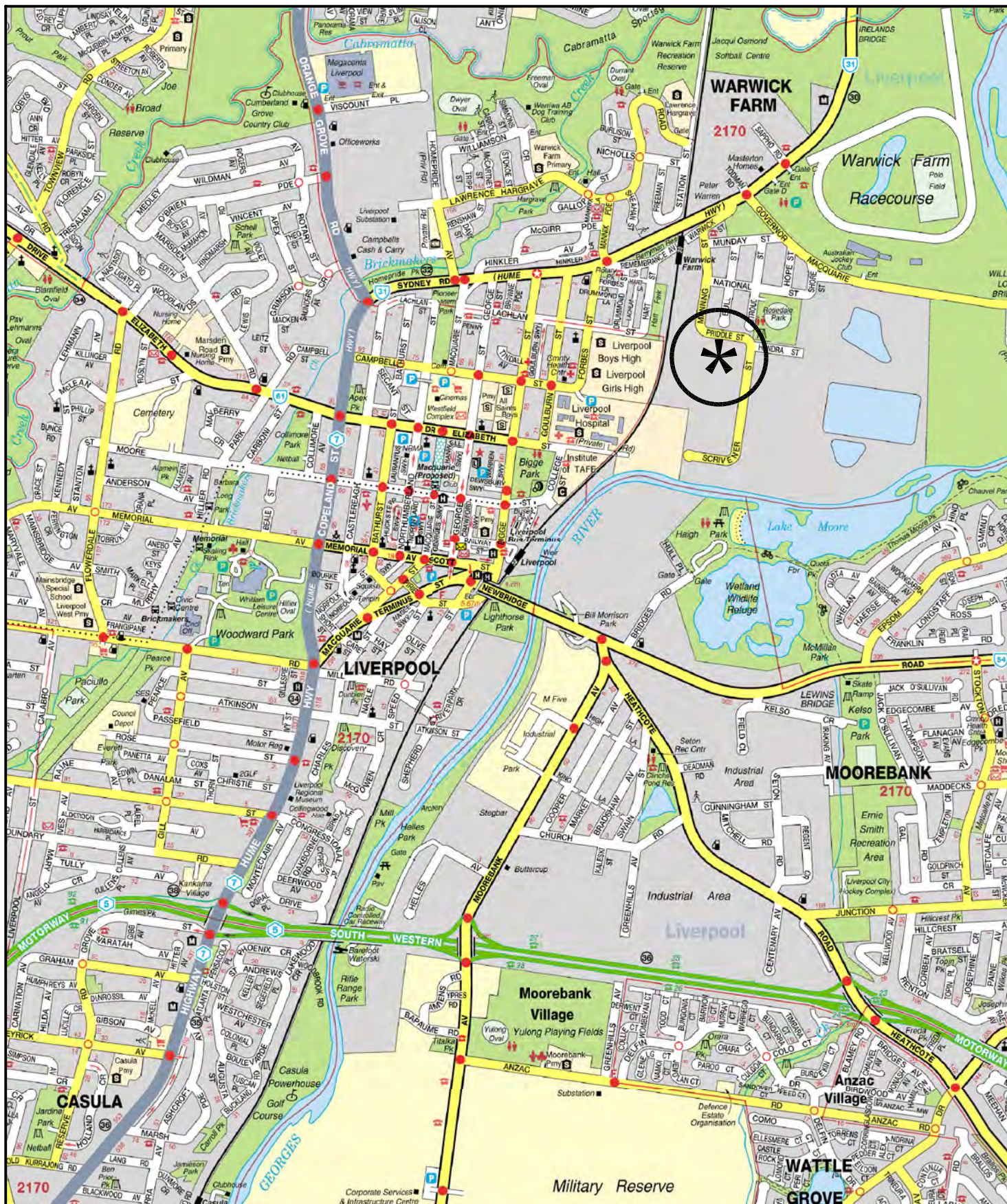
IPMG is the market leading print group in Australia with plants located in Sydney, Melbourne and Brisbane. IPMG is looking to expand and develop its business in Western Sydney. The proposal involves the modification, refurbishment and extension of the existing Kimberley Clark manufacturing plant into a new facility for print production, warehousing and distribution, approximately 39,800m² in area. The plan will produce a variety of printed products including magazines, inserts, direct mail material, brochures, books and the like.

The purpose of this report is to:

- * describe the site, context and former uses
- * describe the proposed development scheme
- * describe the road network serving the site, the prevailing traffic conditions and the public transport circumstances
- * assess the traffic related impacts of the proposed development on the surrounding road network
- * outline the measures to be implemented which encourage travel to/from the site by public transport, cycling and walking
- * assess the adequacy of the proposed parking provision

- *** assess the suitability of the proposed vehicle access, internal circulation and servicing arrangements

- *** outline the outcomes of discussions with both Liverpool Council and the Roads and Traffic Authority with respect to potential traffic and parking issues relating to the proposed project.



LEGEND



LOCATION

FIG 1

2. PROPOSED DEVELOPMENT SCHEME

2.1 SITE, CONTEXT AND FORMER USE

The development site (Figure 2) is an irregular shaped parcel of land of some 7.94 ha which has frontages to Scrivener Street, Priddle Street, Manning Street and the Main South Railway Line. The site was until recently occupied by Kimberley Clark and is encumbered by a number of large warehouse style buildings. Vehicular access is primarily via a security gate controlled entry/exit driveway on the Scrivener Street frontage with minor gated and security protected driveways also provided on Priddle Street and Manning Street.

The surrounding landuses comprise:

- * a mix of light industrial/warehousing uses
- * single dwelling residential to the north
- * horse racing related industry uses (eg stables).

Other notable landuses in the area include:

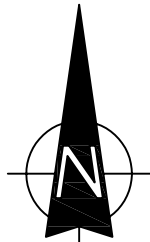
- * Liverpool Hospital to the south of the site which occupies large parcels of land on either side of the Main South Railway Line
- * Warwick Farm Railway Station some 350 metres to the north of the site
- * Rosedale Park, a short walk to the north-east of the site.

2.2 PROPOSED DEVELOPMENT

The project involves the modification, refurbishment and extension of an existing manufacturing plant into a new 39,800m² plant for printing, warehousing and



LEGEND



SITE

FIG 2

distribution. The capital investment value of the project is approximately \$100M. The components of the plant are illustrated in the drawings prepared by IPMG which is reproduced overleaf.

In summary, development will involve:

- * refurbishing and fitting out the existing 34,339m² building to incorporate:
 - a press room and bindery – approximately 13,400m² (Areas B, C and G)
 - material storage and distribution areas – approximately 19,120m² (Areas A, F, J and K)
 - offices and amenities – 1,900m² (Area N)
- * raising part of the existing roof from 8 metres to 12 metres and 14 metres
- * constructing an extension of 4,000m² in total for a future warehouse (Area L)
- * constructing a 1.8 giga litre water storage tank for water recycling (see Area O). This water will be primarily used for garden irrigation and toilet flushing, and may also be utilised, once purified, for printing cylinder preparation
- * installing a vapour recovery and ink supply system (Area D)
- * constructing a waste paper collection area of 630m² (Area I)
- * relocating fire service tanks and pumps (Area M)
- * extending the internal road system to create a circular truck access route
- * installing three rotary printing presses (Area C).

A range of raw materials will be stored on-site including around 25,000 tonnes of paper rolls (at any one time), as well as ink, solvent, acid, alkaline and plating materials (see Section 4.3).

Construction is expected to commence in late 2008/early 2009 with completion and commissioning by late 2009.

Details of the proposed development are provided on the plans prepared by Davis, Naismith and McGovern which accompany the Development Application and are reproduced in part overleaf.

3. ROAD NETWORK AND TRAFFIC CONDITIONS

3.1 ROAD NETWORK

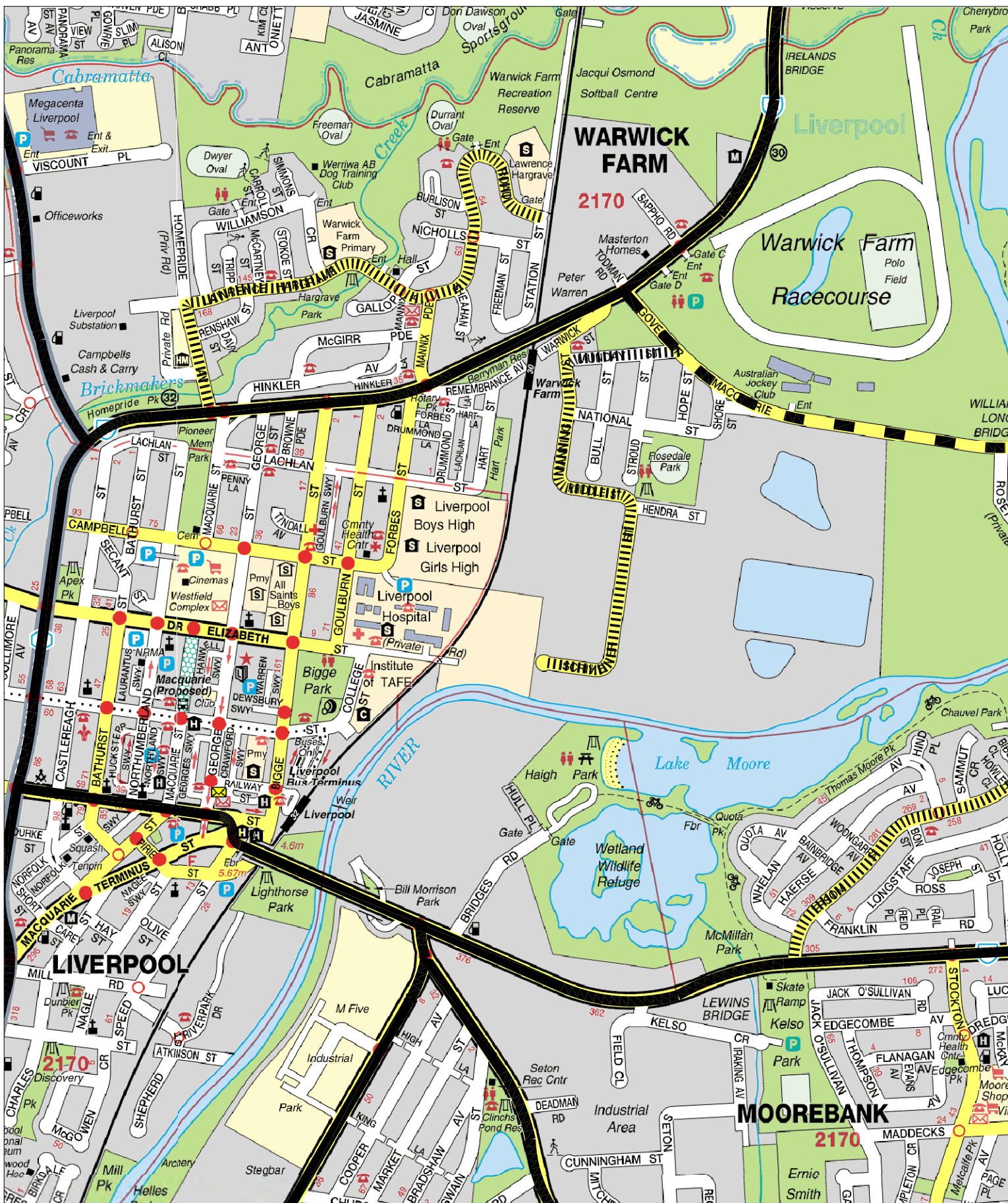
The road network serving the site (Figure 3) comprises:

- * *Liverpool Road (Hume Highway)* – an east/west State Road and arterial route which functions between Campbelltown Road (Casula) to the south-west and Parramatta Road (Summer Hill) to the north-east
- * *Governor Macquarie Drive* – a Regional Road and sub-arterial route which links Newbridge Road and Liverpool Road (Hume Highway)
- * *Newbridge Road* – a State Road and arterial route which provides an east/west connecting route between Liverpool and Bankstown
- * *Manning Street/Priddle Street/Scrivener Street* – a local collector route which connects with Liverpool Road (Hume Highway). Both Scrivener Street and Priddle Street have carriageway widths of 12.8 metres whilst Manning Street is slightly narrower at approximately 12.0 metres.

3.2 TRAFFIC CONTROLS

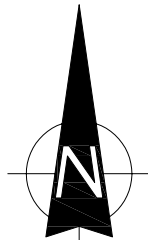
The existing traffic controls which have been applied to the roads in the vicinity of the site include:

- * the traffic control signals at the intersection of Governor Macquarie Drive and Liverpool Road
- * the LEFT IN/LEFT OUT traffic arrangement which has been introduced on Warwick Street at Liverpool Road



LEGEND

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR



ROAD NETWORK

FIG 3

- * the 70 kmph speed limit on Liverpool Road (Hume Highway) in the vicinity of Governor Macquarie Drive
- * the seagull island treatment at the intersection of Governor Macquarie Drive and Munday Street
- * the 60 kmph speed limit restriction on Governor Macquarie Drive
- * the 50 kmph speed limit restriction on all local roads in the precinct including Scrivener Street, Priddle Street and Manning Street.

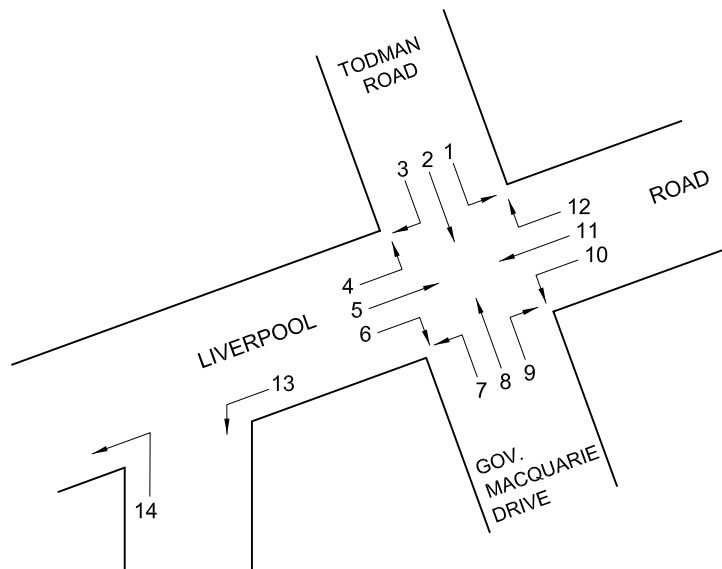
3.3 TRAFFIC CONDITIONS

An indication of the prevailing traffic conditions in the vicinity of the site is provided by data published by the RTA¹ and surveys undertaken as part of this assessment. The RTA data is expressed in terms of Annual Average Daily Traffic (AADT) and the most recently available data is summarised in the following:

Location	AADT	
	2002	2005
Governor Macquarie Drive at Georges River	19,400	20,317
Liverpool Road (Hume Highway) at Cabramatta Road	46,480	45,411
Newbridge Road at Georges River	63,639	56,698
Newbridge Road east of Bridges Road	44,400	38,911

In addition to the above, traffic surveys were conducted during the morning and afternoon peaks of the vehicle movements at the intersection of Governor Macquarie Drive and Liverpool Road (Hume Highway). The results of this survey are provided in Appendix A and summarised in Figure 4 overleaf.

¹ Traffic Volume Data Sydney Region
Roads and Traffic Authority - 2005



MOVEMENT	TIME PERIOD					
	AM			PM		
	7-8	8-9	7.45-8.45	4-5	5-6	4.45-5.45
1	2	26	19	35	16	23
2	5	10	9	31	23	23
3	8	19	12	49	35	38
4	37	51	53	38	18	23
5	1881	1527	1680	1141	1016	1083
6	512	442	469	318	387	425
7	364	406	429	479	414	439
8	17	40	40	7	2	3
9	421	533	566	476	450	442
10	372	412	405	485	715	721
11	800	1100	1095	1622	1659	1655
12	11	14	16	11	6	6
13	64	55	60	136	95	113
14	27	83	57	46	54	50

LEGEND



EXISTING PEAK
TRAFFIC FLOWS

FIG 4

An assessment of the operational performance of this access controlling intersection has been undertaken using the computer based traffic simulation model INTANAL. The results of this assessment are provided in Appendix A and summarised in the table below, whilst an interpretation of the analysis is provided overleaf.

HUME HIGHWAY/GOVERNOR MACQUARIE DRIVE INTANAL ASSESSMENT

	AM	PM
Level of Service	D	D
Degree of Saturation	0.96	0.91
Average Vehicle Delay	56.7	53.7

The analysis indicates that the intersection is currently operating near capacity with moderate to heavy delays on a number of vehicle approaches/movements (eg right-turn movements into and out of Governor Macquarie Drive).

Automatic (tube) counters were also installed on both Warwick Street and Munday Street to gauge the extent of heavy vehicle movements currently traversing the local roads in the precinct. The results of these counts are provided in Appendix B and summarised in the table below:

	Traffic Flow Direction	AADT (7 days)	AADT (5 days)	Class* 3-5		Class* 6-10	
				Volume	%**	Volume	%**
Warwick Street	NE	830	1040	533	10.25	286	5.50
	SW	456	580	540	18.63	137	4.73
Munday Street	EB	1221	1556	952	12.24	335	4.31
	WB	1642	2075	1221	11.77	498	4.80

* Number of vehicles recorded over 5 consecutive weekdays

** Percentage of total vehicle volume recorded over 5 consecutive weekdays

Criteria for Interpreting Results of INTANAL Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'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 signals**² 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.

² the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

The results presented in the table above indicate a high level of heavy vehicle activity with in the order of 1 in 20 vehicles travelling on both Warwick Street and Munday Street being articulated trucks or larger and more than 1 in 6 vehicles being classified as a heavy vehicle. Whilst the proportion of heavy vehicles is high by normal standards it is representative of roads which provide access to/from industrial estates/precincts.

3.4 PUBLIC TRANSPORT SERVICES

Existing Circumstances

Access by public transport to and from the development site is primarily provided by rail services operated by CityRail supplemented by a small number of privately operated bus services.

Warwick Farm Railway Station is located some 350 metres north of the development site providing workers with convenient access to the CityRail network.

Whilst Liverpool Station functions as a focal point in the region for bus/rail interchange, Warwick Farm Station (to the north of Liverpool Station) has been developed as a park'n'ride facility with parking provision for some 340 vehicles (supplemented by other on-street parking in the vicinity).

Data provided by CityRail and reproduced in the table below indicates that some 17,600 and 3,900 persons either board or alight trains each weekday at Liverpool and Warwick Farm Stations respectively.

CITYRAIL SERVICES – WEEKDAY PATRONAGE						
Station		Time Period				
		2–6am	6–9.30am	9.30am–3pm	3–6.30pm	6.30pm–2am
Liverpool	(IN)	160	2,940	2,450	2,680	530
	(OUT)	80	2,170	2,270	2,960	1,280
Warwick Farm	(IN)	40	1,110	420	320	20
	(OUT)	20	260	370	960	340

Warwick Farm Station is serviced by CityRail's Cumberland, Inner West, Bankstown and Southern Lines providing users with non-transfer connections with major centres such as Sydney CBD, Parramatta, Fairfield, Blacktown, Strathfield, Bankstown and Campbelltown.

The frequency of the rail services travelling via Warwick Farm Station is summarised in the table below:

CITYRAIL SERVICES - WARWICK FARM STATION (NUMBER OF SERVICES BY RAIL CORRIDOR AND TIME PERIOD)						
Time Period						
Route	4-6am	6-9am	9am-3pm	3-6pm	6pm-12am	12-2am
Liverpool → City via Bankstown	1	6	12	6	5	-
Liverpool → City via Regents Park	4	6	5	6	12	-
Liverpool → City via Fairfield	7	16	18	12	22 (19)*	1
Liverpool → Parramatta	-	2	-	-	-	-
Liverpool → Campbelltown	4	6	16	9	17	5
Parramatta → Liverpool	-	-	-	2	-	-
Campbelltown → Liverpool	6	10	16	6	19 (17)*	-
City → Liverpool via Bankstown	-	6	12	6	8	-
City → Liverpool via Regents Park	3	5	6	6	12	3
City → Liverpool via Fairfield	4	12	18	15	26	5
Total	29	69	103	68	121 (116)*	14

* Reduced frequency at Warwick Farm

Future Circumstances

The key proposed changes to the public transport network serving Liverpool and surrounding environs over the next 5 – 10 years primarily involve the completion of the North-West Bus Transitway corridors and implementation of CityRail's \$1.5 billion Rail Clearways project. The existing Parramatta – Liverpool Transitway was the first of three dedicated and interconnected bus only transport corridors to be provided for Western Sydney with the remaining two operating between Parramatta and Rouse Hill via Parklea and between Blacktown and Parklea.

The Rail Clearways project proposes to separate the networks 14 metropolitan rail routes into 5 independently operated clearways or corridors. Fifteen major projects involving the construction of additional tracks, platforms, turnbacks and crossing loops have been identified as integral to achieving the 5 clearway corridors. These projects are intended to remove bottlenecks and junctions, reduce congestion and delays and allow for simpler timetables for more reliable and frequent services.

Achieving these outcomes will also result in an overall increase in the in the capacity of the CityRail network and theoretically minimise the potential for one incident on part of the rail network from affecting services on other clearways (corridors).

Of the 15 key projects identified in the Rail Clearways planning, the most relevant to Liverpool is the proposal to construct an additional platform (and turnback) at Liverpool to reduce peak hour congestion and enable improved timetabling of the Bankstown Line.

Following planned completion of the Rail Clearways project in 2010, CityRail propose to introduce a new timetable in 2011 for the entire network to take advantage of the benefits gained for the Clearways.

4. TRAFFIC

The proposed development is expected to generate traffic which is at worst commensurate and realistically less than that which was generated by the former Kimberley Clark operation. In this regard, the total workforce of the proposed development will be in the order of 185 – 190 spread over 3 shifts. This compares with the 300+ staff employed by Kimberley Clark when the facility was operating at its peak in 2007. The IMPG day shift is expected to comprise up to half the 190 staff which are to be employed on the site with the remaining staff spread evenly between the afternoon and evening shifts.

The number of commercial vehicle movements generated by the Kimberley Clark operation is in the order of 98 (ie 49 entry movements) and is made up of:

- * Local delivery truck movements:
 - 16 x 49 pallet trailer movements
 - 7 x 48 pallet truck/pup movements
 - 10 x 28 pallet truck movements
 - 4 x 40 pallet trailer movements

- * Interstate delivery truck movements:
 - 10 x trailers, B Double trucks

- * Import, export truck movements:
 - 2 x 40 foot container trucks

This level of activity is more than double the number of arrivals predicted for the IPMG operation as outlined in the following:

IPMG – COMMERCIAL VEHICLE ACTIVITY

	Entry (per day)	Frequency	Time Period
Delivery of raw materials (B Doubles)	9	5 days/week	24 hours
Shipment of final products (semi-trailers)	7	7 days/week	6.00am – 9.00pm
Wastepaper removal (semi-trailers)	1	5 days/week	7.00am – 7.00pm
Ink deliveries (small tanker trucks)	0.3	5 days/week	7.00am – 7.00pm
Waste product removal (large refuse trucks)	1	5 days/week	7.00am – 7.00pm
Couriers	3	5 days/week	7.00am – 7.00pm
Total	22		

IPMG has advised that the day, afternoon and evening shifts will have commencement times of 7.00am, 3.00pm and 11.00pm respectively. These start/finish times will generally apply to all staff other than office and staff (approximately 19) who generally work between 8.00 – 9.00am to 4.00 – 5.00pm.

On the basis of this advice it is estimated that the proposed IPMG development will generate the following AM/PM and daily vehicle movements.

	AM 7.00am – 8.00am	PM 2.45pm – 3.45pm	Daily
Employees	120*	123*	342
Commercial vehicles	6	10	44
Other	-	8	20
Total	126	141	406

* assumes 12% of staff will either use public transport, walk, cycle or be driven by another employee to/from work

With the former Kimberley Clark operation having in excess of 300 staff employed (over 3 shifts) on the site when it was operating at its peak it is apparent that the proposed IPMG development will generate as many as 60 – 80 fewer journey to/from work related vehicle trips and a smaller number of commercial vehicle movements in the AM and PM peak periods.

With this in mind, the proposed development will have a lesser impact on the surrounding road network than the current development.

5. PARKING

Liverpool Council's Development Control Plan № 3 provides guidance for the provision of carparking and servicing areas for a wide range of landuses, including factory/warehouse and distribution facilities.

The underlying objectives of DCP № 3 are stated as being:

- * that adequate parking space and service facilities are conveniently located on-site to satisfy the demand created by the development
- * access is designated to accommodate the largest vehicle likely to service the site
- * loading facilities are provided for vehicles likely to service the site regularly
- * carparking and manoeuvring of commercial vehicles are separated in the interest of safety and amenity
- * adequate landscaping/tree planting is provided to improve amenity and reduce visual impact
- * parking does not interfere unreasonably with the amenity of the neighbourhood.

For factory/warehouse style developments DCP № 3 requires the following rates for carparking:

- 1 space per 35m² of office GFA, PLUS
- 1 space per 75m² of factory/warehouse GFA, OR
- 1 space per 2 employees whichever is the greater

The existing development comprises some 1,794m² GFA of office/administration space and 34,339m² GFA of warehouse/distribution space, with on-site parking provided for 144 vehicles. The development scheme proposes the construction of an additional 4,570m² GFA of warehouse/printing/distribution space and retention of the current office/administration area.

Application of the aforementioned parking rate to the 'new' development indicates an additional on-site requirement of some 61 spaces (ie 4,570m²/75m²) and a total on-site parking provision of 205 spaces.

Whilst sufficient area is available within the site to provide on-site parking for 205 vehicles, this provision would significantly exceed the estimated workforce. Advice from IMPG indicates that the proposed development will employ in the order of 185 – 190 staff spread over 3 shifts. The daytime shift will comprise the largest workforce with between 90 – 95 people employed at this time. The afternoon shift will have a workforce of between 45 – 50, resulting in a peak changeover workforce of between 140 – 145. As a consequence, it is apparent that even if all staff were to drive (ie nil using public transport, cycling or driven as a passenger) the maximum number of parking spaces required for staff parking would be 145.

With this in mind, it is proposed to provide on-site parking for up to 150 vehicles with the future potential to increase this provision to 205 spaces should an increase in the number of employees on the site occur. Of the 150 spaces being initially provided, 6 spaces will be designated for the exclusive use of visitors and 4 spaces for persons with a disability.

6. TRAVEL DEMAND STRATEGY

As indicated previously, the development site is located within 350 – 400 metres of Warwick Farm Station and 1.3 kms of the bus interchange adjacent to Liverpool Station.

To encourage workers to utilise alternative modes to private vehicles for journeys to/from work it is proposed to implement the following measures/strategies:

- * bus and rail timetable information will be displayed in the reception and staff meal/recreation areas
- * public transport information packages will be provided to all employees of the business. New employees will also receive the information packages as part of the induction process undertaken by the company.

Other measures which are to be introduced, which will act to discourage/limit private vehicle usage include:

- * as the majority of workers will have fixed start and finish times, it is also proposed to encourage carpooling
- * the provision of secure parking for bicycles, together with shower/change room facilities are also to be provided as part of the proposed development.

7. ACCESS AND INTERNAL CIRCULATION

Access

The existing access driveways are proposed to be retained and include:

- * a 17 metre wide security gate controlled median separated entry/exit driveway on Scrivener Street
- * a 13 metre wide gatehouse controlled combined entry/exit driveway at the western end of Priddle Street
- * a 5 – 6 metre wide combined entry/exit driveway at the northern edge of the site on Manning Street.

Both the Scrivener Street and Priddle Street driveways will facilitate heavy vehicle entry and exit movements whilst the Manning Street driveway provides access to a staff carpark.

All driveways provide good sight lines for motorists exiting the site of both approaching traffic and pedestrians.

Internal Circulation

The internal road network will essentially remain in its current configuration and has been designed to accommodate access within the site by a range of truck sizes including articulated and B Double vehicles.

An assessment of the adequacy of the internal roads to accommodate the range of vehicles which will access the site has been undertaken using the computer based vehicle turning path program AutoTrack v5.00a, the results of which are provided in Appendix C.

8. CONSULTATION

In accordance with the Director General's requirements for this project discussions were had with representatives of both the Roads and Traffic Authority (RTA) and Liverpool City Council.

The discussion with the RTA focussed primarily on the potential impact of the proposal on the efficiency of the surrounding road network and in particular with the controlling access intersection of Governor Macquarie Drive and Hume Highway.

The RTA also raised the need for the applicant to implement measures which would encourage workers/visitors to utilise public transport, walking and cycling when travelling to/from the site. These measures are outlined in Section 6 of this report.

The RTA agreed that on the basis that the proposed development will have a smaller workforce than the previous use and that truck movements would be commensurate with the previous use, there would not be any adverse impact or deterioration in the efficiency of the surrounding road network or the Governor Macquarie Drive/Hume Highway intersection.

9. CONCLUSION

This report has assessed the traffic and parking related aspects of a proposal to undertake various alterations and additions to a large existing manufacturing plant to facilitate print production, warehouse and distribution activities. The assessment has established that:

- * the proposed development will generate less traffic than the previous use of the site and as such will not result in any adverse traffic or environmental consequences on the surrounding road network
- * the carparking provision will be sufficient to accommodate the peak parking demands generated by the site including during shift changeover periods
- * the internal road network will be sufficient to accommodate access and internal circulation by articulated and B Double size vehicles
- * the layout of the carpark areas will generally accord with the requirements of Australian Standard AS 2890.1 (2004).

