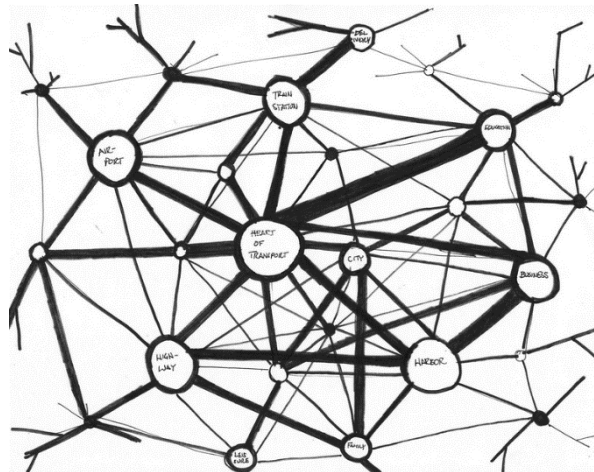


TRAFFIC AND PARKING IMPACT STATEMENT

**207, 209 & 211 HOXTON PARK ROAD,
CARTWRIGHT
(PROPOSED RESIDENTIAL DEVELOPMENT)**



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March 2017

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1. **INTRODUCTION**

The Practice of Thompson Stanbury Associates has been commissioned by Adouni Property Group Pty Ltd to prepare a traffic and transport assessment accompanying a development application ('DA' or 'application') to be lodged with Liverpool City Council ('Council'). The subject DA proposes the demolition of existing site structures and the construction of a residential flat building comprising 26 dwellings on land situated at 207, 209 and 211 Hoxton Park Road, Cartwright.

The general purpose of this report is to undertake an assessment of the potential traffic and transport related implications resulting from the proposed development and, where necessary, recommend suitable mitigating measures. To this end, this report:

- 1) Assesses the adequacy of the proposed off-street parking provision based on Liverpool City Council's parking standards contained within their Development Control Plan (2008);
- 2) Assesses the suitability of the proposed vehicular access arrangements having regard to the traffic conditions surrounding the site and the number of off-street parking spaces;
- 3) Reviews the architectural plans with respect to on-site vehicular manoeuvrability;
- 4) Examines the existing transport conditions in vicinity of the site, including the existing traffic network, traffic volumes and the available public transport network; and
- 5) Determines the likely traffic generation from the proposed development and assesses the ability of the surrounding road network to accommodate this additional traffic.

Throughout this report, reference is made to the following documents:

- The Roads & Maritime Services' *Guide to Traffic Generating Developments* (2002);
- Liverpool City Council's *Liverpool Development Control Plan 2008* (DCP 2008).
- Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1-2004); and
- Australian Standard for *Parking Facilities Part 6: Off-Street Parking for People with Disabilities* (AS2890.6-2009).

Architectural plans have been prepared by Algorry Zappia & Associates Pty. Ltd. and should be reviewed in conjunction with this report.

2. SITE DETAILS

2.1 Site Location

The land the subject of the DA is located on the northern side of Hoxton Park Road, approximately 112m west of its junction with Cartwright Avenue, Cartwright. This location is shown in the context of the surrounding road network in **Figure 1** overleaf and in the local aerial context in **Figure 2**.

2.2 Site Description

The subject site comprises 3 allotments legally described as Lots 374 & 375 in DP227167 and Lot 1 in DP796901, with a collective street address of 207, 209 and 211 Hoxton Park Road, Cartwright. The consolidated allotments form a trapezoidal shaped development site that provides a frontage to Hoxton Park Road of approximately 60m and a depth of approximately 36m along the eastern property alignment. Total site area is 1966m².

2.3 Existing Uses

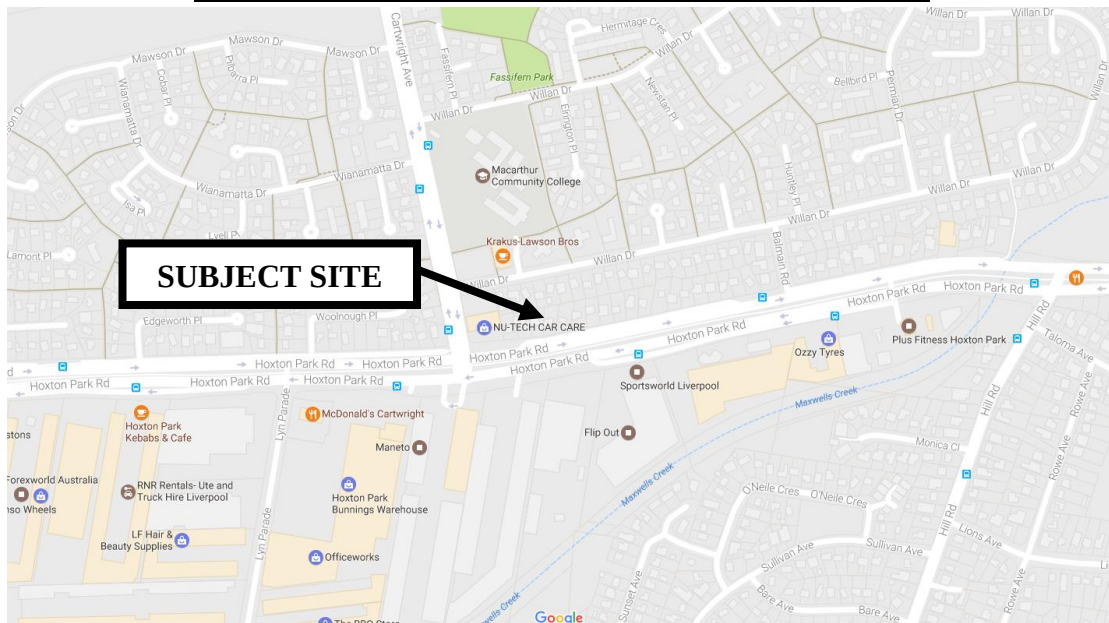
Each of the existing allotments accommodates a single storey detached dwelling and associated outbuildings serviced by separate driveways off Hoxton Park Road. The existing development is proposed to be demolished under the subject DA.

2.4 Surrounding Uses

Detached residential development adjoins the subject site to the immediate north, east and west. A mix of industrial, recreational and retail developments is situated to the south of the subject site (across Hoxton Park Road).

The immediate locality generally accommodates low density detached residential development.

FIGURE 1
SITE LOCATION – ROAD NETWORK CONTEXT



Source: Google Maps

FIGURE 2
SITE LOCATION – LOCAL CONTEXT



Source: Six Maps

3. **PROPOSED DEVELOPMENT**

3.1 **Built Form**

The subject DA proposes the demolition of existing site structures and the construction of a five (5) storey residential flat building comprising 26 dwellings, with the following dwelling mix:

4 x 1 bedroom dwellings;

18 x 2 bedroom dwellings; and

4 x 3 bedroom dwellings.

Total floor area over the five residential levels is 3,137m².

The residential apartment building is proposed to be serviced by a 6.1m wide combined ingress/egress driveway connecting with a rear service lane that forms part of Hoxton Park Road, at the south-western corner of the site. The one-way nature of this service road restricts site access to left in/left out. This driveway is proposed to provide connectivity to a single level basement parking area containing 46 passenger vehicle spaces.

3.2 **Vehicular Parking**

The proposed development is to be serviced by a total of 46 off-street car parking spaces within one basement parking level.

Table 13 Part 1: General Controls of Liverpool DCP 2008 establishes the following off-street parking requirements for residential flat buildings (**Table 1**).

TABLE 1 OFF-STREET CAR PARKING REQUIRMENTS LIVERPOOL DCP 2008		
Dwelling Type	Min Rate (car space per dwelling)	Min Spaces Required
1 bed	1	4
2 bed	1.5	27
3 or more bed	2	8
Visitor	0.25	6.5
	Total	45.5 (say 46 spaces)

Table 1 indicates that the proposed development is required to provide a minimum of 46 car parking spaces.

The proposed parking provision therefore readily complies with the car parking requirements specified within DCP 2008.

3.3 Access

Access to the off-street parking provision is proposed off a rear service lane that forms part of Hoxton Park Road via a 6.1m wide driveway providing a combined ingress/egress function at the south-western corner of the site. This rear service lane forms a one-way road that facilitates access to a number of existing residential developments (including the subject site). It connects with the main eastbound Hoxton Park Road carriageway at its eastern and western end. Due to the one-way travel arrangement of the service road, access to/from the site is restricted to left in/left out.

In order to undertake an assessment of the suitability of the proposed site access arrangements, reference is made to AS2890.1-2004. This Standard provides driveway specifications based on a number of site and surrounding road network characteristics including the land-use proposed, the number of parking spaces serviced and the function order of the access roads.

Based on the residential nature of the subject development, the provision of 46 off-street car parking spaces and the arterial functional order of Hoxton Park Road, AS2890.1-2004 specifies that the site must be serviced by, at minimum, a 6m wide combined ingress / egress driveway. The proposed 6.1m wide combined ingress / egress driveway readily complies with the minimum AS2890.1-2004 requirement and accordingly, is considered to be satisfactory in terms of design.

The consistent vertical and horizontal alignment of the service road in the immediate vicinity of the subject site results in good sight distance conditions between approaching vehicles within service road and the site access driveway. The vehicle/vehicle and vehicle / pedestrian sight distance is proposed to be assisted by the provision of a maximum grade of 1:20 for the first 6m of roadway extending into the property from Heath Street. In consideration of this and the above discussion, the proposed site access arrangements are considered to be satisfactory.

3.4 Internal Circulation and Manoeuvrability

The development is proposed to be serviced by a single basement parking level containing a series of 90 degree angled parking rows accessed via internal circulating aisles.

In order to assess the suitability of the proposed internal circulation design servicing the development, an audit of the architectural plans has been undertaken with respect to the design criterion of AS2890.1-2004. A schedule of compliance with the relevant sections AS2890.1-2004 is contained within **Table 1** provided below.

TABLE 1 ASSESSMENT OF COMPLIANCE OF ON-SITE PARKING AREA WITH AUSTRALIAN STANDARD (AS 2890.1-2004)			
Section	Requirement	Provided	Compliance
2.4.1	Residential 90 degree space dimensions = 2.4m x 5.4m	Minimum space dimensions = 2.4m x 5.5m	Yes
2.4.2 (a)	Parking aisle adjacent to 90 degree residential spaces = 5.8m	Minimum parking aisle = 5.8m	Yes
2.4.2 (c)	Blind aisles to be extended a	1m	Yes

	minimum of 1m beyond last space		
2.4.6	Maximum gradients, 1:20 parallel to angle of parking and 1:16 @ 90 degrees to angle of parking	Maximum grade = 1:20	Yes
2.4.7	Motorcycle parking space dimensions = 1.2m x 2.5m	Minimum space dimensions = 1.2m x 2.7m	Yes
2.5.2 (a) (ii)	Two-way straight roadway / ramp, at least 5.5m wide	Minimum 5.5m	Yes
2.5.3 (a)	Maximum grade of roadway / ramp = 1 in 4	Maximum grade = 1 in 4.8	Yes
2.5.3 (d)	Maximum change in grade = 1 in 8	Maximum = 1 in 8	Yes
3.4.2	Sight distance triangle 2.5m x 2m at corner of driveway adjacent to egressing vehicle must be clear of obstructions	Sight distance triangles are clear of obstructions	Yes
3.3 (a)	Maximum grade within 6m of the property boundary = 1 in 20	Maximum grade = 1 in 20	Yes
5.2	Columns to be located clear of space envelope	Columns located clear of space envelope	Yes
5.3	Minimum headroom = 2.2m	Minimum headroom = 2.2m	Yes

It is therefore considered that the proposed car park layouts servicing the development suitably conform to the intentions of the requirements of AS2890.1-2004.

Further to the above, the following design criterion is provided with respect to disabled parking spaces in accordance with AS2890.6-2009:

- Disabled space width = 2.4m (plus adjoining 2.4m wide shared area, some of which are contained within the adjoining manoeuvring aisle);
- Disabled parking space length = 5.4m; and
- Clearance above disabled spaces = 2.5m.

In order to further demonstrate the internal passenger vehicle manoeuvrability within the parking areas, a number of swept path plans have been overlaid on the architectural plans. The turning paths provided on the plans have been generated using Autoturn software and derived from B85 vehicle specifications provided within the *Australian Standard for Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1-2004).

Section B4.4 of AS2890.1-2004 states the following with regard to the use of templates to assess vehicle manoeuvring:

‘Constant radius swept turning paths, based on the design vehicle’s minimum turning circle are not suitable for determining the aisle width needed for manoeuvring into and out of parking spaces. Drivers can manoeuvre vehicles within smaller spaces than swept turning paths would suggest.’

It would therefore appear that whilst the turning paths provided within AS 2890.1 - 2004 can be utilised to provide a ‘general indication’ of the suitability or otherwise of internal parking and manoeuvring areas, vehicles can generally manoeuvre more efficiently than the paths indicate. Notwithstanding this, our review of the swept path

plans illustrate that passenger vehicles can manoeuvre throughout and enter and exit the most difficult passenger vehicle parking spaces within the parking areas. The proposed site layout as it relates to passenger vehicle manoeuvrability is considered satisfactory.

4. EXISTING TRANSPORT CONDITIONS

4.1 Traffic Network

Hoxton Park Road performs a State Road under the care and control of the Roads & Maritime Services. In this regard, it forms an important arterial road, providing an east-west connection between Hume Highway in the east at Liverpool and Cowpasture Road in the west at Middleton Grange.

In the vicinity of the subject site, Hoxton Park Road forms a four lane divided carriageway providing two through public lanes of traffic in each direction. It further accommodates a two lane bus only carriageway within the central median, forming part of the Liverpool to Parramatta Transitway.

Further to the above, one-way service roads are provided to the north and south of the primary Hoxton Park Road carriageways to service abutting developments, including the subject site.

Intersections along Hoxton Park Road are largely governed by traffic signal control, with additional turning lanes at major junctions, such as Cartwright Avenue to the immediate west of the site.

4.2 Traffic Volumes

Recent observations have indicated that whilst peak hour traffic demands within the directional Hoxton Park Road carriageways are significant commensurate with its important arterial function, traffic demands within the eastbound service road connecting with the subject site are typically low (being less than 20 vehicles per hour).

Entry/exit movements to/from the service road are significantly assisted by the operation of traffic signals at Cartwright Avenue to the west. These signals significantly punctuate eastbound Hoxton Park Road traffic flow thereby providing regular and extended gaps within which ingress and egress movements to/from the service road to/from the primary carriageway can be undertaken in a safe and efficient manner.

In a broader context, whilst traffic demands within Hoxton Park Road are significant, positive signalised intersection control at major nearby junctions provide exclusive phases to ensure turning movements can be undertaken to and from the State Road in a safe manner and without unreasonable delay.

4.3 Public Transport

The Liverpool to Parramatta Transitway operates along Hoxton Park Road immediately adjacent to the site, providing regular and efficient connectivity between the site and major public transport interchanges at Liverpool to the east and Parramatta to the north.

The closest stop is located approximately 100m to the west, along the northern side of Hoxton Park Road.

Transit Systems and Interline Bus Services provide the following routes along Hoxton Park Road:

- Route 802 between Parramatta and Liverpool, via Merrylands;
- Route 803 between Miller Cartwright and Liverpool, via Cartwright;
- Route 853 between Carnes Hill and Liverpool, via Hoxton Park and Middleton Grange; and
- Route 854 between Carnes Hill and Liverpool, via Hoxton Park.

Collectively, these routes provide services between approximately 4.30am and 9.30pm, providing directional frequencies of 10 – 15 minutes during commuter peaks, extending to 30 minutes during other periods.

4.4 Pedestrian Conditions / Infrastructure

The following existing pedestrian infrastructure is provided within the vicinity of the site:

- Paved footpaths are provided along the both sides of Hoxton Park Road and the northern side of the service road adjoining the subject site; and
- Signalised pedestrian crossing is provided over all approaches at the junction of Hoxton Park Road and Cartwright Avenue.

The above pedestrian facilities provide safe and efficient pedestrian connectivity between the subject site and public transport facilities in the immediate vicinity of the site.

5. **PROJECTED TRANSPORT CONDITIONS**

5.1 **Traffic Generation**

Traffic generation rates have been established by the Roads & Maritime Services based on surveys of existing development throughout the Sydney metropolitan area. These have been published in their *Guide to Traffic Generating Developments*. Based on the rate for 'medium density residential flat building', the proposed development could be expected to generate the following additional traffic.

Medium Density Residential Flat Building

Smaller units and flats (up to two bedrooms):

Daily vehicle trips = 4-5 per dwelling

Weekday peak hour vehicle trips = 0.4-0.5 per dwelling.

Larger units and town houses (three or more bedrooms):

Daily vehicle trips = 5.0-6.5 per dwelling

Weekday peak hour vehicle trips = 0.5-0.65 per dwelling.

Adopting the higher end of the above rates, the proposed development has been assessed to generate the following additional traffic (**Table 3**).

TABLE 3					
TRAFFIC GENERATION					
Dwelling Mix		Daily Vehicle Trips		Weekday Peak Hour Vehicle Trips	
Type	No.	Rate	No. Trips	Rate	No. Trips
1 bedroom dwellings	4	5 per dwelling	20	0.5 per dwelling	2
2 bedroom dwellings	18	5 per dwelling	90	0.5 per dwelling	9
3 bedroom dwellings	4	6.5 per dwelling	26	0.65 per dwelling	2.6
Total	26		136		13.6 (14 trips)

The subject development could be expected to generate 136 daily vehicle trips and 14 peak hour trips.

As mentioned in Section 2.3 of this report, three existing detached dwellings are to be demolished to accommodate the proposed residential flat building. Based on RMS traffic generation rates for low density (as updated by RMS Technical Direction 2013/04A of August 2013), this existing development could be expected to generate 32 daily vehicle trips and 3 peak hour vehicle trips. The net increase in traffic generated from the subject site is therefore in the order of 104 daily vehicle trips and 11 peak hour trips.

5.2 General Discussion of Transport Impacts

Based on Roads & Maritime Services' traffic generation rates, the proposed 26 dwelling residential flat building has been assessed to generate an additional 104 daily vehicle trips and 11 peak hour vehicle trips over and above the existing use. In a general sense, the additional traffic from the proposed development is not significant, representing approximately one additional vehicle, on average, using the road network every six (6) minutes during the peak hour period. It is not expected that the residential amenity currently experienced by the existing residents will be affected to any unreasonable extent as a result of the traffic from the proposed development

The potential for impacts associated with the subject development are therefore solely focused on the safety and efficiency afforded by the proposed site access arrangements. In this regard, the consistent vertical and horizontal alignment of service road in the vicinity of the site results in a good level of sight distance to and from the proposed access driveway.

It has been previously mentioned that the traffic signals at the junction of Hoxton Park Road and Cartwright Avenue regularly punctuates eastbound traffic flow within Hoxton Park Road. As such, regular gaps within the eastbound Hoxton Park Road carriageway allows for existing and additional traffic associated with the subject development to exit from the service road onto the State Road safely and efficiently.

6. **CONCLUSION**

This Report has undertaken a traffic and transport assessment with respect to a proposed residential flat building containing 26 dwellings at 207, 209 and 211 Hoxton Park Road, Cartwright. Based on this assessment, the following conclusions are now made:

- The proposed access, internal circulation and manoeuvring arrangements are capable of providing for safe and efficient vehicular movements;
- The proposed parking provision meets the standards of Liverpool DCP 2008;
- The immediately adjoining road network currently operates with a good level of service during peak periods;
- The proposed development has been assessed to generate approximately 104 daily vehicle trips and 11 peak hour vehicle trips over and above the traffic generated by the existing site developments; and
- The additional 11 peak hour vehicle trips from the proposed development is not significant, representing one vehicle using the road network every six minutes on average. This additional traffic will not have any measurable impact on the operation of nearby intersections.

Based on the contents of this Report and the conclusions reached herein, we are of the opinion that there are no traffic related issues with the proposed development that prevent the granting of development consent. Accordingly, we recommend that action to Council.