HYDROX NOMINEES PTY LTD

TRANSPORT ASPECTS OF PLANNING PROPOSAL FOR MASTERS, BULKY GOODS AND INDUSTRIAL DEVELOPMENT, HAWKESBURY VALLEY WAY, CLARENDON

SEPTEMBER 2013

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REF: 7835/3

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1. INTRODUCTION

1.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Hydrox Nominees Pty Ltd to undertake the transport aspects of a planning proposal to permit a new Masters, food outlet and industrial development on Hawkesbury Valley Way at Clarendon. The site location is shown in Figure 1.

1.2 The site is located on the southern side of Hawkesbury Valley Way, west of Percival Street, at Clarendon. It is currently undeveloped.

1.3 On 26 March 2013, Council resolved the following in relation to the site:

> *1. Council support the preparation of a planning proposal for the rezoning of part of the subject site shown in Attachment 4 – Proposed Zoning Map to this report from RU4 Primary Production Small Lots to B7 Business Park under Hawkesbury Local Environmental Plan 2012.*
>
> *2. Council support the proposal to amend Schedule 1, Additional Permitted Uses, subject to the following requirements:*
>
> *(a) Maximum total bulky goods flow space is 5,000m2.*
>
> *(b) Minimum individual floor space for bulky goods uses is 1,000m2.*

1.4 The planning proposal is for a B7 zone, with the part of the site north of the railway line also having bulky goods premises as a permissible use. In accordance with the Council resolution, the potential scale of development includes a Masters

of 11,000m^2, 5,000m^2 bulky goods, 10,000m^2 office plus 90,000m^2 commercial/industrial. Stage 1 would include a Masters (11,000m^2) and bulky goods (2,200m^2).

1.5 The transport aspects of the planning proposal for the development are set down in the following chapter.

2. TRANSPORT ASPECTS OF PLANNING PROPOSAL

2.1 The transport aspects of the planning proposal are set down through the following sections:

- site location and road network;
- scale of development;
- policy context;
- public transport, walking and cycling;
- work place travel plan;
- access, servicing and internal layout;
- traffic generation and effects;
- matters raised by RMS for Masters development; and
- summary.

Site Location and Road Network

2.2 The site is located on the southern side of Hawkesbury Valley Way, west of Percival Street, at Clarendon, as shown in Figure 1. It is currently undeveloped.

2.3 In the vicinity of the site, Hawkesbury Valley Way provides one traffic lane in each direction with an undivided carriageway and a 70 kilometre per hour speed limit. Clarendon Street is east of the site and provides access to the RAAF base on the northern side of Hawkesbury Valley Way. It has an unsignalised t-intersection with Hawkesbury Valley Way, including a right turn bay for turns into Percival Street.

2.4 Racecourse Road connects to Hawkesbury Valley Way west of the site. It provides access to the racecourse and showground. To the south, Racecourse Road connects to Blacktown Road at an unsignalised t-intersection.

2.5 Surrounding land use includes the Richmond RAAF base on the northern side of Richmond Road, Hawkesbury Racecourse and Showground to the west and golf courses to the east. The western rail line runs through the site in an east-west direction.

Scale of Development

2.6 The planning proposal is for a B7 zone, with the part of the site north of the railway line also having bulky goods premises as a permissible use. The potential scale of development includes a Masters of 11,000m^2, 5,000m^2 bulky goods, 10,000m^2 office plus 90,000m^2 commercial/industrial. Stage 1 would include a Masters (11,000m^2) and bulky goods (2,200m^2).

2.7 Vehicular access would be provided from Hawkesbury Valley Way, plus a connection to Racecourse Road. Crossings of the railway line would be provided to connect the two parts of the site.

2.8 The development would be undertaken in stages. Stage 1 would include the Masters and bulky goods (2,200m^2). Other stages would be undertaken following the Masters and would be subject to future demands.

2.9 On-site parking would be provided in accordance with appropriate Council and RMS controls, at the time that future development applications are made for the site.

Policy Context

2.10 There are a number of strategic state policies which are relevant to future development of the Epping town centre. The policies include NSW 2021, the draft Metropolitan Strategy for Sydney to 2031 and The NSW Long Term Transport Master Plan. These policies are discussed below.

- NSW 2021

2.11 NSW 2021: A Plan to Make NSW Number One sets targets to increase the proportion of commuter trips made by public transport for various areas within Sydney by 2016, including:

- 80 per cent in the Sydney CBD;
- 50 per cent in the Parramatta CBD;
- 20 per cent in the Liverpool CBD; and
- 25 per cent in the Penrith CBD.

2.12 It also has targets to:

- improve road safety and reduce fatalities to 4.3 per 100,000 population by 2016;
- double the mode share of bicycle trips made in the metropolitan area by 2016; and
- increase the proportion of the population living within 30 minutes by public transport of a city or major centre in the metropolitan area.

- Draft Metropolitan Strategy for Sydney to 2031

2.13 The draft Metropolitan Strategy for Sydney to 2031 provides a strategic plan to accommodate an additional 1.3 million people, 545,000 houses and 625,000 jobs.

2.14 It identifies a Global Economic Corridor for provision of much of the new employment, encompassing Port Botany, Sydney Airport, the CBD, North Sydney, St Leonards, Chatswood and Macquarie Park, with extension towards Norwest and Parramatta. A number of Urban Activation Precincts will be provided in this area.

2.15 Other key areas in the strategy include Sydney Harbour, Parramatta, the Parramatta Road Corridor, Anzac Parade Corridor, North West Rail Link Corridor, Western Sydney Employment Area and the Metropolitan Rural Area.

2.16 The draft strategy identifies the following objectives for housing, employment and transport:

- provide 27,500 new houses per year, across all of Sydney's six sub-regions;
- provide higher densities closer to major centres;
- provide appropriate land to support jobs growth, including new business parks and industry clusters and hubs;
- provide cross-city transport connections;
- provide appropriate infrastructure to facilitate business growth, including an efficient port, airport and freight network, telecommunications and educational facilities;
- use of the Urban Activation Precincts to demonstrate greater use of public transport, walking and cycling, and integrating land use and transport;

- improve travel times and reduce congestion through improvements to six high priority transport corridors (Parramatta – CBD via Strathfield, Parramatta – CBD via Ryde, Liverpool – Sydney Airport, Sydney Airport – CBD, Mona Vale – Sydney CBD and Rouse Hill – Macquarie Park);
- key transport measures, as outlined in the NSW Long Term Transport Master Plan) to support the strategy;
- provision of other infrastructure, including schools and hospitals, to support the identified growth; and
- improved environmental management by use of resources and energy more efficiently, better planning for natural disasters and increased green space.

- NSW Long Term Transport Master Plan

2.17 The NSW Long Term Transport Master Plan has been developed, in association with the Sydney Metropolitan and Regional Strategies and State Infrastructure Strategy, to support NSW 2021. The key measures identified are as follows:

- providing a fully integrated transport system;
- providing a modern railway system and increase capacity by 60 per cent;
- providing a modern light rail system in the CBD;
- providing a modern bus system to complement the rail networks;
- connect the motorway network, including WestConnex, F3/M2 link and F6;
- reduce congestion in the CBD, including removing the monorail, increasing light rail, improving pedestrian links, increasing ferry use, providing increased capacity on the rail system and improved walking and cycling infrastructure;
- support the growth of new economic centres including the north west and south west rail links, new roads in growth areas and new bus infrastructure;
- connect regional communities through major highway upgrades, and improved rail, bus and air services;

- improve freight efficiency and productivity;
- improve access to Sydney Airport and Port Botany;
- boost walking, cycling and its integration with public transport; and
- preserve future transport corridors.

Public Transport, Walking and Cycling

2.18 The site is close to Clarendon railway station. Clarendon is on the Western Line (Richmond to Chatswood via the city). Services through Clarendon are every 30 minutes in each direction.

2.19 Local bus services are provided by Westbus. Services operate along Hawkesbury Valley Way and Percival Street, adjacent to the site.

2.20 Route 675 connects Windsor with Richmond via the RAAF base, UWS Hawkesbury Campus and Bligh Park. It operates on a 60 minute headway in each direction, Monday to Saturday, with a limited Sunday service.

2.21 Existing public transport services will provide for people to access the development by public transport, walking and cycling, particularly for employees. To support accessibility by bicycles, appropriate bicycle parking, in accordance with Council requirements, is proposed to be provided.

2.22 There will also be opportunities, in association with later stages of the development, to have buses run through the site on the new internal road network, which will connect to Hawkesbury Valley Way and Racecourse Road.

2.23 The potential development will therefore satisfy the objectives of NSW 2021, the draft Metropolitan Strategy for Sydney to 2031 and the NSW Long Term Transport Master Plan as follows:

- enabling commuters to readily access trains and buses close to the site;
- providing pedestrian connections within and through the site, to improve accessibility as well as the general public;
- providing an appropriate level of on-site parking, with reference to appropriate Council and RMS requirements, to encourage public transport use and increase the proportion of trips by public transport; and
- providing employment close to residential areas nearby to reduce the need for external travel.

Work Place Travel Plan

2.24 To encourage travel modes other than private vehicle, a travel demand management approach should be adopted, through a work place travel plan to meet the specific needs of the site, future employees and visitors. The specific requirements and needs of the future employees should be incorporated in the work place travel plan to support the objectives of encouraging the use of public transport.

2.25 The principles of the work place travel plan, which should be developed as part of a future development application in consultation with Council, RMS, public transport providers and other stakeholders, would include the following:

- encourage the use of public transport, including rail and bus services close to the site;

- identify existing bus routes which stop near the site, including the location of bus stops and pedestrian crossings at signalised intersections;

- work with public transport providers to improve services;

- encourage public transport by employees through the provision of information, maps and timetables in the work place travel plan;

- raise awareness of health benefits of walking and cycling (including maps showing walking and cycling routes);

- encourage cycling by providing safe and secure bicycle parking, including the provision of lockers and rails;

- provide appropriate on-site parking provision, consistent with appropriate Council/RMS controls and the objective of reducing traffic generation.

2.26 The work place travel plan should be developed in accordance with the principles identified by Transport for NSW and RMS, and distributed with marketing material, on the website and to employees at the site. The work place travel plan would assist in delivering sustainable transport objectives by considering the means available for reducing dependence solely on cars for travel purposes, encouraging the use of public transport and supporting the efficient and viable operation of public transport services.

Access, Servicing and Internal Layout

2.27 Vehicular access would be provided from Hawkesbury Valley Way, plus a connection to Racecourse Road. Crossings of the railway line would be provided to connect the two parts of the site.

2.28 Two main points of access would be provided from Hawkesbury Valley Way: in approximately the centre of the site, plus opposite Percival Street. The major access points from Hawkesbury Valley Way would be controlled by roundabouts. A left in/left out access would also be provided near the western end of the site.

2.29 A connection to Racecourse Road, from the rear of the site, would be provided. Connections across the railway line, within the site (an overpass and an underpass), would also be provided.

2.30 In the first stage of development (Masters plus bulky goods), a roundabout is proposed on Hawkesbury Valley Way. The intersection of Hawkesbury Valley Way with the Masters access road would require two approach lanes for some 50 metres on the Hawkesbury Valley Way approaches to the intersection. The second approach lanes would be dedicated left and right turn lanes into the site. A concept layout is shown in Figure 3.

2.31 Within parking areas, parking space dimensions, aisle widths, ramp grades, transitions, column locations and height clearances should be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004 at the time that development applications are made.

2.32 Service vehicles to the development would include semi trailers and rigid trucks. Within the site, these vehicles will be separated, as far as practicable, from other traffic. The proposed internal road network will be designed to accommodate semi trailers and rigid trucks.

Traffic Generation and Effects

2.33 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with commuter and other traffic.

2.34 RMS surveys of home improvement centres found the following two-way (sum of both directions) peak hour traffic generations for the similar sized home improvement centres at Bankstown (14,111m^2) and Minchinbury (11,915m^2):

- 289 and 338 vehicles per hour two-way during the afternoon peak hour (representing rates of some 2.05 and 2.84 vehicles per hour per 100m^2 respectively); and

- 844 and 754 vehicles per hour two-way during the weekend peak hour (representing rates of some 5.98 and 6.33 vehicles per hour per 100m^2 respectively).

2.35 Using an average of the above rates, the proposed Masters home improvement centre would have the following two-way peak hour traffic generations:

- weekday afternoon peak hour: some 270 vehicles; and
- weekend peak hour: some 670 vehicles.

2.36 Surveys of the traffic generation of other bulky goods developments have found traffic generation rates of some one and 2.2 vehicles per hour per 100m^2 on weekday afternoons and Saturdays respectively. On this basis, the 5,000m^2 bulky goods uses would have the following generations:

- weekday afternoon peak hour: some 50 vehicles; and
- weekend peak hour: some 110 vehicles.

2.37 The RMS "Guide to Traffic Generating Developments includes the following two-way peak hour traffic generation rates for commercial and industrial/employment development:

- commercial offices: two vehicles per hour per 100m^2 during weekday afternoons;
- warehouses: 0.5 vehicles per hour per 100m^2 during weekday afternoons;
- factories: one vehicle per hour per 100m^2 during weekday afternoons; and
- business parks: 1.1 vehicles per hour per 100m^2 during weekday afternoons.

2.38 On this basis, the proposed 10,000m^2 commercial offices and 90,000m^2 industrial/employment uses would generate some 650 to 1,200 vehicles per hour two-way during weekday peak periods.

2.39 On weekends, the generation of the offices and business park would be lower. We have assessed a generation of some 30 per cent of the weekday generation on weekends.

2.40 Traffic generation of the development would therefore be as follows:

- weekday afternoon: 970 to 1,520 vehicles per hour two-way; and
- weekend: 980 to 1,140 vehicles per hour two-way.

2.41 The access arrangements and road works identified in the previous section should cater for the traffic from the proposed development. Additionally, these flows would likely require the upgrade of Hawkesbury Valley Way to four lanes along the site frontage. The major access points, controlled by roundabouts, would require two lanes on each approach to the intersections.

2.42 To cater for traffic generated by the Masters and food outlet (the first stage of development), a roundabout on Hawkesbury Valley Way would be appropriate. The Hawkesbury Valley Way/access road intersection would require two approach lanes for 50 metres on the Hawkesbury Valley Way approaches. The second approach lanes would be left and right turn lanes into the site. The access road should provide queuing area of 100 metres, prior to other internal intersections, parking spaces or access aisles in the development.

2.43 To assess the operation of the access roundabout to the Masters and bulky goods (the first stage of development), the intersection of Hawkesbury Valley Way with the proposed access road has been analysed using SIDRA, for the traffic flows shown in Figure 2. These flows are based on traffic counts on Hawkesbury Valley Way during a weekday afternoon peak hour.

2.44 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

2.45 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle

should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.46 The analysis found that with a 50 metre second approach lane on the Hawkesbury Valley Way approaches (dedicated lanes for left and right turns into the site), a roundabout at the intersection of Hawkesbury Valley Way with the Masters access road would operate with average delays of some 20 seconds per vehicle or less during peak periods. This represents level of service B, a good level of service.

2.47 We have also analysed the operation of the Hawkesbury Valley Way/site access intersection using a Saturday traffic generation for the Masters and bulky goods of 720 vehicles per hour two-way.

2.48 The analysis found that the intersection would operate with average delays of some 25 seconds per vehicle. This represents level of service B, a good level of service. The SIDRA output summaries are provided in Appendix A.

2.49 Therefore, with the identified road works and intersection treatment, the road network will be able to cater for the traffic from the first stage of development (Masters plus bulky goods) on the site. A concept layout of the Masters access intersection is shown in Figure 3.

2.50 To accommodate future stages of development, the other identified road and intersection works would be implemented, as required.

Matters Raised by RMS for Masters Development

2.51 Roads and Maritime Services has previously provided comments in relation to the Masters development. A copy of the RMS correspondence is attached as Appendix B. Matters raised by RMS are discussed below.

1. RMS has previously acquired a strip of land for road along Hawkesbury Valley Way frontage of the subject property as shown by grey colour on the attached plan.

2.52 This matter is noted.

2. RMS provides in principle support for an access road off Hawkesbury Valley Way to service the proposed development and adjacent land. The design and construction of proposed access road shall make provisions for conjoint access to the adjacent block of land. A two lane roundabout is the preferred facility at the proposed intersection. However, it is the applicant's responsibility to demonstrate that a roundabout would be the most suitable facility at this location.

3. The applicant is to undertake traffic modelling to determine the required turning lanes at the roundabout.

2.53 We agree that a roundabout is appropriate to provide access to the Masters development. Two lanes are proposed on the Hawkesbury Valley Way approaches, as discussed in paragraphs 2.30 and 2.43. The second approach lanes would be 50 metres long and would be dedicated left and right turn lanes into the site.

4. It is noted that the proposed roundabout is partly within Federal land. Any land required to accommodate the roundabout and associated facilities will have to be dedicated as public road by the applicant.

2.54 This matter is noted. The RMS's comments relate to an earlier version of the plans for the site. Land required for the roundabout will be provided from the subject site.

5. All the internal intersections need to be located so that queues from these intersections do not impact on the Hawkesbury Valley Way intersection.

2.55 This matter is noted. As discussed in paragraph 2.43, the access road into the site will be provided with appropriate queuing area of some 100 metres, prior to other internal intersections, parking spaces or access aisles in the development.

6. All vehicles are to enter and leave the site in a forward direction.

2.56 The design will provide for all vehicles to enter and leave in a forward direction.

7. Provision should be made for designated car and trailer parking.

2.57 The future design of the Masters parking area will include provision for parking by cars with trailers.

8. The required sight lines to pedestrians or other vehicles in or around the car park or entrance are not to be compromised by landscaping, signage, fencing or display materials.

2.58 This matter is noted and will be incorporated into the future design of the Masters site.

9. All works / regulatory signage associated with the proposed development are to be at no cost to the RMS.

2.59 This matter is noted.

Summary

2.60 In summary, the main points relating to the transport aspects of the planning proposal are as follows:

i) the planning proposal would provide for a Masters of 11,000m^2, 5,000m^2 bulky goods, 10,000m^2 office plus 90,000m^2 commercial/industrial. Stage 1 would include a Masters (11,000m^2) and bulky goods (2,200m^2);

ii) the potential development would increase employment and retail densities close to good public transport services and is consistent with government objectives to reduce private car travel and encourage public transport use;

iii) a work place travel plan should be prepared for the site;

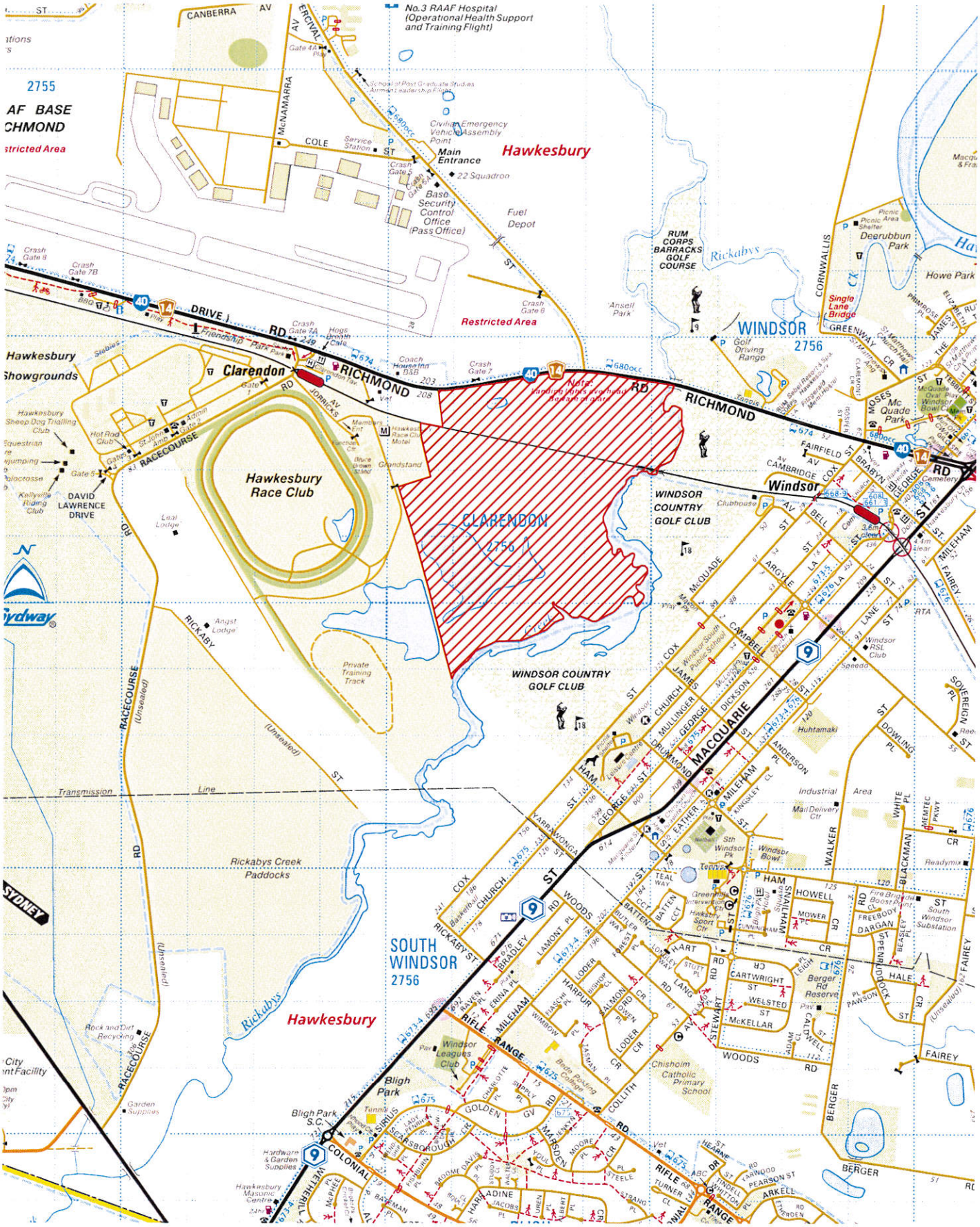
iv) vehicular access would be provided from Hawkesbury Valley Way in three locations, plus a connection to Racecourse Road. Crossings of the railway line would be provided to connect the two parts of the site;

v) two lane roundabouts would be provided at the two main access points to the site on Hawkesbury Valley Way, including upgrading Hawkesbury Valley Way to four lanes between the roundabouts;

vi) for the first stage of development (Masters plus bulky goods), a roundabout on Hawkesbury Valley Way is proposed, with two approach lanes for some 50 metres on the Hawkesbury Valley Way approaches to the intersection, for dedicated left and right turn lanes into the site;

vii) with this measure, the road network will be able to cater for the additional traffic from the first stage of development (Masters plus bulky goods) on the site; and

viii) for future stages of development, the other identified road and intersection works would be implemented, as required.



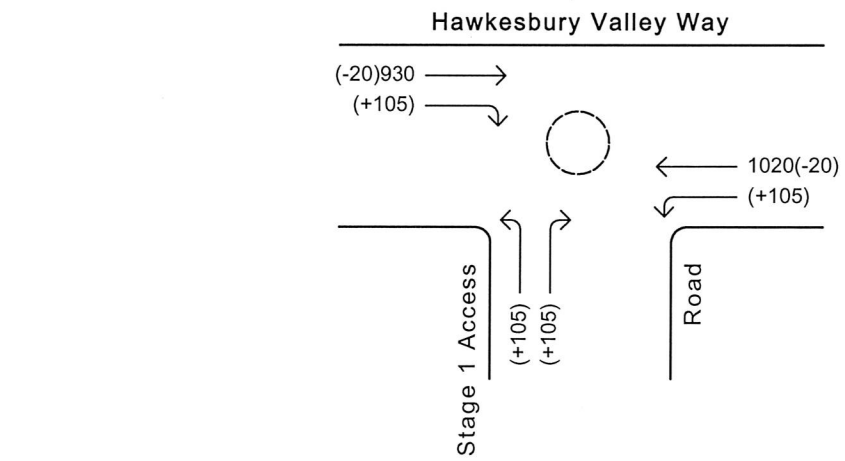
Location Plan

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_nk Ref: 7835 12 September 2012

Site Location

Figure 1



LEGEND

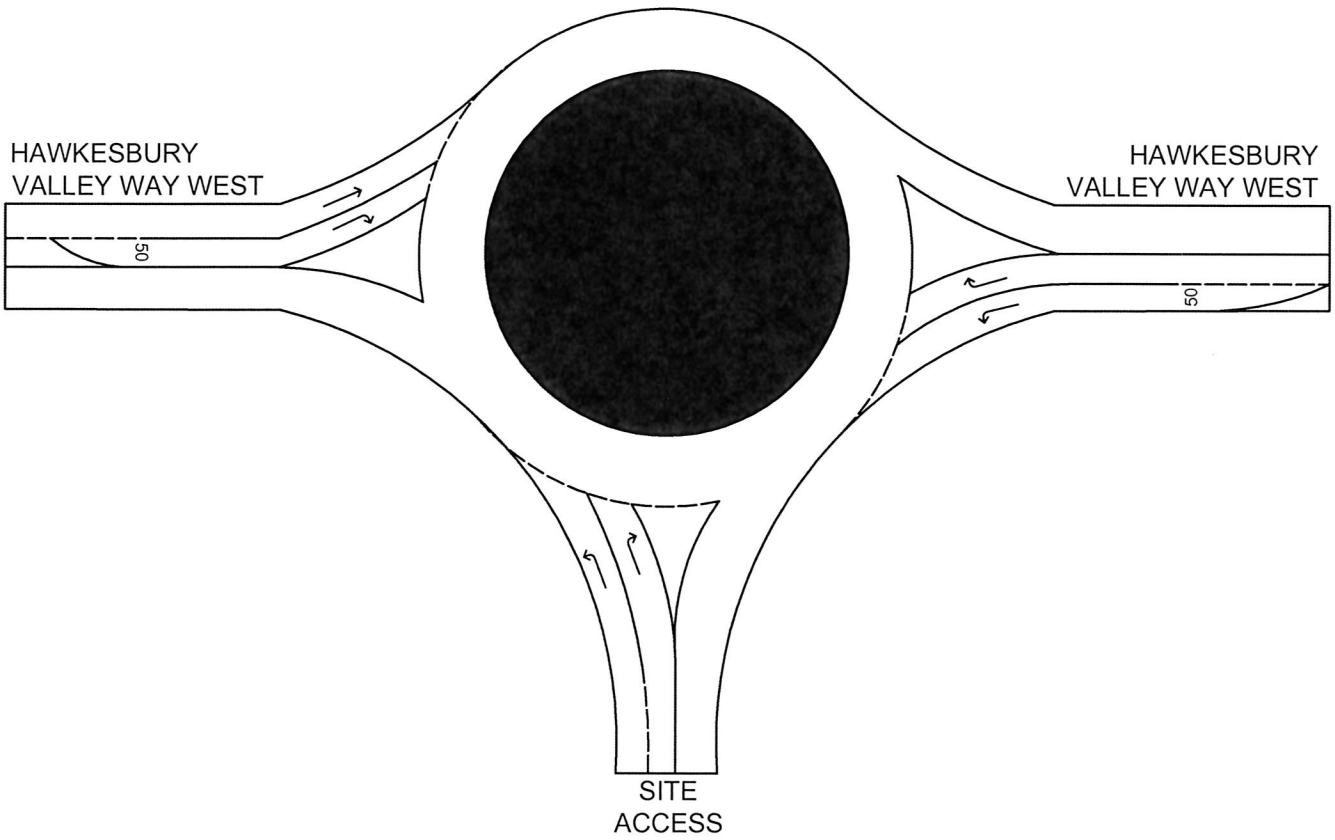
100 - Existing Weekday Afternoon Peak Hour Traffic Flows
(+10) - Additional Stage 1 Development Traffic
○ - Proposed Roundabout

Existing weekday afternoon peak hour traffic flows plus Stage 1 development traffic

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 7835/2 25 June 2013

Figure 2



Masters access intersection concept layout

Colston Budd Hunt & Kafes Pty Ltd

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Figure 3

APPENDIX A

SIDRA OUTPUT SUMMARIES

MOVEMENT SUMMARY

Site: Ex Fri PM + dev traffic

Hawkesbury Valley Way & site access
Existing Friday afternoon peak hour plus development traffic
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site access											
1	L2	105	2.0	0.160	14.3	LOS A	1.2	8.6	0.90	1.65	41.1
3	R2	105	2.0	0.207	20.9	LOS B	1.4	10.0	0.89	1.81	38.0
Approach		210	2.0	0.207	17.6	LOS B	1.4	10.0	0.90	0.87	39.5
East: Hawkesbury Valley Way east											
4	L2	105	2.0	0.108	8.3	LOS A	0.6	4.0	0.30	1.12	52.6
5	T1	1000	2.0	0.642	9.3	LOS A	6.6	47.3	0.46	1.07	53.6
Approach		1105	2.0	0.642	9.2	LOS A	6.6	47.3	0.45	0.54	53.5
West: Hawkesbury Valley Way west											
11	T1	910	2.0	0.597	9.2	LOS A	6.6	46.8	0.50	1.07	53.4
12	R2	105	2.0	0.110	12.3	LOS A	0.6	4.5	0.34	1.29	48.0
Approach		1015	2.0	0.597	9.5	LOS A	6.6	46.8	0.48	0.55	52.8
All Vehicles		2330	2.0	0.642	10.1	LOS A	6.6	47.3	0.50	0.57	51.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Ex Fri PM + weekend dev traffic

Hawkesbury Valley Way & site access
Existing Friday afternoon peak hour plus weekend development traffic
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Site access											
1	L2	230	2.0	0.393	14.7	LOS B	3.3	23.7	1.00	1.86	40.9
3	R2	230	2.0	0.506	25.0	LOS B	4.4	31.6	1.00	2.18	35.9
Approach		460	2.0	0.506	19.8	LOS B	4.4	31.6	1.00	1.01	38.2
East: Hawkesbury Valley Way east											
4	L2	230	2.0	0.270	9.5	LOS A	1.6	11.5	0.52	1.31	51.2
5	T1	980	2.0	0.720	10.8	LOS A	8.5	60.6	0.74	1.33	51.8
Approach		1210	2.0	0.720	10.5	LOS A	8.5	60.6	0.70	0.66	51.7
West: Hawkesbury Valley Way west											
11	T1	890	2.0	0.674	10.2	LOS A	7.5	53.5	0.76	1.31	51.7
12	R2	230	2.0	0.275	13.4	LOS A	1.8	12.6	0.55	1.44	47.1
Approach		1120	2.0	0.674	10.8	LOS A	7.5	53.5	0.71	0.67	50.8
All Vehicles		2790	2.0	0.720	12.2	LOS A	8.5	60.6	0.76	0.72	48.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX B

RMS CORRESPONDENCE

Our Reference:	SYD12/00551
Your Reference:	
Contact:	Pahee Sellathurai
Telephone	8849 2219

SYDNEY REGIONAL DEVELOPMENT ADVISORY COMMITTEE

SRDAC

Director
Colston Budd Hunt & Kafes
PO Box 5186
WEST CHATSWOOD NSW 1515

Attention: Joshua Hollis

PROPOSED MASTERS DEVELOPMENT
162 – 188 HAWKESBURY VALLEY WAY, CLARENDON

Dear Sir/Madam,

Reference is made to your correspondence dated 4 May 2012 with regard to the abovementioned development application, which was referred to the Roads and Maritime Services (RMS) for pre-DA advice. I wish to advise that the Sydney Regional Development Advisory Committee (SRDAC) considered the traffic impact of this development application at its meeting held on 6 June 2012.

Below are the committee's recommendations and RMS comments for consideration in the preparation of the development application:

1. RMS has previously acquired a strip of land for road along Hawkesbury Valley Way frontage of the subject property as shown by grey colour on the attached plan.

2. RMS provides in principle support for an access road off Hawkesbury Valley Way to service the proposed development and adjacent land. The design and construction of proposed access road shall make provisions for conjoint access to the adjacent block of land. A two lane roundabout is the preferred facility at the proposed intersection. However, it is the applicant's responsibility to demonstrate that a roundabout would be the most suitable facility at this location.

3. The applicant is to undertake traffic modelling to determine the required turning lanes at the roundabout.

4. It is noted that the proposed roundabout is partly within Federal land. Any land required to accommodate the roundabout and associated facilities will have to be dedicated as public road by the applicant.

5. All the internal intersections need to be located so that the queues from these intersections do not impact on the Hawkesbury Valley Way intersection.

6. All vehicles are to enter and leave the site in a forward direction.

7. Provision should be made for designated car and trailer parking.

8. The required sight lines to pedestrians or other vehicles in or around the car park or entrance are not to be compromised by landscaping, signage, fencing or display materials.

9. All works / regulatory signage associated with the proposed development are to be at no cost to the RMS.

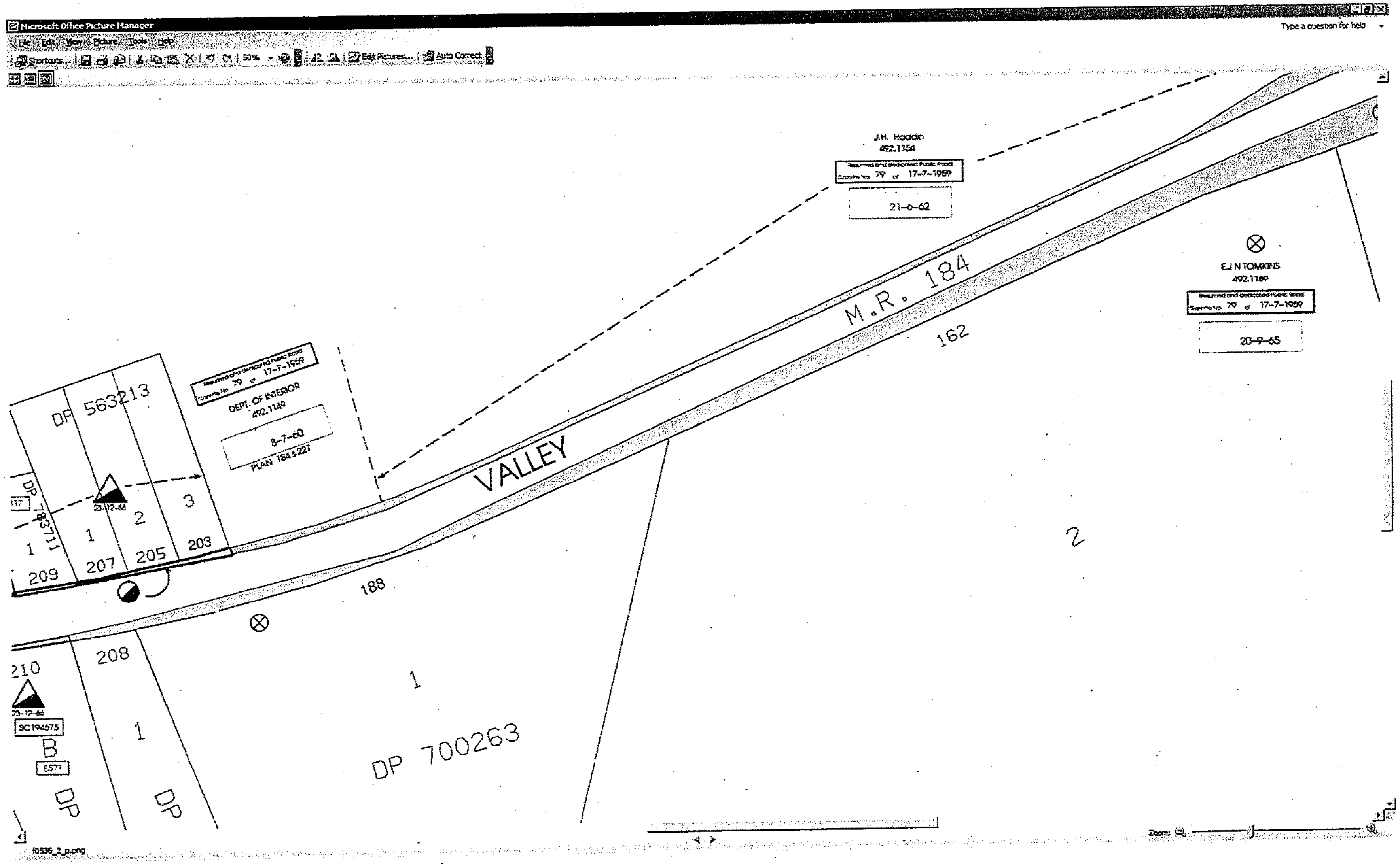
It is emphasised that the comments provided above are informal and of a Pre-DA nature, they are not to be interpreted as binding upon the RMS and may change following formal assessment of submitted development application from the appropriate consent authority.

Any inquiries in relation to this matter can be directed to Pahee Sellathurai on 8849 2219.

Yours sincerely,

Chris Goudanas
Chairman Sydney Regional Development Advisory Committee

19 June 2012



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