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PARKING & TRAFFIC IMPACT STUDY
PROPOSED UPGRADE TO
MUSHROOM FARM FACILITY
172-182 BOUNDARY ROAD
GLOSSODIA

15-070

AUGUST 2015

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1. INTRODUCTION

The Practice of Thompson Stanbury Associates has been commissioned by Urban City Consulting on behalf of Premier Mushrooms Pty. Ltd. to undertake a parking and traffic impact assessment concerned with a proposal to expand an existing mushroom farm development located at 182 Boundary Road, Glossodia. The proposed upgrade involves the recent acquisition of a neighbouring site with a street address of 172 Boundary Road, Glossodia and the construction of a new mushroom production facility that is projected to double the existing production capability and accommodate an additional 54 staff.

The purpose of this report is to assess and document the likely alteration to the existing parking and traffic demand of the subject site associated with the proposed mushroom farm expansion and to recommend where appropriate, treatments to ameliorate such impacts. In particular this study assesses the following:

- The existing on-site parking provision and demand based on the current use;
- The likely future parking demand of the proposed expansion based on future staff employment and travelling patterns;
- The ability of the proposed on-site parking and internal circulation arrangements to accommodate the future demands;
- The operation of the adjoining road network and the suitability and safety of the existing and proposed access arrangements; and
- The alterations to the traffic generating ability of the subject site incorporating the proposed expansion, and the likely impacts on adjoining traffic safety and efficiency.

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

- The Roads and Maritime Services' *Guide to Traffic Generating* Developments;
- Australian Standard *Parking Facilities Part 1: Off-Street Parking* (AS 2890.1-2004) and *Part 2: Off Street Commercial Vehicle Facilities* (AS2890.2-2002); and

This report has been prepared pursuant to State Environmental Planning Policy (Infrastructure) 2007.

The report should be read in conjunction with plans prepared by Pippa Noble Creative Pty. Ltd.

2. SITE DETAILS

2.1 Site Location

The site is situated on the north-eastern end of the terminating Boundary Road cul-de-sac, approximately 1.8km north of its junction with Creeks Ridge Road, Glossodia. This location is shown in the neighbourhood context by **Figure 1** overleaf, being an extract of UBD's *Australian City Streets – Version 4*.

2.2 Site Description

The subject site provides a real property description of Lots 1 and 2 DP 603811 and a street address of 172-182 Boundary Road, Glossodia. Collectively, these allotments form an irregular shaped parcel of land, providing a single frontage of approximately 200m to Boundary Road. The subject land falls from west to east providing an approximate height differential of 13m. The total area of the site is in the order of 20 ha.

2.3 Existing Use

The site currently accommodates an existing mushroom growing facility that is owned and operated by Premier Mushrooms Pty. Ltd within 182 Boundary Road, Glossodia (Lot 1). This allotment is currently being serviced by two access driveways connecting with the north-western and south-western corners of the property.

The company has recently acquired the adjoining property at 172 Boundary Road, Glossodia (Lot 2) to initiate its plans for expanded operations that involve the construction of new mushroom growing facilities.

2.4 Surrounding Land Uses

Glossodia is situated on the north-western fringe of the urbanised Sydney metropolitan area. Accordingly, land in the immediate vicinity of the subject site is used for a variety of rural and primary production/agrarian purposes, including rural residences to the south and a horse breeding club to the north.

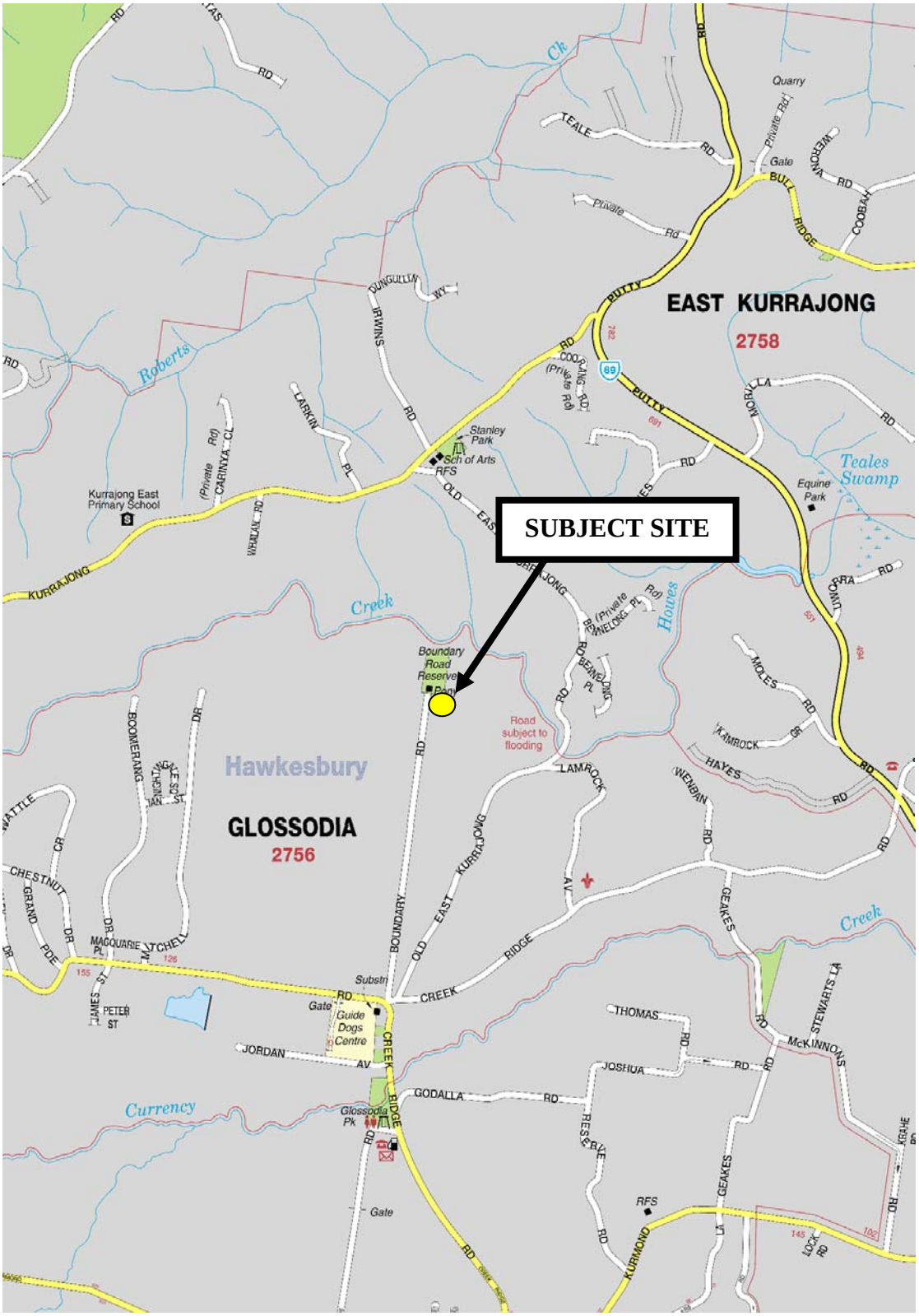

FIGURE 1 – SITE LOCATION

3. PROPOSED DEVELOPMENT

3.1 Built Form

The subject application seeks development consent for the upgrading of an existing mushroom production farm to incorporate the following over three stages of expansion:

- Three mushroom growing buildings, with each structure corresponding to each stage of expansion, located centrally within the eastern portion of the site and providing a combined floor area of 20,007m^2 (6,669m^2 per building);

- Two peat storage rooms associated with Stages 1 and 2 of development is to be located adjacent to the existing workshop building, providing a total floor area of 508m^2;

- A hardstand for dry storage located adjacent to the proposed off-street parking area, providing a floor area of 570m^2;

- Extension of an existing amenities area (specifically lunch room and toilet) situated to the west of the proposed mushroom facility by up to 150m^2 of floor area; and

- An outdoor loading area and associated awning, located between the existing workshop building and the proposed mushroom growing building.

The existing and proposed new facilities are proposed to be serviced by a formalised off-street passenger vehicle parking area comprising a total of 103 parking spaces.

Vehicular connectivity between the on-site parking, manoeuvring and loading areas and Boundary Road is proposed to be facilitated by two access driveways, located at the north and south-western corners of Lot 1.

3.2 Proposed Use

The following provides a summary of the current and future operational characteristics of Premier Mushrooms Pty. Ltd.:

- The current operations employ 45 staff comprising of office, mushroom pickers and general maintenance staff, who work 7 days a week;

- It is understood that the staff employment numbers will increase by up to 54 additional staff as a result of the subject proposal (26 staff are anticipated to be employed following the completion of Stage 1 construction, while Stages 2 and 3 of the development will employ an additional 14 staff associated with each phase);

- Based on information provided by the applicant, it is understood that the existing business operations generate approximately 6 courier vans and 28 trucks (comprising 12.5m long Heavy Rigid Vehicles (HRVs), 19m long

Truck and Dog combination vehicles and Semi-Trailers) over a weekly period; and

- The development proposal has been forecasted to result in the number of weekly truck movements to increase by 68 trips to and from the site.

In addition to the above, despite the number of truck movements over a weekly period appears to be high, it is anticipated that the number of trucks on site at any one time will be low (approximately a maximum of 2-3 trucks per hour). This is to be discussed further in Section 6 of this report.

4. ACCESS & INTERNAL CONSIDERATIONS

4.1 Access Arrangements

Vehicular access to the subject site is currently facilitated as follows:

- A 6.1m wide combined ingress / egress driveway is located at the north-western corner of Lot 1, providing connectivity between the existing terminating Boundary Road cul-de-sac and the on-site parking area. This driveway is to exclusively service passenger vehicles up to the size of small courier vans; and

- A 7.0m wide combined ingress / egress driveway is located at the south-western corner of Lot 1, providing connectivity between the existing terminating Boundary Road cul-de-sac and the heavy vehicle manoeuvring areas associated with tipping and loading activities. This driveway is to exclusively heavy vehicles up to the size of 19m long Semi-Trailers.

In order to undertake an assessment of the suitability of the abovementioned access driveway arrangements in terms of design, reference is made to AS2890.1-2004. This Standard provides appropriate driveway widths based on a number of site characteristics, such as the number of vehicles to be accommodated on-site and the order of the access road.

Based on the site accommodating 103 vehicular parking spaces and Boundary Road performing a minor function in accordance with the Roads & Maritime Services' definitions, at minimum, a combined ingress/egress driveway of between 6-9m is required. The existing 6.1m wide access driveway located at the north-western corner of Lot 1 therefore satisfy such criteria and accordingly is considered to be satisfactory.

It is further acknowledged that the subject development is required to accommodate mushroom delivery and other collection vehicles, up to and including 19m long Semi-Trailers. In order to undertake an assessment of the ability of such vehicles to manoeuvre into and out of the subject site via the proposed 7.0m wide access driveway located at the south-western corner of Lot 1, a desktop analysis of the architectural site plans utilising turning path templates associated with semi-trailers, provided within AS2890.2-2002 has been performed. This assessment indicates that the largest vehicles expected to service the site are suitably capable of accessing and vacating the site via the designated heavy vehicle access driveway.

In addition to the above, it is understood that the movement of such vehicles to and from the site will require almost total occupation of the driveway width however considering the low volume of heavy vehicle traffic accessing and vacating the site in conjunction with the separation of the proposed passenger and heavy vehicle driveways, it is most unlikely that there will be any unreasonable conflict between opposing heavy and passenger vehicle movements on site. In consideration of this and the above discussion, the proposed access driveway arrangements are satisfactory in terms of design.

4.2 Parking Provision

The subject development is proposed to provide a formalised on-site passenger vehicle parking area comprising a total of 103 spaces.

Hawkesbury City Council does not provide locally sensitive parking requirements for mushroom farms. Accordingly, assessment of the proposed parking arrangements is required to be undertaken based on the expected peak operational demands of the facility.

Passenger vehicle parking demand is anticipated to be directly attributed to the peak number of employees on-site at any one time. It has previously been presented that the proposed expansion of operations will result in the employment of an additional 54 members of staff to the business on top of the currently employed workforce of 30 people. Such an arrangement will culminate in an ultimate staff population of 99 people. The peak staff parking provision at any one time is therefore projected to be 99 spaces assuming a 100% staff turnover and a worst case scenario that each staff member actually drives themselves to the site. The proposed parking provision of 103 spaces is therefore considered to be adequate.

Notwithstanding the above, it has also been previously presented that the implementation of autonomous robotic machinery will replace the need for additional staff used for the mushroom picking process, in the future. Under these circumstances, the number of additional staff required to be employed in the future as a consequence of the expansion is likely to be significantly lower than the predetermined number of 54 people, thereby also yielding an ultimate staff population of less than 99 people. In this regard, the proposed parking arrangements are therefore likely to be more than adequate in accommodating the projected parking demand associated with the mushroom farm expansion proposal.

4.3 Internal Circulation and Manoeuvring

4.3.1 Passenger Vehicles

Upon entry into the site, passenger vehicles will move in a forward direction accessing the formalised parking area servicing the administration/office building and mushroom growing facility. The passenger vehicle parking area have been designed to comply with relevant minimum requirements of AS2890.1-2004 and AS2890.6-2009 for rows of 90 degree angled parking spaces, providing the following base dimensions:

- Normal parking space width = 2.4m;
- Parking space length = 5.4m;
- Adjoining manoeuvring aisle width = 6.0m; and
- Parking aisle extension past the end space of a dead end aisle = 1.0m.

In order to evaluate the suitability of the internal passenger vehicle manoeuvrability, this Practice has carefully assessed the architectural plans and have come to the conclusion that all proposed vehicle manoeuvring is capable of being undertaken in a safe and efficient manner within the designated parking area, based on compliance with relevant AS2890.1-2004 requirements. As such, this Practice is satisfied that the internal circulation and manoeuvring arrangements of the subject development are suitable incorporating the recommendations provided within this section given the likely operational characteristics of the site.

4.3.2 Heavy Vehicles

Upon entry into the site from Boundary Road, heavy vehicles, up to the size of 19m long semi-trailers will proceed in a forward direction, accessing the proposed outdoor loading area and associated awning adjoining the eastern wall of the workshop building. In order to assess the heavy vehicle manoeuvrability, a desktop analysis of the site plans with respect to 19m long semi-trailer specifications provided within AS2890.2-2002 has been undertaken throughout the site plans. This analysis has indicated that such vehicles can access the site in a forward direction, manoeuvre into the loading area and thence exit the site in a forward direction. In this regard, this Practice is satisfied that heavy vehicle manoeuvring with respect to semi-trailers can be undertaken in a safe and efficient manner within the areas provided.

It is acknowledged that a low number of heavy vehicles will be required to deposit materials within the dry storage area, which might temporarily impede internal passenger vehicle manoeuvring. However the low volume of heavy vehicle and indeed passenger vehicle traffic accessing and vacating the subject site is such that it is most unlikely that there will be any unreasonable internal conflict between heavy and passenger vehicle movements. Further, such internal passenger vehicle impedance by heavy vehicles is a common and accepted occurrence within industrial/agricultural developments such as that proposal. In consideration of this and the above discussion, the proposed internal heavy vehicle circulation arrangements are considered to be satisfactory.

5. EXISTING TRAFFIC CONDITIONS

5.1 Traffic Functions and Conditions

Boundary Road performs a local access function under the care and control of Hawkesbury City Council. In this regard, it provides a north-south connection between the subject site in the north and Creek Ridges Road in the south. It provides a rural pavement width of 6m, providing one through lane of traffic in either direction between unsealed shoulders. Traffic flow is governed by a sign-posted speed limit of 80km/hr.

Creek Ridges Road performs a collector function extending between Putty/Singleton Road in the east and Spinks Road in the west, before curving to the south to connect with Kurmond Road, thereby effectively linking the rural precincts of Freemans reach and Wilberforce. It intersects with Boundary Road and Old East Kurrajong Road under 'Give-way' signage control, as well as a series of north-south local roads under major/minor priority control, with Creek Ridges Road forming the priority route. Creek Ridges Road provides a 7m wide pavement, facilitating two lane two-way traffic flow between unsealed shoulders.

5.2 Traffic Volumes

Traffic volumes throughout the local road network are low commensurate with the overall rural residential zoning of the precinct. In this regard, observations of Boundary Road during various periods indicate that traffic demands are less than 50 vehicles per hour, even during peak commuter periods.

In order to obtain an accurate indication of existing peak hour traffic demands on the primary access routes to and from the subject site, staff of this Practice have undertake surveys of the intersection of Creek Ridges Road/Spinks Road and Boundary Road. The surveys were undertaken between 7.30am – 8.30am and 4.00pm – 5.00pm on the 29th of April, 2015.

Figure 2 overleaf provides a graphical representation of the surveyed peak hour traffic volumes.

FIGURE 2
EXISTING (2015) WEEKDAY PEAK AM AND PM TRAFFIC VOLUMES
INTERSECTION OF CREEK RIDGES ROAD/SPINKS ROAD & BOUNDARY ROAD

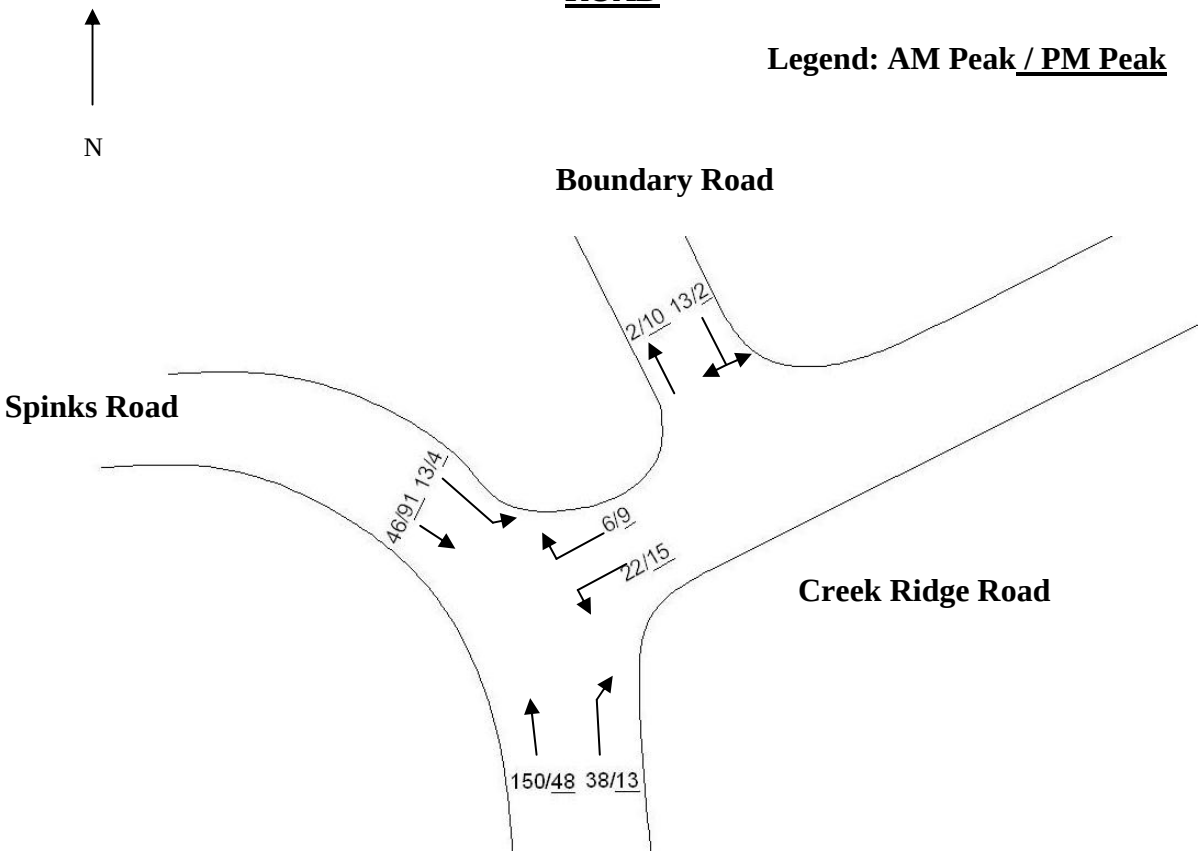

Figure 2 indicates the following:

- Creek Ridge Road/Spinks Road through traffic movements dominate the intersection profile, with such movements being tidal with northbound flow dominating during the morning peak and southbound flow dominating during the evening peak; and

- Two way traffic demands within Boundary Road are very low, being approximately 20 vehicles per hour during peak periods.

5.3 Surrounding Road Network Performance

It has previously been presented that traffic demands within the surrounding roads (Creek Ridge Road/Spinks Road and Boundary Road) are low during peak periods, with such roads accommodating unidirectional volumes of less than 200 vehicles per hour. Such demands result in motorists being provided with a level of service 'A', being defined as a condition of "free flow where drivers are virtually unaffected by others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is high, and the general level of comfort and convenience provided is excellent", according to the Roads & Maritime Services' *Guide to Traffic Generating Developments*.

6. PROJECTED TRAFFIC CONDITIONS

6.1 Traffic Generation

Table 1 provides a summary of the existing and projected traffic generation characteristics of the site over a daily period, based on the operational information contained within Section 3 of this report. It should be noted that the level of traffic generation presented in **Table 1** represents an absolute worst case scenario that is derived on the following conditions:

- All current and future staff are assumed to drive themselves to and from the site; and

- Based on the weekly traffic surveys of heavy vehicle movements associated with business operations provided by the applicant (Premier Mushrooms Pty. Ltd.), at present, the maximum number of heavy vehicle trips to and from the site over a daily period is 18. This level of heavy vehicle traffic generation accounts for approximately 32% of the total weekly turnover of heavy vehicles accommodated on site. In estimating the peak daily traffic generation corresponding to heavy vehicles, the above mentioned rate has been applied to the additional number of weekly heavy vehicle trips anticipated to be generated as a result of the proposed development.

TABLE 1
EXISTING AND PROJECTED AVERAGE DAILY TRAFFIC GENERATION CAPACITIES

	Existing Operation			Projected Operation		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Cars (Pass. Veh.)	45	45	90	99	99	198
Vans (Pass. Veh.)	6	6	12	0	0	0
Heavy Vehicles	9	9	18	31	31	62
TOTAL	**60**	**60**	**120**	**130**	**130**	**260**

Table 1 indicates that the subject proposal is expected to result in an additional 54 passenger vehicle movements and 22 heavy vehicle movements to and from the subject site per day. The passenger vehicle movements are envisaged to comprise 54 inbound vehicle movements during the morning peak and 54 outbound vehicle movements during the evening peak. The heavy vehicle movements are likely to be distributed throughout the day, comprising approximately three additional heavy vehicle movement per hour of site operation. The maximum additional traffic in a single hourly period is therefore projected to be 57 vehicle movements.

6.2 Trip Assignment

In order to gauge the impact of the traffic projected to be generated by the proposed development on the local road network, it is necessary to determine the impact on surrounding intersection efficiency. The objective of this section is to distribute the traffic generated by the proposed development along the major approach routes before it dissipates throughout the general road network.

It is common to assume that trips to the subject site will be distributed in accordance with existing traffic patterns. In this regard, section 5.2 of this report has identified that traffic movements within Creek Ridge Road/Spinks Road are slightly tidal during peak periods, with northbound movements dominating during the morning peak and southbound movements dominating during the evening peak.

Accordingly, it has been assigned that 70% of traffic will originate from the northbound Creek Ridges Road lane and 30% will originate from the southbound Spinks Road lane during the morning peak period. The reverse condition is projected during the evening peak i.e., 70% of traffic will travel in a south-west direction whilst 30% will travel in a north-west direction.

Further to the above, for the purposes of this assessment and to factor into account commuter travelling trends, it has been assumed that 80% of all morning peak hour trips are projected to be inbound trips and 20% outbound, associated with the journey to work trips. The reverse is assigned to apply during the evening peak with 80% of trips being outbound and 20% of trips being inbound.

6.3 Traffic Impacts

The proposed development has been assessed to generate up to 57 additional vehicle movements to and from the subject during peak hourly periods. This equates to approximately one vehicle movement every minute. Such a moderate level of traffic is not projected to have any noticeable impacts on the surrounding road network, particularly considering the prevailing low traffic demands observed within the precinct, as discussed previously in this report. The safe and efficient conditions afforded by the surrounding road network are projected to be suitably capable of absorbing the additional traffic anticipated to be generated by the subject development without any unreasonable impacts on safety, efficiency and / or amenity.

Notwithstanding the above, it has previously been mentioned that technological advancements implemented into workplace practices envisaged for the near future is likely to result in a lower number of additional staff to be hired than the 54 people specified in this report. Further, the estimated total number of projected passenger vehicle trips does not take into consideration the effects of employee car pooling. Both of these factors would reduce the total projected traffic demand associated with the additional staff employment due to the proposed mushroom farm expansion.

In addition to the above discussion, the impacts of the subject proposal are most likely to be restricted to the level of safety and efficiency afforded to the site access arrangements. In this regard, the low traffic demands within Boundary Road in conjunction with the good sight distance provisions of the immediately adjoining road network and the existing driveway arrangements forming part of the subject proposal is anticipated to ensure that motorists can safely and efficiently access the subject site.

7. CONCLUSION

This Practice has undertaken an assessment of the potential traffic implications associated with the expansion of an existing mushroom growing farm business located at 172-182 Boundary Road, Glossodia. Based on this assessment, the following conclusions are now made:

- The proposed off-street passenger vehicle parking provision is projected to be suitably capable of accommodating the peak operational demands of the expanded business operations;

- The existing site access arrangements are expected to provide a safe and efficient means of site access, whereby vehicles up to and including articulated vehicles are capable of entering and exiting the site in a forward direction;

- The proposed internal circulation manoeuvring and servicing arrangements are capable of providing for safe and efficient vehicular movements during peak times;

- The surrounding road network operates with a good level of service during peak periods;

- The subject development is projected to generate a maximum of 57 additional vehicle movements to and from the site during any one hourly period; and

- The surrounding road network is considered to be capable of accommodating the traffic projected to be generated by the development in a safe and efficient manner.

Based on the contents of this report and the conclusions contained herein, we consider that there are no traffic related issues that should prevent approval of the subject application and we therefore recommend that action to Council.