# Transport Assessment Report

## Proposed Plant 2 Refurbishment
## 780 Wallgrove Road, Horsley Park

Ref: 0714r01v2
5/08/2019

Info@asongroup.com.au | +61 2 9083 6601 | Suite 5.02, Level 5, 1 Castlereagh Street, Sydney NSW 2000

# Document Control

**Project No:** 0714r01

**Project:** 780 Wallgrove Road, Horsley Park

**Client:** Austral Bricks

**File Reference:** 0714r01v2 TA_Wallgrove Rd, Issue

# Revision History

| Revision | Date | Details | Author | Approved by |
|---|---|---|---|---|
| - | 5/08/2019 | Draft | A. Tan | J. Mulhaire |
| I | 19/12/2018 | Issue | A. Tan | J. Mulhaire |
| II | 16/04/2019 | Issue | R. Butler-Madden | R. Butler-Madden |
| III | 25/07/2019 | Issue | R. Butler-Madden | R. Butler-Madden |

# Table of Contents



# Appendices

# 1 Introduction

## 1.1 Overview

Ason Group has been engaged by Austral Bricks to prepare a Transport Assessment Report (TA Report) to support a State Significant Development Application (SSDA) that provides for the refurbishment and extension of existing infrastructure (the Proposal) at the Plant 2 Site, which lies within the broader Austral Bricks site at 780 Wallgrove Road, Horsley Park (the Austral Site). The Proposal generally provides for:

- The refurbishment and extension of an existing building which would provide additional Gross Floor Area (GFA) of approximately 13,090m$^2$; and
- The construction of a new fire access road to accommodate emergency vehicle movements.

**From the outset, it is critical to note that the Proposal does not provide for any additional staff at the Plant 2 Site, nor an increase in the production capacity of the Plant 2 Site (and therefore the generation of additional vehicle trips).**

The Austral Site located within the Fairfield Local Government Area (LGA) and is therefore subject to Fairfield City Council (Council) development controls. Notwithstanding, as an SSDA the Proposal will be assessed by the Department of Planning & Environment (DPE).

## 1.2 Secretary's Environmental Assessment Requirements

Further to the above, Secretary's Environmental Assessment Requirements (SEARs) were issued by the DPE on 16th November 2018 regarding the Proposal. The SEARs outline the key areas for consideration in the assessment of the Proposal, and include specific assessment requirements determined by the Roads and Maritime Services (RMS) and Transport for New South Wales (TfNSW).

The general SEARs relating to transport issues are outlined in **Table 1** below, while the Plant 2 Site specific SEARs prepared by the RMS and TfNSW are outlined in **Table 2**. Both tables provide a summary response to each SEARs requirement, and reference to the section of this TA providing a more detailed analysis of each requirement.

## Table 1: Secretary's Environmental Assessment Requirements – General

| SEARs - General | Summary Response | TA Section |
|---|---|---|
| Details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic on the road network located adjacent to the proposed development; | 2018 traffic surveys within the Austral Site indicates a daily traffic generation of 231 trips and 600 trips to/from the Austral Site at the Ferrers Road and Wallgrove Road intersections respectively. The majority of Plant 2 Site trips are generated to/from Ferrers Road, estimated at no more than 5vph during the peak periods. These trips take the form of staff trips to and from the Site rather than heavy vehicles.<br>No pedestrian or bicycle facilities exist on Ferrers Road, it is assumed that little to no pedestrian / bicycle movements exist on the road network adjacent to the Plant 2 Site. | 4 |
| Details of all traffic and transport demands likely to be generated during construction and operation, including a description of haul routes; | The proposed truck route to and from the Plant 2 Site would be via Wallgrove Road, arriving and departing from the north. It is noted that this route is classified as an RMS Restricted Access Vehicle route allowing up to 26m B-Double vehicles. It is not anticipated that the Proposal would result in any change to current operational traffic volumes.<br>Further details would be required with regard to construction traffic, once a Contractor has been appointed, with the Draft Construction Traffic Management Plan (Section 8) to be developed with the accurate details. It is expected that this would be produced in response to a suitable Condition of Consent. However, for the purpose of this SSDA, it is anticipated that construction activities would generate a peak of 50 vehicles per hour based on the workforce numbers (based on 60 staff and an average car occupancy of 1.2).<br>Furthermore, it is currently anticipated that under a worst-case scenario no more than 10-20 truck movements per day would be required for the delivery of constructions materials to Plant 2 Site. Few if any of these trips would be generated during the commuter peak periods. | 7, 8 |
| Details on access to the site from the local road network, including intersection location, design and sight distance, and strategic road network (i.e. motorways); | Access to the Plant 2 Site will be via the Access Road & Ferrers Road intersection for light vehicles (i.e. staff) and the Wallgrove Road & Access Road intersection for heavy vehicles and visitors. The intersections provide sufficient sight distance (approximately 100m in each direction) and is consistent with the existing arrangement. No modifications are proposed to any existing intersections.<br>It is noted that Council have requested that access be restricted to/from Wallgrove Road and that further justification is required as to why Ferrers Road will be used for access to/from the Site. As discussed throughout this Report, **the Proposal would not change the travel patterns of the existing Site**. The vehicles that access the Site via Ferrers Road are regular vehicles which are familiar with the Site (i.e. staff). All visitors to the Site, notably heavy vehicle deliveries would travel via the Wallgrove Road Access. As discussed in Section 4.2, the Ferrers Road access generates very little traffic, this situation would remain consistent as the Proposal would not increase traffic generation associated with the Site. | 4 & 9 |
| Impact of the proposed development on existing and future public transport and walking and cycling infrastructure within and surrounding the site; | The Plant 2 Site has limited access to public transport facilities and the Proposal will have little impact on the surrounding public transport and walking and cycling infrastructure due to the high percentage of car users. | 5 |
| An assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project; | The Proposal does not seek to increase staff or production, and thus does not increase traffic movements. As such, the road safety and road network capacity will function consistent with the existing (approved) conditions. | 7 |
| Details of access and parking arrangements for emergency vehicles; | A new fire access road is to be constructed as part of the Proposal. Swept path analysis indicates that emergency vehicles will be able to safely use the proposed roadway. | 9 |

| | | |
|---|---|---|
| Demonstrate the measures to be implemented to encourage employees of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing; | Due to the nature of the location, the Proposal relies heavily on private car usage, as evidenced in the JTW data for the local area. However, it is noted that as part of the Western Sydney Employment Area and Western Sydney Airport initiatives, public transport in the vicinity will improve in the future. | 5 |
| Plans of any road upgrades or new roads required for the development including the potential to create and east-west road connection through the site linking Wallgrove Road with Ferrers Road; and | The Proposal involves the construction of a new fire access roadway to connect with existing hardstand area. There are currently no plans to upgrade the Access Road. | 9 |
| Detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards. | The existing car parking area has been assessed in accordance with the minimum requirements of AS2890.1 and yielded a capacity of 63 car spaces (based on User Class 1A). This easily accommodate the existing 35 staff, noting that staff numbers will be unchanged further to the Proposal. | 9 |

**Table 2: Secretary's Environmental Assessment Requirements – RMS and TfNSW**

| SEARs – RMS and TfNSW | Summary Response | TA Section |
|---|---|---|
| Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required). | The Proposal does not seek to increase staff numbers or production, and therefore there will be no changes to the existing approved traffic generation of the Plant 2 Site. As such, it is concluded that the operation of the local road network will be unchanged further to the Proposal. | 7 |
| Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e. turn paths, sight distance requirements, aisle widths, etc.). | The existing access design will be retained. Currently, the development utilises an unmarked area for the purpose of car parking. As per the requirements of AS2890.1, this area can accommodate up to 63 car spaces based on User Class 1A dimensions. | 9 |
| Proposed number of car parking spaces and compliance with the appropriate parking codes. | As stated, a technical assessment demonstrates that 63 car parking spaces can be contained within the existing car park. The Proposal seeks to retain staff numbers (35 staff in total) which would result in a parking demand of 35 spaces in a worst-case scenario. The provision of 63 spaces will easily account for the anticipated parking demand. | 9 |
| Details of service vehicle movements (including vehicle type and likely arrival and departure times). | There is currently an average of 20 heavy vehicle movements picking up bricks per day, with only a small number of movements in the commuter peak periods. The Plant 2 Site generally employs Heavy Rigid Vehicles (HRV) for deliveries. | |
| Roads and Maritime requires the EA report to assess the implications of the proposed development for non-car travel modes (including public transport use, walking and cycling); the potential for implementing a location-specific sustainable travel plan (e.g.; Green Travel Plan, 'Travelsmart' or other travel behaviour change initiative); and the provision of facilities to increase the non-car mode share for travel to and from the site. This will entail an assessment of the accessibility of the development site by public transport. | As stated, workers in the area rely on private cars due to the poor public transport and active transport provision currently available.<br>Noting that the Aerotropolis and WSEA projects will develop public and active transport in the future, sustainable travel plans will be considered for implementation in the future when such services become available. | 5 |
| Roads and Maritime requires an assessment of the likely toxicity levels of loads transported on arterial and local roads to / from the site and, consequently, the preparation of an incident | This condition is not applicable to the objectives of this Transport Assessment. The services of suitably qualified consultants will need to be obtained. | |

| | | |
|---|---|---|
| management strategy for crashes involving such loads, if relevant. | | |
| TfNSW notes that the subject site lies within land identified for corridor investigations for the Western Sydney Freight Line1. These investigations are ongoing and TfNSW may consult with the Applicant/landowner when required. | The Applicant understands and accepts this condition. | |
| As part of the SEARs it has been requested that RMS be consulted to address any issues raised within their response. | Ason Group have contacted Ahsanul Amin (RMS Senior Land Use Planner) via email regarding the possibility of a consultation with RMS. Noting that the Proposal will not increase the Plant 2 Site traffic generation above existing approved generation, the RMS has confirmed that consultation is not necessary at this stage of the planning process. | |

## 1.3 Study Objectives

The key objectives of this TA Report are as follows:

- To provide an appropriate response to the SEARs;
- To establish that the proposed works at the Plant 2 Site are compliant and consistent with the access, traffic and parking principles outlined in Council's planning documents;
- To establish that the trip generation of the Plant 2 Site further to the Proposal can be appropriately accommodated by the local road network;
- To demonstrate that there is an appropriate and sustainable provision of car parking at the Plant 2 Site; and
- To demonstrate that the proposed access driveways, internal roads, car parks and service facilities comply with the relevant Australian Standards.

## 1.4 Reference Documents

Key documents referenced in the preparation of the TA Report include:

- Council's *Fairfield Citywide Development Control Plan 2013* (DCP 2013)
- Roads and Maritime Service (RMS) *Guide to Traffic Generating Developments* (RMS Guide)
- RMS *Technical Direction TDT 2013/04a, Guide to Traffic Generating Developments – Updated Traffic Surveys* (RMS Guide Update)
- *Australian Standard 2890.1: Parking Facilities – Off Street Car Parking* (AS 2890.1)
- *Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities* (AS 2890.2)
- *Australian Standard 2890.6: Parking Facilities – Off Street Parking for People with Disabilities* (AS 2890.6)

- *Western Sydney Employment Area – Southern Link Road Network Strategic Transport Assessment*, prepared by AECOM, 18 April 2011 (SLRN Report)
- *Broader WSEA SLRN – Options Refinement* (2014), prepared by AECOM, 6 May 2014 (SLRN Options Report)

## 1.5 Report Structure

This TA Report is structured as follows:

- Section 2 provides an overview of the Proposal;
- Section 3 details the strategic context of the Plant 2 Site;
- Section 4 describes existing local traffic and transport conditions;
- Section 5 outlines existing and proposed public transport, pedestrian and cycling links;
- Section 6 outlines the parking requirements applicable to the proposed development, and proposed parking provision;
- Section 7 assesses the traffic impacts of the development, including the Plant 2 Site's projected trip generation and forecasted network performance;
- Section 8 provides a draft Construction Traffic Management Plan;
- Section 9 reviews the design of internal access driveways, parking and service areas with reference to the appropriate Australian Standards; and
- Section 10 provides a summary of the key conclusions.

# 2 Overview of Proposal

A detailed description of the Proposal is included in the Environmental Impact Assessment (EIS) which this TA Report accompanies. In summary, the Proposal provides for the refurbishment and extension of existing on-site infrastructure, and specifically provides for:

- An extension of the existing building (Plant 2) to provide an additional GFA of approximately 13,090m$^2$ which would in turn provide for the replacement of two (2) existing kilns with one (1) new upgraded kiln.
- The construction of a new sealed fire road to allow emergency vehicles (including fire trucks) to service the Plant 2 Site.
- The retention of the existing on-site car park and provision of 18 formalised visitor parking spaces.

As previously stated, the Proposal does not provide for any additional staff or production increases such as would increase traffic generation. In additional, vehicle access would remain consistent with that of the existing situation with familiar users of the Site utilising the Ferrers Road access and all non-regular visitors (notably heavy vehicle deliveries) utilising the Wallgrove access point.

A reduced copy of the Site Plan, produced by SBA Architects, is provided for context as **Figure 1**.

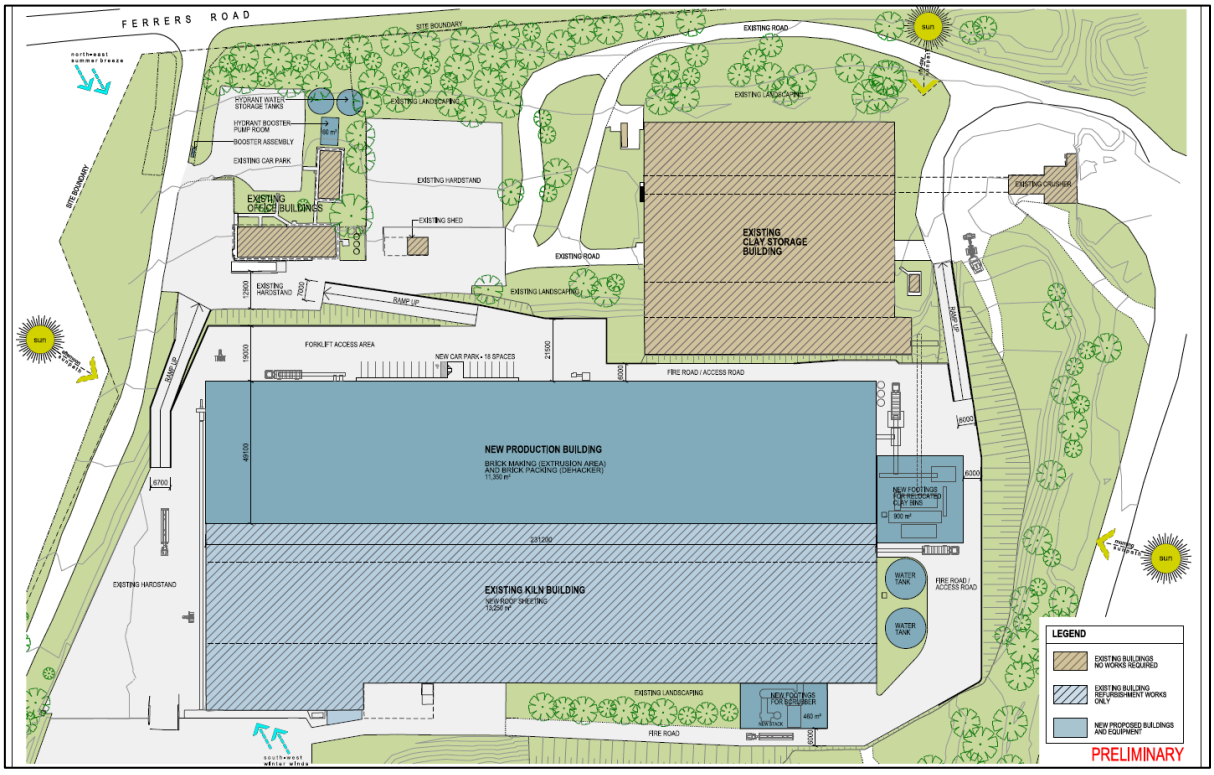



**Figure 1: Site Plan**

# 3 The Existing Site & Strategic Context

## 3.1 Site Location & Land Use

The Austral Site has a street address of 780 Wallgrove Road, Horsley Park, and is legally known as Lot 7 of DP 1059698. The Austral Site is located approximately 30 km west of the Sydney CBD and 13 km southwest of the Parramatta CBD and is used for the manufacturing of bricks.

The Plant 2 Site occupies a parcel of land in the eastern section of the Austral Site and is located to the immediate south of the Sydney Water Supply Pipeline with Ferrers Road running along the eastern boundary. Within the broader locale, surrounding developments comprise predominantly industrial facilities providing warehousing, distribution and various extractive industries.

The Plant 2 Site (and broader Austral Site), as well as the key local roads providing access for the sites, are shown in their local context in Error! Reference source not found..

## 3.2 Existing Plant 2 Site Traffic Generation

With reference to information provided by Austral, and to the traffic surveys reported in Section 4.2 below, the traffic generation of the Plant 2 Site is relatively minor, being based on:

- Staff Trips: A total of 35 staff are employed at the Plant 2 Site. The majority of staff arrive and depart the Plant 2 Site outside of the commuter peak periods based on current shift structures (which would be unchanged further to the Proposal).
- Truck trips: The Plant 2 Site generates daily truck trips arriving and departing with finished product. As with staff trips, the majority of truck trips are generated outside of the commuter periods, with delivery 'runs' generally commencing between 6:00am and 7:00am; then between 11:00am and 12:00pm; and finally, between 3:00pm and 4:00pm.

With consideration of these factors, it is estimated that the Plant 2 Site generates less than 10vph during the AM and PM peak periods.

## 3.3 Strategic Context

### 3.3.1 Western Sydney Employment Area

While the Austral Site lies immediate adjacent to, but outside of, the Western Sydney Employment Area (WSEA), planning for the WSEA necessarily must be considered when assessing the Proposal.

The WSEA is an initiative by the Department of Planning and Environment (DPE) to create an employment precinct that is easily accessible by residents who live within western Sydney. As part of

an integrated land use strategy for the WSEA, the DPE has proposed a number of key road links to provide road infrastructure to service freight and logistics within the area. These road links were published in the NSW Roads & Maritime Services (formerly RTA) document *Western Sydney Employment Hub – Proposed Erskine Park Link Road Network: Concept Plan*, February 2008.

One of key proposed road links discussed in the document that directly impacts the Plant 2 Site is the construction of the Southern Link Road between Wallgrove Road and Mamre Road. Current concept designs have identified that this road will be a four-lane dual carriageway arterial road and will connect to Wallgrove Road by way of a new signalised intersection at the current location of – and incorporating – the Austral Bricks Access Road. This has implications for the future access to the Austral Site in general and will require future analysis to determine suitable intersection layouts for future traffic volumes. It is noted however, that this would improve the function of access into the Site.

The planning for the SLR is still in its early stages and therefore any future assessment should be undertaken separately upon the release of further details of the aforementioned intersection.

### 3.3.2 Western Sydney Airport

In addition to the continual development of WSEA for industrial, warehousing and distribution purposes, planning is underway to enhance the transport infrastructure available to the WSEA further to the planned Western Sydney Airport (WSA).

The WSA will provide freight infrastructure to reduce the need to transport goods over greater distances to existing air freight terminals such as Sydney Airport. As a response to the opportunities presented by the WSA, the DPE recently released the Land Use and Infrastructure Implementation Plan for the Stage 1 “Initial Precincts” to guide development of the ‘Aerotropolis’, which investigates potential new land uses for employment, homes and services surrounding the WSA. This includes the re-planning of the Broader Western Sydney Employment Area, itself an extension of the WSEA, is expected to further improve transport links to the WSA, including the external road network providing access to the Plant 2 Site.

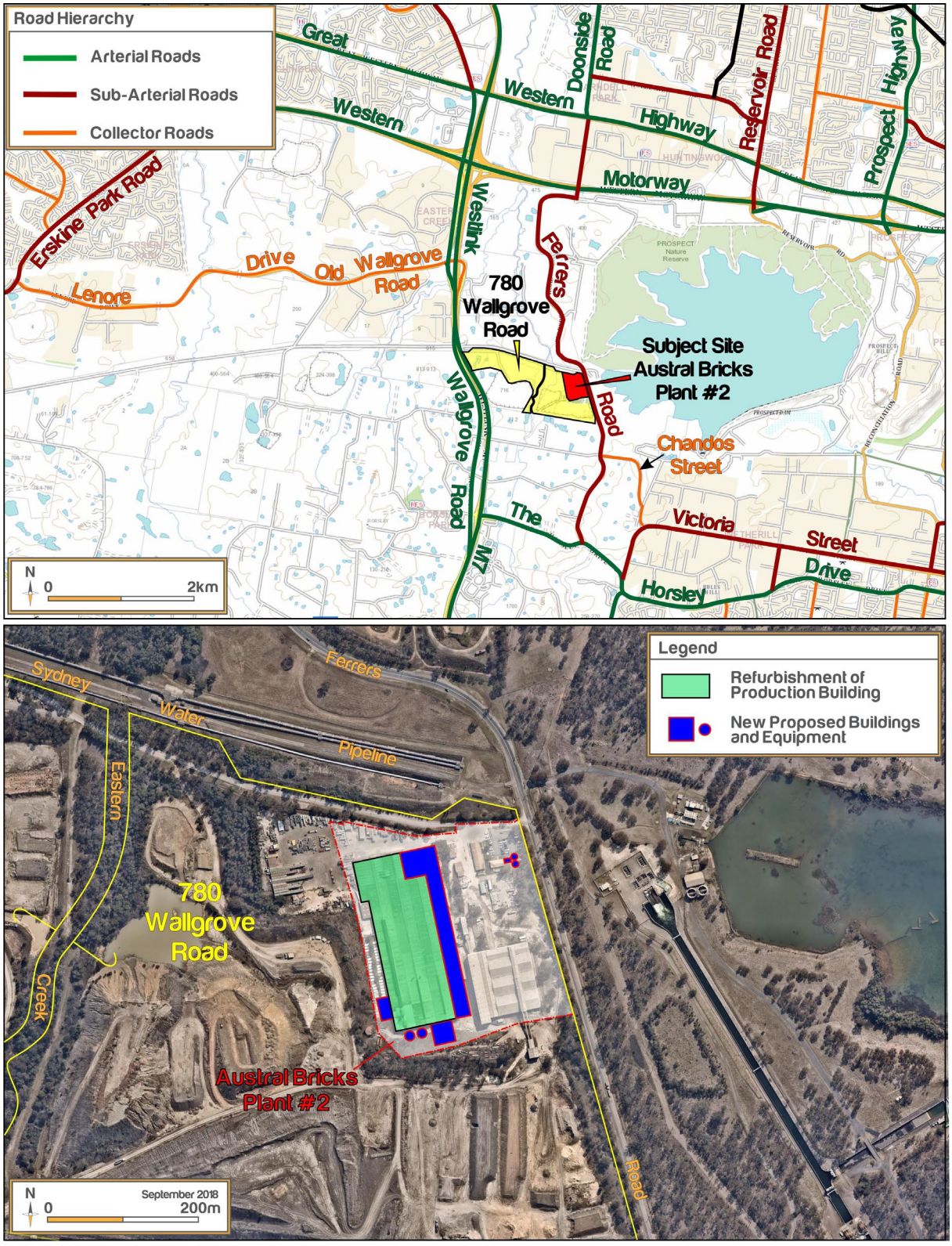



**Figure 2: Site Context and Road Hierarchy**

# 4 Existing Road Network Conditions

## 4.1 Existing Road Network

### 4.1.1 Westlink M7 Motorway

The M7 Motorway is a high capacity road link of state significance and was built to accommodate future traffic growth in the western Sydney region. The M7 Motorway provides a key north-south link between the M2 motorway in the north and the M5 motorway to the south. A major interchange between the M7 motorway and M4 Western motorway is located approximately 3km north of the Austral Site, which connects the Sydney CBD with Western Sydney. The M7 Motorway carries four trafficable lanes with a divided carriageway. The M7 Motorway has a posted speed limit of 100km/h and currently carries approximately 70,000 vehicles per day (vpd).

### 4.1.2 Ferrers Road

Ferrers Road is a sub-arterial road that runs in a north-south direction to the immediate east of the Plant 2 Site between The Horsley Drive and Brabham Drive. The two-lane, undivided road has a posted speed limit of 60km/h and currently carries approximately 15,000vpd in the vicinity of the Plant 2 Site.

### 4.1.3 Wallgrove Road

Wallgrove Road is an arterial road that runs in a north-south direction to the west of the Austral Site and parallel to the M7 motorway. The four-lane, two-way road provides a link between the Great Western Highway and Elizabeth Drive. As with the M7 Motorway, Wallgrove Road connects to the M4 Motorway approximately 3 kilometres to the north of the Austral Site. Wallgrove Road has a posted speed limit of 70 km/h in the vicinity of the Austral Site, and currently carries approximately 30,000vpd.

### 4.1.4 Austral Bricks Access Road (the Access Road)

The Access Road is a road that runs in an east-west direction between Ferrers Road in the east and Wallgrove Road in the west. The Access Road is generally constructed as a two-lane undivided carriageway with a clear width of approximately 6.0 – 7.0 metres. For the majority of its length, the Access Road is a private road owned by Austral Bricks, and there are a series of traffic calming devices on the road to deter through traffic and reduce vehicle speeds within the Austral Site. It is noted that the western end of Access Road (generally between the M7 Motorway and Wallgrove Road) is a public road, though there is little if any public demand.

#### 4.1.5 Intersection of Access Road & Ferrers Road

The intersection of Access Road & Ferrers Road provides a priority (Give Way) T intersection with no auxiliary lane infrastructure. Vehicle trips generated by the Plant 2 Staff utilise this intersection (and then Ferrers Road) to access the sub-regional road network.

#### 4.1.6 RMS Restricted Access Vehicle Routes

Further to this, it is important to consider the RMS' approved routes for 26m B-double vehicles. **Figure 3** details the heavy vehicle restrictions for the area surrounding the Site as displayed in the RAV map:

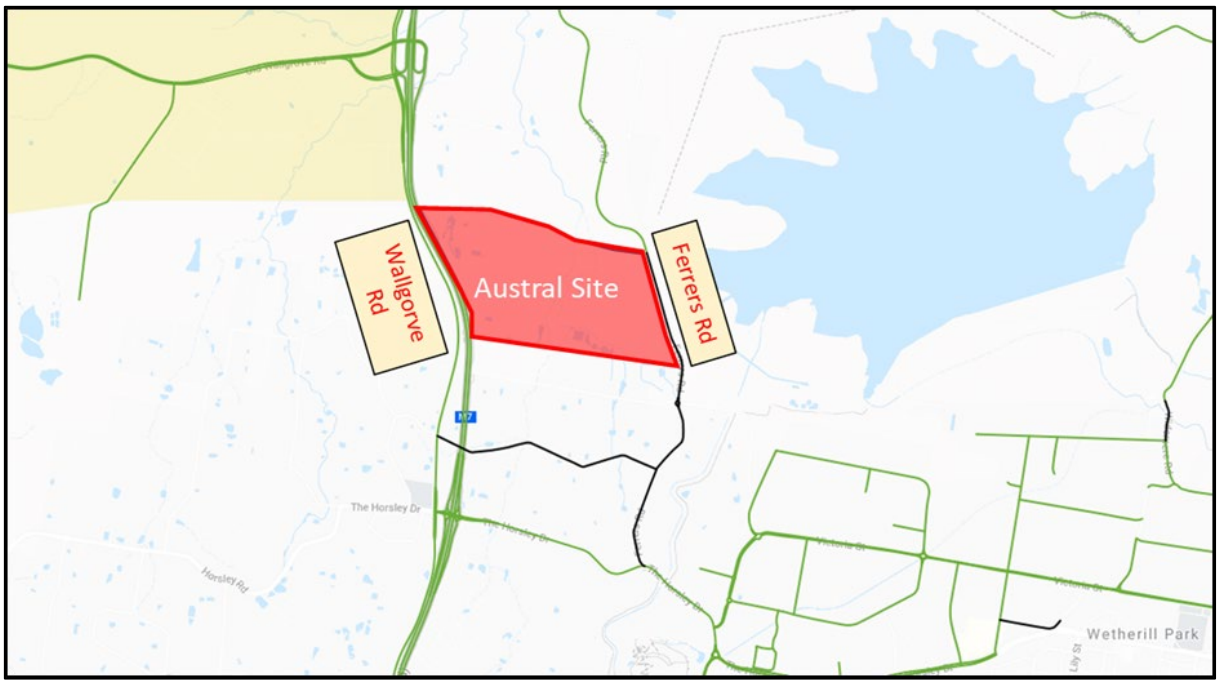



**Figure 3: RMS Approved B-Double Route Map**

### 4.2 Existing Traffic Flows

#### 4.2.1 Access Road Traffic Flows

Traffic surveys in Access Road were undertaken in September 2018 in line with the SEARs requirements; the surveys were conducted at the following locations:

- Access Road west of Ferrers Road; and
- Access Road east of Wallgrove Road.

The results of the surveys are summarised in **Figure 4,** noting that the reported flows are two-way flows at both survey sites.

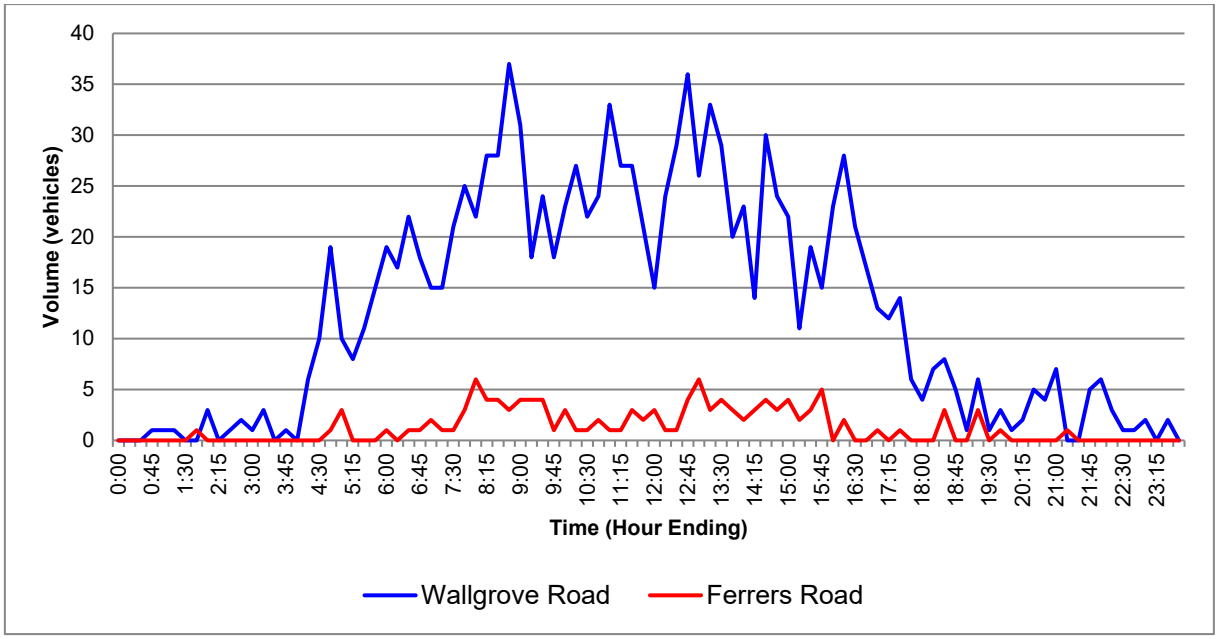



**Figure 4: Existing Austral Site Traffic**

As shown in the surveys, the traffic generation in the eastern section of Access Road is minimal (i.e. via Ferrers Road); as discussed, these flows are primarily those generated by regular travellers to the Plant 2 Site (i.e. staff), and tally well with the estimate of Plant 2 Site trip generation as discussed in Section 3.2. it is clear that the main access point is via the Wallgrove Road access.

It is noted that the percentage of trucks in Access Road was reported as 36% of the total traffic to/from Ferrers Road; and 40% of total traffic to/from Wallgrove Road across both the AM and PM peak periods.

### 4.2.2 Intersection Flows

Traffic surveys were also undertaken at the intersections of Access Road & Ferrers Road in September 2018; a summary of the surveyed traffic flows at the key intersection is provided in **Figure** 5 below.

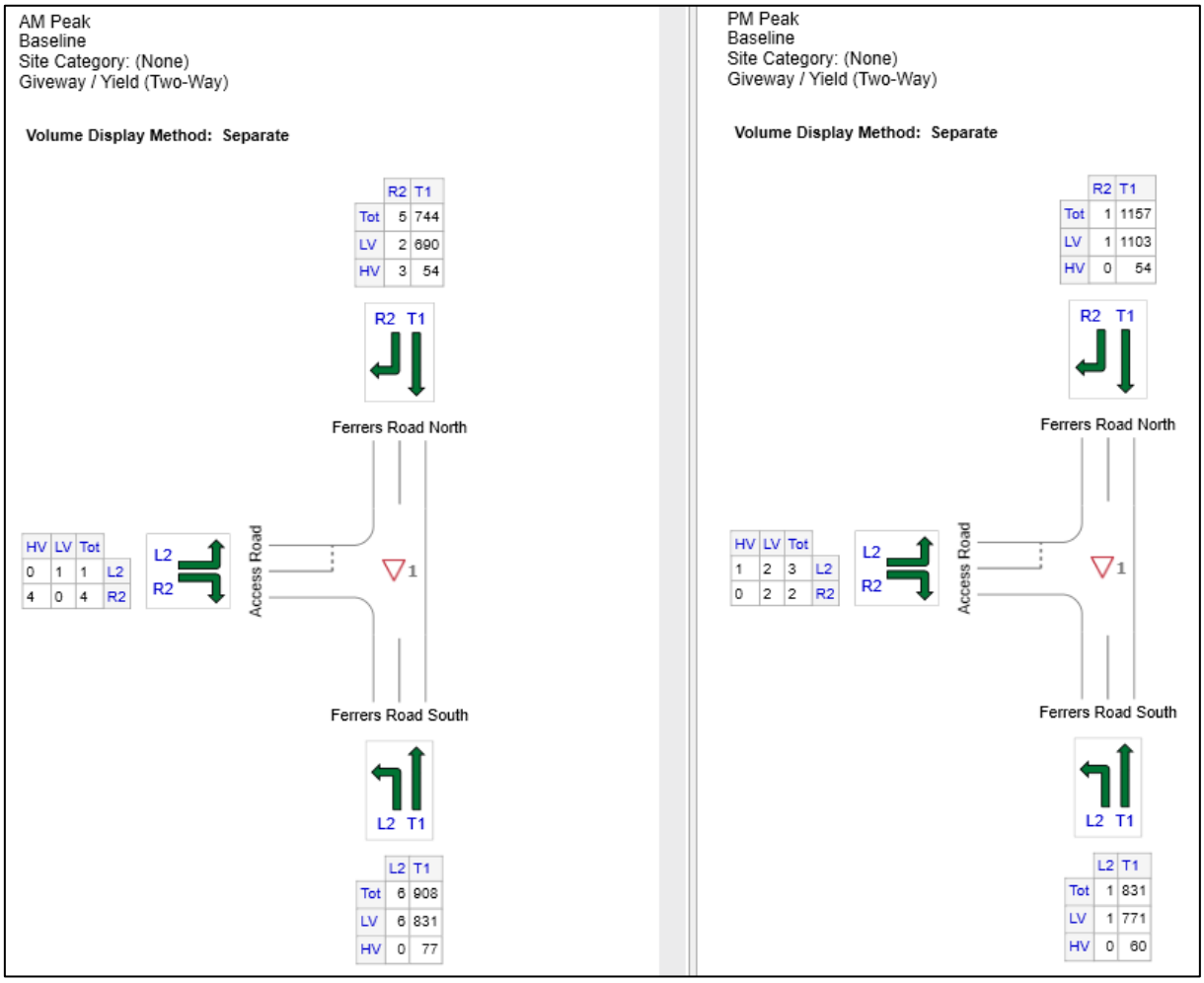



**Figure 5: Peak Period Intersection Flows**

## 4.3 Intersection Operations

### 4.3.1 SIDRA

The performance of the key intersection of Access Road & Ferrers Road has been analysed using the RMS approved SIDRA Intersection model. SIDRA outputs provide a range of performance measures, including:

- Degree of Saturation (DOS) – The DOS is defined as the ratio of demand (arrival) flow to capacity. The DOS is used to measure the performance of intersections where a value of 1.0 represents an intersection at theoretical capacity, above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity). As the performance of an intersection approaches DOS of 1.0, queue lengths and delays increase rapidly. It is usual to attempt to keep DOS to less than 0.9, with satisfactory intersection operation generally achieved with a DOS below 0.8.

- *Average Vehicle Delay (AVD)* – The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.
- *Level of Service (LoS)* – This is a comparative measure that provides an indication of the operating performance, based on AVD. For signalised and roundabout intersections, LOS is based on the average delay to all vehicles, while at priority controlled intersections LOS is based on the worst approach delay

**Table 4** provides the recommended criteria for the assessment of LOS as per the RMS Guide.

**Table 3: RMS Level of Service Summary**

| 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 & spare capacity | Acceptable delays & spare capacity |
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study required |
| D | 43 to 56 | Operating near capacity | Near capacity & accident study required |
| E | 57 to 70 | At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode | At capacity, requires other control mode |
| F | More than 70 | Unsatisfactory and requires additional capacity. | Unsatisfactory and requires other control mode or major treatment. |

### 4.3.2 Existing Intersection Operations

A summary of the existing performance of the intersection of Access Road & Ferrers Road is provided in **Table 4**.

**Table 4: Existing Intersection Performance**

| Intersection | Period | Degree of Saturation (DoS) | Average Vehicle Delay (AVD) | Level of Service (LoS) |
|---|---|---|---|---|
| Ferrers Road / Access Road | AM | 0.515 | 70.1 sec | E |
| | PM | 0.639 | 108.1 sec | F |

With reference to **Table 5**, the SIDRA results indicate relatively poor operations at the intersection of Access Road & Ferrers Road; however, consideration must be given to the following:

- The key delay at this intersection is to the right turn movement, Access Road to Ferrers Road south; however, the delay relates to only a small number of vehicle trips (4 trips and 2 trips in the AM and PM peak hours respectively) and as such has no bearing on general intersection operations.
- In addition, Ason Group has discussed with SIDRA Solutions a minor issue in the assessment of priority controlled T intersections, where the delay to the right turn movement can actually be reduced by increasing the turning volumes; in response to this issue (which is currently be reviewed by SIDRA Solutions) the right turn flow has been increased to an effective 'tipping point' where a minimal delay is determined. Application of this method reduces the reported delay to the right turn movement.
- Notwithstanding the above, it is important to note that the generation of the Plant 2 Site to Ferrers Road – and the broader existing operations of the intersection - are based on previously approved traffic generation forecasts for the Plant 2 Site (and broader Austral Site).

Finally, and with reference to sections below, it is again critical to state that the Proposal does not provide for any increase in staff or Plant 2 Site production, and as such there is no evidence to suggest that the trip generation of the Plant 2 Site to this key intersection would be in any way different to the existing (approved) trip generation to the intersection.

# 5 Public and Active Transport

## 5.1 Public Transport

Existing public and active transport service and infrastructure in the vicinity of the Plant 2 Site is shown in **Figure 6**.

With reference to Figure 4, it is evident that existing public transport services in the area are limited, but given the nature of the Site (and the broader sites along the Ferrers Road corridor) the provision of such services has not been a key priority.

However, it is expected that public transport and general accessibility in the area will be significantly improved in the future as part of WSEA , BWSEA and WSA planning. These programs intend to provide create large business and commercial hubs and have accounted for sustainable transport measures as part of the developmental process; it is noted that the most likely service to become available to the Plant 2 Site would be bus services along Ferrers Road (linking the industrial precincts to the north and south of the Site); and future bus services along the Southern Link Road immediate adjacent to the Site.

## 5.2 Cycle Paths

The cycle networks in the vicinity of the Plant 2 Site are also shown in Figure 6. In this regard, the Westlink M7 Shared Path is located to the immediate west of the Plant 2 Site, which connects to key centres such as Prestons and Baulkham Hills, as well as employment areas such as the Norwest Business Park and Eastern Creek. In addition, other cycleways and shared paths connect to the M7 Shared Path, such as the Elizabeth Drive Shared Path.

The combination of these paths provides the Plant 2 Site with good cycle accessibility.

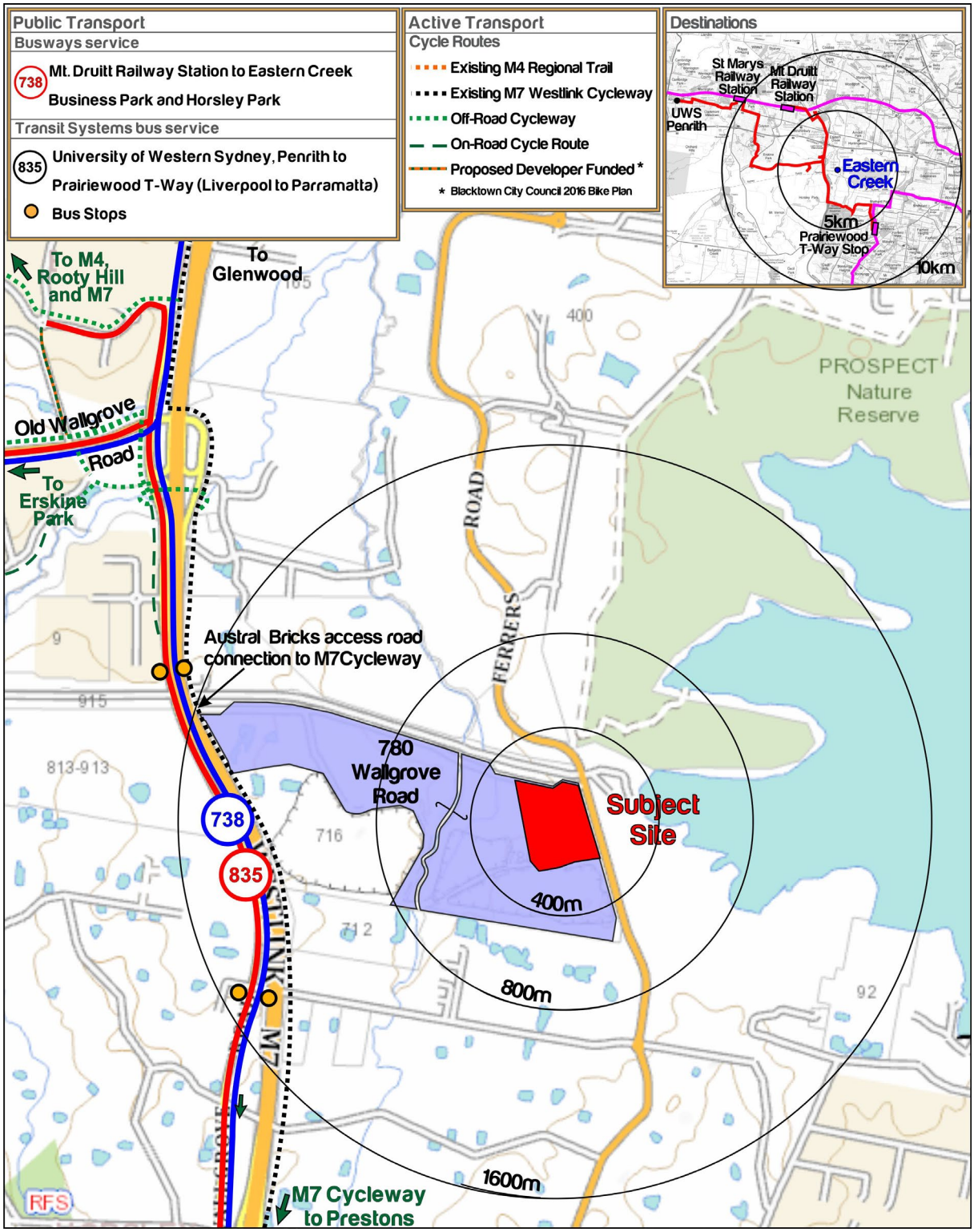



**Figure 6: Public Transport Network**

# 6 Parking Requirements

## 6.1 Parking Requirement

Table 1 of Chapter 12 of DCP 2013 provides parking rates for a range of development types, including general industrial rates; however, these parking rates are not readily applicable to the Plant 2 Site, and as such a 'first principles' assessment of parking demand has been undertaken.

In this regard, as previously stated the Proposal will not increase staff numbers of the existing 35 staff employed at the Plant 2 Site. It is estimated that the majority, if not all, of these staff would travel by private vehicles, and there would likely be only a minor proportion of car-sharing. As such, the peak parking demand at the Plant 2 Site would be for 35 parking spaces.

## 6.2 Parking Provision

All car parking is currently provided in an unmarked car park in the northern portion of the Plant 2 Site; it is our understanding that the design and use of this car parking is consistent with past approvals.

Notwithstanding, a technical assessment of the available car park area has been undertaken to ensure that the car park provides appropriate capacity when measured against the appropriate Australian Standards. This assessment (detailed below in Section 9) indicates that the car park can effectively provide for up to 63 car spaces based on the minimum requirements of AS28890.1, and well over 50 parking spaces even where vehicles are not parked efficiently.

As such, the existing car park will continue to provide more than enough capacity to accommodate peak parking demand further to the Proposal.

In addition to the existing car parking, it is proposed to provide 18 formal spaces to the east of the New Production Building. The purpose of this parking would to provide formal visitor parking only and would not be occupied by staff. This parking would therefore not increase the existing traffic generation of the Site during the traditional road network peak hours.

# 7 Traffic Assessment

As previously discussed, the Proposal provides for the refurbishment and extension of existing on-site infrastructure but does not provide for any increase in staff numbers, production or general vehicle movements.

As such, the future traffic generation of the Plant 2 Site further to the Proposal would be essentially unchanged from the existing Plant 2 Site traffic generation as detailed in Section would be commensurate with the (previously approved) traffic currently being generated by the Plant 2 Site.

As such, it is the conclusion of Ason Group that the Proposal is supportable on traffic grounds.

# 8 Draft Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be provided as part of future construction planning, noting that at this time the details of the construction program are largely unknown other than an estimate of 6 months to undertake the construction works. It is expected that during the most intensive phase of construction, it is estimated that 60 contractors could be on-site at any one time. It is noted that this estimate requires further consideration, when a Contractor has been appointed. Notwithstanding, sections below outline the general principles for managing construction traffic through the construction period.

## 8.1 Potential Haulage Routes

The primary construction vehicle route to and from the Plant 2 Site would be via Wallgrove Road, with the majority of trips expected to be generated to/from the north. Given that this route is an RMS Restricted Access Vehicle (RAV) route, it would provide for all general and RAV construction vehicles.

The movement of construction materials would be managed through the scheduling of deliveries, and would generally provide for minimal staff and truck movements during the peak periods.

## 8.2 Proposed Work Hours

It is expected that construction works would be undertaken during standard working hours, which are assumed to be as follows:

- Monday to Friday: 7:00 AM to 3:00 PM
- Saturday: 8:00 AM to 1:00 PM
- Sunday and public holidays: No planned work.

## 8.3 Construction Traffic Generation

Light vehicle traffic generation would be associated with construction staff movements to and from the Plant 2 Site. Based on the work hours outlined above, it is not expected that any additional trips would be generated during the traditional commuter peak hours (7:00AM – 9:00AM and 4:00PM – 6:00PM) with staff expected to arrive between 6:30AM - 7:00AM prior to starting a shift and depart between 3:00PM – 3:30PM following the shift end.

Similarly, further to appropriate scheduling of construction deliveries, it is not expected that more than 4 truck trips would be generated in the AM and PM peak periods.

As such, the additional trip generation of the Plant 2 Site is expected to have no impact on the operation of the local road network.

## 8.4 Construction Staff Parking

As detailed in Section 6, the Plant 2 Site car park currently provides a minimum capacity of 50 parking spaces. Further the Plant 2 Site has large hardstand areas which are currently largely used for storage. As such, noting the large size of the Site, it is expected that the Site would suitably be able to provide for the peak construction staff alongside Plant 2 operational staff within the Site boundaries.

## 8.5 Construction Mitigation Measures

While the traffic impacts of construction are likely to be negligible, the following measures are expected to be further investigated in order to minimise the impacts of the construction activities on the local road network:

- Traffic control between the Access Road and Plant 2 Site;
- Scheduling of deliveries outside of the commuter peak;
- Appropriate approvals for any over-sized vehicle deliveries; and
- The use of Wallgrove Road as the designated construction vehicle route.

# 9 Design Commentary

The access, internal circulation and car parking complies with the requirements of the relevant Australian Standard requirements of AS2890.1 (2004) Part 1: Off-street car parking and AS2890.2 (2002) Part 2: Off-street commercial vehicle facilities. The key design criterion for the internal roads and driveways was to provide access for vehicle sizes up to B-Double trucks. The following characteristics are noteworthy with regard to the design of the Plant 2 Site access driveway and on-grade car park.

## 9.1 Site Access

As previously discussed, the Access Road providing for the Plant 2 Site provides 3.0m - 3.5m lanes in each direction, and as such is suitable to movement of the maximum sized vehicles accessing the Plant 2 Site (B-Doubles). No further modifications are proposed for the Access Road, again noting that access to the Plant 2 Site will remain consistent with the existing approved access.

## 9.2 Car Park Design

As discussed, the existing on-site car park is not line marked or sealed; notwithstanding, the car park is shown to accommodate up to 63 car parking spaces when assessed against the requirements of AS 2890.1, and specifically with reference to minimum parking aisle and space dimensions.

The new formal visitor car parking spaces to be provided along the eastern side of the New Production Building are to be provided in accordance with the requirements of AS2890.1.

## 9.3 Internal Road Design

The proposed internal fire road (including ramps) has been designed to service a 26 metre B-Double , which would be sufficient to service general and aerial (fire) appliances. The fire road runs along the southern end of the building (around the new footing for clay bins) and extends around to the western side of the development before connecting with existing hardstand area.

Swept path analysis of all loading docks has also been undertaken to confirm geometry and compliance with the relevant standards. The assessment shows that the proposed loading docks are able to accommodate all proposed truck movements (see also **Appendix D**).

## 9.4 Design Summary

In summary, the internal configuration of the Plant 2 Site vehicular access points, car park and internal roads have been designed with reference to the relevant Australian Standards of AS2890. It is expected that a Condition of Consent would be imposed requiring compliance with these Standards and as such

any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

# 10 Conclusions

The key findings of this Transport Assessment are:

- The Proposal generally seeks approval for the refurbishment and extension of an existing building for the purpose of an upgraded kiln and internal fire access road to accommodate emergency vehicle movements.
- An unmarked car park is currently being used to accommodate the existing 35 staff members. An assessment of the car park indicates that a total capacity of 63 car parking spaces is available based on the minimum requirements of AS2890.1. As such, car parking provision will be sufficient for staff parking and the Proposal is therefore supportable on car parking grounds.

  Further, visitor parking is to be provided to the eats of the New Production Building to accommodate visitor demands.
- The Proposal does not provide for any increases in staff or heavy vehicle movements outside of construction works. SIDRA analysis of the existing intersection of Access Road & Ferrers indicates that the intersection is operating with a high delay to the right turn movement, access road to Ferrers Road, during both the AM and PM peak periods. However, given that that the Proposal would not generate any additional trips over and above this (approved) level of generation, it must be concluded that this intersection (and the broader road network) would be unaffected by the Proposal. As such, the Proposal is therefore supportable on traffic grounds.
- A formal Construction Traffic Management Plan will be prepared further to construction to minimise potential impacts to the road network during the construction period.
- The internal configuration of the Plant 2 Site, including vehicular access, car parking and internal roads, has been designed with reference to the relevant Australian Standards. It is expected that a future Condition of Consent would be imposed requiring compliance with these Standards, and as such any minor amendments considered necessary (if any) can be dealt with prior to the release of a Construction Certificate.

In summary therefore, the Proposal is supportable on transport planning grounds.

# Appendix A

# Planning Secretary's Environmental Assessment Requirements

## Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*

| | |
|---|---|
| **Application Number** | SSD 9601 |
| **Project Name** | Horsley Park Brickworks Plant 2 Upgrade |
| **Development** | Upgrade works to existing Brickworks Plant 2 brick manufacturing facility including:<br>• a new kiln to replace existing 2 kilns;<br>• kiln car storage extension and relocated dehacker with an area of 3,500m$^2$;<br>• a 1,600 m$^2$ building for consolidated additives area and regularisation of building;<br>• new footings for relocated clay bins and conveyor system;<br>• extending existing clay storage building by 1,000m$^2$ for additional undercover stockpile area; and<br>• new footings for existing scrubber. |
| **Location** | 780 Wallgrove Road, Horsley Park |
| **Applicant** | Brickworks Limited |
| **Date of Issue** | 16 November 2018 |
| **General Requirements** | The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*. In addition, the EIS must include a:<br>• detailed description of the development, including:<br>– need for the proposed development;<br>– justification for the proposed development;<br>– likely staging of the development;<br>– likely interactions between the development and existing, approved and proposed operations in the vicinity of the site; and<br>– plans of any proposed building works.<br>• consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments;<br>• risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;<br>• detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:<br>– a description of the existing environment, using sufficient baseline data;<br>– an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and<br>– a description of the measures that would be implemented to avoid, minimise, mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive |

| | |
|---|---|
| | management and/or contingency plans to manage significant risks to the environment; and<br>– consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.<br><br>The EIS must also be accompanied by a report from a qualified quantity surveyor providing:<br>• a detailed calculation of the capital investment value (CIV) of the proposal as defined in clause 3 of the *Environmental Planning and Assessment Regulation 2000*, including details of all components of the CIV; and<br>• a close estimate of the jobs that will be created by the development during the construction and operational phases of the development; and certification that the information provided is accurate at the date of preparation. |
| **Key issues** | The EIS must include an assessment of the potential impacts of the proposal (including cumulative impacts) and develop appropriate measures to avoid, mitigate, manage and/or offset these impacts. The EIS must address the following specific matters:<br>• **Community and Stakeholder Engagement –** including:<br>- a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach<br>- a report on the results of the implementation of the strategy including issues raised by the community and surrounding occupiers and landowners that may be impacted by the proposal<br>- details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal<br>- details of the proposed approach to future community and stakeholder engagement based on the results of the consultation.<br>• **Strategic Context** – including:<br>– detailed justification for the proposal and suitability of the site and proposed transport routes;<br>– details of any proposed consolidation or subdivision of land; and<br>– demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. The following documents must be addressed:<br>o *State Environmental Planning Policy (Western Sydney Parklands) 2009;*<br>o the *Parklands Plan of Management 2020;*<br>o the *Parklands Plan of Management 2020 Supplement;*<br>o the *Parklands draft Plan of Management 2030.*<br>• **Air Quality** - including:<br>– a comprehensive air quality impact assessment (AQIA) of all potential point source and fugitive air emissions (including odour) and dust impacts from the development, including details of air quality impacts on private properties in accordance with relevant Environment Protection Authority guidelines; |

| | |
|---|---|
| | - details of mitigation, management and monitoring measures for preventing and/or minimising both point and fugitive emissions; and<br>- an assessment of the effectiveness of the proposed air quality mitigation measures.<br>• **Noise** – including:<br>- description of all potential noise sources such as construction, operational and traffic noise;<br>- a comprehensive noise impact assessment including a cumulative noise impact assessment in accordance with relevant Environment Protection Authority guidelines; and<br>- details of noise mitigation, management and monitoring measures.<br>• **Traffic and Transport** – including:<br>- details of the current daily and peak hour vehicle, public transport, pedestrian and bicycle movements and existing traffic on the road network located adjacent to the proposed development;<br>- details of all traffic and transport demands likely to be generated during construction and operation, including a description of haul routes;<br>- details on access to the site from the local road network, including intersection location, design and sight distance, and strategic road network (i.e. motorways);<br>- impact of the proposed development on existing and future public transport and walking and cycling infrastructure within and surrounding the site;<br>- an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project;<br>- details of access and parking arrangements for emergency vehicles;<br>- demonstrate the measures to be implemented to encourage employees of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing;<br>- plans of any road upgrades or new roads required for the development including the potential to create and east-west road connection through the site linking Wallgrove Road with Ferrers Road; and<br>- detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.<br>• **Soils and Water** - including:<br>- a description of the catchment and proximity of the site to waterways;<br>- consideration of potential local and mainstream flooding impacts;<br>- an assessment of potential surface and groundwater impacts associated with the development, including potential impacts on watercourses and riparian areas, groundwater and groundwater dependent communities nearby;<br>- a description of the surface, stormwater and wastewater management systems, including on site detention, and measures to treat or reuse water;<br>- a detailed water balance including a description of the water demands and breakdown of water supplies; and any water licensing requirements;<br>- description of the measures to minimise water use;<br>- details of site history with regards to potential contamination; and |

| | |
|---|---|
| | – description of the construction erosion and sediment controls.<br>• **Waste Management** – including:<br>– details of the quantities and classification of waste and wastewater to be generated on site;<br>– details on waste storage, handling and disposal; and<br>– details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2007*.<br>• **Bushfire and Incident Management** – including:<br>– an assessment of the level of hazard posed to future development on adjacent land and how the hazards may change as a result of development<br>– address the requirements of Planning for Bush Fire Protection 2006 (RFS), in particular the provision of access (including perimeter roads) and water supply for firefighting purposes.<br>• **Biodiversity** – including:<br>– details of the number of trees to be removed and the number of trees to be planted on the site;<br>– and assessment and documentation of biodiversity impacts related to the development in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR) in the form required section 6.12 of the *Biodiversity Conservation Act 2016,* section 6.8 of the *Biodiversity Conservation Regulation 2017* and the Biodiversity Assessment Method.<br>• **Visual** – including:<br>– height, scale, signage and lighting, particularly from nearby public receivers and vantage points of the broader public domain (i.e. roads); and<br>– landscaping to minimise visual impacts and/or offset any clearing. All species used for landscaping shall be listed within the 'Cumberland Plain Woodland' endangered ecological community.<br>• **Greenhouse Gas** – including:<br>– A quantitative assessment of the potential Scope 1 and 2 greenhouse gas emissions of the development, and a qualitative assessment of the potential impacts of these emissions on the environment; and<br>– a detailed description of the measures that would be implemented on site to ensure that the development is energy efficient.<br>• **Hazards** – including an assessment of the potential fire risks of the development.<br>• **Cumulative Impacts** – particularly in relation to air, noise and traffic associated with other nearby industrial or commercial operations. |
| **Consultation** | During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.<br><br>In particular you must consult with:<br>• Environmental Protection Authority<br>• Fairfield City Council<br>• Office of Strategic Lands<br>• NSW Roads and Maritime Service<br>• Office of Environment and Heritage |

| | |
|---|---|
| | • Department of Primary Industries<br>• NSW Fire Brigade<br>• Local community and other stakeholders<br><br>The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided. |
| **Further consultation after 2 years** | If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, you must consult further with the Secretary in relation to the preparation of the EIS. |
| **References** | The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this proposal. |

9 November 2018

Our Reference: SYD18/01692/01 (A24785584)
Department Ref: SSD 9601

Director
Industry Assessments
Department of Planning & Environment
GPO Box 39 SYDNEY NSW 2001

Attention: Shaun Williams

Dear Sir/Madam,

**SEARS REQUEST FOR PROPOSED ALTERATIONS AND ADDITIONS TO UPGRADE THE EXISTING AUSTRAL BRICKS PLANT-2 BRICK MANUFACTURING FACILITY AT 780 WALLGROVE ROAD, HORSLEY PARK**

Reference is made to the Department's correspondence dated 24 October 2018, regarding the abovementioned Application which was referred to Roads and Maritime Services (Roads and Maritime) for comment in accordance with the *State Environmental Planning Policy (State and Regional Development) 2011*.

Roads and Maritime has reviewed the submitted information and noted that the proposal does not involve increasing of existing annual production capacity of 80,000 bricks. However, the proposal would 3,500m$^2$ of additional building for extended kiln car storage and relocated de-hacker, 1,600m$^2$ of new building to match existing for consolidation of additives area and new environmental measures, new footings to relocate clay bins & conveyor system, 1,000m2 new building to match existing to increase undercover stockpile area, replacing existing 2 kilns with a new kiln; and new footings for scrubber to be attached to the existing kiln stack.

Roads and Maritime would require the following issues to be included in the transport and traffic impact assessment of the proposed development:

1. Daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required).

2. Details of the proposed accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e.; turn paths, sight distance requirements, aisle widths, etc.).

3. Proposed number of car parking spaces and compliance with the appropriate parking codes.

4. Details of service vehicle movements (including vehicle type and likely arrival and departure times).

5. Roads and Maritime requires the EA report to assess the implications of the proposed development for non-car travel modes (including public transport use, walking and cycling); the potential for implementing a location-specific sustainable travel plan (e.g.; Green Travel Plan, 'Travelsmart' or other travel behaviour change initiative); and the provision of facilities to increase the non-car mode share for travel to and from the site. This will entail an assessment of the accessibility of the development site by public transport.

6. Roads and Maritime requires an assessment of the likely toxicity levels of loads transported on arterial and local roads to / from the site and, consequently, the preparation of an incident management strategy for crashes involving such loads, if relevant.

Any further inquiries in relation to this matter can be directed to Ahsanul Amin, A/Senior Land Use Planner on 8849 2762 or by email at development.Sydney@rms.nsw.gov.au.

Yours sincerely,

Pahee Rathan
**A/Senior Land Use Assessment Coordinator**
**Sydney Division – North West Precinct**

Mr. Shaun Williams
Planning Officer
Industry Assessments
Department of Planning & Environment
GPO Box 39
Sydney NSW 2001

Dear Mr. Williams,

**Request for input to SEARs for Austral Brick Works Plant 2 Upgrade**
**780 Wallgrove Road, Horsley Park (SSD 9601)**

Thank you for your email sent on 23 October 2018 requesting Transport for NSW (TfNSW) input on the Secretary's Environmental Assessment Requirements (SEARs) for the proposed Austral Brick Works Plant 2 Upgrade at the subject address.

TfNSW has reviewed the Applicant's Request for SEARs and the draft SEARs provided by the Department of Planning & Environment.

Input has been provided to the draft SEARs overleaf, in RED, as tracked changes.

TfNSW notes that the subject site lies within land identified for corridor investigations for the Western Sydney Freight Line[1]. These investigations are ongoing and TfNSW may consult with the Applicant/landowner when required.

If you require any further information regarding this matter, please do not hesitate to contact Ken Ho, Transport Planner, via email at ken.ho@transport.nsw.gov.au.

Yours sincerely

6/11/2018

Mark Ozinga
**Principal Manager, Land Use Planning & Development**
**Freight, Strategy & Planning**

CD18/09629

[1] Western Sydney Freight Line corridor identification, Transport for NSW 2018, <https://www.transport.nsw.gov.au/corridors/wsfl>

**Transport for NSW (TfNSW)**
241 O'Riordan Street, Mascot NSW 2020
**T** 02 8202 2200 | **W** transport.nsw.gov.au | ABN 18 804 239 602

# Appendix B

# MOVEMENT SUMMARY

## Site: 1 [AM Peak: Ferrers Road - Access Road]

AM Peak
Baseline
Site Category: (None)
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | Turn | 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 | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ferrers Road South | | | | | | | | | | | | |
| 1 | L2 | 6 | 0.0 | 0.515 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 58.2 |
| 2 | T1 | 956 | 8.5 | 0.515 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | | 962 | 8.4 | 0.515 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| North: Ferrers Road North | | | | | | | | | | | | |
| 8 | T1 | 783 | 7.3 | 0.441 | 1.1 | LOS A | 0.9 | 6.5 | 0.06 | 0.00 | 0.08 | 58.7 |
| 9 | R2 | 5 | 60.0 | 0.441 | 36.3 | LOS C | 0.9 | 6.5 | 0.06 | 0.00 | 0.08 | 53.8 |
| Approach | | 788 | 7.6 | 0.441 | 1.3 | NA | 0.9 | 6.5 | 0.06 | 0.00 | 0.08 | 58.7 |
| West: Access Road | | | | | | | | | | | | |
| 10 | L2 | 5 | 20.0 | 0.409 | 27.3 | LOS B | 1.2 | 9.3 | 0.96 | 1.02 | 1.12 | 28.9 |
| 12 | R2 | 25 | 16.7 | 0.409 | 70.1 | LOS E | 1.2 | 9.3 | 0.96 | 1.02 | 1.12 | 28.8 |
| Approach | | 31 | 17.2 | 0.409 | 62.8 | LOS E | 1.2 | 9.3 | 0.96 | 1.02 | 1.12 | 28.8 |
| All Vehicles | | 1781 | 8.2 | 0.515 | 1.7 | NA | 1.2 | 9.3 | 0.04 | 0.02 | 0.06 | 58.2 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 1 [PM Peak: Ferrers Road - Access Road]

PM Peak
Baseline
Site Category: (None)
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | Turn | 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 | Aver. No. Cycles | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ferrers Road South | | | | | | | | | | | | |
| 1 | L2 | 1 | 0.0 | 0.465 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 58.2 |
| 2 | T1 | 875 | 7.2 | 0.465 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| Approach | | 876 | 7.2 | 0.465 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 59.8 |
| North: Ferrers Road North | | | | | | | | | | | | |
| 8 | T1 | 1218 | 4.7 | 0.639 | 0.0 | LOS A | 0.1 | 0.5 | 0.01 | 0.00 | 0.01 | 59.9 |
| 9 | R2 | 1 | 0.0 | 0.639 | 22.2 | LOS B | 0.1 | 0.5 | 0.01 | 0.00 | 0.01 | 57.8 |
| Approach | | 1219 | 4.7 | 0.639 | 0.1 | NA | 0.1 | 0.5 | 0.01 | 0.00 | 0.01 | 59.9 |
| West: Access Road | | | | | | | | | | | | |
| 10 | L2 | 3 | 33.3 | 0.079 | 14.1 | LOS A | 0.2 | 1.6 | 0.94 | 0.97 | 0.94 | 31.5 |
| 12 | R2 | 2 | 0.0 | 0.079 | 108.1 | LOS F | 0.2 | 1.6 | 0.94 | 0.97 | 0.94 | 31.9 |
| Approach | | 5 | 20.0 | 0.079 | 51.7 | LOS D | 0.2 | 1.6 | 0.94 | 0.97 | 0.94 | 31.6 |
| All Vehicles | | 2100 | 5.8 | 0.639 | 0.2 | NA | 0.2 | 1.6 | 0.01 | 0.00 | 0.01 | 59.8 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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 C

FERRERS ROAD

SITE BOUNDARY

north-east summer breeze

HYDRANT WATER STORAGE TANKS

HYDRANT BOOSTER PUMP ROOM

60 m²

BOOSTER ASSEMBLY

EXISTING CAR PARK

EXISTING LANDSCAPING

EXISTING HARDSTAND

EXISTING OFFICE BUILDINGS

EXISTING SHED

SITE BOUNDARY

EXISTING ROAD

EXISTING LANDSCAPING

sun

mid-day sunpath

EXISTING CRUSHER

EXISTING CLAY STORAGE BUILDING

EXISTING ROAD

EXISTING LANDSCAPING

12900

EXISTING HARDSTAND

7000

RAMP UP

RAMP UP

sun

afternoon sunpath

19000

FORKLIFT ACCESS AREA

NEW CAR PARK - 18 SPACES

21500

6000

FIRE ROAD / ACCESS ROAD

RAMP UP

6000

49100

NEW PRODUCTION BUILDING

BRICK MAKING (EXTRUSION AREA)
AND BRICK PACKING (DEHACKER)
11,350 m²

6700

6000

NEW FOOTINGS FOR RELOCATED CLAY BINS

900 m²

231200

EXISTING HARDSTAND

EXISTING KILN BUILDING

NEW ROOF SHEETING
13,250 m²

WATER TANK

WATER TANK

FIRE ROAD / ACCESS ROAD

morning sunpath

sun

EXISTING LANDSCAPING

NEW FOOTINGS FOR SCRUBBER

460 m²

NEW STACK

FIRE ROAD

6000

south-west winter winds

**LEGEND**

- EXISTING BUILDINGS NO WORKS REQUIRED
- EXISTING BUILDING REFURBISHMENT WORKS ONLY
- NEW PROPOSED BUILDINGS AND EQUIPMENT

PRELIMINARY

SBA ARCHITECTS
Commercial Industrial Residential Retail Interior Design
Suite 702, 83 Mount Street, North Sydney NSW 2060
T 02 9929 9988 F 02 9929 8899
E info@sbaarch.com.au W www.sbaarch.com.au

| ISSUE | REV. | DESCRIPTION | DATE |
|---|---|---|---|
| C | | PRELIMINARY DA | 26.03.2019 |
| B | | PRELIMINARY FOR INFORMATION | 04.03.2019 |
| | 1 | Size of new building increased | |
| A | - | ISSUED FOR DA | 19.12.2018 |

# ALTERATIONS AND ADDITIONS OF PLANT NO.2

AUSTRAL BRICKS
174-181 FERRERS ROAD, HORSLEY PARK NW 2157

NORTH

DRAWING TITLE
## SITE PLAN & SITE ANALYSIS PLAN

| DATE | SCALE | JOB NO. | DRAWING NO. | |
|---|---|---|---|---|
| AUG 2018 | 1:1000@A3 1:500 @A1 | 18212 | DA 102 | C |

FERRERS ROAD

SITE BOUNDARY

SITE BOUNDARY

HYDRANT BOOSTER
PUMP ROOM ROOF

3°
FALL

EXISTING
OFFICE BUILDINGS

EXISTING SHED

EXISTING CLAY STORAGE BUILDING

EXISTING CRUSHER

NEW PRODUCTION BUILDING

PREFINISHED METAL DECK
ROOFING

3° FALL

3° FALL

EXISTING KILN BUILDING

PREFINISHED METAL DECK ROOFING ON
EXISTING STEEL STRUCTURE

EXIST.
FALL

EXIST.
FALL

EXIST.
FALL

EXIST.
FALL

EXIST.
FALL

RELOCATED CLAY BINS

NEW SCRUBBER

NEW STACK

## LEGEND

- EXISTING ROOFS TO REMAIN
- NEW ROOF SHEETING AT EXISTING STEEL STRUCTURE
- NEW BUILDING ROOFS

PRELIMINARY


SBA ARCHITECTS

Commercial Industrial Residential Retail Interior Design

Suite 702, 83 Mount Street, North Sydney NSW 2060

T 02 9929 9988 F 02 9929 8899

E info@sbaarch.com.au W www.sbaarch.com.au


| ISSUE | REV. | DESCRIPTION | DATE |
|---|---|---|---|
| C | | PRELIMINARY DA | 26.03.2019 |
| B | 1 | PRELIMINARY FOR INFORMATION<br>Size of new building increased | 04.03.2019 |
| A | * | ISSUED FOR DA | 19.12.2018 |

# ALTERATIONS AND ADDITIONS OF PLANT NO.2

AUSTRAL BRICKS

174-181 FERRERS ROAD, HORSLEY PARK NW 2157

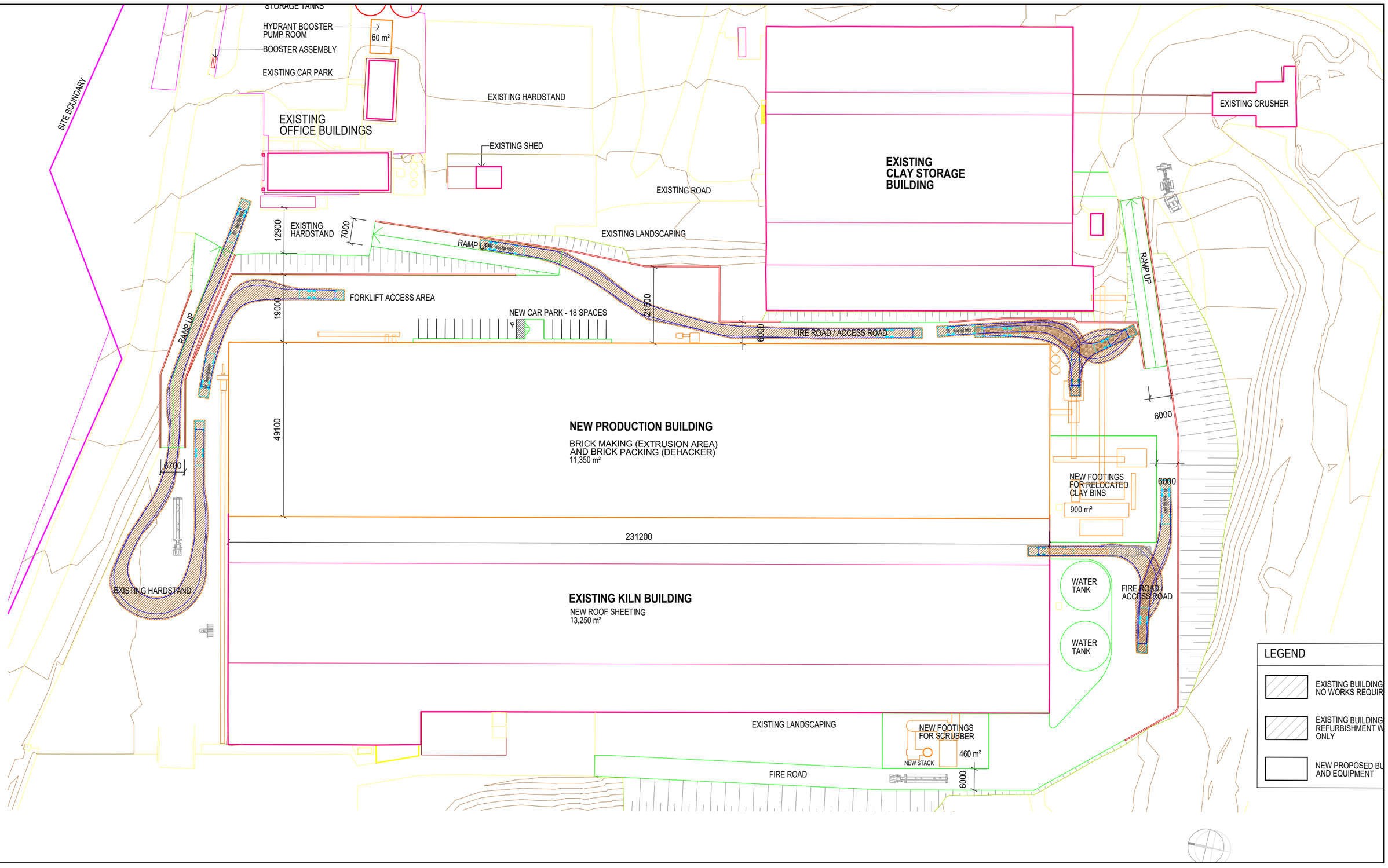
NORTH

DRAWING TITLE

## OVERALL ROOF PLAN

| DATE | SCALE | JOB NO. | DRAWING NO. | |
|---|---|---|---|---|
| AUG 2018 | 1:1000@A3<br>1:500 @A1 | 18212 | DA 103 | C |

# Appendix D




Notes:

This drawing is provided for information purposes only and should not be used for construction.

Document Info:
Drawn by: AT

Client:
Austral Bricks

Project:
0714
Plant 2 Refurbishment, 780 Old Wallgrove Road

Drawing Title:
Swept Path Analysis - 12.5m HRV

Date:
1 Nov 2018

Scale @ A3:
1:1000

Drawing Number:
01

asongroup
Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000
info@asongroup.com.au