Traffic and Parking Assessment

March 2008

WIPS Management

Parsons Brinckerhoff Australia Pty Limited ACN 078 004 798 and Parsons Brinckerhoff International (Australia) Pty Limited ACN 006 475 056 trading as Parsons Brinckerhoff ABN 84 797 323 433

Suite 1, Level 3,
55 Bolton Street
Newcastle NSW 2300
PO Box 1162
Newcastle NSW 2300
Australia
Telephone +61 2 4929 3900
Facsimile +61 2 4929 7299
Email newcastle@pb.com.au

ABN 84 797 323 433
NCSI Certified Quality System ISO 9001

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Author: John Waters .....

Signed: .....

Reviewer: Stuart Holle .....

Signed: .....

Approved by: Stuart Holle .....

Signed: .....

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Executive summary

The proposal is for the development of a pre-fabricated building material manufacturing plant, namely internal and external wall panels for domestic and commercial construction.

The development comprises warehouse (17,800 m^2), manufacturing (9,240 m^2) and office (740 m^2) space. Relevant traffic facilities include driveway, circulating roads, truck loading bays and car parking. Referral to the RTA is required pursuant to SEPP 11.

The manufacturing process will operate 24 hours a day with 25 factory & warehouse staff per shift and an additional 10 staff during office hours. Accordingly, the peak parking demand for WIPS Management will not exceed 60 cars. It is noted Cessnock City Council's parking guidelines suggest the need for additional spaces however this is based on a typical 9:00am to 5:00pm operation and less mechanised production methods. In addition, Parsons Brinckerhoff (PB) previously prepared a traffic impact assessment for the HEZ that demonstrated the RTA Guide to Traffic Generating Developments over estimates the traffic and parking generation of similar industrial development by 250%.

It is proposed to provide a total of 105 parking spaces in order to over satisfy actual demand. Having regard for Council's standard requirements, an additional 103 spaces have been allowed for within the landscaped curtilage to the west of the building should the use of the building change in the future. It is noted that such changes in use require development consent.

Internal roads, loading bays and the access driveway have been designed in accordance with the relevant Council, RTA and Australian Standards. The design access vehicle is a 19m semi trailer.

The development fronts the main HEZ spine road, which is a 2 lane road.

Traffic impacts of the development on the wider road network, including main roads 195 and 588 have been assessed in the overall HEZ Traffic Impact Assessment Report and the Stage 1 and 2 Deed of Agreement (DoA) Report. Relevant mitigating strategies are to be implemented by the HEZ Association in the future, and accordingly, no further traffic measures are required of the proposed development.

1. Introduction

WIPS Management is proposing to build an industrial development within the Hunter Economic Zone (HEZ) near Kurri Kurri. The site is located on an approximately seven hectare parcel of land in the southern part of the HEZ development in the Cessnock City Council (CCC) Local Government Area (refer to **Figure 1.1**).

The proposed facility will be accessed via HEZ Spine Road, the main through road for the estate and is part of the Stage 1 development of the HEZ. WIPS will fabricate wall sections and comprise manufacturing, warehouse and office areas. The site will also incorporate truck loading, dispatch and chemical delivery areas with associated circulation roads and parking areas.

Parsons Brinckerhoff Australia Pty Limited (PB) was engaged by WIPS Management to undertake a traffic and parking assessment of the development. The traffic report is prepared for inclusion in the Part 3A Application. The assessment includes the consideration of:

- access to the site
- parking requirement and provision
- car park layout and manoeuvrability
- traffic generation characteristics, and
- traffic impact of the proposed development.

The findings and results of this traffic assessment are detailed in this traffic report, which draws upon several references including the RTA *Guide to Traffic Generating Developments* (2002), Cessnock City Council *Development Control Plan No. 2: Off Street Vehicular Car Parking* (2001), AS 2890.1 *Parking Facilities Part 1: Off-street Car Parking* (1993), *Hunter Economic Zone: Traffic Impact Assessment Report* (Parsons Brinckerhoff, June 2006) and the HEZ Stage 1 and 2 Deed of Agreement (Parsons Brinckerhoff November 2007).

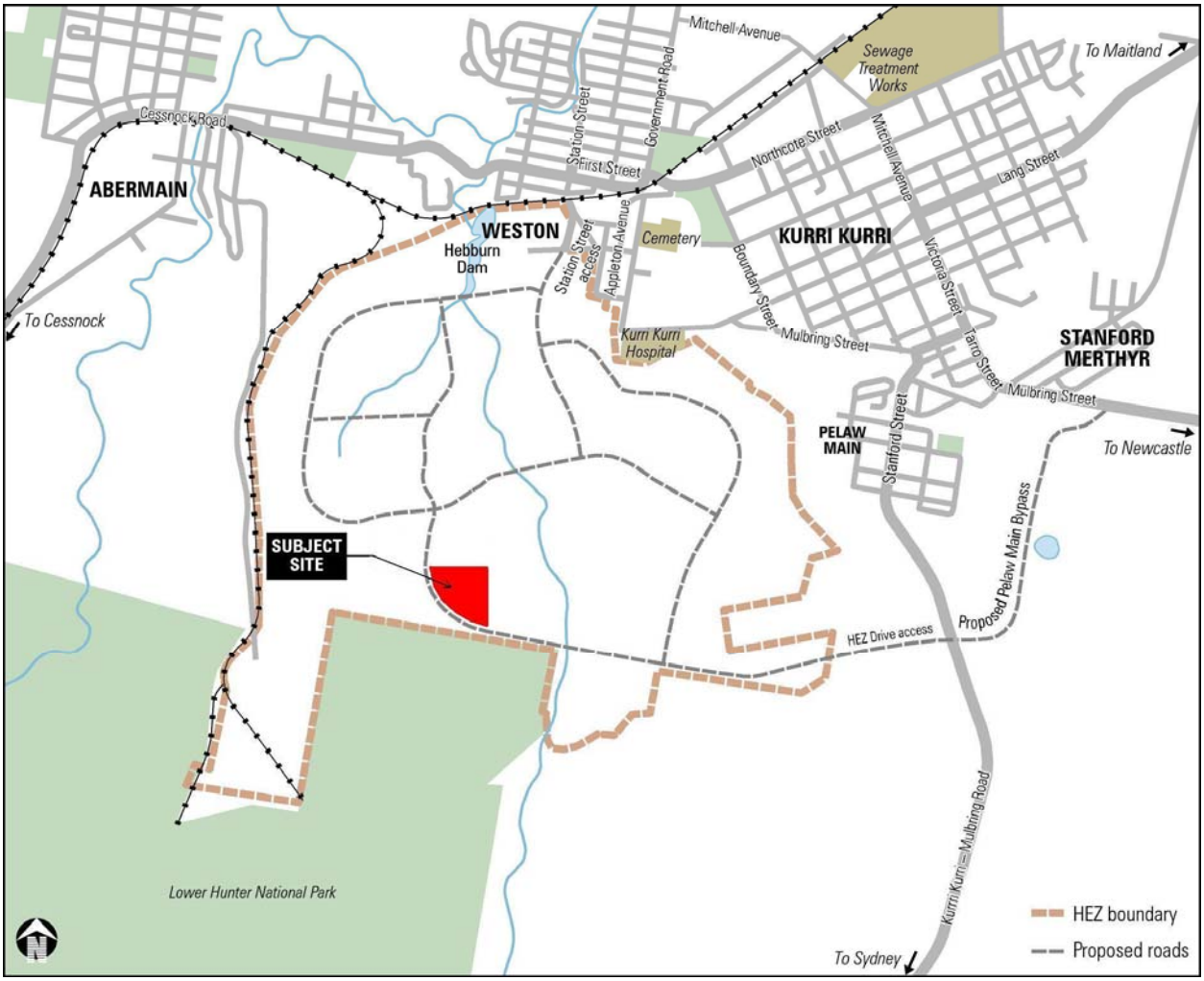


Figure 1.1: Locality Plan

2. Proposed development

2.1 The development

The industrial business is to be one of the first developments in Stage 1 of HEZ and will manufacture wall panels. The site is envisioned to comprise warehouse, manufacturing and office space, truck loading bays and associated driveway, circulation roads and car parking facilities. The Gross Floor Area (GFA) of the warehouse is expected to be around 17,800 m^2 and the GFA of the manufacturing component around 9,240 m^2. The GFA of the office is expected to be approximately 740 m^2, giving a total GFA for the site of around 27,780 m^2.

There will be around 25 people working in the factory and warehouse per 8 hour shift (24 hours a day) with an additional 10 staff during regular office hours. There will also be 2 truck movements per hour dispatching the wall product, which will comprise a 7m tray truck with a 7m trailer. There is also expected to be 4 semi-trailer (19m) movements per day which will deliver the chemicals to the site to produce the wall segments. This translates to around 52 truck movements every 24 hours.

2.2 SEPP 11

The proposed development is a new commercial / industrial facility of more than 15,000 m^2 GFA, consequently the development falls under Schedule 1 of SEPP 11 and referral to the RTA is required.

2.3 Parking

2.3.1 Demand

Cessnock City Council Development Control Plan No. 2 Off Street Vehicular Parking (DCP No. 2) sets out the guidelines for the provision of parking for various types of development. As this development is an industrial premise with warehouse and office space, DCP No. 2 states the following:

- industrial premise - 1 space per 75m^2 or 1 space per 2 employees, whichever is greater;
- warehouse - 1 space per 300m^2 or 1 space per employee, whichever is greater and
- office - 1 space per 30 m^2 of GFA.

The results are summarised in the **Table 2.1** below.

Table 2.1: CCC Parking Provision Guidelines

	Industrial Premises	Warehouse	Office	Total
GFA (m^2)	9240	17800	740	**27780**
m^2 / space	75	300	30	**-**
Spaces	123	59	25	**207**

However, the RTA Guide to Traffic Generating Developments recommends the following:

- factory – 1.3 spaces per 100m^2;
- warehouse - 1 space per 300m^2 and
- office - 1 space per 40 m^2 of GFA.

The results are summarised in the **Table 2.2** below.

Table 2.2: RTA Parking Provision Guidelines

	Factory	Warehouse	Office	Total
GFA (m^2)	9240	17800	740	**27780**
m^2 / space	77	300	40	**-**
Spaces / GFA	120	59	19	**198**

Following the CCC guidelines 207 spaces are required, or alternatively, 198 using the RTA guidelines. These guidelines, however, are underpinned by surveys dating back more than 20 years. More recent surveys at the Thornton and Rutherford industrial estates, which support similar industries to the WIPS Management development reveal lower car parking demand generation.

The HEZ Traffic Impact Assessment Report (June 2006) quantifies the total traffic generation for the fully developed HEZ at around 10,000 vehicles per hour, while the RTA guide predicts approximately 24,000 vehicles per hour. Accordingly, it is argued that the HEZ is likely to generate 40% of the traffic predicted by RTA models and an equivalent reduction in parking spaces. Predominantly this is because there is likely to be a lower employee density at HEZ compared to the typical Sydney industrial estates on which the RTA surveys were based. The RTA has accepted the revised traffic generation rates.

It should also be noted that an analysis of 2001 census data shows that around 82% of work trips for those working and living in Cessnock are undertaken by private vehicle, with 9% as a passenger. Therefore of the 60 employees on site during peak periods (at change of shift), statistically only 49 might drive their own car and park at the site. The facility will not retail to the general public and will therefore not require customer parking spaces. Even allowing for the shift change over period when staff arrive before the previous shift has finished, 60 spaces is all that is required if all employees drive in separate vehicles. This confirms the adequacy of the calculated 79 space (40% of 198) demand discussed above.

2.3.2 Provision

Having regard for the likely parking demand generated by the proposed development and Council's DCP guidelines of 207 spaces, the car parking is proposed to be staged. 105 spaces are to be provided for the WIPS Management facility with provision for a future 103 spaces on the western side of the site if required should the use of the building change. During the operating life of WIPS Management the 105 formalised parking spaces will adequately cater for the likely 60 spaces peak demand expected, with the additional 103 space area to be landscaped. Should a change of use occur and Council's assessment requires it, further car parking can be formalised in this area. In this way, appropriate car

parking is provided for WIPS Management, with sufficient future provision for other development on the site, which would be subject to Council approval in any case.

Refer to **Appendix A** for site layout including proposed parking provision. Two disabled parking spaces are provided close to the main entrance of the development.

2.3.3 Dimensions

The type of user class for this development is a User Class 1 according to AS2890.1. The dimensions of the car spaces for the development are exceeding those recommended in the standard, being a width of 2.5m, length of 5.5m and a low kerb to allow overhang. The two disabled parking spaces each have a width of 3.2m as per DCP No 2.

The aisle width in all of the car parks is 6m, in order to provide adequate manoeuvrability for entry and exit to spaces. The parking bays are also dispersed with landscaping to provide visual amenity.

2.4 Loading/unloading facilities

There are several dispatch and unloading areas planned for the proposed development. The areas have all been designed to allow for the movement of semi trailers with turning bays provided where necessary. Manoeuvring service vehicles will not conflict with parking areas, and once in their docking position, will not conflict with through traffic at the site or in adjacent streets.

2.5 Internal circulation

The internal roads are all two way with a minimum width of 6.5m to allow for truck access to the rear of the building. Where necessary, roads have been widened to allow adequate space for turning manoeuvres. Relatively infrequent truck access as well as defined turnover times for staff changing shifts means there is little scope for conflict between manoeuvring vehicles.

A site plan showing 19m articulated vehicle (semi trailers) turning paths is included in *Appendix A*. Internal roads have been designed to accommodate semi trailers, even though the majority of larger vehicles will be 7m tray trucks with 7m trailers.

2.6 Access arrangement

It was considered that the access driveway is an RTA Type 7 as heavy vehicles will use the driveway and it fronts a major road. As such a driveway with a 10m entry and exit lane widths, separated by a 3m wide median has been proposed as the access to the site from HEZ Spine Road. It allows enough width for large rigid trucks and semi – trailers to enter and exit the site and complies with RTA guidelines and AS 2890.2. The conceptual design layout for the access is included in **Appendix B**.

The location of the driveway is on the eastern side of HEZ Spine Road. The geometry of the kerb returns on the driveway intersection was determined by vehicle swept path analysis using a 19m semi trailer, the largest vehicle required to enter the site. The vehicle swept paths are also shown in **Appendix B***, Figures 2 and 3*.

Having regard to the two lane configuration of HEZ Spine Road, the driveway splays accommodate the design vehicle at approximately 10 km/h. HEZ Spine Road is currently a two lane, two way road with a total width of 8 m.

The issue of delays to through traffic is a function of the traffic volume on HEZ Spine Road, as well as turning movements into WIPS Management. The volume and frequency of movements into WIPS Management does not justify additional widening.

2.7 Pedestrians

Based on the HEZ Traffic Assessment Report, it is not expected that pedestrians will form a large part of the journey to work figures. The low frequency of car and truck movements on the site does not warrant any special treatment for pedestrian movements.

The disabled car parking spaces are provided close to the entrance and ramps provided for adequate movement of disabled persons in accordance with AS 1428.

2.8 Cycles

Cycles may form 5% of the total journey to work figures. HEZ provides cycleways which in the case of WIPS Management is on the development side of HEZ Spine Road. Accordingly, appropriate connection to the cycleway have been provided at the driveway entrance (refer to **Appendix B**).

3. Traffic analysis

3.1 Trip generation rates

The RTA's *Guide to Traffic Generating Developments, 2002* provides trip generation rates for various land use types. The rates for Section 3.10.4 Business parks as relevant to WIPS Management are presented in **Table 3.1** below.

Table 3.1: RTA Traffic Generation Rates

	Factory	Warehouse	Office	Total
GFA (m^2)	9240	17800	740	27780
Rate	1.0 vph / 100m^2	1.0 vph / 100m^2	1.2 vph / 100m^2	-
Vehicles per hour	**92**	**178**	**9**	**279**

Peak Service Vehicle Trips (PSVT) are calculated at 0.5 vph / 100m^2 for factory and warehouse GFA, giving a peak of 135 vehicles per hour.

As with the parking space provisions, the RTA rates are based on surveys dating back more than 20 years. More recent surveys conducted at the Thornton and Rutherford industrial estates, which support similar industries to WIPS Management reveal lower generation rates. The HEZ Traffic Impact Assessment Report (June 2006) quantifies the total traffic generation for the fully developed HEZ at around 10,000 vehicles per hour, while the RTA guidelines predict approximately 24,000 vehicles per hour. The RTA has endorsed these rates.

The type of technology used in the plant is such that fewer employees are required than traditional manufacturing. The data which the RTA surveys were based on state that within five high–tech industrial developments within Sydney, the GFA per employee varied from 26 to 127m^2 with an average of 57m^2 (RTA, 2002) . In comparison, the WIPS Management development is expected to have 283m^2 of GFA per employee. WIPS Management is therefore likely to generate 112 two way vehicle trips during the peak hour and a maximum of 54 two way service vehicle trips per hour.

Having regard for the likely number of employees and the likely delivery and dispatch schedule, the above rate is considered to be conservative. Real traffic generation figures are predicted to peak at shift changeover times when up to 35 vehicles arrive and depart giving a maximum of 70 two way trips generated. It is also of note that the 24 hour operation of the plant means that service vehicle trips will be spread evenly throughout the day, reducing the peaks that are likely to coincide with other HEZ development.

3.2 Traffic movement

Initially only the eastern Leggetts Drive (MR 195) access to HEZ will be operational, with Station St being used in the later stages of HEZ. As such all traffic will flow along HEZ Spine Road to Leggetts Drive. Sydney bound traffic will turn right at the intersection and journey south where MR195 links with the Sydney – Newcastle Freeway. An alternative route to

Sydney is via John Renshaw Drive onto George Booth Drive and then onto the freeway. This route will become more attractive once the proposed Pelaw Main Bypass is constructed.

Kurri, Cessnock and Maitland traffic will travel into Kurri via Stanford Street. When the Station Street access is constructed car and light vehicle traffic for Cessnock and Kurri will use this route as well. Newcastle traffic is expected to depart and arrive via the proposed Pelaw Main Bypass and John Renshaw Drive.

4. Road network impact

4.1 Existing road network and access to the site

The main access to the site will be from Spine Road as shown in **Figure 1.1**. Under the HEZ master plan proposal, two key accesses will provide network connection with the external roads:

- to the east, with Leggetts Drive (MR 195/proposed Pelaw Main Bypass intersection), and
- to the north, with the Station Street extension over the South Maitland railway line.

While the eastern entrance will provide access for all types of vehicles, Station Street access will allow only car and four axle commercial vehicles. From Newcastle and New England Highway, the subject site can be accessed via John Renshaw Drive (MR588). To the north, the subject site can be accessed from Maitland and New England Highway via Main Road/Lang Street (MR195). To the west, it can be accessed from Cessnock using Cessnock Road (MR588).

From Sydney and the south, it can be accessed via the Freemans Waterhole interchange at the F3 Freeway using Leggetts Drive (MR195), which becomes the Kurri Kurri – Mulbring Road. Alternatively traffic may take the George Booth Drive exit on the F3 Freeway which eventually connects with John Renshaw Drive around 5km west of Kurri Kurri.

John Renshaw Drive (including Mitchell Avenue, Victoria/Tarro/Mulbring Streets) is a state road (MR588) under the jurisdiction of the RTA and provides key east-west movements between Kurri Kurri and Newcastle. The rural section is a two-lane two-way rural road with sealed shoulders on both sides and a posted speed limit of 100 km/hr, while in Kurri Kurri town centre it is a four-lane divided road with kerbside parking on both sides and a posted speed limit of 60 km/hr. On the rural section of John Renshaw Drive, land use on either side is generally rural and/or vacant with no direct access. Any adjacent properties are accessed via connecting side roads. The F3 Freeway from Sydney terminates at John Renshaw Drive and Weakleys Drive to form a four-way roundabout.

Main Road/Lang Street is also a state road (MR195). It is generally a two-lane, two-way rural road with a posted speed limit of 70 km/hr. In vicinity of residential areas it is a two-lane, two-way road with kerbside parking, and a posted speed limit of 60 km/hr. Main Road/Lang Street provides a major connection between Kurri Kurri and Maitland.

Cessnock Road (including Northcote Street) is a state road and the continuation of MR588 to the west providing direct access to Cessnock from Kurri Kurri. It is generally a two-lane, two-way undivided road with kerbside parking on both sides and a posted speed limit of 60 km/hr. For the urban section between Kurri Kurri and Abermain, there is direct access to Cessnock Road to/from the adjoining residential properties.

Kurri Kurri – Mulbring Road is a state road and the continuation of MR195 to the south of Kurri Kurri. The southern end of MR195 is called Leggetts Drive, which is a two-lane, two-way rural road with a posted speed limit of 100 km/hr. Land use on either side of Leggetts Drive is generally rural and/or vacant. The northern end of MR195 is called Kurri Kurri –

Mulbring Road, a two-lane, two-way urban road with kerbside parking on both sides and a posted speed limit of 60 km/hr.

4.1.1 Traffic flows

Historical traffic data on the key roads within the vicinity of the subject site was sourced from the RTA *Traffic Volume Data for Hunter and Northern Regions* 2004. **Table 4.1** summarises the annual average daily traffic (AADT) for seven key locations along MR195 and MR588.

Currently MR195 carries daily traffic volumes in the order of 4,000 vehicles per day (vpd) to almost 10,000 vpd. Of the three locations along MR195 where data is available, the two locations in the town centre i.e. at Stanford Street and Lang Street carry substantially more traffic than the one isolated away from the town centre. This could be due to the influence of local traffic. Furthermore, in the nine years since 1995, traffic on MR195 has increased at a rate of three to five per cent per annum. Traffic in Kurri Kurri town centre has experienced growth at a faster rate than traffic outside of Kurri Kurri.

MR588 carries daily traffic volumes ranging from approximately 13,000 vpd to more than 16,000 vpd. Of the four locations along MR588 where data is available, John Renshaw Drive carries the most traffic at more than 16,000 vpd. This has grown at a rate of around four per cent per annum since 1995. Average weekday hourly volumes for Cessnock Road at Neath near the railway station were also obtained from the RTA (RTA Station No. 05.914). At this location the average weekday volume was approximately 13,700 vpd with the traffic balanced in both directions i.e. 6,850 vpd in each direction.

Table 4.1: Summary of daily traffic volumes (AADT) on key roads

RTA station ID	Location	1995	1998	2001	2004	Annual Growth (95-04)
05.459	Stanford St (MR195), north of Hebburn St	5,275	4,829	5,752	6,822	2.9%
05.151	Leggetts Dr (MR195), north of White Br. Rd	3,079	3,136	3,267	4,095	3.2%
05.530	Lang Street (MR195), east of Victoria St	6,652	8,424	9,399	9,675	4.3%
05.010	Mitchell Av (MR588), north of Aberdare St	11,236	11,228	12,612	16,099	4.1%
05.194	Maitland Rd (MR588), Neath at railway crossing	11,862	11,844	12,246	12,875	0.9%
05.579	Tarro St (MR588), south of Railway St	11,797	12,961	13,814	15,010	2.7%
05.197	John Renshaw Dr (MR588), west of Wallis Creek Bridge	11,602	13,215	13,011	16,241	3.8%

Source: RTA Traffic Volume Data for Hunter and Northern Regions 2004

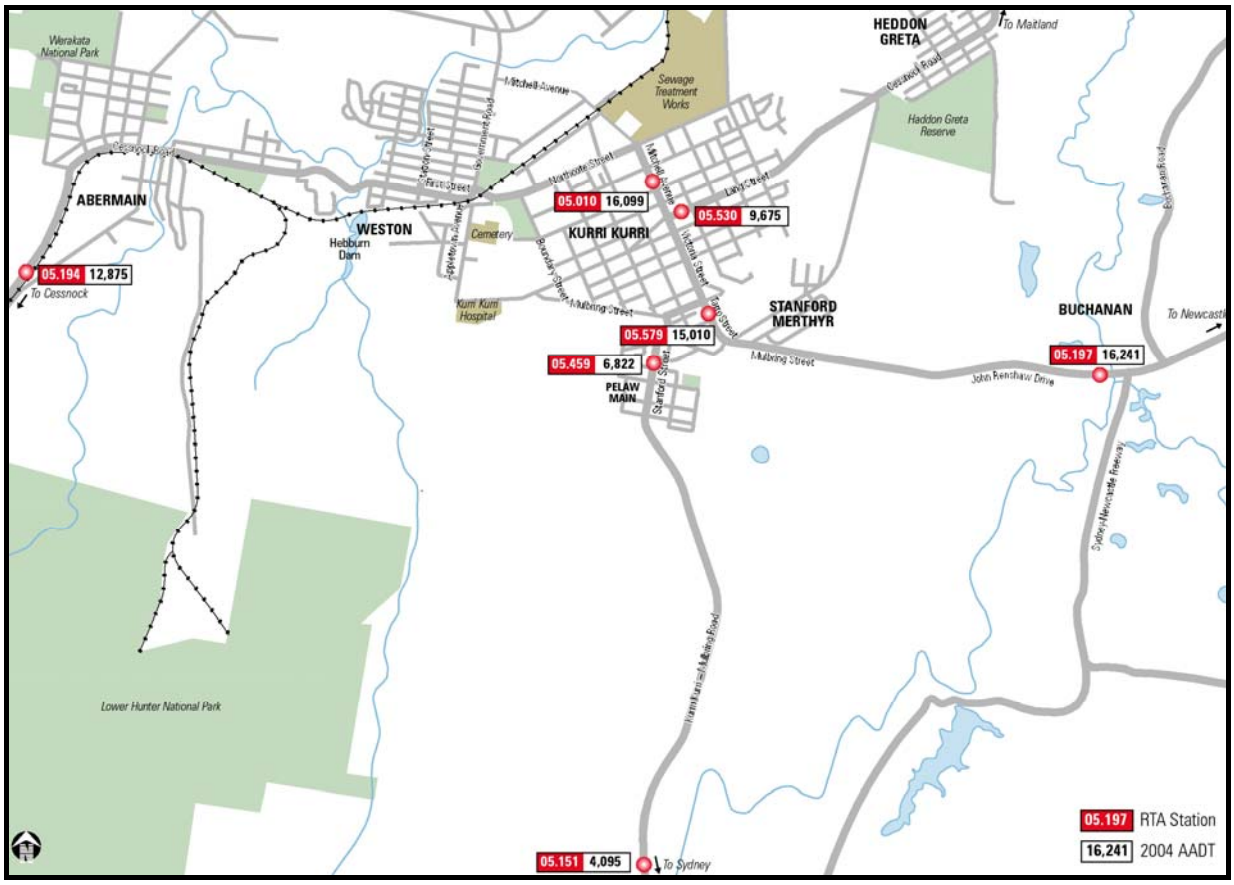


Figure 4.1: RTA Count Locations

4.2 Road transport

There is expected to be around 2 bulk deliveries per day of chemicals delivered in a standard 20 foot ISO container by a specialist company such as Chemtrans. The chemicals delivered are classified by Australian Design Guidelines as Class 3, 8 and 9. They will arrive on standard drop deck container truck with a bed height of 1200mm to provide a low centre of gravity to reduce the risk of rollover. The gross weight of the ISO containers for each delivery would be a maximum of 24 Tonnes.

It is expected that the chemicals will initially be imported and will come from the Port Botany Terminal in Sydney and will enter the HEZ site via the eastern entrance. They will then exit onto Leggetts Drive and return to Sydney. The 7m truck and trailers will be used as the dispatch vehicles for the finished wall product and are expected to not significantly impact on the surrounding road network. It is envisioned that private vehicles will also be spread evenly in accordance with the predictions in the lower Hunter traffic model developed for the HEZ traffic report.

4.3 Freight rail

The road network surrounding the HEZ is likely to serve as the main transport mode for freight to and from the WIPS Management site. Whilst opportunities exist to extend the freight line from the Kurri Kurri line into the HEZ area, there are a number of constraints to this.

4.4 HEZ Traffic Impact Assessment Report

When completed, HEZ will be Australia's largest single contiguous industrial estate. It is a 35 year development with the potential to generate up to 15,000 jobs and it is anticipated that the site will be developed in ten stages. Stages 1 and 2 will be developed by 2016 and would generate approximately 2,400 vph. The remaining stages are assumed to be completed by 2040 (there is great uncertainty about the timing of these latter stages), and is expected to generate an additional 7,500 vph.

In order to quantify the impacts of the HEZ in total, PB has developed a traffic assessment report, which is underpinned by a predictive traffic model.

Following recent discussions between Cessnock City Council, RTA, HEZ representatives and PB it was agreed that the RTA and CCC have signed off on assumed trip generation rates supplied to the HEZ development. As the RTA still had comments relating directly to the third access (which is required after the completion of 206Ha) and the future HEZ (remaining 504Ha – Crown and MLALC Lands) it was agreed PB should prepare an additional report focusing solely on Stages 1 and 2 (206Ha) which will form part of a Deed of Agreement (DoA) between CCC, RTA and HEZ.

This Stage 1 and 2 DoA report was prepared in November 2007 and PB understands the RTA and CCC have almost finalised the terms of the DoA for HEZ to sign. This will effectively allow the development of the first 206Ha of HEZ and specify the works required as the development proceeds. It will also allow the RTA to begin assessment and approval of individual lot developments within Stage 1 and 2. The WIPS Management site is part of Stage 1.

Intersections that will require upgrading due to demand from HEZ occupied land (Stages 1 and 2) include:

- Upgrading HEZ eastern access intersection with the Leggetts Drive and HEZ Spine Road. Initially this intersection should be constructed as C type with appropriate turning lane. This intersection will be converted to signals after the completion of 67 Ha of HEZ.
- Construction of Cessnock Road/Station Street (HEZ northern access) between 20.6Ha and 43.6Ha of Stage 1 development. This will occur between 2008 and 2009. PB recommend modelling of the development types that are constructed within the first 20Ha of development to allow correct determination of this timing.
- Construction of the Pelaw Main Bypass when 67Ha of HEZ development is reached in 2009/2010. It is recommended that Pelaw Main Bypass be constructed as a 2 lane, limited access road (1 lane each way) when the existing capacity in the road network approaches saturation. The following intersections will require upgrading in conjunction with the development of Pelaw Main Bypass:
  - Leggetts Drive/HEZ Spine Road (HEZ eastern access) – new signals;
  - John Renshaw Drive/Pelaw Main Bypass – new roundabout
- In addition, a partial road closure is recommended at the Mitchell Street/Government Road intersection.

Road sections requiring construction within Stages 1 and 2 are:

- HEZ Spine Road 2 lane (1 lane each way) (complete now).

Each new development at the HEZ will gradually increase traffic in the Kurri Kurri township and surrounding road network. As such the mitigating measures mentioned in the Stage 1 and 2 DoA report will apply to this and other new businesses. In the context of HEZ as a whole, it should be noted that the WIPS Management development will not impact significantly on the road network. The predicted traffic generated will be small percentage of the total traffic increase when HEZ is fully developed.

4.5 Traffic Impact Statement

As the generation rates for the WIPS Management development are likely to be lower than the rates used in the HEZ Stage 1 and 2 DoA (November 2007), and recommendations are given in the report to mitigate the impacts, it is assessed that the global impacts of the WIPS Management development are accommodated.

5. Conclusion

A traffic and parking assessment was undertaken to determine the effect of the proposed WIPS Management industrial development. Located in the HEZ near Kurri Kurri, it will be one of the first developments of Stage 1. The access to the site will be from HEZ Drive, the spine road through the industrial estate.

The access driveway, internal roads and loading bays are all designed in accordance with the relevant CCC, RTA and Australian Standards. A 19m semi trailer is able to negotiate the site as it was designed to accommodate the turning path. Car parking is proposed to be provided in accordance with the parking scenario for the site with 105 parking spaces (including 2 disabled).

The effects of the development on the surrounding roads are accommodated for in the recommendations outlined in the HEZ Stage 1 and 2 DoA report.

Appendix A

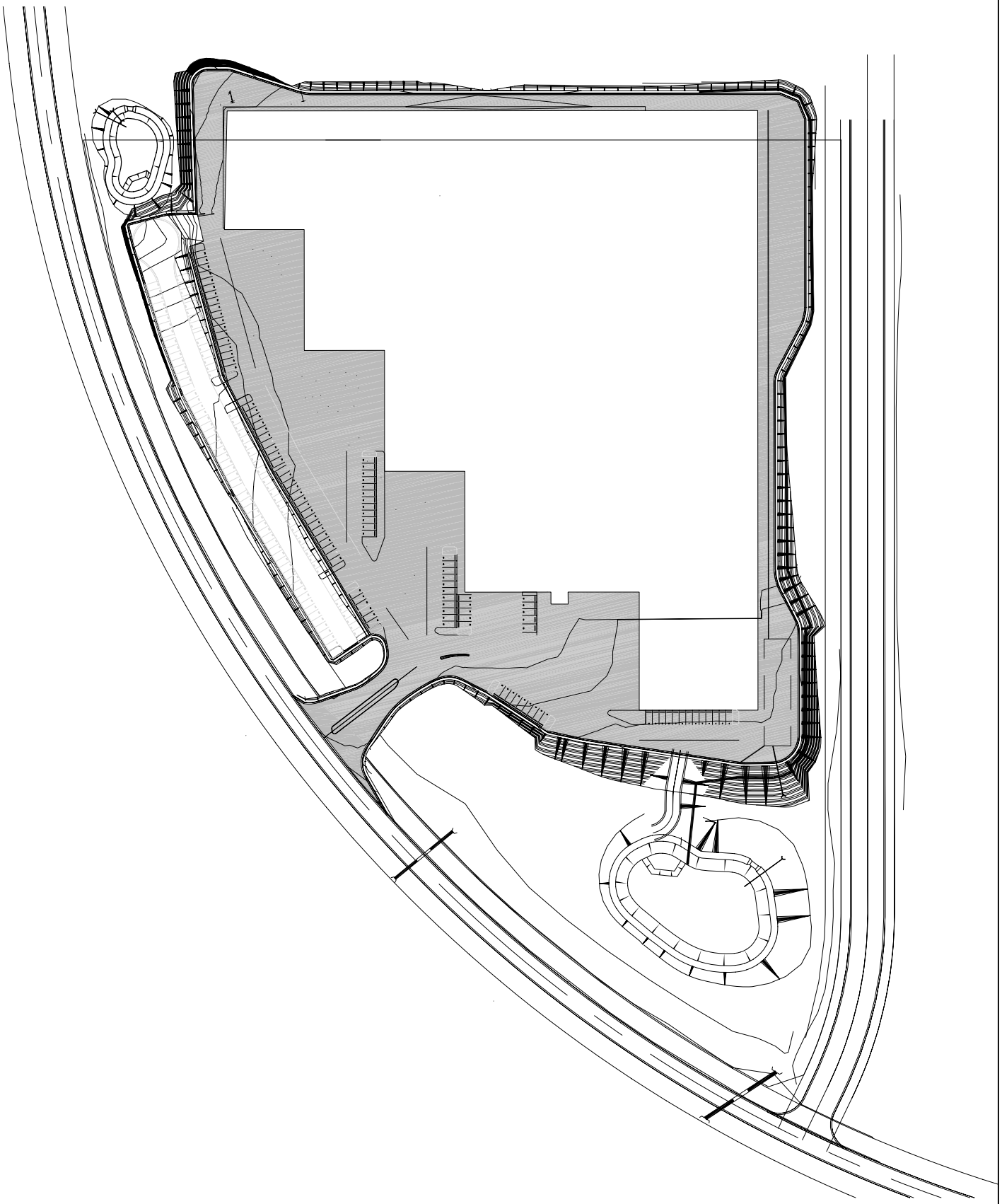
Proposed Development Layout

Client: Walltech
Project: Drainage & Stormwater Management Strategy
Location: Hunter Economic Zone, Kurri Kurri

PB PARSONS BRINCKERHOFF

0 50 100 m

Scale 1: 2000



Site Plan

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Appendix B

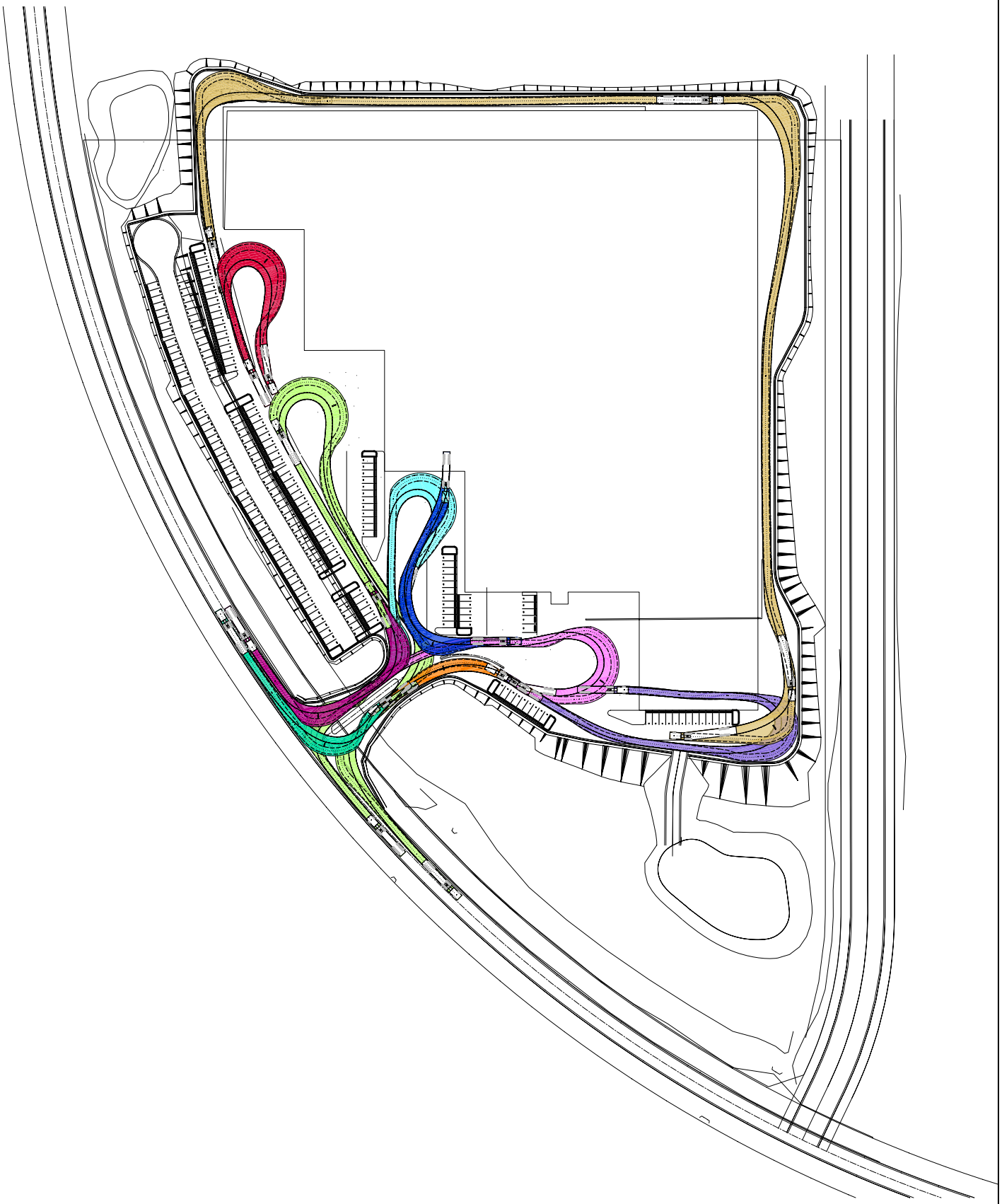
Concept access design

Client: Walltech
Project: Drainage & Stormwater Management Strategy
Location: Hunter Economic Zone, Kurri Kurri

PB PARSONS BRINCKERHOFF

0 50 100 m

Scale 1: 2000



Concept Access Design

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