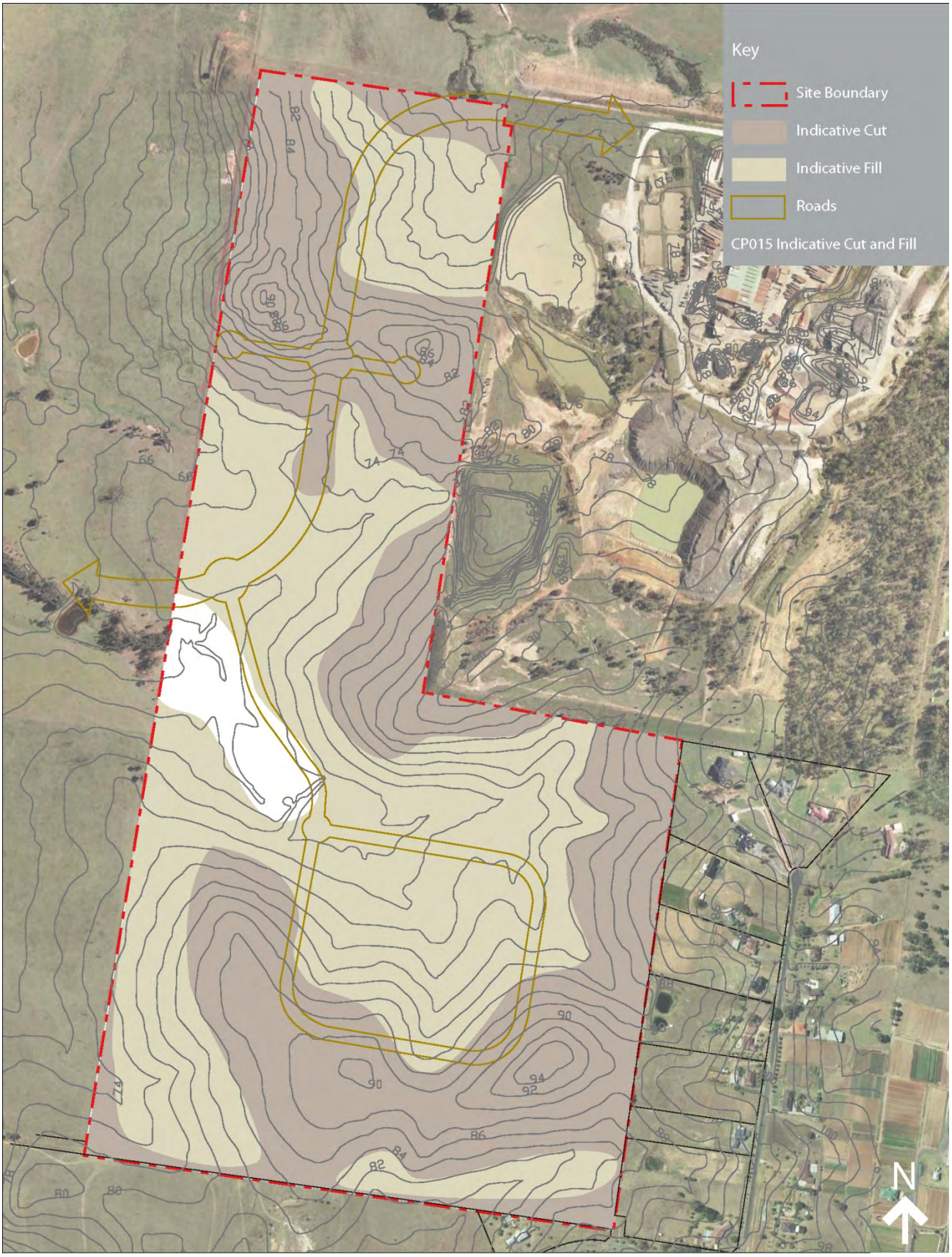

Figure 27 – Areas of Cut and Fill

5.4 Installation of Services

A services plan has been prepared by Browns Consulting and is included at **Appendix K**. Electricity will ultimately be sourced from the proposed zone substation site in the Oakdale Development. Until such time as this substation is constructed by Integral Energy, energy will be sourced from the Eastern Creek zone substation.

Water will be supplied by extension of the water main in Old Wallgrove Road whilst the existing sewer lines will be utilised until such time as a sewage pumping station is erected within the precinct.

The above proposals are subject to approval by Sydney Water.

5.5 Road Layout and Access

As part of the Stage 1 scope of works, the northern section of Regional Road 1 (half carriageway) and the eastern section of Local Road 1 will be constructed so as to provide access to Warehouse Building 1.

Burley Road will also be upgraded between the northern boundary of the site and Old Wallgrove Road. As Burley Road will become part of the Regional Road network it has a 40m wide road reserve as shown on the civil drawings at **Appendix P**. For Stage 1, however only one half of this road will be constructed with two travel lanes and a verge to incorporate the services (see drawing 101 and 102).

It is noted that the location of the new regional road, where it enters the site from the north, has been positioned slightly west of the route shown in SEPP (WSEA) 2009. The proposed alternative route is not significantly different to what was originally proposed but will allow the development of the site to occur without reliance of the development of the PGH brickworks facility. The proposed route does not preclude the redevelopment of the adjacent brickworks site. The Oakdale development has been approved incorporating setbacks to accommodate the proposed regional road.

5.6 Landscaping

Clouston Associates has prepared a landscaping scheme for the proposed warehouse (see **Figure 28** and **Appendix Q**). The landscape scheme has been designed to reflect the predominant rural character of the locality, containing various low scale grasses and shrubs. It also accounts for the scale of the proposed warehouse development and accordingly includes groups of trees which will grow to a height similar to that of the warehouse buildings.

At the south-western corner of the site a Morton Bay Fig Tree will planted to act as a marker to the entrance of the development.

A 20m landscape zone has been established between the Regional Road reserve and the proposed building. This will be planted with Pennisetum alopercuriodes `Nafray' which will maintain the rolling hillside character of the site. The edge of the site will be defined by consistent rows of Grevillia rosmarinifolia `Nana'. Two copse of `Magenta Cherry' will be planted within the western landscape area which will have a mature height of approximately 15m.

The car park entry and parking area will be defined by a perimeter planting of canopy trees. The plantings will be wholly contained within the perimeter planting beds to contain the tree litter. A mixture of native grasses and ground covers will also be planted within the planting beds to provide additional interest to the island.

An area of paving and turf has been provided to the south-western corner of the office area for staff. This location has been chosen as it provides district views. Shrubs have been proposed along the southern edge of the area so as to screen the staff area from the carpark.

A black palisade fence will be constructed around the perimeter of the property.

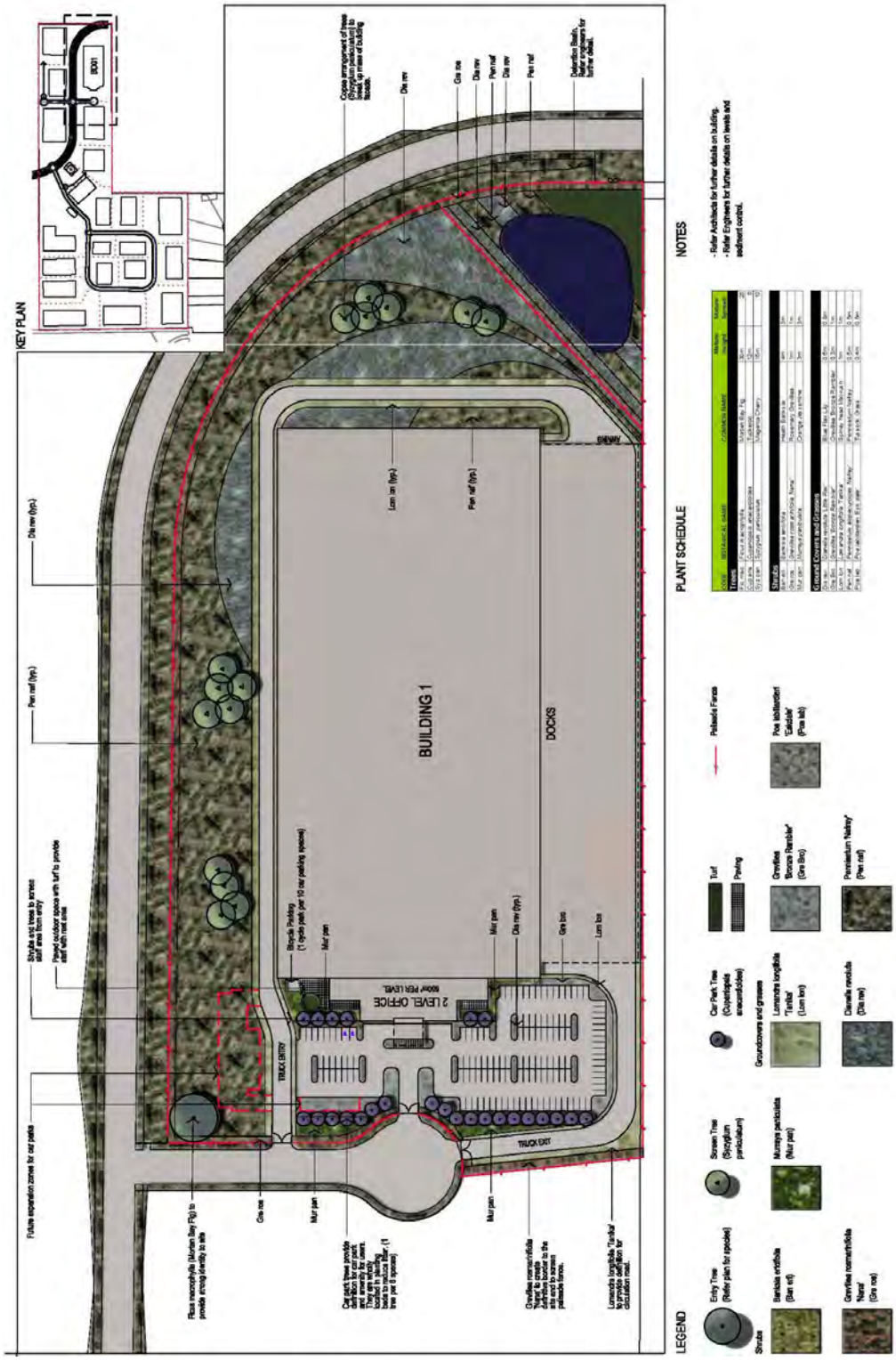

Figure 28 – Proposed Landscaping Scheme

Source: Clouston Associates

5.7 Hours of Operation

Approval is sought for 24 hour operation, 7 days a week.

5.8 Waste Management

Waste will be collected from the site by a private contractor on an as needs basis. A Waste Management Plan will be prepared by the company occupying the site prior to occupation of each warehouse (refer to the Statement of Commitments at Section 7).

If storage of hazardous materials is required a hazard assessment will be undertaken prior to occupation of the building. A commitment to this effect is made in the Statement of Commitments at Section 7 of this report.

5.9 Signage and Lighting

Separate applications will be lodged in the future for signage and external lighting. A commitment to this effect is made in the Statement of Commitments at Section 7 of this report.

5.10 Capital Investment Value

A QS certificate has been prepared by Northcroft (Australia) Pty Ltd for the project which demonstrates that the proposed development has a Capital Investment Value of $40,045,000 (**Appendix M**). This is broken down into the following elements:

- Warehouse Building 1 + Infrastructure Works - $35,755,000
- Consultants Fees - $4,290,000

5.11 Future Applications

Future applications will be lodged for the fit out and operation of the proposed warehouse. Key issues which are specific to the operation of each warehouse will be dealt with in future applications, including:

- Land use specifics;
- Signage;
- Lighting;
- Storage of hazardous materials (if required); and
- Odour Control (if required).

6.0 Environmental Assessment

This section of the report assesses and responds to the environmental impacts of the Project, including site wide cumulative impacts and site specific impacts for the Project Application. It addresses the matters for consideration set out in the Director-General's Environmental Assessment Requirements (DGRs).

The draft Statement of Commitments at Section 7 complements the findings of this section.

6.1 Director General's Requirements

The Director General's Requirements (DGRs) for the project were issued in August 2010 (refer **Appendix A**). **Table 1** provides a summary of the individual matters listed in the DGRs and identifies where each of these requirements has been addressed in this report and the accompanying technical studies.

Table 1 – Director General's Environmental Assessment Requirements

Director General's Requirements	Location
General Requirements	
Executive Summary	Page vii
Site Analysis	Section 2
Description of the proposed development	Sections 4 and 5
Risk Assessment	Section 6.18
Assessment of key issues & potential impacts	Section 6
Draft Statement of Commitments	Section 7
Conclusion and justification of suitability of the site for proposal	Section 6.17 and Section 8
Statement of Validity	Page vi
Quantity Surveyor's Certificate	Appendix M
Key Issues	
Strategic and Statutory Context	
▪ detailed justification for the proposal and suitability of the site to be developed	Section 6.17
▪ demonstration that the proposal is generally consistent with:	
o SEPP (WSEA) 2009	Sections 3 and 6.2 and Appendix H
o any relevant DCPs	Sections 3 and 6.2 and Appendix H
o NSW State Plan, Metropolitan Strategy and draft subregional strategy	Section 3
o justification for any inconsistencies	Appendix H
Site Layout and Design	
▪ details of subdivision of the site, including site coverage, lot sizes and positioning of lots	Section 4.1 and 5.1
▪ details of how the proposed layout and development of the project would be undertaken to minimise potential impacts on nearby sensitive receivers	Section 6 and 7
▪ details of a DCP	Appendix L
Transport, Access and Parking	
▪ Details of traffic volumes likely to be generated during construction and operation	Section 6.4 and Appendix I
▪ An assessment of the predicted impacts of this traffic on the safety and capacity of the surrounding road network in the short and long term, and an assessment of the cumulative impact of traffic volumes	Section 6.4 and Appendix I

Director General's Requirements	Location
▪ Details of the consistency of the project with the Government's design for the new Erskine Park Link Road and all connector roads between Mamre Road and the M7/M4, and the corridor/s identified in the Government's Draft Structure Plan for the area	Section 6.4 and Appendix I
▪ Details of any proposed road upgrades	Section 4.2, Section 6.4 and Appendix I
▪ Access, including detailed consideration of various access options and justification for the proposed location of the main access points	Section 6.4 and Appendix I
▪ Details of the availability of non-car travel modes and measures to encourage greater use of these travel modes	Section 6.4 and Appendix I
Infrastructure Requirements	
▪ Detailed written and graphical representation of the infrastructure required on site	Section 4.3 and Appendix K
▪ The identification of the infrastructure upgrades that are required off-site to facilitate the orderly and economic development of the project, and a description of the arrangements that would be put in place to ensure these upgrades are implemented in a timely manner and maintained	Section 4.3 and Appendix K
▪ A description of how the provision of infrastructure both on and off site would be co-ordinated and funded to ensure the necessary infrastructure is in place prior to the details development of the site	Section 4.3 and Appendix K
▪ Maintaining access to public utility infrastructure	Section 4.3 and Appendix K
Planning Agreement / Developer Contributions	
▪ Arrangements that would be made to provide, or contribute to the provision of, the necessary local and regional infrastructure required to support the proposal	Section 6.14
Noise and Vibration	
▪ Including an assessment of construction, operation and traffic noise	Section 6.10 and Appendix S
Heritage	
▪ Including Aboriginal and non-Aboriginal	Section 6.7 and Appendix F
Flora and Fauna	
▪ Including an assessment of any impacts on critical habitats, threatened species, populations or ecological communities and their habitats in the region.	Section 6.8 and Appendix E
▪ Details of measures to enhance and protect any riparian zones, including setbacks	Sections 4.1 and 6.8 and Appendix E
Soil and Water	
▪ Water supply and efficiency	Section 4.3 and Appendix K
▪ Erosion and sediment controls during construction	Section 6.13 and Appendix R
▪ Proposed stormwater management system	Section 6.3 and Appendix R
▪ Assessment of any potential offsite drainage or flooding impacts	Section 6.3 and Appendix R
▪ Consideration of the potential for rainwater harvesting	Section 6.3 and Appendix R
▪ Waste water disposal	N/A no waste water proposed
▪ Soil salinity	Section 6.5 and Appendix C
▪ Contamination	Section 6.6 and Appendix D

Director General's Requirements	Location
Visual	
▪ Detailed description (including photomontages) of the measures to be implemented to:	Section 6.11 and Appendix T
- Ensure the project has a high design quality and is well presented	Section 6.11 and Appendices L and T
- Manage the bulk and scale of the buildings	Section 6.11 and Appendices L and T
- Minimise the visual impact of the project, particularly from any nearby residential properties	Section 6.11 and Appendices L and T
▪ A detailed landscaping scheme	Section 5.6 and Appendix Q
▪ A signage and lighting strategy	Section 5.9
Energy Efficiency	
▪ An assessment of energy use on site	Section 6.12 and Appendix U
▪ Measures to be implemented to ensure the proposal is energy efficient	Section 6.12 and Appendix U
Air Quality and Odour	
▪ Details of dust monitoring undertaken during bulk earth works and construction	Section 6.13 and Appendix R
Hazards	
▪ Storage and use of hazardous materials	Section 5.8
▪ Fire risk and management	Section 6.9 and Appendix G
Waste	
▪ During construction and operation	Section 5.8
Consultation	Section 6.15

6.2 Compliance with EPIs

A detailed assessment of the proposal's compliance with the relevant provisions of the WSEA SEPP is provided at **Appendix H**. In summary the proposal is consistent with the WSEA SEPP in the following ways:

- The development complies with the prescribed zoning of the land (See **Figure 29**).
- The proposed road linkages are consistent with the Regional Road layout as contained with the WSEA SEPP.
- The Concept Plan establishes appropriate development principles for the site which will ensure the development occurs in a logical, environmentally sensitive and cost-effective manner.
- The proposal does not impact adversely on the E2 environmental conservation zone.

Design guidelines have been prepared for the precinct which incorporate the relevant provisions of the Penrith DCP. An assessment of the proposals compliance with the Penrith DCP is provided at **Appendix H**.

Figure 29 – Concept Plan with zoning overlayed

6.3 Stormwater and Flooding Assessment

Brown Consulting Engineers has undertaken a flood study to determine appropriate flood mitigation measures for the site (see **Appendix R**).

6.3.1 Flood Assessment

Horsley Park Catchment & Existing Flood Extents

The Horsley Park Employment Precinct is located within the Ropes Creek Catchment. Ropes Creek is a tributary of South Creek which forms part of the Nepean River System. Ropes Creek flows in a northerly direction and has a catchment of 186.5 hectares at the location of the proposed Employment Precinct.

Using the SOBEK hydraulic modelling program, Brown Consulting Engineers was able to determine the extent of the existing 100 year flood extents within the proposed Employment Precinct. The 100 year ARI flood levels vary from RL71.5m AHD in the location of the existing farm dam to RL65mAHD at the downstream western boundary of the site. The 100 year flood extent is shown in **Figure 30** and the preliminary flood hazard is shown in **Figure 31**.

Preliminary Developed Flood Extents

Following the analysis of the existing flood conditions, Brown Consulting Engineers undertook an analysis of the proposed Concept Plan. The results of the analysis are shown in **Figures 32** and **33** and demonstrate that all of the proposed lots are capable of accommodating development above the 1 in 100 year ARI.

Brown Consulting Engineers has recommended that all of the proposed floor levels of the warehouse buildings should be a minimum of 500mm above the 100 year ARI flood level. All of the proposed roads will be above the 100 year ARI level.

Flow Rates

Flow rates for the existing and proposed conditions were analysed by Brown Consulting. Storm durations from 5 minutes to 12 hours were analysed, with the total runoff from the Horsley Park Employment Precinct for the 20 year and 100 year recurrence interval presented.

The results of the assessment show that detention will be required to bring the post development flows to pre development flows. A commitment has been made which requires future applications to demonstrate that flow rates will be the same or less than that currently existing at the discharge point on the western boundary, see the Statement of Commitments at Section 7 of this report

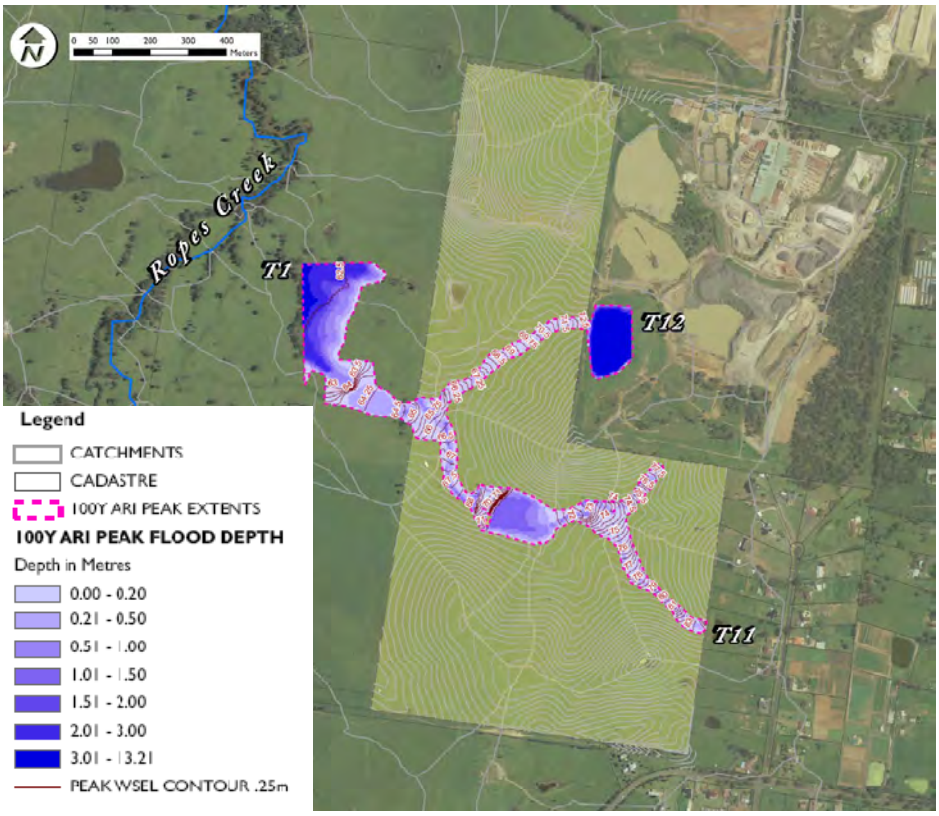

Figure 30 – 100 Year ARI Peak Flood Extents Existing Conditions

Source: Brown Consulting Engineers

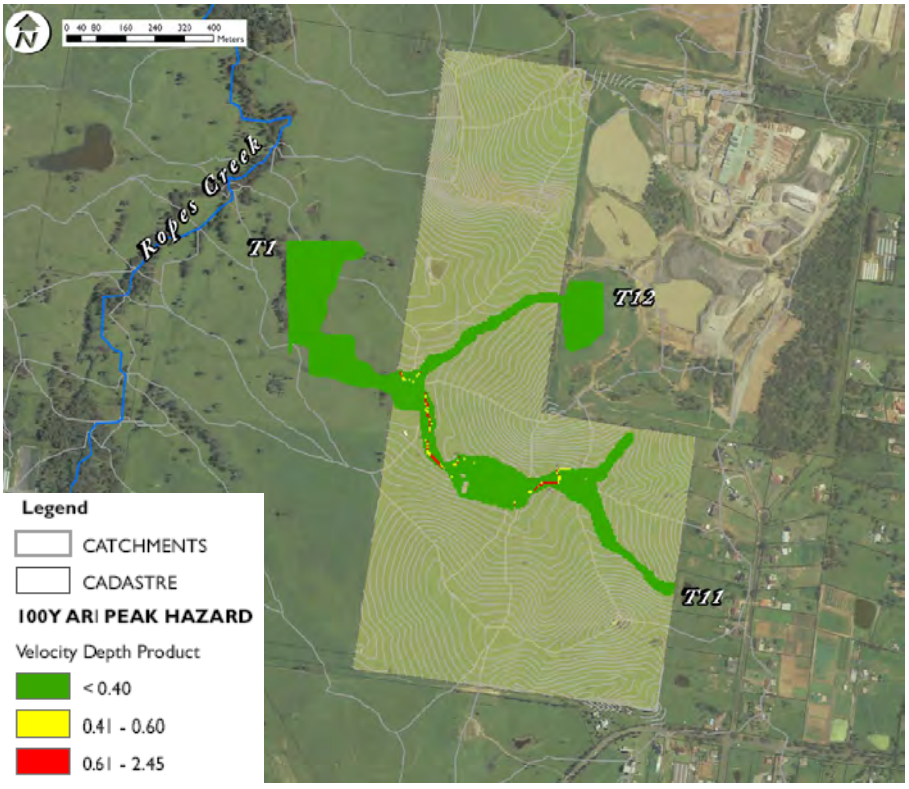

Figure 31 – 100 Year ARI Peak Hazard Existing Conditions

Source: Brown Consulting Engineers

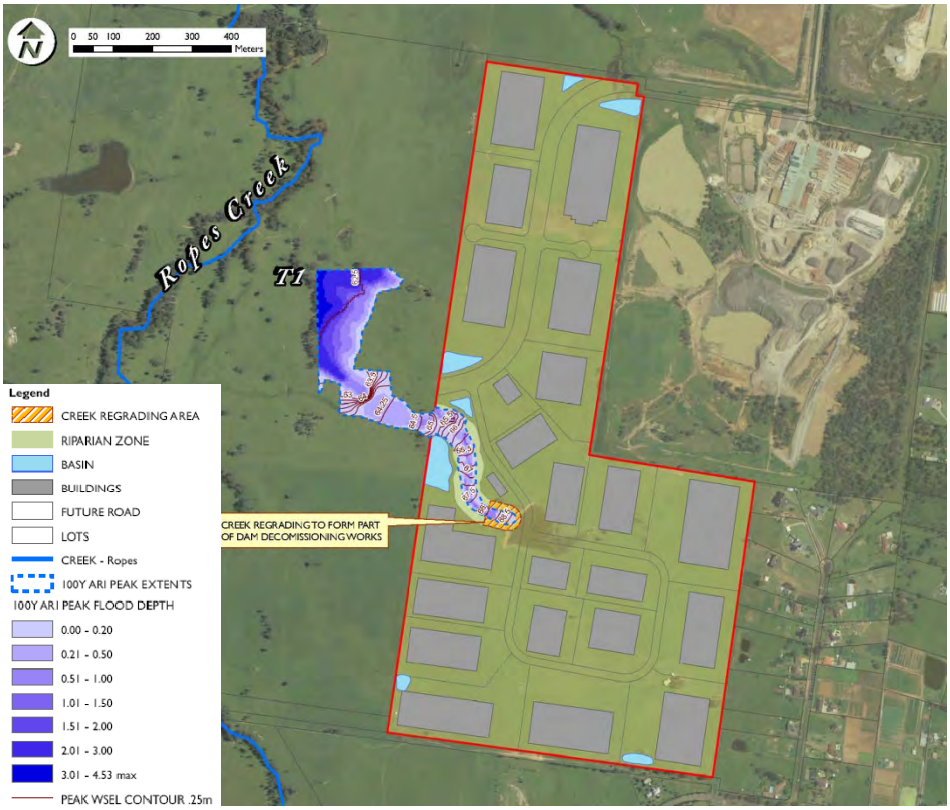

Figure 32 – 100 Year ARI Peak Flood Extents Proposed Conditions

Source: Brown Consulting Engineers

Figure 33 – 100 Year ARI Peak Hazard Proposed Conditions

Source: Brown Consulting Engineers

6.3.2 Stormwater Management

Lot Drainage

Runoff from the development area for storms up to the 20 year ARI will be collected by the following systems:

- For the car and truck parking/ manoeuvring areas, a combination pit and pipe and swale system discharging to a number of bioretention basins around the site.
- The roof water will be directed to rainwater harvesting tanks, to detention basins and from there will be discharged to the trunk drainage system.

Trunk Drainage Design

Figure 34 shows the preliminary basin locations and stormwater masterplan for the Horsley Park Employment Precinct which will manage 100 year ARI flows to pre-development rates from the catchment, thereby ensuring no increase in peak flows at Ropes Creek .

Seven detention basins are proposed within the precinct which will collect stormwater flows from collection areas (also shown in **Figure 34**). The basins will be designed with a bioretention system in the base, and with extended detention above. Gross Pollutant Traps (GPTs) will be installed at the inlets of the detention basins for litter control. The outlet of the basins will be sized to meet Penrith City Council's design requirements of attenuating the 100 year ARI flows.

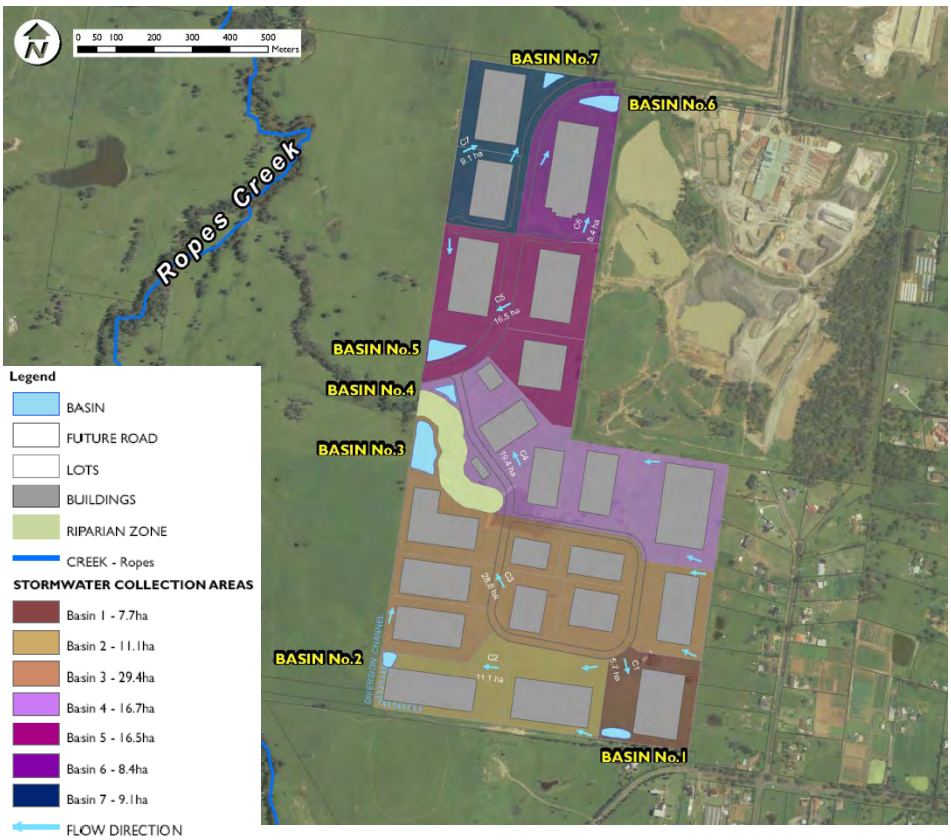

Figure 34 – Stormwater Masterplan and preliminary basin locations

Source: Brown Consulting Engineers

Water Quality

Stormwater is proposed to be managed through the installation of GPTs and bioretention basins on the site. Each Project Application will need to demonstrate compliance with the targets provided in **Table 2**.

Table 2 – Water Quality Targets for the Precinct

Water Quality Pollutant Removal	Target (%)
Gross Pollutants	90
Total Suspended Solids	85
Total Phosphorous	65
Total Nitrogen	45

Source: Brown Consulting Engineers

Stage 1 Project Application

The following drainage infrastructure will be constructed as part of the Stage 1 works:

- A 3600 x 1200 culvert from the regional road to detention basin 6; and
- Construction of Detention Basin 6:
  - Total area 2,800m^2
  - Total bio-retention area 1,700m^2
  - Total volume 1,200m^3

With the above infrastructure in place, the proposed development will manage 100 year ARI flows to pre-development rates or less. Brown Consulting also advises that installation of the bio-retention filter media, as outlined above will also ensure that the treated water meets the adopted water quality requirements (listed in **Table 2** above).

6.4 Traffic and Transport

Halcrow was commissioned to undertake a Traffic Impact Assessment of the proposed development. Halcrow's report is included at **Appendix I** and is summarised below.

Site Access

In order to provide suitable access to the site it is proposed to upgrade Burley Road (the section between Old Wallgrove Road and the site) such that it provides two lanes, one in either direction. The road reserve will be capable of being widened in the future, by others, when demand requires it.

The north-south regional road will initially be constructed such that it provides access via the southern boundary of the Stage 1 Warehouse. As the following stages are developed, the north-south regional road will be extended further south into the site.

It is noted that the location of the new regional road, where it enters the site from the north, has been positioned slightly west of the route shown in SEPP (WSEA) 2009. The proposed alternative route is not significantly different to what was originally proposed but will allow the development of the site to occur without reliance of the development of the PGH brickworks facility. The Oakdale development has been approved incorporating setbacks to accommodate the proposed regional road.

It is noted that the proposed location of the road will not affect the longterm redevelopment of the brickworks site as access to that land will be available from either Burley Road or the new regional road proposed as part of this application.

Traffic Generation

During the detailed planning for the regional link roads the RTA produced morning and peak traffic forecasts for use in the determination of intersection capacity needs. Halcrow has used these RTA forecasts for the purposes of formulating traffic forecasts for the proposed development (both the Concept Plan and Stage 1 Project Application) – 15 vehicle trips per hectare of developable area per peak hour.

However, Halcrow's survey of the Coles distribution warehouse at Eastern Creek in June 2008 (traffic generation rate of 5.3 – 6.3 vehicles per hectare per hour) and Penrith Council's assessment of development with the Erskine Park Industrial area suggest that the RTA's traffic planning rate may be conservatively high and if so, the area as planned may have capacity to accommodate more development than the initial expectation.

In determining implications of the Horsley Park Employment Precinct, Halcrow has assumed the following:

- The site is developed to its full potential; and

Regional road connections are constructed as shown in **Figure 35**.

Table 3 provides forecast peak hour and daily traffic volumes on roads within the Horsely Park precinct and on the roads leading to it.

Table 3 – Future two-way peak hour traffic volumes

Link	Peak Hour (total) Traffic Flows (vph)	Daily (total) Traffic Flows (vpd)	Peak Hour (Commercial) Traffic Flows (vph)	Daily (Commercial) Traffic Flows (vph)
SEPP Road (between Burley Rd and North Internal Roundabout)	3123	21033	129	364
SEPP Road (between North and South Internal Roundabouts)	3033	20427	125	353
SEPP Road (south of South Internal Roundabout)	1980	13335	82	231
Internal Road (between SEPP Rd and Internal Loop Rd)	973	6550	40	114

Source: Halcrow

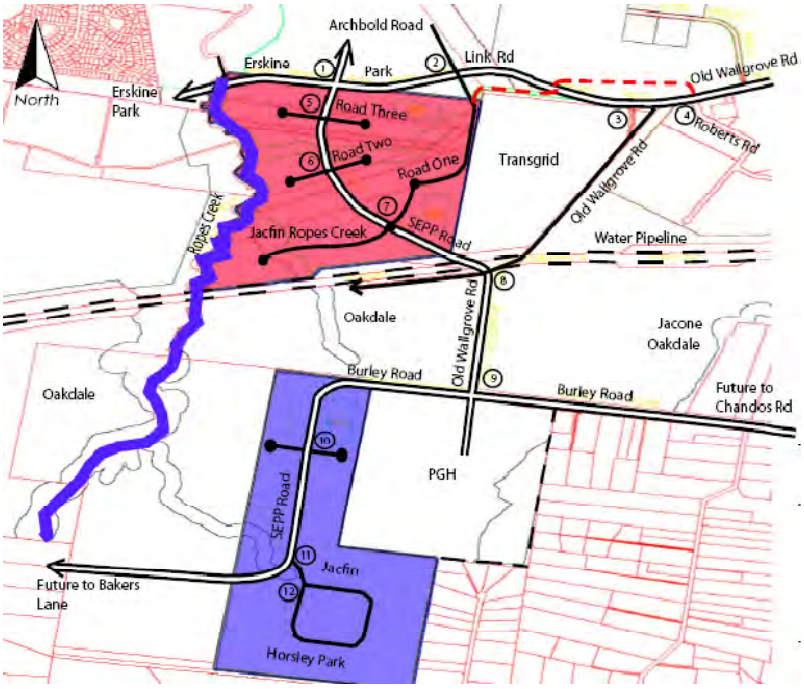

Figure 35 – Regional Road Network

Source: Halcrow

The RTA's Guide to Traffic Generating Development provides the following Level of Service (LOS) criteria for development (**Table 4**).

Table 4 – Level of Service (LOS) criteria

Level of Service	Average Delay per Vehicle (secs/veh)	Signals and Roundabouts	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and 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	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Source: Halcrow

Using the SIDRA intersection analysis program, Halcrow was able to determine the intersection requirements and performance. **Table 5** provides the result of the analysis and shows that the proposed roundabout intersections will operate at a good to satisfactory level and that the proposed road network is capable of accommodating both internally generated and through traffic. Halcrow has advised that whilst both traffic signals and roundabouts would operate satisfactorily, they recommend that roundabouts be implemented, as these would afford more flexibility in terms of traffic access, have reduced ongoing operating costs and would moderate traffic speeds.

Table 5 – Intersection Analysis Results

Intersection	Control	Morning Peak		Evening Peak	
		Av Delay	LOS	Av Delay	LOS
OWR / SEPP Rd / Oakdale Access	Signals	50	D	52	D
OWR / EW Rd / PGH Access	Signals	56	C	35	D
Regional Road 1 – North Roundabout	2 – Lane Roundabout	19	B	32	C
Regional Road 1 – South Roundabout	2 – Lane Roundabout	19	B	32	C
Internal Local Roundabout	1 – Lane Roundabout	11	A	11	A
OWR / Erskine Park Link Road	Signals	15	B	48	D

Source: Halcrow

Construction Traffic

It is anticipated that typical daily flows during construction would be similar to if not less than operational traffic generation of the proposed development.

Peak construction traffic generation will occur during concrete pours and bulk earthworks should material be required to be removed or imported to the site. At these periods it is anticipated that some 20 trips per hour (10 in / 10 out) would occur. These details would be confirmed and assessed as part of a Construction Traffic Management Plan (see Section 6.13).

Parking

Parking requirements for each site will be highly dependent on the number of employees and on the nature of the operation of the tenant. In view of this it is proposed to allow the provision of a proportion of spaces as sealed parking and designate an undeveloped area of the site in which additional parking could be provided if there was a demonstrated need.

In determining the appropriate parking provision rate for the site, Halcrow has considered the rates prescribed by the RTA, Blacktown Council and Penrith Council all of which are significantly different and reflect the wide variety of parking demands that industrial and warehouse developments can exhibit.

In light of the above, Halcrow has proposed the following rates:

- Office: 1/40m^2 GFA
- Factory: 1/100 GFA first 100m^2 then 1/200m^2 GFA (includes office component)
- Warehouse: 1/300m^2 GFA + 1/40m^2 office

Applications will also nominate overflow parking capacity to allow increased parking supply if required, which will increase rates to:

- Factory: 1.3/100m^2 GFA
- Warehouse: 1/200m^2 GFA + 1/40m^2 GFA for office

The above rates are similar to those which have been adopted at the nearby Oakdale development and other warehousing developments recently approved by the DoP.

Sustainable Transport

Regional Road 1 will be suitable for use by buses. The roads will allow buses to circulate within the site or to pass through the site to/from other industrial land north and west of the site when developed. Bus shelters will be provided at suitable locations.

It is proposed to provide a shared cycle/pedestrian path on the verge on one side of Regional Road 1 and Local Road 1. These will connect pedestrians and cyclists to future cycle and pedestrian routes in the WSEA once developed.

Within each warehouse development shower and change facilities will be provided for staff. A provision rate of 1 bicycle parking space per 10 cars spaces is proposed.

Stage 1 Project Application

Halcrow has reviewed the proposed design and layout of warehouse building 1. Halcrow considers that the proposed access and internal road layout comply with all relevant standards and note in particular that:

- The proposed road reserve would accommodate a 13.5 metre wide road pavement which will facilitate satisfactory two way vehicle access (including articulated vehicles) to and from the sites.
- The internal design complies with the requirements of AS 2890.1, Off-street car parking and AS 2890.2, Off-street commercial vehicle facilities.
- The site incorporates a one-way clockwise flow-through system which is safe and efficient and provides sufficient clearances to accommodate a B-Double articulated truck operating with a 12.5 metre radius turn.
- Extensive internal queuing capacity is provided.
- In accordance with AS 2890.2, cars and trucks are provided with separate access driveways and are separated internally, providing maximum safety for both car drivers and pedestrians.
- Available sight distances at all driveways will be satisfactory, subject to the road verge being landscaped with appropriate species.
- The parking bays and aisles comply with the requirements of AS 2890.1 and 2890.6, Off-street parking for people with disabilities.

With regard to traffic generation, the proposed stage 1 warehouse is expected to generate 101 trips per hour during the morning or evening peak periods. Halcrow notes that the proposed access road will easily be able to accommodate the relatively low traffic volume.

The parking proposed is consistent with the rates proposed as part of the Concept Plan application as demonstrated in **Table 6**. Halcrow considers that the parking space provided for both of the warehouse building will more than adequately accommodate the parking demands of the proposed development for both staff and visitors.

Table 6 – Stage 1 Project Application Parking Provision Rates

Use	Rate	Warehouse 1	
		Number required	Number provided
Warehouse	1/300m^2 GFA	84.3	84
Office	1/40m^2 GFA	50.8	51
Total		**135.1**	**135**
Warehouse (Overflow)	1/200m^2 GFA	126.5	129
Office (Overflow)	1/40m^2 GFA	50.8	51
Total		**177.3**	**135 + 45 = 180**

Source: Halcrow

6.5 Geotechnical Investigation

Consulting Earth Scientists Pty Limited (CES) was commissioned to undertake a Preliminary Geotechnical Investigation (**Appendix C**) for Lot A DP392643 in order to provide geotechnical information regarding subsurface and groundwater conditions, preliminary earthworks and site preparation advice and information on issues such as soil salinity and soil aggressivity.

Fieldwork was undertaken in mid-July 2010 and involved drilling five (5) boreholes on site. Soil samples taken during the fieldwork were analysed by SGS Australia Pty Limited. Ground conditions observed in the boreholes typically comprised topsoils underlain by alluvial and residual soils over shale bedrock of the Wianmatta group. This is summarised in **Table 7**.

Table 7 – Summary of subsurface condition model

Geotechnical Unit	Depth to base of unit (mbgl)	Thickness	Description
1. Topsoil		0.1 to 0.3	Clay
2. Alluvium	0.5 to 3.0	0.2 to 2.8	Clay or Sandy Clay
3. Residual Soil	1.0 to 4.0	0.5 to 2.5	Clay or Gravelly Clay
4a.Weathered Shale	3.75 to 6.5	1.8 to 4.7	Interbedded Shale and Sandstone
4b. Moderately Weathered to Fresh Sandstone and Shale	Drilled to a maximum depth 12.7	-	Interbedded Shale and Sandstone
4c. Weathered Volcanic Breccia	7.4	4.4	Volcanic Breccia
4d. Moderately Weathered to Fresh Volcanic Breccia	Drilled to a maximum depth 10	-	Volcanic Breccia

Source: CES

Earthworks and Site Preparation- Stage 1 (Building 1)

Earthworks will be required to create a level building platform for Stage 1 works (Building 1). Once vegetation and topsoil are removed for construction then Units 2 (Alluvium) and 3 (Residual Soils) will be exposed, which will have poor trafficabilty characteristics when wet. The mitigation measures for the Horsley Park Employment Precinct and the Stage 1 building site are discussed below.

Excavation

Excavations into Unit 2 and Unit 3 should stand at temporary slopes of 1.5H:1V. CES advises that permanent batter slopes will begin to deteriorate if left exposed and should be treated against erosion using shotcrete, vegetation, geotextile or similar treatments to prevent this. Where there is insufficient area available to form unsupported batters, Units 2 and 3 will require support and/or retaining walls.

Permanent batter slopes in Units 4b and 4d may be constructed vertically but should be assessed by a geotechnical practitioner for stability. These faces may require localised application of shotcrete, rock bolts or other stabilisation as recommended.

Pavement Bearing

Unit 2 and Unit 3 soils have a medium to high plasticity and are considered a poor bearing stratum for pavements without modification. CES recommends that either pavement bearing capacity could be improved through either subgrade improvement through lime stabilisation or subgrade replacement at suitable levels for pavement bearing.

Groundwater Issues

Groundwater was encountered in all boreholes during testing between levels of 1.6 metres below ground level (mbgl) and 3.8mbgl at the interfaces between Units 2 and 3 and Units 3 and 4. As such it is expected that groundwater will be encountered in excavations below 2mbgl, particularly after heavy rain periods. In cuttings not significantly below groundwater level seepage is expected to be controllable by conventional sump pumping, however formal dewatering such as the installation of formal dewatering walls will be necessary where cuttings extend considerably below groundwater level.

Foundations

Preliminary allowable bearing pressures have been calculated for pad and strip footings, and it is noted that Unit 2 and Unit 3 soils have a significant potential for volume change on wetting and drying which may influence the suitability of this type of footing. Open bored piles could be adopted where the depth to rock exceeds the practical excavation depths for strip and pad footings, and it is expected that appropriate capacity piling rigs should be able to penetrate to Unit 4b (Moderately Weathered Rock) and Unit 4d (Moderately Weathered Volcanic Breccia). Such footings may require temporary liners through Units 2 and Unit 3 if groundwater seepage occurs. Slab on ground construction may be used given adequate consideration of Unit 2 and Unit 3 shrinkage and swelling, moisture conditioning and employment of a good quality sub-base of crushed rock.

Soil Dispersion Potential

The results of Emerson classification indicate that Units 2 (Alluvium) and Unit 3 (Residual Soil) are both considered Class 5, and are not anticipated to be dispersive.

Acid Sulphate Soils

The acid sulphate soil field screening indicates that acid sulphate soils are not likely to be present on the site.

Soil Aggressivity

Soil aggressivity testing of Units 2 (Alluvium) and Unit 3 (Residual Soil) found that these soils may be considered non-aggressive to concrete and steel as per AS2159-1995 (Piling- Design and Installation).

Soil Salinity and Sodicity

Field screening for salinity levels within Units 2 and Unit 3 indicate that these soils are typically very slightly to moderately saline. Saline and Sodic Soils are characterised by slow rates of water infiltration, poor water and nutrient transport within the soil, restricted vegetation growth and severe surface crusting.

These effects can be mitigated through a number of measures including minimising stormwater infiltration, use of gypsum or lime, retention of existing vegetation and planting and the provision of damp proof membranes under slabs and foundations.

Once the requirements for the proposed development are defined in subsequent project applications it is recommended that further assessment of the soil in low-lying areas of the site is carried out to assess whether or not a Salinity Management Plan is necessary. Mitigation measures to deal with any saline soils present on the site are outlined in the report and included in the Statement of Commitments at Section 7 of this report.

Geotechnical Constraints

The results of the geotechnical fieldwork identified the following geotechnical constraints:

- Low California Bearing Ratio (CBR) values for Unit 2 (Alluvium) and Unit 3 (Residual Soils) indicates a poor foundation for roads and pavement, and therefore subgrade improvement such as lime modification or subgrade replacement will be used where necessary to address this.
- Areas of cutting will require further investigation of groundwater levels and in some cases will require active groundwater management measures during and following construction.
- Unit 2 (Alluvium) and Unit 3 (Residual Soil) soils indicated a high potential for significant change in moisture content (i.e. reactive soils) however these soils are not considered to be aggressive to concrete or steel as per AS2159-1995 (Piling- Design and Installation).
- There is a possibility of Saline Soils being present in low-lying areas, and mitigation measures to address this are proposed in the report.

The report by CES makes suggestions to address these issues and recommends further investigation of the site for detailed design and to confirm the ground conditions of the proposed building locations. Compliance with the recommendations of the CES Geotechnical Investigation Report is ensured through the Statement of Commitments at Section 7 of this report.

6.6 Contamination

Consulting Earth Scientists Pty Limited (CES) was commissioned to undertake a Stage 1 Preliminary Site Investigation (**Appendix D**) of Lot A DP392643 in order to identify any contaminants present on site and determine whether remediation work is necessary to make the site suitable for the development proposed.

The desktop review for the Stage 1 Preliminary Site Investigation included a review of land title, ownership and Council records, historical aerial photographs, mapping data, hydrogeological information for the site. The review found that the site has historically been used as grazing land for cattle and horses since the early 1900's, with no sheep, stock drips or crops present on the site at any time. Historical records obtained from Penrith City Council and the Department of Environment, Climate Change and Water show that there have been no records of site contamination or acid sulphate soils affecting the site.

As such it was concluded that the most likely on-site sources of contamination was likely to be associated with the historical use of pesticides/herbicides on stock and the possible storage of diesel fuel, oil and lubricants for farming purposes.

Fieldwork involved sampling of soil from twenty-five (25) grid locations across the site and one (1) specifically targeted location (Stage 1 Project Application site), with samples taken from between 0.1 to 0.5 mbgl. These samples were analysed by Envirolab Service Pty Ltd and Australian Laboratory Services Pty Ltd. Results found that levels of potential contaminants including heavy metals, hydrocarbon compounds (TPH, BTEX and PAH), pesticides (OCP), Polychlorinated Biphenyls (PCB) and asbestos in each of the samples were below the adopted site assessment criteria for Commercial / industrial land use. Based on observations of site topography and field investigation results, CES found that the presence of significant volumes of fill was considered unlikely.

The CES Stage 1 Preliminary Site Investigation found that with regard to soil contamination, the site is suitable for the proposed industrial/commercial development. They recommend however that a detailed Phase 2 investigation be carried out for future development along the north-eastern boundary of the site. A commitment to this effect is made at the Statement of Commitments at Section 7 of this report.

6.7 Heritage

Godden MacKay Logan (GML) has prepared an Heritage Impact Assessment for the proposed project. Their report is included at **Appendix F** and is summarised below.

GML's assessment has been carried out in accordance with the following guidelines:

- DECCW Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation;
- NSW Heritage Manual; and
- Burra Charter.

6.7.1 Indigenous Heritage Assessment

Consultation

Under the Aboriginal Land Rights Act 1983, the subject land falls within the administrative boundaries of Deerubbin Local Aboriginal Land Council (DLALC). GML has consulted with DLALC during the preparation of the report and also invited the organisation to attend the field survey.

GML has undertaken the initial consultation stages, including the placement of an advertisement on 28 July in the Koori Mail inviting stakeholders to register their interest and sending letters of invitation to the relevant bodies. To date the following organisations have registered their interest:

- Deerubbin Local Aboriginal Land Council (DLALC);
- Darug Aboriginal Cultural Heritage Assessments (DACHA);
- Darug Land Observations (DLO);
- Darung Custodian Aboriginal Corporation (DCAC);
- Darug Aboriginal Landcare Incorporated (DALI); and
- Yarrawalk.

A second site visit was conducted on 28 January with the above groups. Verbal comments and written comments on the process proposed have now been received following the site visit and are appended to the heritage report at **Appendix F**.

A further advertisement advising of the project will be placed in a local newspaper. Any additional stakeholders beyond those already identified will be included in the consultation process on this project.

Desktop Review

A desktop review of the Aboriginal Heritage Information Management System (AHIMS) revealed that there are no previously recorded sites within the Horsley Park Employment Precinct.

Within a 4km x 4km search of the subject land, 46 Aboriginal sites were identified and in a 10km x 10km search area approximately 300 Aboriginal sites were identified. Many of these sites have been recorded as a response to the development of the surrounding area for residential, industrial and road projects.

In carrying out their desktop review GML also had regard to various archaeological assessments that have previously been prepared for sites in the nearby area. The outcomes of these reports were used to inform the field investigations undertaken and also the recommendations of the assessment.

Field Survey

Standard archaeological field survey techniques were employed during the site survey. Due to the dense grass cover over the fields a pedestrian survey was undertaken. The field team focussed their attention on drainage lines, creeks, slopes and hilltops where artefacts would be more likely to occur, and areas of exposure such as dam banks, vehicle and animal tracks.

The land was surveyed in the following three areas:

- Hill tops and slopes in the southern paddock, including the cottage and horse yards;
- East-west drainage lines, large dam and natural drainage line in the centre of the property; and
- Ridgelines in the northern paddock.

The results of the field investigation are summarised in **Table 8**. As the effective survey coverage was very low over the precinct, averaging just 3.2% most of the property could not be adequately inspected for Aboriginal artefacts. GML recommends that further investigation be undertaken in the areas circled by a dashed red line in **Figure 36**.

Table 8 – Results of heritage field survey

Survey Area	Number of new sites	Potential for Archaeological Deposits (PADs)
1	None	Hilltops are identified as locations that may contain buried archaeological deposits.
2	One artefact – a single red silcrete flake measuring 18mm x 11mm x 3mm was located next to the dirt vehicle track at the southern end of the dam bank.	Natural drainage lines are identified as locations that may contain buried archaeological deposits.
3	None	Moderate potential for PADs due to low ground surface visibility and proximity to permanent water.

6.7.2 Concept Plan Assessment and Recommendations

Assessment

GML recommends that Indigenous community consultation should continue in accordance with the document `Aboriginal cultural heritage consultation requirements for proponents 2010' produced by DECCW. The Heritage Impact Statement has been referred to the relevant organisations who have registered their interest in participating in the assessment process and additional surveys will be undertaken if required.

The significance of Aboriginal cultural heritage is generally assessed under four criteria commonly applied in Aboriginal cultural heritage management. These criteria are based primarily on the standards outlined in the ICOMOS Burra Charter, which is generally considered to set best practice standards for the management and conservation of places of cultural significance within Australia and also in accordance with the National Parks and Wildlife Service 'Aboriginal Cultural Heritage Standards and Guidelines Kit'.

The four criteria are discussed further below. It is noted that this is a preliminary significance assessment which will be finalised once the consultation process has been completed.

- Cultural value:

Unmodified natural features in the landscape can signify sacred sites/places of significance. As such they are archaeologically invisible and can only be identified with the aid of Aboriginal interpretation. If such sites are still remembered by local Aboriginal communities, they hold particular cultural significance to Aboriginal people. Furthermore, sites of significance are not restricted to the period prior to contact with Europeans. Often events related to the contact period may be important to the local Aboriginal community. If these events relate to a specific place in the landscape, then that place (i.e. the site) may become sacred or highly significant to the local Aboriginal community.

Copies of responses received from the Aboriginal community have been appended to the Heritage Impact Statement.

- Scientific / archaeological / research value:

GML undertook a scientific assessment of the isolated silcrete flake recorded during the field investigation. Given it is one artefact located in a disturbed and eroded environment next to a dam and dirt vehicle track, the integrity of the site is considered low. Isolated artefacts are common on the Cumberland Plan and are considered to have low research potential.

- Aesthetic value:

The Aboriginal Cultural Heritage Standards and Guidelines Kit recommends that archaeologists do not make an aesthetic significance judgement of Aboriginal sites or places because of the subjective nature of this type of assessment. As such, no assessment was made of the sites under this criterion.

- Educational value:

The educational value of the site is considered low, as it is not considered an appropriate site for educational or interpretative purposes.

Recommendations

Development of the Horsley Park Employment Precinct has the potential to impact on the artefact located during the field survey and areas of archaeological potential. In light of this, GML recommends that the areas of archaeological potential be managed by undertaking a test excavation program at the four PAD locations to determine the presence and extent of buried archaeological material at these locations.

Should highly significant archaeological deposits be discovered during the test excavation program, a program of salvage excavation may be appropriate.

Following the completion of the test excavation program, GML consider that management of Aboriginal heritage across the balance of the site can be managed by either:

- the preparation of an Aboriginal Heritage Management Plan (AHMP) prior to the commencement of future development within the precinct beyond the Stage 1 Project Application area; or
- the undertaking of an Aboriginal Heritage Impact Assessment on a project by project basis prior to the commencement of each project.

A commitment regarding the above recommendations is made in the Statement of Commitments at Section 7 of this report.

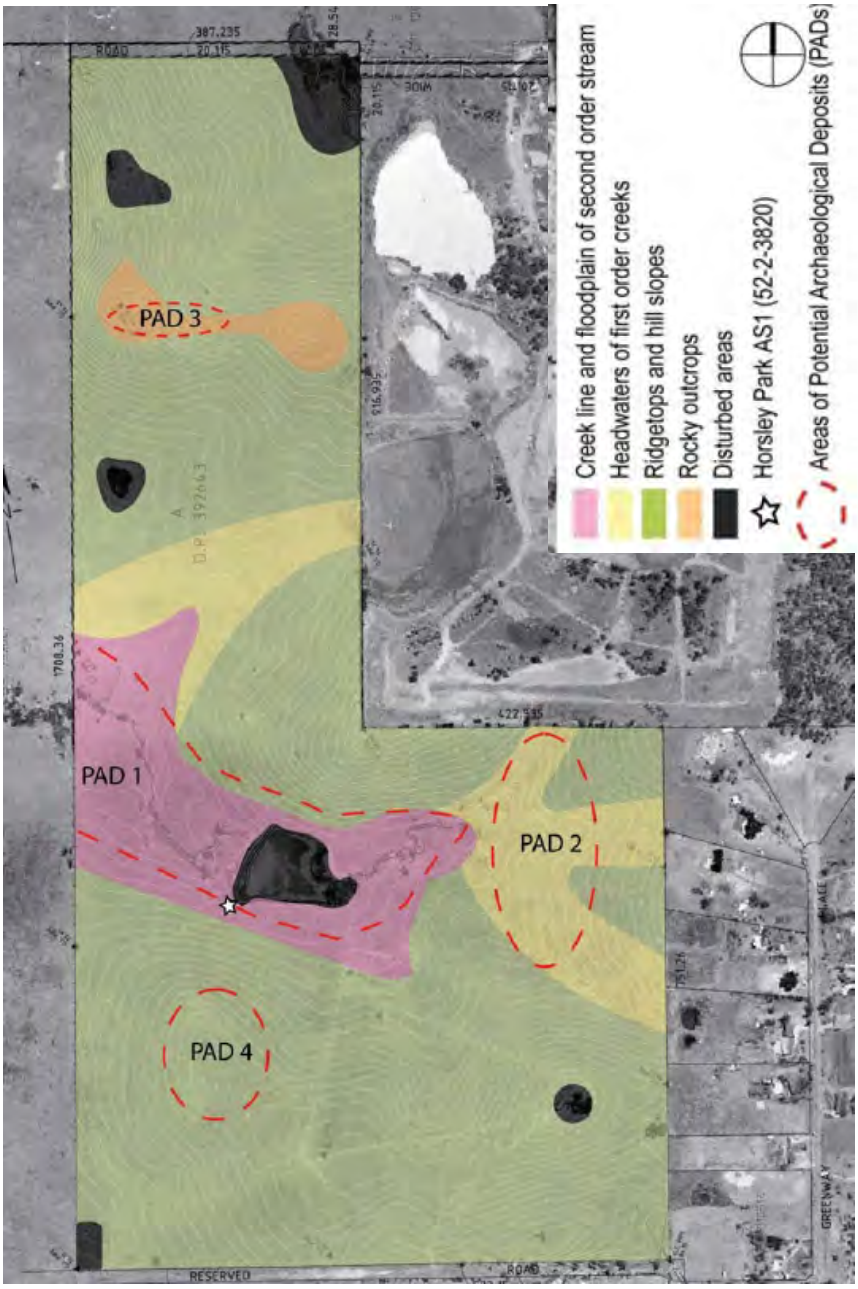

Figure 36 – Areas which should be subject to further investigation and disturbed areas

Source: GML

6.7.3 Stage 1 Project Application Assessment and Recommendations

The location of building 1 and the proposed regional road will impact on a rocky outcrop and hilltop which have been identified as having potential for archaeological objects. GML recommends that a test excavation program should be undertaken at the Pad 3 location prior to works commencing. GML recommends that an Archaeological Research Design (ARD) be prepared and presented to the registered Aboriginal stakeholders for review and comment. Should highly significant archaeological deposits be discovered during the test excavation program, a program of salvage excavation may be appropriate. If Aboriginal objects are located during the test excavation program, the finds should be reported to DECCW under Section 91 of the *National Parks and Wildlife Act 1974*.

A commitment regarding the above has been made in the Statement of Commitments at Section 7 of this report.

6.7.4 Non-Indigenous Heritage Assessment

A desktop review of Council's records and the State Heritage Register has found that there are no listed heritage items on the site and that the site is not located within a Conservation Area.

GML undertook a desktop review and a site visit to determine whether the site presented any potential non-indigenous heritage significance. Aerial photos of the site taken in 1947 and 1955 show that a farmhouse, row of trees and associated out buildings existed in the northwest corner of the site. The 1961 aerial photograph of the site shows these buildings in a ruinous state and by 1965 the house is no longer visible and only the line of trees remains.

GML considers that the archaeological remains of the farmhouse and associated buildings, if they exist, together with the Privet trees may constitute a cultural landscape. However their significance is considered to be low due to the fact that the trees are considered weeds and the farmhouse is not known to be associated with any prominent identities. The site does represent rural life on the Cumberland Plain in the early twentieth century and is considered to have research significance at a local level.

In light of the above, GML recommends that if any relics are exposed during earthworks in the north-western corner of the site then the Heritage Branch of the Department of Planning be notified to determine if further investigation is required. A commitment to this effect is made at the Statement of Commitments in Section 7 of this report.

6.8 Biodiversity, Flora and Fauna

Whelans Insites has prepared an Ecological Issues and Assessment Report for the Horsley Park Employment Precinct (see **Appendix E**). In preparing their report, Whelans Insite undertook a dedicated survey of the subject site for flora and fauna on 23rd July 2010. Whelans Insites also referred to the results of previous investigations of the site that it undertook in 2008 and 2010 as well as reports which have been prepared for various sites in the general vicinity of the site.

Existing Vegetation

The site supports three vegetation types:

- Community 1 – Low Closed Grassland (Pasture), which occupies approximately 98% of the site;
- Community 2 – Degraded Riparian Woodland, which is confined to that part of the tributary in the south-western part of the site below the large farm dam;
- Community 3 – Highly Degraded Drainage Lines, along the upper part of the drainage line in the south-western part of the site. This community does not represent an Endangered Ecological Community (EEC) and has little ecological value; and
- Community 4 – Artificial Freshwater Wetland, which occupies the two farm dams in the western and south-western parts of the site. This vegetation type does not constitute an example of any listed "endangered ecological community".

With regard to Community 2, Whelans notes that this vegetation was mapped by the National Parks and Wildlife Service (NPWS) as Alluvial Woodland Type 11 (Sydney Coastal River-flat Forest) which has since been subsumed into the River-flat Eucalypt Forest on Coastal Floodplains (REFCF) EEC. Whelans notes that the vegetation in parts exhibit some of the floristic characteristics of the REFCF EEC but does not regard it as an example of the EEC as none of the land along or adjacent to this part of Ropes Creek constitutes a `Coastal Floodplain'. Notwithstanding this, this vegetation is located within the E2 zone and will thus be retained under the proposal.

A total of 95 plant species were recorded on the site, of which 57 (60%) were exotic. None of the species identified comprise a threatened species or "endangered population".

Fauna and Fauna Habitats

As the site is predominantly cleared, it is the small section of disturbed riparian woodland which presents a potential habitat. Whelans Insites considers the *`small narrow band of riparian vegetation to be too small and disturbed to provide any habitat of relevance or particular value opportunities for forest dependent fauna'*. Further to this Whelans notes that the vegetation is isolated from any large tracts of vegetation and is therefore unlikely to be utilised, even on a transitory basis.

The farm dam provides some habitat opportunities for wetland birds such as ducks, waders and the Black Swan. Whelans Insite did observe Black Swans within the large dam in the south of the subject site, but did not observe any breeding activities.

The farm dam also provides habitat opportunities for some frog species such as the Common Eastern Froglet, the Striped Marsh Frog and Peron's Tree Frog.

There are few hollow-bearing trees located within the paddocks on the southern part of the site which provide potential habitat for a number of native fauna species, including microchiopteran bats.

No threatened fauna species have been recorded on the site or on adjacent lands. Whelans Insites believes that this is because the site does not provide significant habitat or resources for any threatened fauna species due to the highly disturbed condition of the vegetation on the site.

Whilst on site, Whelans Insites identified the following fauna:

- 37 native fauna species;
- 37 bird species, or which 4 are introduced pest species;
- 3 amphibian species; and
- 1 reptile species, although it is likely a number of reptile species would occur on occasions during appropriate seasons.

Impact Assessment and Recommendations

Whelans Insite notes that the degraded riparian vegetation located along the watercourse downstream, which has the potential to be classified as an EEC, is contained within the E2 zone and as such will be retained and protected under the development proposal.

The farm dam on the subject site will be removed as a result of the industrial development of the site as proposed. Whilst this dam provides some limited habitat for some native fauna, it is not of significance with respect to biodiversity conservation in the general locality. Further, appropriate planting of native aquatic and semi-aquatic vegetation in and around stormwater control basins on the subject site would provide essentially the same habitat values and features.

The few hollow bearing trees on the site provide a limited potential for foraging habitat due to their limited canopies and Whelans Insite considers the removal of such vegetation represents a minute fraction of the home range or the available foraging habitat for any such species.

With regard to the Riparian Corridor, Whelans Insite do not consider it necessary to provide additional setbacks from or buffers around the E2 zone. This is because the degraded drainage line and dam which comprise the E2 zone do not currently provide habitat of value or conservation significance and do not connect to any areas of habitat upstream.

Following the above assessment, Whelans Insite makes the following conclusion:

"The subject site presents essentially no ecological constraints to development activities. None of the vegetation present is of particular ecological value or significance, and it is not considered likely that any native biota would be dependent or reliant upon vegetation, habitats or resources present on the subject site for their survival in this locality.

Given the nature and condition of the subject site at present, and on the assumption that development activities would be undertaken in accordance with the Concept Plan and Stage 1 Project Application (including all relevant impact amelioration measures), it cannot be regarded as likely that the proposed development of the subject site would impose adverse impacts of any relevance or concern on the natural environment in general, or on threatened biota or their habitats in particular.

No resources, habitats or ecological features of particular value or conservation significance would be adversely affected by the proposal. Further, it is intended that regrowth and / or regeneration of the E2 – Environmental Conservation Zone and the use of stormwater detention basins at various locations around the development site as habitat for native biota, will provide a range of resources and enhanced habitat features for native biota."

In order to ensure the proposal has a positive impact on the biodiversity value of the site, Whelans Insite has made the following recommendations:

- the management of stormwater discharge rates and water quality from the development area, both during construction activities and following completion and occupation of the site, according to current 'best practice' principles;
- the implementation of 'Water Sensitive Urban Design' principles in the development, including the capture and re-use of stormwater runoff, the treatment of water to be discharged from the development, and minimisation of the use of potable water for other purposes;
- the use of sediment fences and other appropriate control measures during construction activities to manage erosion and sediment discharge or the discharge of other contaminants;
- the use of detention basins within the proposed development to provide replacement habitat for the artificial farm dams which need to be removed by inter alia:
  - the design of features to ensure that some or all of the detention basins remain as permanent ponds (other perhaps than during major droughts);
  - construction of the detention basins with varying depths and substrate slopes to provide a variety of aquatic and sub-aquatic features;
  - the planting of detention basins with native sedge, reed and rush species to provide habitat and shelter for wetland birds and amphibians; and
  - the provision of relevant adjacent features (such as logs and rock piles) to provide resources for amphibians within and adjacent to the detention basins;
- the implementation of a management regime during the construction process to ensure that no other wastes are discharged from the construction area, and that all such wastes and contaminants are contained within the construction footprint and are appropriately managed;
- the retention of the vegetation in the E2 - Conservation Zone to allow natural regeneration without the adverse impact of grazing cattle in order to facilitate the long term viability of native flora and fauna which do or could utilise the site; and
- the implementation of a Hollow-bearing Tree Protocol which includes inter alia:
  - the 'dismantling' by professional tree experts of hollow-bearing trees in order to salvage tree-hollows, wherever possible;
  - the placement of salvaged tree-hollows on either existing large trees to be retained within the E2 - Conservation Zone or on wooden poles adjacent to existing trees within the E2 - Conservation Zone;
  - alternatively, the placement of salvaged tree-hollows on the ground as hollow log habitat where erection within the E2 - Conservation Zone is not practical; and
  - the use of artificial nest boxes to replace tree-hollows which cannot be salvaged.

The above recommendations in relation to stormwater management are included in the Precinct Stormwater Management Strategy. The recommendations in relation to construction management will be incorporated into the Construction and Environmental Management Plan to be prepared by the appointed building contractor prior to works commencing. A commitment to this effect is made in the Statement of Commitments at Section 7 of this report.

6.9 Bushfire Risk Assessment

The Penrith Bushfire Prone Land Map (see **Figure 37**) shows that the site is not currently impacted by any bushfire prone vegetation, which has been confirmed by a site visits undertaken by Australian Bushfire Protection Planners Pty Ltd (ABPP). Despite this, the natural revegetation of an E2 Environmental Conservation corridor within the site will introduce new vegetation that is likely to become bushfire prone over the life of the proposed development. As such a Bushfire Protection Assessment (**Appendix G)** has been prepared by ABPP in order to assess any protection measures required for the Horsley Park Employment Precinct and the proposed Stage 1 warehouse building.

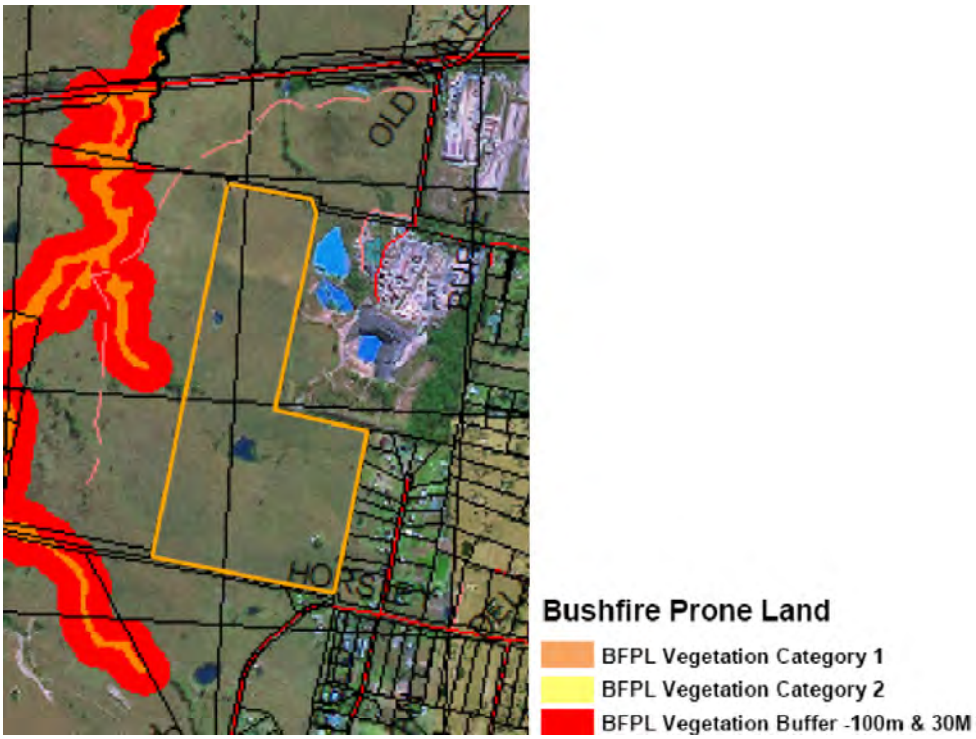

Figure 37 – Bushfire Prone Land Map

Source: Penrith City Council

Bushfire Risk to the Horsley Park Employment Precinct and Stage 1

The development site currently contains vacant grazing land with no significant vegetation which may pose a bushfire risk. It is proposed that the E2-Environmental Conservation zone will be naturally revegetated as part of the proposal, and over time this vegetation is likely to become bushfire prone vegetation. As part of the site management this environmental corridor will be managed in order to ensure that the bushfire risk posed to the development by this vegetation is minimised.

Whilst many of the prescribed APZ's and construction standards within *Planning for Bushfire Protection 2006* (NSW Rural Fire Service) do not apply to industrial development (they mainly apply to residential), consideration of the requirements of this document have been considered in the Bushfire Protection Report and are summarised below.

Asset Protection Zones/ Defendable Space

The report identifies the surrounding vegetation, topography and available Defendable Space widths for the precinct and Building 1 located in the north-east corner of the site.

As part of the Concept Plan a Defendable Space buffer 10 metres wide is provided around the E2 Environmental Conservation corridor which will ensure that adequate buffers are provided to all building envelopes. The proposed plan is compliant with all of the Defendable Space recommendations made in the report and ensures that the setbacks will not encroach upon the environmental conservation land.

There are no mandatory Defendable Space setbacks required for Building No.1 as it is not located adjacent to current or future bushfire prone vegetation. Vegetation located on the neighbouring property to the east is grassland which is not considered to be bushfire prone. Despite this a Defendable Space buffer is still incorporated into the landscape through the building setbacks.

Access for Fire Fighting Operations

A Stage 1 Project Application road will provide heavy vehicle access to Building No.1, and the future internal road network will be suitable to the needs of NSW Rural Fire Service Category 1 Tankers and NSW Fire Brigade Composite and Aerial Appliances. Access to the bushfire prone vegetation in the E2 Environmental Conservation corridor will be provided in further stages of development, through either a perimeter trail or by vehicle access to future buildings and parking areas.

Water Supplies

A reticulated water supply for potable water and fire hydrants is to be extended into the site. In addition Building No. 1 will be required to provide onsite static water supply for structural fire suppression systems. These systems will be in compliance with the BCA and A.S. 2419.1-2005 (Fire Hydrant Installations).

Construction standards for Buildings in Proximity of Bushfire Prone Vegetation

The future warehouse buildings for the Precinct are classified as Class 7 buildings under the Building Code of Australia (BCA), which contain general fire safety requirements for these types of buildings but no bushfire-specific standards.

The provision of adequate Defendable Space will ensure that potential flame distances between the E2 Environmental Conservation corridor and the future buildings are minimised so that radiant heat exposure to buildings is likely to be less than 40lW/m^2 in the course of any fire. All portions of buildings exposed to the hazard shall be constructed to the standards of BAL40 as defined by A.S. 3959-2009 (Construction of buildings in bushfire prone land). The report also makes the following recommendations for construction standards for buildings located adjacent to the E2 zone:

- Operable windows, external vents, grilles, roof ventilators and ventilation louvres should be fitted with aluminium/stainless steel mesh flyscreens with a maximum aperture of 2mm, or be able to be closed to maintain a maximum gap of 2mm.
- Access doors should be fitted with full seals to prevent embers from entering the building.

Emergency Planning

Due to the low bushfire risk within the Horsley Park Employment Precinct there is no requirement for a Bushfire Evacuation Plan or a Bushfire Management Plan.

Fire Management Procedures to Minimise Risk to the Biodiversity Corridor

The management of Defendable Spaces shall generally comply with the recommendations of *Planning for Bushfire Protection 2006* and *Standards for Asset Protection Zones.* Specifically these measures will include:

- maintaining a clear area surrounding buildings with suitable materials such as Scoria, pebbles, recycled crushed bricks and low cut lawn to reduce flammability;
- keep areas under shrubs and trees raked clear of combustible fuels;
- ensure separation distances of 2 metres between tree canopies to reduce the risk of fire spread within the corridor; and
- ensure understorey vegetation in retained as clumps and does not become continuous.

Recommendations and Commitments

The Bushfire Protection Assessment addresses all of the above issues in detail, and makes a number of recommendations in relation to properties affected by the E2 zone which are summarised below:

- That management of landscaped gardens, vegetation and Defendable Space within the site should remain the responsibility of the property owner and comply with *Planning for Bushfire Protection 2006, Standards for Asset Protection* and the recommendations of the ABPP Bushfire Protection Assessment.
- A Positive Covenant should be placed on the title of properties adjacent to the E2 zone to ensure compliance with the management prescriptions for the Defendable Spaces detailed in the report.
- The construction standards recommended in the Bushfire Protection Assessment should be adopted for development of the site.
- All reticulated water supply and onsite static water supply tanks should be provided in compliance with the BCA and A.S.2419.1-2005 (Fire Hydrant Installations).
- Access to the bushfire prone land in the E2 Environmental Conservation corridor should be provided by either a perimeter trail or by vehicle access to future buildings and parking areas.

These recommendations are addressed in the Statement of Commitments at Section 7 of this report.

6.10 Noise Assessment

Wilkinson Murray has prepared an Acoustic Assessment for the proposed development (**Appendix S**) to determine if any acoustic mitigation measures are required for the development. The following sources of noise were assessed:

- Construction Noise;
- Traffic Noise; and
- Industrial / Operational Noise.

In undertaking their assessment, Wilkinson Murray had regard to the *"Interim Construction Noise Guideline"* and the "*NSW Industrial Noise Policy*" both of which are authored by the Department for the Environment, Climate Change and Water (DECCW).

Wilkinson Murray has identified the following noise receivers:

- Erskine Park Residences to the North (Residential Location A);
- Emmanus College and Retirement Village to the West (Residential Location B);
- Bakers Lane Residences to the West (Residential Location C);
- Greenway Place Residences to the East (Residential Location D);
- Burley Road Residences to the south of the East Precinct (Residential Location E); and
- Capitol Hill Drive Residences to the south of the site (Residential Location F).

The above locations are shown in **Figure 38**.

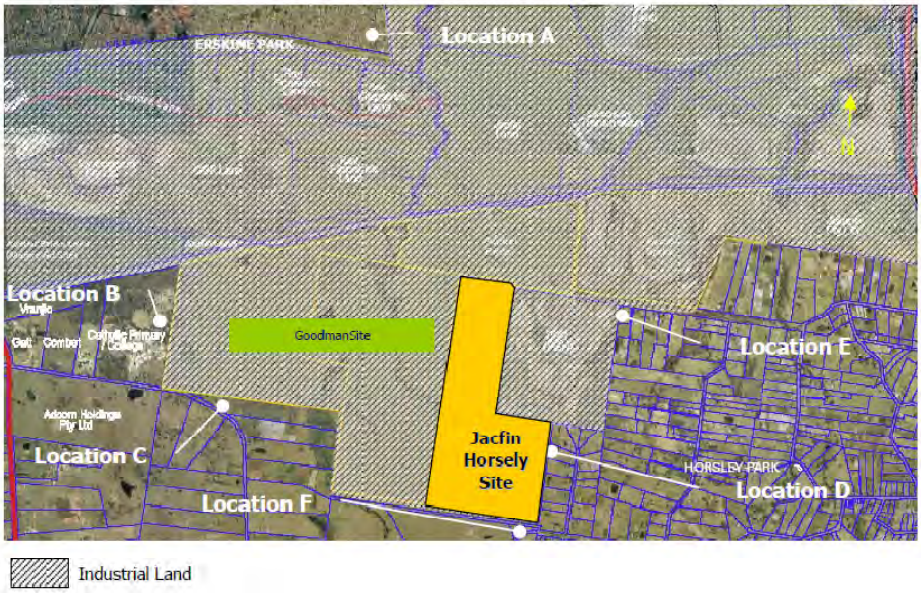

Figure 38 – Nearest residential receivers

Source: Wilkinson Murray

Noise monitoring was conducted between Monday 19 July and Monday 26 July 2010. Noise loggers were placed at the following locations:

- Location 1 – 58 Weaver Street, Erskine Park (Receiver Area A)
- Location 2 – 20 Bakers Lane, Erskine Park (Receiver Areas B & C)
- Location 3 – 41-43 Greenway Place, Horsley Park (Receiver Areas D & E)
- Location 4 – 1 Capitol Hill Drive, Mt Vernon (Receiver Area F)

The *NSW Industrial Noise Policy* (INP) recommends two criteria `intrusiveness' and `amenity' which are relevant for the assessment of noise.

The intrusiveness criterion requires that the LAeq noise level from the source being assessed, when measured over 15 minutes, should not exceed the Rating Background Noise Level (RBL) by more than 5dBA.

The amenity criterion sets a limit on the total noise level from all industrial noise sources affecting a receiver. Different criteria apply for different types of receiver (e.g. residence, school classroom); different areas (e.g. rural, suburban); and different time periods, namely daytime (7.00am-6.00pm), evening (6.00pm-10.00pm) and night time (10.00pm-7.00am).

The noise level to be compared with this criterion is the LAeq noise level, measured over the time period in question, due to all industrial noise sources, but excluding non-industrial sources such as transportation.

Where a new noise source is proposed in an area with negligible existing industrial noise, the amenity criterion for that source may be taken as being equal to the overall amenity criterion. However, if there is significant existing industrial noise, the criterion for any new source must be set at a lower value. If existing industrial noise already exceeds the relevant amenity criterion, noise from any new source must be set well below the overall criterion to ensure that any increase in noise levels is negligible. Methods for determining a source-specific amenity criterion where there is existing industrial noise are set out in the INP.

In this case, there is insignificant industrial noise existing in the area. Whilst there are quarries around Location E no significant noise was observed during a site visit. Traffic noise levels are unlikely to reduce in the future therefore the full amenity criteria are applicable.

Using the existing background noise levels (RBL) obtained from the above monitoring, Wilkinson Murray established the following noise goals for the development of the Concept Plan area (**Table 9**).

Table 9 – Noise criteria for the Concept Plan

Receiver Area	Time Period	RBL (dBA)	Intrusiveness Criterion $L_{Aeq,15min}$ (dBA)	Project-Specific Amenity Criterion
A	Daytime (7am – 6pm)	34	39	55
	Evening (6pm – 10pm)	36	41	45
	Night time (10pm to 7am)	34	39	40
B & C	Daytime (7am – 6pm)	33	38	50
	Evening (6pm – 10pm)	34	39	45
	Night time (10pm to 7am)	33	38	40
D & E	Daytime (7am – 6pm)	32	37	50
	Evening (6pm – 10pm)	32	37	45
	Night time (10pm to 7am)	31	36	40
F	Daytime (7am – 6pm)	33	38	50
	Evening (6pm – 10pm)	36	41	45
	Night time (10pm to 7am)	32	37	40

Source: Wilkinson Murray

Construction Noise

Using typical Sound Power Levels of plant likely to be used during earthworks and road building when the site is being established Wilkinson Murray was able to assess whether or not the proposed development would meet the required noise criterion or if mitigation measures are required.

The assessment revealed that the proposal will comply with the noise criteria except at Location F (i.e. to the south of the site) during the later stages of the project. The initial calculations show that the criterion will be exceeded during the initial earthmoving phase, however Wilkinson Murray notes that exceedances of construction noise criteria are quite common for construction projects and some tolerance is usually expected.

In order to minimise acoustic impacts during construction, Wilkinson Murray has made the following recommendations:

- Construction activities that are likely to be audible at any residence must not occur outside the usual hours of 7.00am-6.00pm Monday to Friday and 8.00am-1.00pm on Saturday.
- Construction vehicles should not approach the site before 7.00am.
- Noisy activities such as earthworks in close proximity to residences should ideally be programmed to avoid early mornings and Saturdays. While this may not be always practical, consideration should be given to surrounding residential receivers when planning the construction program.
- Diesel powered machines such as trucks, bobcats and excavators should be switched off if not required for more than a few minutes rather than left idling unnecessarily.
- Machines used on site should be maintained in good condition, particularly considering the exhaust system on diesel powered machines, to minimise noise emissions. Excessively loud machines should be repaired, modified or removed from the site.
- Sound pressure level measurements should be conducted on all plant prior to works beginning on-site.
- A representative from the construction contractor should be available to respond to questions and complaints from the community in a professional, considerate and timely manner.
- Reverse alarms should be controlled to the minimum sound level consistent with safety by replacing, shielding or relocating the alarm unit on noisy machines.

A commitment requiring the implementation of the above mitigation measures is included in the Statement of Commitments at Section 7 of this report. The recommendations will be incorporated into the Construction Management Plan to be prepared by the building contractor once appointed.

Road Noise

The traffic assessment prepared by Halcrow concludes the following:

- The regional road proposed in the SEPP will transverse the site in an 'S' shape from the north to south;
- The road will extend from Old Wallgrove Road through the site to approximately the midpoint of the western boundary;
- The road will be eventually extended to Bakers Lane by others; and
- Local roads will be provided to access the proposed lots.

Therefore the RTA forecasts are consistent with the development of the site. The impact of noise on the regional Link Roads will be assessed by the RTA in the project application stage which is consistent with RTA commitment detailed in the link road concept plan environmental assessment. A separate traffic noise assessment is not required here.

It is noted that Burley Road is a sufficient distance from any residential development so as to not generate any adverse noise impacts.

Industrial / Operational Noise

Operational noise associated with warehouse developments is usually generated by the following:

- Roof fans;
- Truck movements and associated reversing alarms;
- Dock activities, including loading and unloading of goods; and
- Air-conditioning and refrigeration plant.

The Concept Plan has been formulated to minimise noise impacts, especially on the eastern boundary, by lowering the pad levels, restricting truck loading and unloading activities to the western face of the buildings and providing a 5m high barrier in the gaps between the 3 eastern most buildings. This results in the development meeting all the necessary operational noise criteria.

The proponent is seeking 24 hour 7 day a week operation of the Precinct, the assessment of the proposal (included below in **Tables 10** and **11**) demonstrates that the proposal will comply with the noise criteria set for the project, subject to the design mitigation measures below being implemented for the warehouses in close proximity to Greenway Place (Location D).

Table 10 – Predicted $L_{Aeq(15\ minute)}$ Operational Noise at Surrounding Residences

Receivers	Predicted Resultant Noise Levels at Residences (dBA)		Intrusiveness Noise Goal $L_{Aeq,15\ min}$ (dBA)	Compliance
	Calm Conditions	Wind Condition [1]		
A	19	16	39	Y
B	19	15	38	Y
C	24	19	38	Y
D	33	36	36	Y
E	25	30	36	Y
F	30	33	37	Y

[1] 2.6m/s westerly wind
Source: Wilkinson Murray

Table 11 – Predicted Truck Reversing Alarm Noise Levels at Residences - dBA

Receivers	Predicted L_{Amax} Noise Level – dBA		Sleep Disturbance Screening Criterion (dBA)	Compliance
	Calm Conditions	Wind Condition		
A	24	19	49	Y
B	19	16	48	Y
C	25	20	48	Y
D	35	39	46	Y
E	30	34	46	Y
F	37	41	47	Y

Source: Wilkinson Murray

In order to further minimise noise impacts, Wilkinson Murray recommends the following mitigation measures for buildings adjacent to the south-eastern boundary of the site:

- Ensure that the three eastern warehouses are orientated so the buildings run in a north south direction so that they effectively form a barrier to Greenway Place;
- Loading docks of the eastern buildings are located on the western side of these buildings; and
- Barriers in the order of 5 metres in height are to be constructed in the gaps between the three eastern warehouse facilities.

A commitment and design guideline have been proposed which have incorporated these recommendations (see the Statement of Commitments at Section 7 and design guidelines at **Appendix L**).

Noise from future fixed plant and buildings can be controlled by the implementation of engineering noise controls such as enclosures, silencers and acoustic louvers. These can be adequately addressed at the detail design stage of the individual buildings.

Stage 1 Project Application

In order to assess the proposed Stage 1 warehouse building, Wilkinson Murray assumed the following `worst case' scenario (**Table 12**). The assessment showed that the proposed warehouses will comply with the noise criteria set for the project due to the large separation distances between the warehouse and the nearest residential receivers and consequently no further noise attenuation / mitigation is required.

Table 12 – Predicted Maximum Noise Levels at Residences - dBA

Receivers	Predicted L_{Amax} Noise Level (dBA)		Sleep Disturbance Screening Criterion (dBA)	Compliance
	Calm Conditions	Wind Condition [1]		
A	10	<10	49	Y
B	<10	<10	48	Y
C	<10	<10	48	Y
D	29	34	46	Y
E	34	37	46	Y
F	25	25	47	Y

[1] 2.6m/s westerly wind
Source: Wilkinson Murray

6.11 Visual Impact Assessment

JBA Planning has prepared a Visual Impact Assessment (**Appendix T**) to determine the visual sensitivity of the site and any mitigation measures which may be required.

Visual Sensitivity Assessment

Figure 39 shows the visually sensitive portions of the site. As can be seen in the image, the south-eastern corner of the site has a relatively high level of visual sensitivity. This is due to:

- the proximity of adjacent rural residential properties;
- the orientation of these dwellings and elevation above the site (providing views looking into and over the site, with distant views of the Blue Mountains); and
- the `openness' of the landscape and the lack of existing vegetation within the site that could be used to help screen future development.

View Impact and Mitigation Measures

The development of the site has the potential to impact the views obtained from residences in Greenway Place and Capitol Hill Drive. In order to minimise these potential impacts, the following mitigation measures are proposed:

- lowering of pad levels of buildings in the visually sensitive part of the site to pad levels of around RL78 – RL85 (approximately 14 – 21m below the level of Greenway Place);
- provision of a minimum 30m building setback from the eastern boundary and 20 metres from the southern boundary in the south-eastern corner of the site; and
- incorporation of landscaping, architectural measures on building walls, and boundary treatments such as fencing and earth batters where appropriate.

Figure 40 provides a cross section through the eastern boundary with the above mitigation measures in place. It is noted this image shows a building with the minimum 30m setback and in some instances a larger setback may be provided.

The visual impact of the development with the mitigation measures in place is shown in **Figures 41**, **42** and **43** (images show the worst case scenario with a building setback 30m from the eastern boundary and 20m from the southern boundary). As can be seen, the proposed development will maintain views across the site towards the Blue Mountains and will have a minimal visual impact when considering the zoning of the site, the proposed built form and the views that are retained under the current proposal.

Figure 39 – Visually sensitive portions of the site

Figure 40 – Indicative cross section through the eastern boundary of the site

Figure 41 – Photomontage of the proposed precinct as viewed from Greenway Place

Figure 42 – Photomontage of the proposed precinct as viewed from the ground level of Capital Hill Drive

Figure 43 – Photomontage of the proposed precinct as viewed from between residential properties on Greenway Place

6.12 Ecologically Sustainable Development

Worley Parsons has prepared a Sustainability Report for the project which is included at **Appendix U**. Warehouses and distribution centres are not generally high energy dependent compared to industrial and commercial uses as they do not require energy for high level lighting or manufacturing within the building. Notwithstanding the above, the proposal will incorporate design measures which will result in energy efficiency and savings on the site.

The proposed warehouse buildings will incorporate the following ecologically sustainable design features:

- rainwater harvesting and re-use for irrigation purposes;
- installation of energy efficient fixtures and fittings;
- bicycle parking and associated amenities, shared pedestrian/bicycle footpaths and bus stops so as to encourage more sustainable forms of transport;
- installation of bio-retention basins which will treat stormwater run-off from the site;
- balancing cut and fill requirements so as to minimise truck movements during construction and also the amount of materials to be transported to and from the site;
- use of recycled or sustainable materials where possible;
- encouragement of design which maximises natural light and ventilation; and
- planting of vegetation that has low water requirements.

In addition the above it is noted that the proposed development will result in the improvement of the bio-diversity values of the site through:

- protection of the E2 zoned land;
- planting of new native trees and shrubs on the site; and
- creation of new potential habitat through the construction of bio-retention basins within the precinct.

6.13 Construction Management

A Construction and Environmental Management Plan (CEMP) will be prepared by the building contractor once appointed. The CEMP will be submitted to the Principal Certifying Authority for sign off and will address the following issues:

- Site Management;
- Air Quality;
- Noise and Vibration Management;
- Soil and Water Management;
- Construction Traffic Management;
- Waste and Hazardous Materials Management; and
- Protection of E2 zoned land.

A commitment to this effect is made in the Statement of Commitments at Section 7 of this report.

With regard to construction waste management, waste will be taken from the site and sorted at a Recycling and Landfill facility.

Waste types likely to be generated on the site include:

- General waste;
- Putrescible waste (lunch room waste from site personnel);
- Cardboard and white paper (amended plans and drawings);
- Bottles, cans and plastics; and Concrete, bricks, tiles, timber and gyprock.

The CEMP will build upon the Soil and Water Management and Air Quality measures outlined by Brown Consulting Engineers (**Appendix R**) which include but are not limited to:

- Construction of cut-off drains to prevent clean water entering disturbed areas;
- Installation of silt fences and sedimentation basins around disturbed areas;
- Locating stockpiles as far away from public and residential areas as possible;
- Covering of stockpiled materials where possible;
- Wetting of disturbed areas during high wind events;
- Covering of loads;
- Restricting construction traffic to defined areas and speed limits;
- Dust monitoring – both prior to and during construction activities (installing dust deposition gauges at identified locations; daily and weekly visual surveillance of dust emissions, dust controls, plant emissions, meteorological daily data collection such as wind speed, rain temperature, humidity etc); and
- Minimisation of disturbed and exposed areas.

It will also build upon the Traffic Management measures outlined by Halcrow (see **Appendix I**) which include:

- Designation of truck parking areas, construction zones, crane usage, truck routes, etc;
- Nominating truck routes within the site to ensure trucks enter and leave the site in a forward direction unless accredited flag persons are in place to control traffic and pedestrians;
- Nomination of personnel (Building Contractor) who will maintain strict traffic management procedures to ensure the safety of the public road users utilising traffic wardens;
- Provision of openings in the construction fencing at the construction access driveways will be managed and controlled by qualified site personnel; and
- Installation of temporary warning signs and flashing lights will be erected adjacent to construction access driveways where appropriate.

6.14 Contributions

Local Contributions

While the site is not subject to a Section 94 or 94A contributions plan, as set out in **Table 13** below, the proposed development makes provision for all necessary local infrastructure and will not require the provision of, or increase the demand for, public amenities and public services within the local area. Accordingly, a contribution towards local infrastructure is not warranted and there is no offer made to enter into a voluntary planning agreement in respect of local infrastructure contributions. The proposed approach to local contributions is consistent with that approved by the Department of Planning for the Oakdale development.

Table 13 – Local Infrastructure to be delivered under the Concept Plan

Infrastructure	Detailed Description
Internal Local Roads	▪ Dedication of land ▪ Construction of three local roads, all with a 21.5m road reserve ▪ Landscaping of road reserve
Pedestrian and Cycle Paths	▪ Construction of a 3.0m wide shared parking / cycle lane and a 1.5m pedestrian path on either side of all local roads
Stormwater Infrastructure	▪ Construction of stormwater bio-detention basins within the precinct which will manage 100 year ARI flows
Sewerage	▪ Construction of a new connection to the Eastern Creek submain ▪ Construction of a new sewage pumping station on the site ▪ Installation of internal reticulation
Potable Water	▪ Construction of a new connection to existing services in Old Wallgrove Road ▪ Installation of internal reticulation
Electricity, Gas and Communications	▪ Construction of a new connection to existing services in Old Wallgrove Road ▪ Installation of internal reticulation

Special / Regional Contributions

Clause 29 of SEPP (WSEA) requires that a consent authority not consent to development on land within the WSEA unless "satisfactory arrangements have been made to contribute to the provision of regional transport infrastructure and services (including the Erskine Park Link Road Network)".

On 12 August 2009, the Premier of NSW announced that the NSW Government would impose a $180,000 state infrastructure charge per developable hectare in the WSEA. This announcement further stated that the state infrastructure charge levy across the whole of the SEPP (WSEA) area provides proponents with upfront certainty on the infrastructure costs they are asked to bear for development. However, no special infrastructure contributions (within the meaning of subdivision 4 of Division 6 of Part 4 of the EP&A Act) plan currently exists that incorporates the state infrastructure charge.

In the absence of a special infrastructure contributions plan, under section 93I of the EP&A Act, Jacfin offers to enter into a planning agreement with the Minister for Planning, prior to the grant of an occupation certificate, for any project approval which may be granted by the Minister for Major Project 10-0129 – Horsley Park (Jacfin Approval).

The offer is conditional on the agreement providing that:

1. Jacfin contribute a monetary contribution maximum of $180,000 per developable hectare payable to the Minister for Planning for the provision of regional infrastructure within the broader Western Sydney Employment Area (Jacfin Contribution) in relation to the Jacfin Approval.
2. The planning agreement will exclude the operation of s94, 94A and 94EF of the EP&A Act.
3. If a Special Infrastructure Contribution (SIC) is determined under section 94EE of the EP&A Act that covers the land the subject of the Jacfin Approval:
   (a) prior to Jacfin making the Jacfin Contribution, Jacfin will pay the value of the SIC as if it had applied to the land the subject of the Jacfin Approval to the maximum amount of $180,000 per developable hectare; or
   (b) after Jacfin makes the Jacfin Contribution and the value of the Jacfin Contribution is more than the SIC, Jacfin will be entitled to repayment of that difference in amount within 60 days.

4. With the agreement of the Minister for Planning (or his delegate), Jacfin may provide regional infrastructure within the Western Sydney Employment Area in relation to the Jacfin Approval, or dedicate land for the provision of this infrastructure, and obtain a credit against the Jacfin Contribution (Jacfin Credit).
5. The value of the Jacfin Credit shall be determined by an independent person, and
   (a) in relation to the provision of regional infrastructure works, be based on the cost of providing the works; and
   (b) in relation to the dedication of land for the provision of regional infrastructure works, be calculated in accordance with the Land Acquisition (Just Terms Compensation) Act 1991 (NSW) as if that land had been acquired by compulsory acquisition.
6. The planning agreement will provide for the provision of suitable security (including in the form of works in kind) for the Jacfin Contribution.

With a developable area of 93.5 hectares, the development of the entire precinct will potentially generate a total contribution value of $16,830,000 - including monetary contributions, works-in-kind and the dedication of land.

A commitment to enter into a VPA for the Stage 1 Project Application is provided in the Statement of Commitments at Section 7 of this report.

6.15 Consultation

The Proponent and or members of the consultant team have consulted with the following authorities and agencies as set out below:

- Penrith City Council (consulted on 20 August 2010)
- Fairfield City Council (consulted on 24 August 2010)
- Sydney Water (consulted on 13 July 2010)
- Sydney Catchment Authority (consulted on 19 August 2010)
- NSW Office of Water (consulted on 19 August 2010)
- Transgrid (7 October 2007)

The key issues raised during the above consultation and the proponents response are summarised in **Table 14**.

Table 14 – Summary of Consultation

Agency / Authority	Key Issues Raised / Discussed	Proponent's Response
Penrith City Council	Road Access	▪ N/A
	E2 zones and setbacks	▪ Setbacks from riparian corridors within E2 zone ▪ Defensible areas for bushfire protection outside of E2 zone
	Regional Roads and Local Roads	▪ Advised that access will be via Old Wall grove Road and it is proposed to upgrade Burley Road ▪ Regional roads in accordance with WSEA SEPP
	Visual Impact from Rural Residential properties	▪ Advised that a Visual Impact Assessment has been prepared for the project
	Design Guidelines	▪ Advised that these would form part of the Concept Plan application and that all future applications will need to be consistent with the guidelines

Agency / Authority	Key Issues Raised / Discussed	Proponent's Response
	Maintenance Access - Proposed public road and basin detention will be remote to Council services until such time as regional connections are constructed	▪ Noted
	Staging of development and infrastructure	▪ A staging plan is provided within the Concept Plan documentation.
	Contributions	▪ Advised that site will provide local infrastructure as works in kind ▪ The Proponent proposes to enter into a VPA with the Minister for Planning prior to the grant of an occupation certificate for any project approval ▪ The VPA will provide for a Regional Infrastructure contribution of $180,000 per developable hectare, subject to offsets for dedication of land for the regional road and construction of the regional road (see Section 6.15 of this report.
Fairfield City Council	Lot Sizes	▪ Advised that the lot sizes shown on the Concept Plan are indicative only and will dependent on the market and needs of future tenants
	Water Quality Controls	▪ Advised that a Stormwater Management Plan has been prepared for the Precinct
	Torrens or Community Titling?	▪ Subdivision will be Torrens title
	Services and Infrastructure	▪ Local infrastructure to be provided by the proponent (details included at Appendix K) ▪ Proponent will provide land and construct the regional road that runs through the site (to be offset from the regional infrastructure contribution (see Section 6.14)
	Interface with rural residential dwellings	▪ Mitigation measures are proposed which will manage potential acoustic and visual impacts
	Regional road – consultation with CSR?	▪ Proponent has consulted with the Department of Planning regarding the proposed regional road network.
Sydney Water	Sydney Water advised that no infrastructure is planned within the nearby area that is suitable for use within the Precinct.	▪ The proposal includes servicing facilities which have the capacity to serve the whole of the site. ▪ The Proponent will continue to consult with Sydney Water throughout the assessment and post approval, seeking the relevant approvals from Sydney Water as required
Sydney Catchment Authority	Main concern relates to the pipe crossings, advised that SCA had been in discussions with the DoP regarding the regional road system.	▪ Advised that the regional road layout has been designed to be consistent with the WSEA SEPP.
NSW Office of Water (NOW)	Advised that NOW will provide formal comment when the detailed submission from the DoP is received	▪ None required
Transgrid	No issues were raised in relation to the Horsley Park Development.	▪ None required

6.16 Economic and Social Benefits

The proposed development of the site is expected to generate the following economic and social benefits:

- Generation of between 1,870 and 3,740 new jobs within Western Sydney;
- Investment of up to $479,026,000 in the NSW economy million in the NSW economy;
- Construction of sections of the new regional link road network;
- Construction of new local roads; and
- Provision of $16,830,000 ($180,000 per developable hectare) in Regional Infrastructure Contributions.

6.17 Site Suitability and Justification for the Development

The site is considered suitable for warehouse use for the following reasons:

- it is appropriately zoned;
- of an appropriate size;
- generally clear of vegetation;
- does not require remediation; and
- will be highly accessible via the M4 and M7 motorways following the construction of the new regional road network.

The proposed development is considered justified for the following reasons:

- the proposed development will implement the aims and objectives of SEPP WSEA;
- the proposal will see the delivery of new jobs within Western Sydney;
- the proposal will deliver part of the new regional road infrastructure;
- the proposal will generate $16,830,000 ($180,000 per developable hectare) in Regional Infrastructure Contributions; and
- the E2 zone will be protected.

6.18 Environmental Risk Assessment

Approach

The Environmental Risk Assessment at **Table 16** has been adapted from Australian Standard AS4369:1999 Risk Management and environmental risk tools developed by other organisations (summarised at **Table 15**). The Environmental Risk Assessment establishes a residual risk by reviewing the 'significance of environmental impacts' and the 'ability to manage those impacts'.

The significance of environmental impacts is assigned a value between 1 and 5 based on:

- The receiving environment;
- The level of understanding of the type and extent of impacts; and
- The likely community response to the environmental consequence of the project.

The manageability of environmental impact is assigned a value between 1 and 5 based on:

- the complexity of mitigation measures;
- the known level of performance of the safeguards proposed; and
- the opportunity for adaptive management.

The sum of the values assigned provides an indicative ranking of potential residual impacts after the mitigation measures are implemented.

Table 15 – Environmental rating risk matrix

Significance of Impact	Manageability of Impact				
	5 Complex	4 Substantial	3 Elementary	2 Standard	1 Simple
1 - Low	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)	2 (Low)
2 - Minor	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)	3 (Low)
3 - Moderate	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)	4 (Low/Medium)
4 - High	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)	5 (Low/Medium)
5 - Extreme	10 (High)	9 (High)	8 (High/Medium)	7 (High/Medium)	6 (Medium)

Table 16 – Environmental risk matrix for project

Item	Phase	Potential Environmental Impact	Proposed Mitigation Measures	Significance of Impact	Manageability of Impact	Residual Impact
Noise	C & O	▪ Increase in noise levels during construction ▪ Increase in noise levels as a result of 24 hour operation of the warehouses	▪ Installation of Noise Attenuation measures where required during earthworks; ▪ Compliance with noise criteria established for the precinct during operation; ▪ Location of loading areas on the western side of buildings which are positioned in the south-eastern corner of the precinct	2	2	4 (Low / Medium)
Traffic	C & O	▪ Increased traffic on roads	▪ Provision of shared pedestrian cycleways and bus stops on the site so as to encourage the use of more sustainable forms of travel. ▪ Implementation of a Construction Traffic Management Plan	1	1	2 (Low)
Visual	O	▪ Visual impact of warehouses in the south-eastern corner of the precinct	▪ Implementation of Design Guidelines; ▪ Lowering of pad levels; ▪ Provision of a minimum 20 metre setback from the southern and eastern boundaries; ▪ Considered design and choice of materials; and ▪ Planting of appropriate landscaping and boundary fencing.	2	2	4 (Low / Medium)
Heritage	C	▪ Potential for Indigenous Heritage Objects to be located on the site ▪ Potential for Non-Indigenous archaeology to be located on the site	▪ Consultation with local Aboriginal groups and representatives ▪ Observation of initial earthworks by local Aboriginal community member within nominated Stage 1 areas ▪ Submission of heritage impact assessments with future applications for later stages or preparation of an Aboriginal Heritage Management Plan ▪ Monitoring of earthworks in the north-eastern corner of the site	3	2	5 (Low / Medium)
Bio-diversity	C	▪ Loss of hollow-bearing trees as habitat	▪ Implementation of a Hollow-bearing Tree Protocol	3	2	5 (Low / Medium)
Water Quality	C & O	▪ Deterioration of water quality in Ropes Creek	▪ Implementation of an Environmental Construction Management Plan which includes erosion and sediment control ▪ Implementation of a Stormwater Management Plan which proposes treatment of stormwater runoff	3	2	5 (Low / Medium)
Waste	C & O	▪ Generation of waste	▪ Implementation of business specific waste management plans	2	1	3 (Low)
Flooding	O	▪ Potential flooding of site during 1 in 100 year storm events ▪ Adverse impacts on Ropes Creek riparian corridor	▪ Implementation of a Stormwater Management Strategy ▪ Construction of bioretention basins ▪ Installation of rainwater storage tanks	3	2	5 (Low / Medium)
Contamination	C	▪ Unexpected Finds	▪ Phase 2 investigations to be prepared for future applications in the north-eastern corner of the precinct	3	2	5 (Low / Medium)
Bushfire Protection	O	▪ Natural regeneration of E2 Zone	▪ Designation of defensible areas around E2 zone	1	1	2 (Low)
Hazardous Materials	O	▪ Storage of Hazardous Materials	▪ A hazardous materials assessment to be prepared where storage of hazardous materials is proposed	1	1	2 (Low)
ESD	C & O	▪ Potential increase in emissions ▪ Increase in use of potable water	▪ Use of energy efficient fixtures and fittings ▪ Installation of rainwater storage tanks ▪ Provision of shared pedestrian cycleways and bus stops on the site so as to encourage the use of more sustainable forms of travel.	2	2	4 (Low / Medium)

Key: C – Construction, O: Operation

7.0 Project Draft Statement of Commitments

In accordance with the Director-General's Environmental Assessment Requirements, the proponent is required to include a Draft Statement of Commitments in respect of environmental management and mitigation measures on the site. **Table 17** outlines the commitments made by Jacfin Pty Ltd to manage and minimise potential impacts arising from the Concept Plan while **Table 18** outlines the commitments made in relation to the Stage 1 Project Application.

Table 17 – Draft Concept Plan Statement of Commitments

Subject	No.	Commitments	Timing
Construction Management	1.	A Construction and Environmental Management Plan will be prepared for each project by the appointed building contractor and will be submitted to the Principal Certifying Authority for sign off. The CEMP will address the following issues: - Site Management; - Air Quality; - Noise and Vibration Management; - Soil and Water Management; - Construction Traffic Management; - Waste and Hazardous Materials Management; and - Protection of E2 zoned land	Prior to works commencing.
	2.	The construction noise mitigation measures recommended by the Acoustic Consultant will be incorporated into the Construction and Environmental Management Plans for each project as relevant.	Prior to works commencing.
Geotech	3.	Future Project Applications within the Precinct will demonstrate compliance with the recommendations of the Geotechnical Assessment in relation to: ▪ Bulk Earthworks; ▪ Structural Design; ▪ Ground Water Management; ▪ Acid Sulphate Soils; and ▪ Soil Salinity.	Details to be provided with the relevant Project Application(s).
Stormwater Management	4.	Future Project Applications will demonstrate compliance with the targets in the Stormwater Masterplan and Trunk Drainage Strategy prepared by Brown Consulting Engineers.	Details to be provided with the relevant Project Application(s).
	5.	Future Project Applications will demonstrate that: ▪ the project water quality targets will be met; and ▪ stormwater flow rates will be equal to less than the current existing flow rates.	Details to be provided with the relevant Project Application(s).
Waste Management	6.	An Operational Waste Management Plan will be prepared for each of the warehouse buildings on the site.	Prior to the occupation of each warehouse.
Hazardous Materials	7.	Should storage of hazardous materials be required by the occupants of a warehouse building, a hazardous materials assessment will be prepared.	Prior to the occupation of the relevant warehouse, if applicable

Subject	No.	Commitments	Timing
Bushfire Protection	8.	Future Project Applications within the Precinct will demonstrate compliance with the recommendations of the Bushfire Consultant, in relation to: ▪ Access to the bushfire prone vegetation in the E2 Environmental Conservation corridor; ▪ Building setbacks; ▪ Building construction requirements; ▪ Landscape Maintenance; and ▪ Emergency Planning.	Details to be provided with the relevant Project Application(s).
Signage and Lighting	9.	Future applications will provide detail on signage and lighting.	Details to be provided with the relevant Project Application(s).
Noise	10.	Acoustic Assessments will be submitted with future project applications for each warehouse building detailing acoustic mitigation measures where required. For buildings on lots with boundary to the Greenway Place properties: ▪ Buildings are to be orientated in a north south direction to form a barrier to Greenway Place; ▪ Loading docks are to be located on the western side of the buildings; and ▪ Barriers in the order of 5 metres in height are to be constructed in the gaps between the buildings.	Details to be provided with the relevant Project Application(s).
Waste Management	11.	An Operational Waste Management Plan will be prepared for each of the warehouse buildings on the site.	Prior to the occupation of each warehouse.
Biodiversity	12.	A Hollow-bearing Tree Protocol prepared by a suitably qualified ecologist and will be implemented.	Prior to the removal of any trees within the Employment Precinct
Heritage	13.	A test excavation program will be undertaken in 4 PADs identified by GML. An Archaeological Research Design (ARD) will be developed prior to the test excavation program and presented to the relevant Aboriginal stakeholders for review and comment.	Prior to issue of a Construction Certificate for any parts of the site which include a PAD.
	14.	An Aboriginal Heritage Management Plan will be prepared for the precinct or Aboriginal Heritage Impact Assessments will be submitted with future Project Applications.	Prior to the lodgement of any Project Application beyond Stage 1.
	15.	Indigenous community consultation will continue in accordance with the document `Aboriginal cultural heritage consultation requirements for proponents 2010' produced by DECCW. The Heritage Impact Statement will be referred to the relevant organisations who have registered their interest in participating in the assessment process and additional surveys will be undertaken if required.	Prior to the submission of a Preferred Project Report or response to submissions whichever is appropriate.
Visual Impact Assessment	16.	Future project applications for developments within the south-eastern corner of the precinct will detail mitigation measures to be implemented so as to minimise and visual impacts.	Details to be provided with the relevant Project Application(s).
Contamination	17.	That a phase 2 assessment be undertaken for future developments located along the north-eastern boundary.	Details to be provided with the relevant Project Application(s).

Table 18 – Draft Stage 1 Project Application Statement of Commitments

Subject	No.	Commitments	Timing
Construction Management	1.	A Construction and Environmental Management Plan will be prepared by the appointed building contractor and will be submitted to the Principal Certifying Authority for sign off. The CEMP will address the following issues: - Site Management; - Air Quality; - Noise and Vibration Management; - Soil and Water Management; - Construction Traffic Management; - Waste and Hazardous Materials Management; and - Protection of E2 zoned land.	Prior to works commencing.
	2.	The construction noise mitigation measures recommended by the Acoustic Consultant will be incorporated into the Construction and Environmental Management Plan.	Prior to works commencing.
Waste Management	3.	An Operational Waste Management Plan will be prepared for the Stage 1 Warehouse Building.	Prior to the occupation of the warehouse.
	4.	If required a Hazard Assessment for the storage of hazardous goods will be undertaken.	Prior to the issue of a Construction Certificate relating to the construction of a hazardous material storage facility.
Signage and Lighting	5.	Future applications will be lodged providing detail on signage and lighting for the Stage 1 Warehouse Building.	Prior to the occupation and use of the warehouse building.
Building Code of Australia	6.	The Stage 1 warehouse building will comply with the relevant provisions of the Building Code of Australia.	Prior to issue of a Construction Certificate.
Heritage	7.	Prior to works commencing a test excavation program will be undertaken in PAD 3. An Archaeological Research Design (ARD) will be developed prior to the test excavation program and presented to the relevant Aboriginal stakeholders for review and comment.	Prior to issue of a Construction Certificate.
Contributions	8.	Jacfin will enter into an agreement with the Department of Planning as part of the Stage 1 Project Application, in accordance with Division 6 of Part 4 of the EP&A Act, to provide for regional infrastructure contributions, as outlined in Section 6.14 of the this report.	Prior to the issue of an Occupation Certificate.

8.0 Conclusion

This Concept Plan Application seeks approval for the following:

- establishment of a new employment precinct comprising approximately 93.5 hectares of developable land;
- location and design of new regional and local roads;
- indicative project staging; and
- Design Guidelines for future project applications.

The concurrent Project Application seeks approval for the construction of the Stage 1 development which includes:

- site subdivision;
- construction of a warehouse building;
- upgrade of Burley Road and construction of part of the Regional Link Road network and a Local Road;
- associated bulk earthworks;
- installation of associated infrastructure, including drainage, water, sewer, gas, electricity & telecommunication reticulations; and
- site landscaping.

This Environmental Assessment Report demonstrates that the proposed development is generally consistent with the relevant planning controls. In particular the proposal is consistent with State Environmental Planning Policy (Western Sydney Employment Area) 2009 which seeks to generate high quality industrial precincts which generate a significant amount of new employment within Western Sydney.

The report details the appropriate mitigation measures that will be in place during the construction and operational phases of the development so as to minimise environmental and amenity impacts on surrounding development and residential amenity.

The proposal is expected to generate the following public benefits:

- Generation of between 1,870 and 3,740 new jobs within Western Sydney;
- Investment of up to $479,026,000 in the NSW economy; and
- Construction of sections of the new link road network.

The report demonstrates that the proposed Concept Plan and the Stage 1 warehouse development (Project Application) comply with all relevant statutory requirements. Additionally, commitments are made to mitigate any environmental impact that will result from the development. Accordingly it is appropriate that the applications be approved.