PART F ENVIRONMENTAL ASSESSMENT

6.1 DIRECTOR GENERAL'S REQUIREMENTS

The Director General's Environmental Assessment Requirements were received on 03 November 2011. The Key Issues include:

- Relevant Environmental Planning Instruments
- Strategic Policies, Guidelines and Planning Agreements
- Contamination
- Layout and Urban Design
- Economic Impact
- Ecologically Sustainable Development
- Noise
- Transport and Accessibility
- Sediment, Erosion and Dust Control
- Flora and Fauna
- Utilities
- Staging
- Contributions
- Flood and Stormwater Drainage Management
- Waste
- Heritage and Archaeology

These matters are addressed in the following sections:

6.2 RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

The statutory framework is addressed in Part D of this EIS above.

The proposal is consistent with all relevant legislative objectives. No variations to any controls are required to enable the proposed development to be approved or undertaken.

6.3 STRATEGIC POLICIES, GUIDELINES AND PLANNING AGREEMENTS

The strategic context is addressed in Part D of this EIS above.

The proposal is consistent with all relevant policy objectives. No variations are required to enable the proposed development to be approved or undertaken.

6.4 CONTAMINATION

The Phase 2 Environmental Site and Geotechnical Investigation prepared by WSP Group (**Appendix 10**) notes that Lot 10 DP 879209, located in the centre of the eastern boundary, was formerly a fuel depot and has been notified to the EPA as a contaminated site. Council is not aware that a Site Audit Statement (SAS) has been issued for the site.

The site is not deemed to be significantly contaminated, subject to a management order, subject of an approved voluntary management proposal, or subject to an ongoing management order under the provisions of *Contaminated Land Management Act 1997*.

Between 2005 and 2009, one above ground storage tank, eleven USTs, fuel pumps and associated line work were removed. Contaminated soil excavated from the former tankpits and infrastructure locations was landfarmed in the south western corner of the Lot. In 2006, the landfarm was validated to NSW EPA (1994) guidelines.

Soil in the vicinity of the linework and tankpits had concentrations of total petroleum hydrocarbons (TPH) which exceeded the NSW EPA (1994) guidelines for Sensitive / Open Space landuse. Remaining sample locations met the guideline criteria. The excavations were backfilled with validated excavated material and imported ENM.

Soil and groundwater investigations were conducted in 2009 and 2010 which identified ongoing contaminants across Lot 10 DP 879209 including TPH, saline soils of low yield, concentrations of heavy metals arsenic, nickel, cadmium, copper and zinc exceeding ANZECC 2000 guidelines. Phase Separated Hydrocarbons (PSH) were identified at the southern boundary of Lot 10 and in the adjoining property (Lot 100 DP 879680).

The recent investigations undertaken by WSP, identified the following potential sources of contamination as:

- Agricultural activities – primarily market gardens (M8, Pesticides)
- Discarded 200L drums – VOCs (di-chloromethane)
- Petroleum Depot – TPH, BTEX, PAHs, Metals

Given groundwater flow direction for Lot 10 DP 879209, the PSH plume has the potential to migrate beyond the eastern site boundary. The vertical extent of the investigations was limited to 1.5m below existing ground level for contamination investigations.

The conclusions regarding the site in relation to current contamination are:

- *TPH impacted soil exists on Lot 10 DP 879209.*
- *Groundwater at the boundary of Lot 10 DP 879209 and Lot 100 DP 879680 is impacted with TPH.*
- *PSH were identified in two wells.*
- *Concentrations of heavy metals arsenic, nickel, cadmium, copper and zinc exceeded the ANZECC 2000 guidelines in the majority of wells. These concentrations were considered to be representative of background concentrations.*
- *All other results fall below the adopted site criteria.*

WSP has prepared a Remediation Action Plan (**Appendix 11**) for the site which details proposed methodologies for works required to make the areas impacted, suitable for unrestricted commercial land use. The work required as part of remediation includes:

- removal of surface rubbish;
- TPH delineation of plume present on Lot 1 DP879209 and Lot 100 DP 879680 and possible remediation of groundwater
- TPH remediation in shallow soils on Lot 1 DP 879209

6.5 LAYOUT AND URBAN DESIGN

The principles behind the Trust's vision to develop a business hub within the Parklands were to:

- achieve the Government's goals for the Parklands, by continuing to grow private business investment that creates a sustainable ongoing funding base for the Parklands for the future;
- work with Fairfield City Council to identify suitable locations and land use opportunities for business hubs;
- consider the impact on existing land uses and commercial centres in each Council's LGA and deliver additional employment and training opportunities for regional communities;
- undertake development in a manner that minimises negative environmental impacts.

There is also a strong need to ensure that the layout and urban design is both conducive to market requirements whilst ensuring appropriate amenity, visual impact and sustainability objectives are satisfied. Additionally, the engineering constraints presented by undulating terrain with multiple catchments, limitation to direct road connections for individual allotments and provide a staged delivery needed to be considered from initial design conception.

The final design proposed aims to strike a balance between the competing objectives through a layout that:

- Responds to the natural terrain as far as practicable to minimise earthworks, constrain infrastructure requirements and maintain pre-development environmental quality;
- Complements the adjoining industrial context of the adjoining Smithfield industrial precinct;
- Presents a high quality urban streetscape to major thoroughfares including The Horsley Drive and Cowpasture Road;
- Maintains the integrity of existing nearby infrastructure including the Sydney Water Supply Channel, regional cycleways, electricity easements and road corridors;
- Provides opportunity for flexibility in future development on individual allotments within the estate through a large 'superlot' subdivision arrangement.

Figure 16 provides three indicative panoramic views over the site, showing three different perspectives provide an overview of the types of landforms, views and constraints and that have been considered in creating a suitable design for the Site.

Figure 16 – Existing Landscape Perspectives (Source: Dominic Steele, 2012)

Key features of the proposed design include:

Access Road
A central estate access road will provide direct entry and egress to all lots, except the northern-most lot along Cowpasture Road. The road has been designed to Fairfield City Council standards and is likely to be transferred to Council upon completion of the last stage of works under this application.

Connection to the local and regional road network is to be provided through a major intersection upgrade at the intersection of Cowpasture Road and Newton Road. this intersection is currently a round-a-bout and will become a signalised intersection under the proposed scheme.

Lot Layout
12 large 'superlots' lots are to be provided within the estate, with an additional service lot that will accommodate essential stormwater infrastructure. The lot arrangement provides flexibility to enable large scale corporate development, individual units, or a combination of such development. Lots are large enough and oriented to enable a high level of sustainable building location and design that will be complemented by on-site water management and landscaping.

The Draft Plan of Proposed Subdivision is provided as **Appendix 4**.

Landscaping
Habitation has been engaged to prepare an integrated estate landscape treatment that provides identity to the estate, provide environmental value through the provision of natural systems and species that are contextually appropriate to the adjoining Parklands as well as provide visual amenity and streetscape presentation within the locality.

The Landscape Plan is provided as **Appendix 5**.

Infrastructure
The provision of essential infrastructure has been designed to be unobtrusive and integrated into the other elements of the estate. In particular, on-site detention basins are to be incorporated into the overall landscape design and have been designed to satisfy the terrain modifications proposed to facilitate the estate without impacting pre-development characteristics.

It is noted that the layout and urban design of the Horsley Drive Business Park as provided in the subject application merely establishes the basis on which future development can be accommodated. In this regard, it is considered that the future development of individual allotments under separate application will have the most significant effect on the amenity, visual aesthetic and environmental performance forming the underlying principles of urban design.

The design of future development should follow the detailed considerations adopted in the structure of the estate infrastructure works to address primary views, integrated landscaping that complements the intended outcomes for the adjoining recreation and conservation lands within the Western Sydney Parklands.

6.6 ECONOMIC IMPACT

The Capital Investment Value for the subject development (infrastructure works subdivision and Proposed has been estimated at $15.6 million.

Business hubs have been considered to fulfill two of the Parklands community obligations:

1. ensuring the long term and sustainable future for the Parklands and
2. to generate high quality jobs in Western Sydney.

The Western Sydney Parklands Trust aims to derive revenue from 2% of the Parklands from business hub facilities to generate the income necessary to manage and enhance the remaining 98% of the Parklands in lieu of government funding.

Self-funding has always been part of the long term plan for the Parklands. The *Western Sydney Parklands Act 2006*, *State Environmental Planning Policy (Western Sydney Parklands) 2009* and the *Western Sydney Parklands Plan of Management 2011* outlined a range of commercial, retail and infrastructure that deliver beneficial social and economic outcomes for Western Sydney.

The $47Million income generated from business hubs will fund conservation and environmental initiatives, as well as the expansion of additional recreation, open space and educational programs for the people for western Sydney such as 250ha of new picnic and playgrounds, over 35km of new bike and walking track links thru the Parklands, building 1000ha of new bushland and catering to the needs of around 2 million visitors to the parklands each year.

The site location has been strategically selected to address both local and regional characteristics, including the need for employment provision in a location that has been historically earmarked for such activity and will complement the established amenity of the adjoining employment lands by providing a small extension of the Wetherill Park/Smithfield industrial area.

When combined with the business Trusts planned business hub at Eastern Creek, the Horsley Drive Business Park will attract private capital investment of more than $200 million and provide more than 1,100 full time jobs in Western Sydney and a further 750 jobs during construction.

The employment lands respond to Fairfield City Council's Employment Land Strategy which suggests that from 2008-2016, a further 100 ha of land will need to be released to cope with new workers expected in the LGA.

The document entitled *Sydney over the next 20 years- A discussion Paper* prepared by the NSW Government (May 2012) will provide the basis for preparation of a new Strategy for Metropolitan Sydney with strong links *NSW 2021* the 10-year plan to rebuild the economy, provide quality services, renovate infrastructure, restore Government accountability and strengthen our local environment and communities.

The Discussion Paper indicates that the Sydney Metropolitan Area (including Western Sydney) is expected to show the highest rate of economic growth among NSW regions with an annual average rate of growth of Gross Regional Product (GRP) (2011-32) of 2.8 per cent.

As several factors place pressure on the industrial sector, including competition from economies such as China and India as they move to higher-value manufacturing and services, the Sydney Region must provide the settings for jobs that are both accessible to the workforce and well networked with the markets.

Western Sydney is recognised as being the most significant location for employment lands in NSW strategic planning history, containing 79% of total industrial lands (**Figure 17**). The demand for employment in these locations reflect the high levels of connectivity and utility services that contribute to economies of scale, market requirements, transfer of ideas and skills as well as sustainability objectives including journey to work targets, alternative transport methods and environmental protection.

Distribution of industrial lands by subregion by hectare and as a percentage.

Subregions	Employment Lands (Ha)	
East	633.30	4.7%
Inner North	188.00	1.4%
Inner West	345.60	2.5%
North	186.40	1.4%
North East	242.20	1.8%
North West	4,697.90	34.7%
South	1,102.60	8.1%
South West	2,203.10	16.3%
Sydney City	154.10	1.1%
West Central	3,800.90	28.0%
Total	**13,554.10**	**100%**

Source: NSW Department of Planning January 2011 ELDP (UNPUBLISHED).

Figure 17 – Distribution of Industrial Lands by Subregion (Source: Department of Planning, 2011)

The Draft Central West Sub-Regional Strategy also identifies significant employment land requirements for the region, with the Fairfield LGA specifically targeted as providing the greatest number of jobs to 2031 (**Figure 18**). The Draft Sub-Regional strategy also notes that industries such as advanced manufacturing, information and communication technology and biotechnology are growing faster in the Central West Sub-Regional when compared with national averages.

LOCAL GOVERNMENT AREA	EMPLOYMENT CAPACITY TARGETS TO 2031
AUBURN	12,000
BANKSTOWN	6,000
FAIRFIELD	15,000
HOLROYD	1,000
PARRAMATTA	27,000
TOTAL	**61,000**

Figure 18 – West Central LGAs by Employment Capacity Target (Source: Department of Planning, 2011)

The Draft Sub-Regional Strategy also notes that, in terms of employment by industry sector, West Central is on par with Sydney as a whole for distribution of managers and administrators, tradespersons and clerical staff but has a significantly higher proportion of workers such as labourers, production and transport workers and a notably lower proportion of its workforce are professionals and associate professionals compared with the Sydney Statistical District.

Market investigations undertaken as part of the Due Diligence stages for the proposal design also indicates that there will be suitable demand to support the staged development of the Horsley Drive Business Park. Specifically, market analysis data published by CBRE, May 2012, indicates that within the Central West sub-region, some 16,572 sqm of industrial space was completed in 2011. This amount is well below the 5 year (2006-2010) average of 70, 993sqm.

The staged approach to the proposed Horsley Drive Business Park is expected to align the release of land in concert with returning demand over the next 5-year period. The return on investment for the estate is similarly expected to remain positive given that CBRE data reveals net rental for warehouses and

distribution centres having remained stable through the last quarter of 2011 at $123/sqm and $115/sqm respectively. Indicative yields remained stable over the last half of 2011 warehouse yields remained unchanged at 8.42%. Capital values for Grade A warehouse and distribution centres remained stable over the last half of 2011 at $1,465/sqm while capital values for Grade B warehouses grew by 2.7% to $1, 297sqm.

Land value was generally stabile since June 2009 where property prices reached the bottom of the pricing cycle at this time. Larger lots (over 1.6ha) grew in value by 3.5% in the last half of 2011. The design of the project can be easily adapted to cater for market forces through the flexible provision of superlots. The lots within the estate are to be leased and not sold, so will always remain in public hands, generating an income for the Parklands.

The opportunity for office-style business park development is also supported by the CBRE data which indicates construction activity is expected to rebound in 2012 and 2013 with 168,532 sqm of office space forecasted to be completed within the Central West region alone. While tenant demand in the suburban office markets fell to its lowest levels in 2011, where annual net absorption figures totaled just 14,356 sqm, the cautious decision making and business contraction throughout the region is set to recover over 2012-2014 with an annual average of 95,494 sqm net absorption forecast. The total suburban vacancy is forecast fall to 10.2% in 2014.

As with industrial properties, office portfolios in the Central West sub-region achieved 3.0% rental growth over the six month period and were likely to achieve net rents of $312/sqm as of March 2012.

It is intimated from the above data that whilst demand at present is less than the historical averages this is as a result of minor business contraction as a result of the GFC and that there is a clear case to expect a strong need for office space once the development is completed.

In support of the market data findings provided above, several large firms have all engaged in speculative development within the Central West sub-region during 2011, suggesting confidence is returning to the market. The strategically located business hubs, will contribute to jobs and economic growth of Western Sydney, allowing more Western Sydneysiders the opportunity to live and work locally in line with these trends.

6.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The design of the Horsley Drive Business Park has been specifically targeted to produce an 'eco business park' focus. While the future development of individual allotments will provide a significant role in providing the ecologically sustainable outcomes through building design and orientation, activity practices, on-site water management, landscaping and waste management, the framework of the estate has similarly been designed to maximise environmental quality and minimise resource reliance.

The engineering objectives for the development were to create a site which responds to the topography and site constraints and to provide an appropriate and economical stormwater management system which incorporates best practice in water sensitive urban design and is consistent with the requirements of council's water quality objectives.
The strategy developed for the site as proposed in this application has been developed to meet these objectives and provides a solution that fits within the constraints of the existing landform. Within this strategy, a stormwater quantity and quality management strategy has been also been developed to mitigate downstream effect from increased stormwater runoff and to reduce pollutant loads in stormwater leaving this site in accordance with principle of WSUD and long term council policy. In fact, the effect of one of the on-site basins (Basin 2) has been determined to actually increase the quality of pre-development stormwater (see **Appendix 6**).

Details of environmentally sustainable elements of the proposal are outlined as follows and detailed throughout this EIS and supporting documentation:

Water Management
The design incorporates the principles of Water Sensitive Urban Design (WSUD) through both water use and quality objectives. Fairfield City Council has nominated the requirements for stormwater quality to be performed on a catchment wide basis and in accordance with the Sydney Catchment Management Authority. These are presented in terms of annual percentage pollutant reductions on a developed catchment and are as follows:

Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	65%
Total Nitrogen	45%
Total Hydrocarbons	90%

The proposal targets pollutants that are present in the stormwater so as to minimise the adverse impact these pollutants could have on receiving waters and to also meet the requirements specified by the Fairfield City Council.

Water use is to be minimised through the implementation of stormwater harvesting intended for future development within the Estate. The aim is to reduce the non-potable water demand for the individual future developments in the range of 50-80%.

Rainwater harvesting is proposed for future development lots within this development with re-use for non-potable applications. Internal uses include such applications as toilet flushing while external applications will be used for irrigation. Indoor and outdoor water demand and rainwater tanks sizing will be based on individual site requirements and form part of separate future development applications

The Construction Management Plan prepared by Hansen Yuncken (**Appendix 18**) also provides that the Contractor is to implement water-saving practices and technologies to ensure on-site water consumption is minimised. This will be monitored through sub-metering and visual inspection by the Contractor to ensure measures are being actively utilised by sub-contractors.

To ensure that all site personnel adequately control the consumption of water, the Contractor will monitor site staff by:

- Visually viewing site works and utilising digital photos to record and witness water management procedures during random site inspections.
- Undertaking audits on a regular basis to review water control procedures and practices.
- Reporting on a monthly basis to the Project Control Group. Such reports to include:
    - Relevant Trade Contractor reports for the period
    - Other Important information / events that reduced water consumption (if not covered by the Trade Contractor reports).
    - Overall assessment of water management practices and procedures for the month.

To increase the environmental benefits of reducing water consumption and recycling water, the following measures should be undertaken by the Contractor and sub-contractors as a minimum during the construction works:

- Rainwater collection for use when washing down concrete pumps, trucks and other vehicles leaving site.
- Introduce water-less urinals to the site amenities.
- Educate site workers about water consumption and simple measures to save water (e.g. utilise collected rainwater for cleaning equipment, ensure taps are not left running etc.)
- Sub-metering of water consumption.

Transport

The Traffic Impact Assessment (**Appendix 13**) identified that bus, rail (with bus connection), cycleway and walking paths are readily available to the site and are likely to be increased as further development occurs in the Estate.

Recommendations have also been made in the Traffic Impact Assessment to encourage alternative methods of transport including the implementation of a Workplace TP requires the implementation of initiatives and targets that will enable the Horsley Drive Business Park to reduce the impact of transport on the nearby environment.

Landscaping

The landscape design (**Appendix 5**) incorporates a large percentage of native trees that will complement the ecological context of the adjoining Western Sydney Parklands recreational and conservation areas. Landscaping is also provided as an integrated water quality system that supplements the engineered stormwater management systems.

Natural infiltration and treatment of stormwater will occur around the detention basins, road verges, as well as upon individual allotments.

Remediation

Earth and groundwater that has been contaminated due to previous use of part of the as a petrol depot is to undergo remediation as part of the proposed development. The Remediation Action Plan (**Appendix 11**) aims to achieve a quality suitable to enable commercial development upon the affected land and is to have significant benefit for downstream earth and water.

Based on the design proposed and the supporting documentation, sustainable outcomes have been achieved by:

- Roads and transportation design (with options for further individual development strategies)
- Earthworks minimisation;
- Contamination remediation;
- Stormwater management (quality and quantity);
- Erosion and sedimentation control; and
- Integrated landscaping.

6.8 NOISE

Acoustic Logic has prepared a Construction Noise and Vibration Management Plan (**Appendix 12**) to be implemented to manage noise and vibration emissions from the proposed development (including demolition, excavation and construction).

This report includes the assessment of noise and vibration associated with the works that are the subject of this application, and does not include any building works associated with the development of individual allotments following completion of the Estate.

In determining the acoustic impact of the proposal, the assessment uses criteria from the New South Wales Construction Noise Guideline developed by The NSW Department of Environment, Climate Change and Water (DECCW) and with the Australian Standard AS2436-1981 *Guide to Noise Control on Construction Maintenance and Demolition Sites*.

In analysing noise impact, the following parameters have been adopted:

- Construction traffic access to the site will occur from Cowpasture Road and The Horsley Drive.
- Heavy vehicle traffic will include large rigid and articulated trucks.
- Heavy vehicle trips expected each day will vary and these will be distributed during the day without any peak hour period.
- It is anticipated that there would be an average of up to 10 truck movements every hour.

The outcomes of the assessment are summarised below:

Existing Conditions
Environmental noise levels were measured in the vicinity of the subject development. The measurement locations were determined to be representative existing background noise levels.

Background noise levels in this area are principally determined by traffic on the surrounding roadways including The Horsley Drive and Cowpasture Road which carry medium to high traffic volumes during most hours of the day. Attended noise measurements were conducted at the site during a typical daytime period of 1.30pm to 2pm on the 2nd April, 2012.

Noise levels that were recorded at the site and used as the basis of this report are shown in **Figure 19**.

MONITORING LOCATION	$L_{90\ (15\ min)}$ dB(A)
Location 1 – The Horsley Dive	54
Cowpasture Road	57

Figure 19 – Base Level Noise (Source: Acoustic Logic, 2012)

Potential Noise Receivers
The Horsley Drive Business Park, Wetherill Park proposed development site is located on the corner of The Horsley Drive and Cowpasture Road, Wetherill Park.

The surrounding properties to the development site are shown in **Figure 20** and include the following:

2. Commercial or industrial buildings to the east
3. Residential properties to the north south and west.

Figure 20 – Noise Receiver Locations (Source: Acoustic Logic, 2012)

Sleep Disturbance

As the proposed development is not proposing night time works an assessment into the potential for sleep disturbance is not required.

Noise Impact

A detailed study has been undertaken of each of the proposed activities that will occur as a part of the construction work on this project. The analysis indicates that most of the construction work activities will not adversely impact the surrounding receivers, with the exception of the following:

- High noise activities such as hammering, sawing and concrete pumping.

Vibration Impact

Construction vibration criteria associated with works on the proposed Horsley Drive Business Park site when measured at the potentially affected receivers should not exceed the following sets of vibration criteria to ensure no architectural or structural damage to surrounding buildings.

These standards have been selected as they are widely used in the assessment of vibration associated with construction activities within Australia, namely:

- German Standard DIN 4150-3 (1999-02): *Structural Vibration – Effects of Vibration on Structures*; and
- British Standard BS 6472:1992 *Guide to Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz)*.

Based on the location of the proposed development and the proposed activities to be conducted on the site, vibration is expected to generally comply with the criteria detailed in these standards.

Recommendations

The following recommendations are made to mitigate noise and vibration impacts and manage complaints and recording keeping:

- Construction hours should be carried out in accordance with recommended construction hours detailed in the standard hours for construction sites which details the following:
  - 7am to 5pm Monday to Friday; and
  - 8am to 5pm Saturday.

- Where a particular activity or construction appliance is found to generate noise levels that exceed the criteria, it may be possible to select an alternative approach or appliance.

- In the event noise levels at receivers exceed criteria the following recommended treatments may be used to minimise noise from hydraulic hammering:

  - Acoustically screen activities from surrounding receivers by using building structures or a specifically constructed screen.
  - Acoustic testing to plant and equipment to confirm if site noise levels comply with nominated manufacturing noise levels.
  - Regular maintenance of equipment.
  - Locating concrete pumps at a maximum distance from neighbouring residential receivers.

- Continual communication is required between all parties which may be potentially impacted upon, the builder and the regulatory authority.

- Monitoring of the proposed construction should be conducted as follows:

  Noise: Noise measurements/monitoring should be conducted during periods with the potentially greatest impact to neighbouring receivers. In the event compliance with noise goals is achieved no additional monitoring is required unless alternative work practices are adopted. If exceedances are found noise monitoring should be conducted during periods when this process is in operation.

  Vibration: Vibration measurements/monitoring should be conducted at potentially worst affected receivers during periods impact is greatest from construction activities, when activities may have the potential to impact surrounding receivers. If this is found to be compliant no additional monitoring is required. If exceedances are likely continuous noise monitoring should be conducted during the period when this activity is in operation.

- Reporting and Response procedures are to be implemented, as follows:
  - A sign shall be displayed at the site indicating the Site Manager and the general public and the contact telephone number of the person(s) responsible for complaint handling.
  - If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:
    1. The name and address of the complainant (if provided).
    2. The time and date the complaint was received.
    3. The nature of the complaint and the time and date the noise was heard.
    4. The name of the employee who received the complaint.
    5. Actions taken to investigate the complaint and a summary of the results of the investigation.
    6. What operations were occurring on site at the time of the complaint.
    7. Required remedial action, if required
    8. Validation of the remedial action.

9. Summary of feedback to the complainant.

- In the event complaints are received from neighbours the following process will be followed:
    1. Determining the offending plant/equipment/process
    2. Locating the plant/equipment/process further away from the affected receiver(s) if possible.
    3. Implementing additional acoustic treatment in the form of localised barriers, silencers etc
    4. Selecting alternative equipment/processes
- Where monitoring is required and indicates exceedences of the noise limits immediate action should be taken to identify any further controls as required to reduce noise emissions so that the noise limits are complied with.
- The following shall be kept on site by the builder:
    1. A register of complaints received/communication with the local community with information as detailed below.
    2. Where noise/vibration complaints require noise/vibration monitoring, results from monitoring.
    3. Any noise exceedences occurring including, the actions taken and results of follow up monitoring.
    4. A report detailing complaints received and actions taken shall be presented.
    5. All monitoring and reporting shall be conducted in conjunction with the conditions of consent.

6.9 TRANSPORT AND ACCESSIBILITY

The Traffic Impact Assessment prepared by Traffix, June 2012 (**Appendix 13**) provides the outcomes of detailed modelling undertaken in consultation with the NSW Roads and Maritime Authority, including independent peer review.

Although the development of individual allotments does not form part of this application, analysis based on full development has been undertaken to estimate the total daily and peak hour trips anticipated to be generated by the business park, including accurate details of the current and future daily vehicle movements and assess the impacts of the traffic generated on local road networks, intersection capacity and the potential need/associated funding for upgrading or road works.

While the full methodology is provided in detail in **Appendix 13**, the scenarios investigated to determine the impact of the proposed were to be as per the DGR's, with the inclusion of an additional scenario being the Base Case + Background Traffic Growth. Paramics micro simulation modelling was adopted.

Growth rates adopted were established through interpolation of RMS EMME2 data provided by the RMS. The traffic generation associated with the future development is to be assessed at the rate of 15 trips per hectare which is consistent with similar developments in the locality.
The base case model was also independently reviewed prior to its use for scenario testing.

Traffic count data identified the following AM and PM peak periods and accordingly, these time periods were adopted for the model:

- AM: 7:30am to 8:30am; and
- PM: 3:30pm to 4:30pm.

The input data for the modelling included:

Road geometry - To identify existing road geometry, aerial photography was used and confirmed using signal layout plans and survey plans of the study area. This information was used to code the road network for the 'base' model.

Traffic Signal Data - TCS and IDM data was provided by the RMS and utilised for all phase sequences of the signalised intersections of the M7 with The Horsley Drive, M7 with Wallgrove Road and The Horsley Drive with Cowpasture Road. LX Data was also provided by the RMS and utilised for intersection offsets. Signal timings at intersections where IDM data was not available were recorded through on-site investigations.

Traffic Survey Data - Traffic surveys were undertaken at all critical intersections within the study area.

RMS Standard Files - The RMS provides a series of standard files for use in Paramics projects and were used in both the AM and PM models. Changes to the vehicle file were undertaken to reflect the higher percentage of heavy vehicles that were observed during the traffic surveys.

The findings of the Traffic Assessment are summarised below:

Existing Traffic Conditions

- *Road Hierarchy*

  The Traffic Impact Assessment identifies that the site is conveniently located with respect to the arterial and local road systems serving the region including access to the M7 motorway which in turn provides direct access to both the M4 and M5 motorways. Major roads of note include:

  - The Horsley Drive
  - Wallgrove Road
  - Cowpasture Road
  - Newton Road
  - Ferrers Road
  - Victoria Road; and
  - Northern Link Road.

  The site has direct frontage to The Horlsey Drive and Cowpasture Road.

  The Horsley Drive is a major RMS State Road providing access between the M7 Motorway and the Hume Highway. In the vicinity of the site, the Horsley Drive is generally constructed with a 12.8m wide undivided carriageway carrying two lanes of traffic in either direction. Parking is not permitted generally along its entire length. No footpaths or pedestrian infrastructure is currently provided in the vicinity of the site.

  The Horsley Drive forms the major signal controlled T Junction with Cowpasture Road immediately adjacent to the site. The intersection is constructed with two through lanes on both the northbound and eastbound approaches in addition to a dual signalised left turn slip lane of length 300m for southbound vehicles turning east into Cowpasture Road; and a dual signalised right turn bay of length 80m for northbound vehicles turning east into Cowpasture Road.

  Approximately 160m south of the above mentioned intersection; The Horsley Drive forms the northern approach to a roundabout controlled junction with Cowpasture Road and the access road to the Lizard Creek Park.

  To the immediate east of the site Cowpasture Road forms the major approach to a roundabout controlled intersection with Newton Road with an inscribed radius of 20 metres and with generally two circulating lanes.

  Existing conditions for the AM peak were observed to involve extensive queuing for southbound traffic along The Horsley Drive on approach to the signalised intersection with Cowpasture Road. These queues are a direct result of the operation of the roundabout controlled junction of Cowpasture Road and The Horsley Drive where queues extend north to the signalised junction of Cowpasture Road and The Horsley Drive. The intermediate road network between these two intersections operates with considerable delays and limits the discharge of southbound vehicles.

Considerable northbound queues on Cowpasture Road on approach to its roundabout controlled junction with The Horsley Drive were observed. These queues are a result of the high right turn movement from The Horsley Drive which operates with minimal delays.

Considerable delays were observed for northbound vehicles accessing Ferrers Road. These queues extended south for a considerable distance and impeded northbound movements of vehicles accessing the M7 and Wallgrove Road.

Existing conditions for the PM peak involved southbound queues on Cowpasture Road between The Horsley Drive and Newton Road. These queues limited access to Cowpasture Road from Newton Road and resulted in extensive westbound queues and delays.

Delays at the roundabout controlled junction of The Horsley Road and Cowpasture Road were observed. In particular, southbound queues on Cowpasture Road and westbound queues on The Horsley Drive.

- *Intersection Performance*
  To assess the operation of key intersections in the vicinity of the site, turning movements were surveyed at the critical intersections identified by the RMS during both the AM and PM Peak Periods.

  Specifically, the following key intersections were examined:

  - The Horsley Drive / Cowpasture Road
  - The Horsley Drive / Ferrers Road
  - The Horsley Drive / Westlink M7
  - Cowpasture Road / Newton Road
  - Cowpasture Road / Victoria Street.

  The intersections were then analysed using the SIDRA computer program to determine their performance characteristics under existing traffic conditions.

  The modelling revealed that the network operates at a generally satisfactory level of service (LoS) during the AM and PM peak periods.

  The Traffic Impact Assessment notes, however, that the LoS reported does not accurately reflect the congestion within the network as it is a measurement of average performance across all approaches. In practice, some approaches operate with reduced LoS. Notwithstanding this, the most relevant use of the modelling is the comparison with the future operation of the network taking into account the proposed development yield.

Traffic Impacts

The following scenarios were to be tested to establish the impacts of the proposed development on the existing road network as requested by the RMS:

Scenario 1: Existing Base Case
Scenario 2: Existing Base Case + Growth
Scenario 3: Existing Base Case + Growth + Development

An additional scenario being Existing Base Case + Development was also undertaken.

However, after consultation with the RMS based on the outcomes of Scenario 2, it was deemed that the only relevant scenario to be considered in further detail would be that of Scenario 4 Existing + Development due to the considerable delays and necessary infrastructure upgrades that would be required within the network to accommodate the estimated growth under Scenario 2, which is would be outside the scope of the applicant. That is, the provision of capacity improvements to accommodate network growth in the region is rightly the responsibility of Council and RMS in undertaking their strategic planning responsibilities. As such, Scenario 3 was not modelled.

The outcomes of the scenario modelling are provided below:

- *Traffic Generation and Distribution*
  The traffic impacts associated with the application were assessed based on a future traffic generation of 15 trips per hectare as recommended by RMS. The overall site includes a site area of 21.4Ha and which results in an overall generation of 321 vehicles per hour.

  These trips have been proportioned with 70:30 split in the direction of peak flow and results in the following generations:

  AM Peak: 225veh in / 96veh out, and
  PM Peak: 96veh in / 225veh out.

  Scenario 1: Base Case
  For the Base Case Scenario, the distribution of these trips onto the network was undertaken using the 2006 Journey to Work Data (JTWD) for Travel Zone 1042. The outcomes are shown in **Figure 21**.

Direction of Travel (To/From)	Route	Volume	%
North	M7 & Horsley Drive	3051	49%
South	Cowpasture Road	836	13%
West	N/A	NA	0%
East	The Horsley Drive & Victoria St	2322	37%
Total		6209	100%

Figure 21 – Base Case Traffic Generation (Source: Traffix, 2012)

Scenario 2: Existing Base Case + Growth
Under Scenario 2, the growth rates were established through the interpolation of the RMS EMME2 Data for the design years of 2016 and 2026. These growth rates were established for the major road corridors of Wallgrove Road and The Horsley Drive/Cowpasture Road for both the AM and PM Peak Periods, as follows:

Wallgrove Road:
Northbound: AM: 2.7% / PM:2.9%
Southbound: AM: 1.3% / PM:2.6%

The Horsley Drive/Cowpasture Road:
Northbound: AM: 1.9% / PM:1.0%
Southbound: AM: 1.2% / PM:2.0%

These rates were then applied to the relevant existing OD matrices to establish the future year network. The model was run using the base case model network with no infrastructure upgrades and showed extensive queuing on Ferrers Road, Cowpasture Road and The Horsley Drive with a high number of unrealised vehicles at the end of the simulation period. Signal timings and some minor network upgrades were investigated however this resulted in no considerable change in the overall operation of the network under the future year scenario.

The Traffic Impact Assessment notes that the considerable in congestion is generally contributed to the proximity of the roundabout controlled junction and signal controlled junction of Cowpasture Road and The Horsley Drive, and the inability to coordinate major movements. The model also demonstrated increases in queue lengths in the PM peak period along the northern section of Cowpasture Road adjacent to the site.

Further to discussion with RMS regarding the outcomes of this scenario, it was not considered necessary to undertake a SIDRA intersection analysis of this Scenario.

Scenario 3: Existing Base Case + Growth
As discussed above, this Scenario was not assessed due to the considerable delays and queues measured in Scenario 2. This approach was confirmed with the RMS.

Scenario 4: Existing Base Case + Development
The estimated traffic generation and development yield were superimposed onto the existing Base Case network.

The model was run and indicated only minor increases in delays during the AM peak period. During the PM peak, increased delays and queues were recorded along the northern section of Cowpasture Road extending from The Horsley Drive to the east of its the intersection with Victoria Street. The model also indicated an increase in queues and delays along Newton Street and within the development.

Options to Mitigate Impact

Based on the outcomes of the modelling, options to upgrades the existing network were investigated with the aim of maintaining the existing LoS and delays through the network. The options tested included:

1. Provision of an additional access from The Horsley Drive to facilitate entry movements by southbound vehicles accessing the site.
2. Extension of the existing left turn auxiliary lanes on the Horsley Drive for vehicles turning east into Cowpasture Road.
3. Limiting exit movements from the proposed development to left out only onto Cowpasture Road.
4. Signalisation of the proposed future site access of Cowpasture Road and Newton Road.

Options 1 and 2 were simulated and resulted in no measureable improvement in the operation of the network during either the AM or PM peak periods. Accordingly, the implementation of these options is not recommended.

Option 3 investigated the impacts resulting from limiting all exit movements form the development to left out only onto Cowpasture Road. This requires all vehicles accessing the Horsley Drive undertake a U-Turn manoeuvre at the intersection of Cowpasture Road and Victoria Street.

This option had no major impact on the AM peak period which operated generally as per the existing base case scenario however resulted in considerable delays southbound on Victoria Street during the PM peak period. This option has not been adopted.

Option 4 involved the signalisation of the existing roundabout controlled intersection of Cowpasture Road with Newton Road. The objective of this was to coordinate the major movements in the AM and PM peaks to reduce queues within Cowpasture Road.

The key geometric and operational characterises of this option included:

- Provision of a 120m right turn bay within Cowpasture Road to facilitate northbound traffic turning east into Newton Road
- Provision of a 50m long right turn bay within Cowpasture Road to facilitate southbound traffic on Cowpasture Road turning west into the site
- Signalised pedestrian crossings on the northern, eastern and western approaches.

- The banning of all right turn and through movements from Newton Road onto Cowpasture Road
- The banning of all right turn and through movements from the proposed site access
- Signalisation of the existing left turn slip lane from Cowpasture Road to The Horsley Drive

The signalisation of this movement resulted in improved operation and reduced queues and was therefore adopted.

As outlined above, the application seeks to ban the existing right turn movement from Newton Road onto Cowpasture Road. This is considered acceptable for the following reasons:

- This movement currently accommodates a low volume of vehicles surveyed as 17veh in the AM peak and 30veh in the PM peak.
- A number of alternate routes are available and as such coupled with the low volumes will have a negligible impact on the operation of existing intersections
- The banning of this movement results in a considerable improvement in the operation of the intersection and reduced delays to vehicles currently using Newton Road to that which would occur should the movement be retained.
- The proposed intersection geometry and banning of the right turn movement from Newton Street has been discussed with Council officers and is supported in principle, subject to review of critical data by Council.

The removal of the right turn movement is considered supportable based on the overall network improvements and delivers a significant network improvement with no unacceptable consequences. As such this has been included in all subsequent modelling.

Impacts following implementation of Option 4

Following the implementation of Option 4 mitigation measures as outlined above, the proposal will have a minor impact on the overall delay and travel speeds within the network under both the AM and PM model. This level of delay is however considered supportable having regard for the congested nature of the network in both peaks.

The Intersection LoS is generally maintained in all scenarios with the exception of the following:

- The Horsley Drive & Cowpasture Road (signals) – LoS has reduced from “D” under existing conditions to “E” under the future scenario. This is however misleading as the reduced LoS is associated with only a minor deterioration in delays. In this regard delays during the AM peak period have increased from 55.5sec to 57.7sec which represents an increase of only 2.2sec per vehicle.

- Cowpasture Road & Newton Road – The LoS at the intersection of Cowpasture Road and Newton Road has reduced from “A” in the under the existing scenario to “B” in the future. This is expected due to the signalisation of the intersection under the future scenario.

The proposed development and the signalisation of the intersections of Cowpasture Road and Newton Road under Option 4 has only a minor impact on the network during the AM Peak Period. It is reiterated that the signal timings at some intersections were varied to accommodate the additional demand however these variations were generally to the detriment of the minor roads with priority given to the major through movements.

In this regard, major northbound and southbound movements are generally unchanged or improved with a maximum increased delay of 8 seconds for vehicles travelling from Cowpasture Road, south of the Horsley Drive to the M7 Motorway.

Some additional delays to movements from Ferrers Road were recorded however this was to improve the overall operation of The Horsley Drive. Travel times for vehicles traversing Victoria Road and Newton Road also increased, however this is to be expected as priority at the proposed intersection was given to the northbound vehicles to ensure queues did not extend south to The Horsley Drive.

Overall, a reduction in the overall times through the network will result. The major northbound and southbound movements are generally unchanged (within 15 seconds of the base case scenario) however the signalisation has resulted in a considerable reduction in travel times for vehicles using Newton Road. The movements from Newton Road decreased by as much as 45% or 2:56 minutes from those recorded in the base case model. These reductions are a result of the improved ability for vehicles to exit Newton Road which was not previously possible due to the inability to coordinate major movements.

Parking

As outlined above, the Application relates to bulk earthworks, infrastructure and subdivision only; however for the purpose of assessment a nominal gross floor area (GFA) of 95,400m^2 has been adopted to assess the parking requirements of the future development.

In this regard the Fairfield Council's DCP 12 stipulates a rate of 1 space per 80m^2 for Warehouse uses. This compares to a rate of 1 space per 300m^2 suggested for adoption in the RMS Guide to Traffic Generating Developments. Accordingly, having regard for the objectives of state planning policy as well as other precedents, a rate of 1 space per 200m^2 is proposed.

Using Council rate (1.0 spaces per 80m^2), 1,193 spaces would be required.

Under RMS guidelines, (1.0 spaces per 300m^2) 318 spaces would be required.

It is evident that the parking requirements under Council's DCP are excessive and represent a 375% increase over and above the suggested rates of the RMS. At the proposed rate of 1.0 spaces per 200m^2, 477 spaces would be required.

It is noted that the rate of 1 space per 200m^2 (or less) has also been adopted in other industrial precinct subdivisions within the Western Sydney Employment Area (WSEA) including areas within the Fairfield Council LGA.

The provision of parking in accordance with Council's DCP would result in a considerable oversupply of parking and would generally encourage the use of private vehicles rather than alternative transport modes.

It is noted that large industrial operations have demonstrated lower levels of employees to historical levels generally resulting from improvements in technology and critical infrastructure. This is particularly evident in larger industrial developments within the M7 Business Hub and Erskine Park Industrial Precinct, where parking has been provided at rates less than those required by Council with no impact on the availability of on-street parking.

The rates required by Council reflect parking requirements for smaller industrial developments (1,000-2,000 GFA) where the ratio of floor area to employees is higher than that which generally occurs in larger developments such as the one proposed.

Accordingly, the provision of parking at the proposed rate of 1 space per 200m^2 of GFA is considered sufficient to accommodate the likely parking demands for the overall site without any reliance on on-street parking as demonstrated by numerous large industrial subdivisions within both Council's LGA and the greater WSEA. Based on this rate, 477 would be required.

Alternative Transport

The following sections provide an overview of the existing alternative transport facilities and potential improvements that are available. It is envisaged that future improvements public transport facilities will assist in achieving a shift from private car usage.

- Bus
  The site benefits from bus services which operate along The Horsley Drive and Cowpasture Road, with two bus stops located immediately adjacent to the south-eastern site boundary. The 813 and 814 bus services provide connections to Fairfield Railway Station which is located approximately 8

kilometres to the south-east of the site. It is however noted that these service are relatively infrequent and generally operate only during Peak periods.

The Horsley Drive Business Park will itself result in a demand for additional bus services and frequencies. This demand will increase when account is taken of the cumulative effect of the proposed development and development of the WSEA more generally. The provision of these additional bus services and frequencies will therefore improve the accessibility of the site and promote a reduction in car dependency, in accordance with the State Planning Policy. In this regard, service improvements can be expected to respond to a demonstrated increase in demand over time.

Existing bus network services are shown in **Figure 22**.

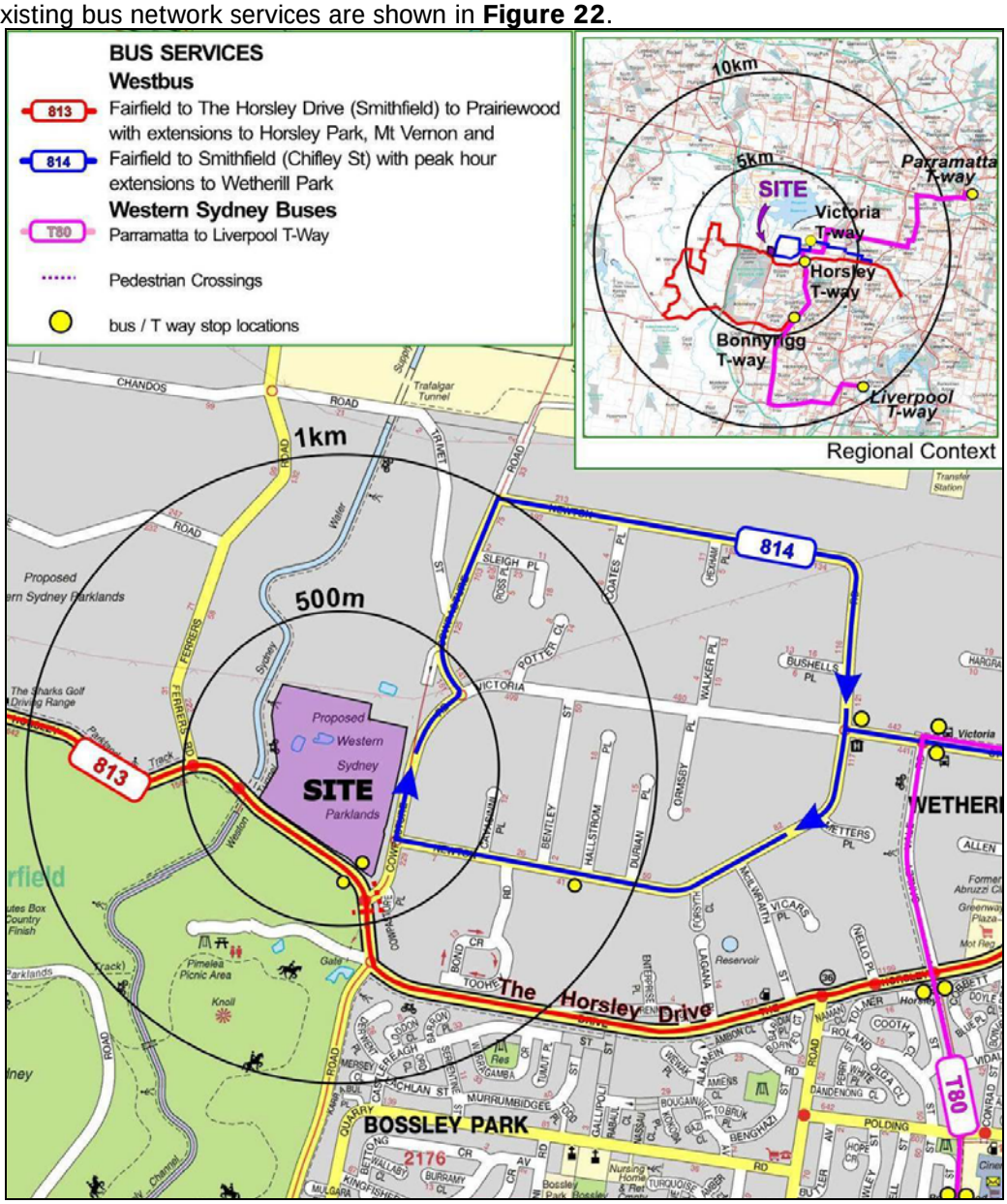

Figure 22 – Bus Network Services (Source: Traffix, 2012)

- Rail

  The Fairfield Railway Station is located approximately 8 kilometres to the south-east of the site. Direct connections between Fairfield Railway Station and the site are available using the 814 Westbus service.

  The Metropolitan Transport Plan produced in 2010 incorporates a ten year funding program which intends to provide a $4.5 billion Western Express City Rail Service. This service would significantly reduce commuting times between Western Sydney and the city. The project includes the construction of a new 5 kilometre tunnel linking Central Station with Redfern Station, Town Hall and Wynyard. This will allow express services from Richmond, Penrith, Blacktown and Parramatta to the Sydney CBD.

  This will have a considerable impact on the accessibility of the subject site, noting the existing bus connections along Cowpasture Road and The Horsley Drive, with Fairfield Railway Station. It is envisaged that a consolidated regional assessment would be undertaken as part of this proposal to ensure that improved services are provided to employment areas within Greater Western Sydney.

  Existing rail network services are shown in **Figure 23**.

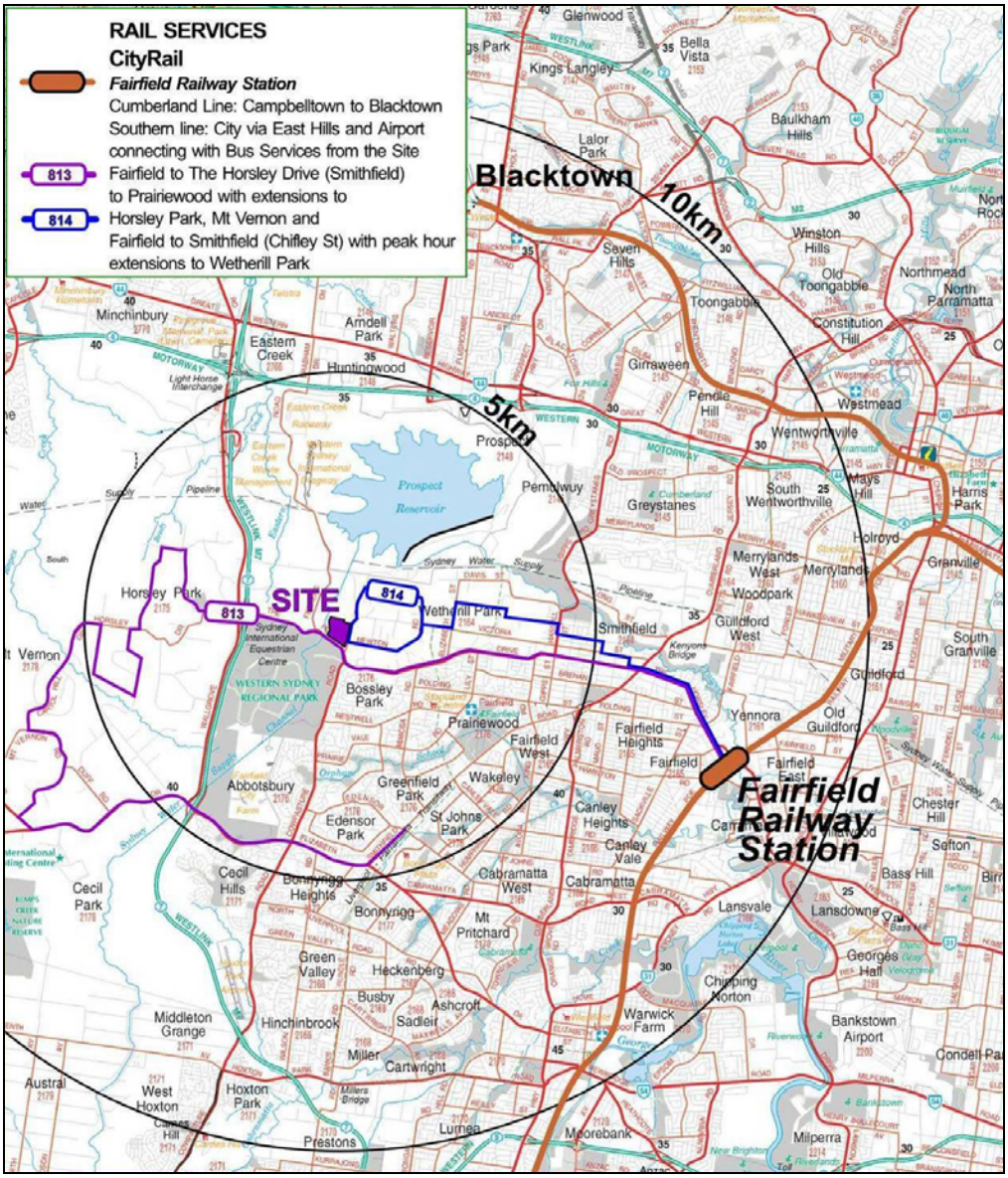

Figure 23 – Rail Network Services (Source: Traffix, 2012)

- Cycle
  The site is well located with respect to the existing cycle network which links the site to the major residential land areas to the east. A major north-south cycle route also exists directly to the west of the site linking it with Eastern Creek and the regional cycle network.

  Cycleway / shared path upgrades are proposed by the RMS on Lenore Lane and Erskine Park Link Road (Northern Link Road) in Erskine Park and on The Horsley Drive. These will provide links to the Horsley Drive Business Park, existing commercial centres, the M7 motorway and provide a framework for the future cycleway development. It is noted that future cycleway development is dependent on future road construction and progressive development of the region.

  In particular the existing M7 shared path which runs parallel to the M7 motorway between Prestons and West Baulkham Hills with an overall length of 40 kilometres provides extensive opportunities to implement future cycle networks in accordance with the objectives of the NSW Bike Plan. There are existing connections in the vicinity of the site at The Horsley Drive, Cowpasture Road, Chandos Road, The Austral Bricks access road, Wallgrove Road and Old Wallgrove Road. These connections provide a basis for potential future cycleway upgrades linking the WSEA.

  The development proposes a link to the existing cycleway / shared path which is runs along the western side of the site. This link will further develop the cycleway / shared path network in the locality and promote alternative modes of transport.

  The NSW Government's Metropolitan Plan for Sydney 2036 published in 2010, outlines the following objectives:

  - The RMS in cooperation with local government is to continue to upgrade walking and cycling facilities, and
  - That future planning of walking and cycling networks should be developed to ensure appropriate linkages with both existing and proposed public transport routes with the aim of improving overall network connectivity.

  These objectives have been adopted in the NSW Bike Plan (2010) which outlines a ten-year bicycle infrastructure implementation schedule to improve the existing accessibility to local and regional bike networks. The plan states the RMS will provide on an average $5 million in 50/50 funding each year for the upgrade of cycleways and shared paths to local Councils. Additionally, the NSW Bike Plan seeks to deliver cycleways as an integrated component of road upgrades.

  The provision of adequate bicycle facilities including bicycle lockers / parking and showers will further encourage the use of the existing networks and will assist in the reduction of trips associated with private vehicles for the journey to work.

  The existing cycleway network is shown in **Figure 24**.

- Walk
  As is the case with cycleways, the NSW Government's Metropolitan Plan for Sydney 2036 seeks to improve local walking networks. Particular emphasis is placed on aligning pedestrian paths with existing public transport routes and providing pedestrian paths as an integrated part of road upgrades.

  Pedestrian facilities in the locality are comprised of short sections of walkways which are generally only provided adjacent to the signalised and roundabout controlled intersections of The Horsley Drive and Cowpasture Road. In this regard, the existing walkway facilities provide a poor level of amenity for pedestrians.

The development will generate relatively low levels of walking demand within the Horsley Park area both to and from the site. Whilst the intention of this assessment is to encourage alternative modes of transport and specifically reduce dependency of vehicle users, it is evident that pedestrian linkages will not have any significant bearing on this objective, but will largely improve local accessibility.

Nevertheless, it is acknowledged that footpaths will be provided throughout the development and along The Horsley Drive and Cowpasture Road. In addition to this, signalised pedestrian crossings will also be provided across the northern, eastern and western approaches to the proposed upgraded intersection of Cowpasture Road and Newton Road.

It is essential that the location of the Horsley Drive Business Park be placed into context with regard to pedestrian connectivity. Although it is unlikely that there will be any significant walking trips in the short to medium term, the construction of the pedestrian paths throughout the site, along The Horsley Drive and Cowpasture Road, will provide a link to the existing paths in the locality and provide a more integrated network. These facilities will also provide a safe path for pedestrians between the Horsley Drive Business Park and Bus Stops on The Horsley Drive.

Figure 24 – Cycleway Network (Source: Traffix, 2012)

Recommendations
The analysis demonstrated that whilst the network operates at a level approaching capacity, the additional generation of the site can be accommodated subject to the implementation of including:

- Signalisation of the existing roundabout controlled intersection of Cowpasture Road and
- Newton Road
- Provision of a 120m right turn bay within Cowpasture Road to facilitate northbound traffic turning east into Newton Road
- Provision of a 50m long right turn bay within Cowpasture Road to facilitate southbound traffic on Cowpasture Road turning west into the site
- Signalised pedestrian crossings on the northern, eastern and western approaches
- The banning of all right turn and through movements from Newton Road onto Cowpasture Road
- The banning of all right turn and through movements from the proposed site access
- Signalisation of the existing left turn slip lane from Cowpasture Road to The Horsley Drive

To promote alternative travel choices, the Traffic Impact Assessment recommends consideration of a Workplace Travel Plan (WTP) for future development. WTP's should be issued to all staff and provided in common areas and should include a Travel Information Pack as part staff induction procedures.

- The following initiatives should be considered:
- Local bus network maps and timetables.
- Rail network maps and timetables.
- Cycle route maps.
- Location of critical services within walking distances.
- Taxi contact numbers.

In addition opportunity exists to implement initiatives to further reduce car dependency. Initiatives implemented at similar developments which have resulted in a demonstrated reduction in car trips include:

- Promoting a car-pooling scheme for work related journeys.
- Staff sharing scheme for fleet vehicles.
- Use of taxis for work related journeys.
- Provision of a mini-bus facility and interchange area.
- Possible shuttle bus services from Fairfield Railway Station.
- Providing staff with a discount or subsidy on public transport costs.
- Employee cycling allowance.
- Provision of on-site facilities, which may include change rooms, showers, lockers and storage facilities, to encourage cycling and walking as a mode of transport.

The implementation of a shuttle bus services from Fairfield Railway Station or bus interchanges and the encouragement of car pooling is a realistic method of reducing private vehicle usage given the overall accessibility to public transport. It is therefore recommended that these services be encouraged.

6.10 SEDIMENT, EROSION AND DUST CONTROL

The underlying geology of the study area consists largely of shales of the Wianamatta Group (Ashfield, Bringelly and some Minchinbury), which overlies Hawkesbury Sandstone. Quaternary alluvial deposits consisting of fine-grained sand, silt and clay are associated with parts of the larger creek systems in the Fairfield LGA.

According to the 1:100,000 Penrith Soil Landscape Series Sheet 9030 (Third Edition), the site is situated in the Luddenham Erosional Landscape, which is characterised by undulating to rolling low hills on Wianamatta Group Shales often associated with Minchinbury Sandstone. The shallow (<100cm) soils consist of dark Podzolic Soils on crests, moderately deep (70-150cm) soil consists of red podzolic soils on upper slopes

The Penrith 1:100,000 Geological Series Sheet 9030 indicates that the site is underlain by Bringelly Shale of the Wianamatta Group. This geology typically consists of shale, carbonaceous claystone, claystone, laminate, fine-medium grained lithic sandstone, rare coal and tuff

Topsoil was recorded to depths of 0.3 - 0.5m during the geotechnical investigations undertaken by WSP (**Appendix 10**). The soil stratum was identified as silty clay topsoil to 0.5m bgl underlain by high plasticity residual silty clays. Weathered shale bedrock was identified in all locations with the exception of BH5 which was underlain by sandstone. The bedrock improved in quality with depth

Groundwater was measured at between 6.27m and 17.52m bgl across the 9 wells on Lot 10 DP 879209

Ground water in the vicinity of the monitoring wells was determined to flow in a southeasterly direction Shallow groundwater across the remainder of the site is expected to follow local topography and flow towards the site boundaries

The A1 and A2 horizons of the Luddenham soil landscape comprise friable loams and hard-setting clay loams respectively, ranging from slight to strong acidity. Topsoil depths vary according to the landform element on which they occur, and erodibility is classed as moderate. The topsoils (A and A2 horizons) of the Blacktown soil landscape are strongly acidic loams, clay loams and silty clay loams. These soils are shallow to moderately deep (<100cm) with a high fine sand and silt content; and high to moderate organic content. They can be hard setting and have moderate erodibility.

The site is predominately cleared of vegetation and is presently covered with pasture grasses reflective of the long agricultural landuse history of the place as detailed in the following sections of this report. Little of the original vegetation on the site remains due to historic European landuse practices, and the property is today characterised by some timber regrowth, and a significantly degraded understorey groundcover that is inter-mixed with introduced weed species such as lantana and blackberry.

The 1906 and 1925 plans mark the watercourse as running through (at least in 1925) lightly timbered land. By 1930 virtually all the timber and vegetation across the entire site has been cleared, excluding a small number of isolated trees. The exception to this is within Lot 23 to the north of the study area, and within one defined (square) parcel of land within Lot 28 on the south eastern boundary of the site fronting Cowpasture Road. By 1961 the margins of the creekline are largely devoid of vegetation excluding isolated regrowth.

The meandering nature of the watercourse channel, whereby water-flow and direction has changed at different times, most likely during periods of prolonged rain, and which has been exacerbated by the low-lying nature of some of this land and its cleared nature. The line of the creek can be traced in more recent aerial images that are most easily discerned on the basis of changes in the colour and density of vegetation relative to surrounding margin areas. However, in many locations this has been obscured by past market gardening activities.

Site investigations identified that the exposed soil profiles across the more elevated topography within the centre of the property were found to be relatively shallow, and in places, considerably disturbed from past agricultural and building activities.

The majority of the land within the study area has been intensively farmed for over 70 years and displays extensive evidence for agricultural furrowing and the excavation of farm dams, drainage lines, and grading for water run-off control.

The proposal will modify the terrain further than previously undertaken including the realignment of overland flow paths in order to facilitate the development. Costin Rose Consulting has prepared an Erosion and Sediment Control Plan (ESCP) as part of the Civil Engineering Report attached as **Appendix 6**.

The ESCP is conceptual only providing sufficient detail to clearly show that the works can proceed without undue pollution to receiving waters. A detailed plan will be prepared once consent and prior to construction certificate being issued. To minimise land disturbance and associated erosion and sedimentation impacts, strategies have been developed for the proposal as outlined in **Table 9**.

TABLE 9 – Erosion and Sediment Control Strategies	
Element	***Conditions / Comments***
Construction areas	Limited to 5 (preferably 2) metres from the edge of any essential construction activity as shown on the engineering plans.
	All site workers will clearly recognise these areas that, where appropriate, are identified with barrier fencing (upslope) and sediment fencing (downslope), or similar materials.
Access areas	Limited to a maximum width of 5 metres.
	The site manager will determine and mark the location of these zones onsite. They can vary in position so as to best conserve existing vegetation and protect downstream areas while being considerate of the needs of efficient works activities. All site workers will clearly recognise these boundaries.
Remaining lands	Entry prohibited except for essential management works
General Erosion Prevention	Clearly visible barrier fencing shall be installed as shown on the plan and elsewhere at the discretion of the site superintendent to ensure traffic control and prohibit unnecessary site disturbance. Vehicular access to the site shall be limited to only those essential for construction work and they shall enter the site only through the stabilised access points.
	Soil materials will be replaced in the same order they are removed from the ground. It is particularly important that all subsoils are buried and topsoils remain on the surface at the completion of works.
	Where practicable, schedule the construction program so that the time from starting land disturbance to stabilisation has a duration of less than six months. Notwithstanding this, schedule works so that the duration from the conclusion of land shaping to completion of final stabilisation is less than 20 working days.
	Land recently established with grass species will be watered regularly until an effective cover has properly established and plants are growing vigorously. Further application of seed might be necessary later in areas of inadequate vegetation establishment.
	Where practical, foot and vehicular traffic will be kept away from all recently established areas.
	Earth batters shall be constructed in accordance with the Geotechnical Engineers Report or with as law a gradient as practical but not steeper than: ▪ 2H:1V where slope length is less than 7 meters ▪ 2.5H:1V where slope length is between 7 and 10 meters ▪ 3H:1V where slope length is between 10 and 12 meters ▪ 4H:1V where slope length is between 12 and 18 meters ▪ 5H:1V where slope length is between 18 and 27 meters ▪ 6H:1V where slope length is greater than 27 meters
	All earthworks, including waterways/drains/spillways and their outlets, will be constructed to be stable in at least the design storm event.
	During windy weather, large, unprotected areas will be kept moist (not wet) by sprinkling with water to keep dust under control. In the event water is not available in sufficient quantities, soil binders and/or dust retardants will be used or the surface will be left in a cloddy state that resists removal by wind.
General Pollution Prevention	Stockpiles will not be located within 5 meters of hazard areas, including likely areas of high velocity flows such as waterways, paved areas and driveways.
	Sediment fences will: a) Be installed where shown on the drawings, and elsewhere at the discretion of the site superintendent to contain the coarser sediment fraction (including aggregated fines) as near as possible to their source. b) Have a catchment area not exceeding 720 square meters, a storage depth (including both settling and settled zones) of at least 0.6 meters, and internal dimensions that provide maximum surface area for settling, and c) Provide a return of 1 meter upslope at intervals along the fence where catchment area exceeds 720 square meters, to limit discharge reaching each section to 10 litres/second in a maximum 20 year t_c discharge.
	Sediment removed from any trapping device will be disposed in locations where further erosion and consequent pollution to down slope lands and waterways will not occur.
	Water will be prevented from directly entering the permanent drainage system unless it is

	relatively sediment free (i.e. the catchment area has been permanently landscaped and/or likely sediment has been treated in an approved device). Nevertheless, stormwater inlets will be protected.
	Temporary soil and water management structures will be removed only after the lands they are protecting are stabilised.
Waste Management	Acceptable bins will be provided for any concrete and mortar slurries, paints, acid washings, lightweight waste materials and litter. Clearance service will be provided at least weekly.
Site Inspection and Maintenance	A self-auditing program will be established based on a Check Sheet. A site inspection using the Check Sheet will be made by the site manager: ▪ At least weekly. ▪ Immediately before site closure. ▪ Immediately following rainfall events in excess of 5mm in any 24 hour period. The self audit will include: ▪ Recording the condition of every sediment control device ▪ Recording maintenance requirements (if any) for each sediment control device ▪ Recording the volumes of sediment removed from sediment retention systems, where applicable ▪ Recording the site where sediment is disposed ▪ Forwarding a signed duplicate of the completed Check Sheet to the project manager/developer for their information
	A suitably qualified person will be required to oversee the installation and maintenance of all soil and water management works on the site. The person shall be required to provide a short monthly written report. The responsible person will ensure that: ▪ The plan is being implemented correctly ▪ Repairs are undertaken as required ▪ Essential modifications are made to the plan if and when necessary The report shall carry a certificate that works have been carried out in accordance with the plan.
	Waste bins will be emptied as necessary. Disposal of waste will be in a manner approved by the Site Superintendent.
	Proper drainage will be maintained. To this end drains (including inlet and outlet works) will be checked to ensure that they are operating as intended, especially that: ▪ No low points exist that can overtop in a large storm event ▪ Areas of erosion are repaired (e.g. lined with a suitable material) and/or velocity of flow is reduced appropriately through construction of small check dams of installing additional diversion upslope. ▪ Blockages are cleared (these night occur because of sediment pollution, sand/soil/spoil being deposited in or too close to them, breached by vehicle wheels, etc.).
	Sand/soil/spoil materials placed closer than 2 meters from hazard areas will be removed. Such hazard areas include and areas of high velocity water flows (e.g. waterways and gutters), paved areas and driveways.
	Recently stabilised lands will be checked to ensure that erosion hazard has been effectively reduced. Any repairs will be initiated as appropriate.
	Excessive vegetation growth will be controlled through mowing or slashing.
	All sediment detention systems will be kept in good, working condition. In particular, attention will be given to: a) Recent works to ensure they have not resulted in diversion of sediment laden water away from them b) Degradable products to ensure they are replaced as required, and c) Sediment removal, to ensure the design capacity or less remains in the settling zone.
	Any pollutants removed from sediment basins or litter traps will be disposed of in areas where further pollution to down slope lands and waterways should not occur.
	Additional erosion and/or sediment control works will be constructed as necessary to ensure the desired protection is given to down slope lands and waterways, i.e. make ongoing changes to the plan where it proves inadequate in practice or is subjected to changes in conditions at the work site or elsewhere in the catchment.
	Erosion and sediment control measures will be maintained in a functioning condition until all earthwork activities are completed and the site stabilised.
	Litter, debris and sediment will be removed from the gross pollutant traps and trash racks as required.

The sequencing of works will also be managed to manage water and soil disturbance. Each subsequent stage is not to be commenced until the previous one is completed. Stage 1 works are to be carried out in the following sequence:

1. Installation of stabilised site entry.
2. Installation of sediment fencing and construction of catch drains.
3. Construction of diversion channels
4. Construction of sedimentation basins as nominated on plan.
5. Diversion of existing overland flow path around the works.
6. Grading of site to Bulk Earthworks Levels
7. Construction of estate road and stormwater drainage lines.
8. Finalisation of construction of OSD basins.
9. Sediment basins on development lots are to remain until such time that the disturbed areas are stabilised and/ or building works take place.

Flood and stormwater management is discussed in detail in **Section 6.15** below.

The Construction Management Plan prepared by Hansen Yuncken (**Appendix 18**) notes that a Dust Control Plan will be implemented for the proposal.

The Dust Control Plan will aim to minimise the amount of dust generated, reduce the nuisance that dust may cause to the community and site personnel and ensure the dust is controlled in accordance with the EPA guidelines so as to minimise the impact on air quality.

To ensure that all site personnel adequately control the creation and spread of dust, the Contractor may monitor the site workers by:

- Visually viewing site works and utilising digital photos to record and witness dust control procedures during random site inspections.
- Undertaking audits on a regular basis to review dust control procedures and practices.
- Reporting on a monthly basis to the Project Control Group. Such reports to include:
    - Relevant Trade Contractor reports for the period.
    - Other Important information / events that generated dust and how it was
    - controlled (if not covered by the Trade Contractor reports).
    - Overall assessment of dust control practices and procedures for the month.

During dry conditions, on-site construction activities have the potential to generate dust. The following activities are those identified as a specific potential source of dust generation:

- Earthmoving activities including clearing of topsoil;
- Movement of vehicles and construction machinery;
- Stockpiling of materials; and
- Build-up of material around erosion and sedimentation controls.

To reduce the environmental nuisance of dust generation, Trade Contractor's and site staff should implement the following measures:

- In the event of dust levels on site becoming a nuisance or unacceptable, introduce controls such as ground watering.
- Cover trucks transporting material from the site immediately after loading to prevent wind-blown dust
- Where or whenever necessary, erect appropriate barriers to control dust generated as a result of construction-associated works.

6.11 FLORA AND FAUNA

An Ecological Issues and Assessment Report prepared by SLR is attached as **Appendix 14**. The findings are summarised as follows:

Existing Environment

The subject land is located within an old rural-agricultural and rural-residential area in western Sydney, much of which has been developed into new industrial and residential suburbs, such as Wetherill Park industrial precinct to the east and Bossley Park to the southeast. Accordingly, much of the land at this location is already largely cleared, either as a result of the past agricultural and rural-residential land uses or for the present residential and industrial developments.

SLR notes "*there are no outstanding natural features on the subject land.*"

Flora

The SLR Assessment notes that the National Parks and Wildlife Service (NPWS) vegetation mapping have identified the majority of the subject land as containing 'no native vegetation', and this is confirmed by aerial photography and site inspection. The only native vegetation mapped by the NPWS within the subject land is a small patch of Shale Hills Woodland with less than 10% cover near the northern boundary.

Site investigations identified vegetation to be scattered and highly disturbed and, in some instances, no longer present at all. The only areas of native vegetation on the subject land include:

- a patch of regrowth mixed eucalypt woodland, with a Blackthorn understorey, in the northern centre of the site; and
- a patch of Grey Box woodland along the eastern boundary of the site.

The 'Shale Plains Woodland' community mapped by NPWS as being present on the subject land constitutes a critically endangered ecological community (as listed in the TSC Act and EPBC Act) known as Cumberland Plain Woodland. Ground-truthing of the NPWS (2002) vegetation mapping has determined that two small patches of vegetation on the subject land exhibit some characteristics of the CPW community where some species characteristic of the critically endangered ecological community known as Cumberland Plain Woodland, were amongst the trees present. However, of a total of 66 species identified, only 23 native species were recorded, along with 43 exotic species.

Although individual species within the Cumberland Plain Woodland (CPW) community were identified, the Assessment Report concluded that the vegetation on the subject land does not constitute the Cumberland Plain Woodland community given the scarcity of native groundcover species (with only very small patches of native grasses or forbs), and the dominance of introduced pasture species and weeds in the groundcover layer, none of the vegetation present on the subject land is regarded as an example of the community. Even if small patches were deemed to constitute the Cumberland Plain Woodland community, they cannot be regarded as a viable local occurrence of that community, and are of no conservation or biodiversity value.

No other threatened species of flora were recorded during the recent site inspection. Given the highly disturbed nature and artificial condition of the vegetation across the subject site and in its vicinity, and the long history of management (fertilisers, irrigation and weed control), no suitable habitat for any such species is present. The subject site could theoretically provide some potential habitat for two species, being the Downy Wattle *Acacia pubescens* and the Spiked Rice-flower *Pimelea spicata*.

Despite dedicated searches of the limited areas of native vegetation on the subject land at Smithfield, and of the land generally, no "*threatened species*" of flora were recorded during the recent site inspection. Similarly, no endangered populations of any flora species listed in the TSC Act were recorded on the subject land.

Fauna

In terms of habitat, the subject land provides only very limited (and often artificial such as drainage/dams) habitat opportunities for native fauna, threatened or otherwise, and is unlikely to be utilised by any fauna groups other than highly mobile species and/or habitat generalists (such as some bats and birds). Only 12 native species (8 birds, 2 amphibians and 2 reptiles) were observed on the site, all of which are relatively common to abundant in urban and peri-urban environments.

There are no other habitat features or resources present which are of any particular significance for any native fauna, threatened or otherwise. The nature, condition and context of the subject land render it of value only for abundant, widespread, cosmopolitan and adaptable species of native fauna, and of little or no relevance for any threatened species.

In particular, the subject land does not provide any particularly suitable habitat for the Cumberland Plain Land Snail, and no specimens of this threatened Snail were recorded on the land.

No threatened species were recorded on the subject land during the site inspection at Smithfield, although an individual of the 'vulnerable' Little Eagle was sighted soaring over the land. Further, given the highly disturbed nature of the subject land and the general locality, it is highly unlikely that any such species would occur on a frequent or regular basis.

The Ecological Assessment concludes:

> *"The proposed development on the subject land at Smithfield is not "likely" to impose a "significant effect" upon any "threatened species, populations or ecological communities, or their habitats", pursuant to Section 5A of the EP&A Act.*
>
> *Even if some threatened biota do use the subject land, it is not likely that the vegetation present would support a "viable local population" of any such biota in isolation. It is not likely that any such "population", nor indeed any individuals of any such species, would be dependent or reliant solely (or to any relevant extent) on that portion of the subject land proposed for development activities.*
>
> *The CPW community is not present on the subject land at Smithfield because of the highly degraded nature of the vegetation which is present. Given those circumstances, there will be no adverse impact (or "significant effect") imposed upon the CPW community (which does not exist on the "subject land").*
>
> *The 'precautionary' Section 5A Assessments of Significance prepared with respect to the CPW community (Appendix F) has concluded that even if some vegetation on the subject land did constitute the CPW community, the proposal would not result in a "significant effect" on that CEEC. Similarly, there is not "likely" to be a "significant effect" on the Little Eagle as a result of the proposed development.*
>
> *There is no requirement for the preparation of a Species Impact Statement (SIS) for the proposed development at Smithfield."*

Further, the assessment concludes that the subject land at Smithfield is of no relevance with respect to any threatened or migratory biota listed in the *Environment Protection & Biodiversity Conservation Act 1999*, or any other Matter of National Environmental Significance.

Recommendations
Notwithstanding the minor impacts on the natural environment which would ensue from development of the subject land at Smithfield as proposed, appropriate impact amelioration and environmental management measures would be anticipated (as a standard practice) for implementation as part of any future development of the land.

Specific measures in this regard which either have been incorporated into the development design or which should be included as *Conditions of Consent* should include:

- *the management of stormwater discharge volumes and water quality from the development area, both during construction activities and following completion and occupation of the site, according to current 'best practice' and 'Water Sensitive Urban Design' principles;*
- *the use of sediment fences and other appropriate control measures during construction activities to avoid erosion and sediment discharge or the discharge of other pollutants or contaminants;*
- *the implementation of a management regime during the construction process to ensure that no other wastes (including building rubble, garbage, contaminants, fuels, oils, paints or other chemicals) are discharged from the construction area, and that all such wastes and contaminants are contained within the construction footprint, and are appropriately managed; and*
- *the use of appropriate plant species in the landscaping of roads and public areas to avoid invasive species in the adjoining landscape.*

6.12 UTILITIES

Hansen Yuncken has prepared a Utilities Report and Infrastructure Management Plan for the proposed development (**Appendix 16**). This Report addresses the existing capacity of services to the Site, required augmentation to service the Site and the staging by which this will be achieved. It is noted that the servicing strategy is less onerous than many other State Significant Developments, given the location of the Site is located directly adjacent to an existing industrial precinct and in most cases the services have existing capacity readily available.

The services are considered as follows:

Water
The following existing water mains are located adjacent to the Site:

- 375mm on western side of Cowpasture Road.
- 250mm on eastern side of Cowpasture Road.
- 250mm on northern side of The Horsley Drive.
- 375mm on southern side of The Horsley Drive.

Investigation into the existing water services and the proposed use on the Site of General Industry confirms the lines will be sufficient to provide a potable water supply.

It is noted that Sydney Water was consulted regarding the need for an 'Integrated Water Management Plan' under DGRs. Given the application relates only to subdivision and associated infrastructure works and were advised the following by David Demer (Growth Officer) by email on 29 May 2012:

> *"... if it's for subdivision approval, then a Water Management Plan would be premature. If the Environmental Assessment includes a subdivision layout plan, intended use, scale/size of the future development, and any anticipated connection points to our systems that would help us to assess water consumption and sewage discharge quantities. This is the type of information you may be including in your EA anyway, so it is not necessary for you to prepare a specialised Water Management Plan."*

The Stormwater Management Plan addresses water sensitive urban design (WSUD) and water conservation measures.

Sewer

The following existing sewer mains are in close proximity to the Site:

- 300mm sewer located on a property across the road to the east of the Site, on the north-east corner of Cowpasture and Newton Roads, known as 205 Cowpasture Road.
- 375mm sewer located on the corner of Cowpasture Road and Victoria Streets.

For the purpose of waste water servicing provision, the Site consists of a northern and southern catchment. The southern catchment of approximately 10.5 hectares will drain to the existing 300mm sewer main at 205 Cowpasture Road subject to consent from the lot owner (required prior to construction) and will be included in Stage 1.

The northern catchment will drain to an existing 375mm sewer located at the corner of Cowpasture Road and Victoria Street. The existing sewer is expected to be sufficient to adequately cater for the balance of the development and this will be incorporated into Stage 2.

Existing mains have capacity to service the Site based on a standard General Industry sewer requirement.

Electricity

Connect Infrastructure was engaged to investigate the electrical services and found the existing zone substation located at Victoria Street near Cowpasture Road, approximately 300 metres to the north-east of the Site, has sufficient capacity to service the proposed development. Based on consultation with Endeavour Energy, the Trust will submit an application to secure an allocation of electrical supply and be responsible for the installation and funding of the "Connection Assets" in accordance with relevant terms and conditions and authorities.

The provision of electrical services will require delivery of two 11kV feeders and cross feeder ties from Endeavour Energy's West Wetherill Park Zone Substation, located at the corner of Victoria Street and Potter Close.

In relation to electrical supply, Stage 1 of the IW will involve the delivery of a feeder line running south along Cowpasture Road to enter the estate along the proposed access road. Stage 2 of the IW will see delivery of a feeder running west in an alignment similar to the electrical easement and service lots from the north.

Telecommunications

There is an existing telecommunications line along the eastern side of Cowpasture Road which includes three connections across the road. Additionally lines exist on the northern and southern sides of The Horsley Drive and a line is extended down from the Cowpasture Road north of Victoria Street.

The National Broadband Network Company is yet to determine the timing of the rollout in the Wetherill Park precinct although standard telecommunications will be readily available once the development progresses.
The proposed extension of the telecommunication lines is likely to run from near Newton Road directly along the access road but formal advice is required from Telstra.

Gas

An existing main (1,050kPa) is located at the corner of Cowpasture Road and Newton Road and will provide source for the Site. It is not likely the gas would be connected until a user that requires it commits to the Site and in that instance, associated costs may be provided by the provider/retailer of the gas pending the quantity required. This will also affect the gas servicing strategy based on which lot the user operates from.

6.13 STAGING

The proposal is to be developed over three (3) stages as indicated in **Figure 7** above.

6.14 CONTRIBUTIONS

See **Section 4.4.6** and **4.4.7** for detail review of Contributions applicable to the proposal.

In summary, no contributions are applicable under the *Direct (s94) Development Contributions Plan 2011.* Contributions are applicable under the *Indirect (s94A) Development Contributions Plan 2011*.

6.15 FLOOD AND STORMWATER DRAINAGE MANAGEMENT

Costin Roe Consulting has designed the flood and stormwater management system to be implemented for the new estate. The Civil Engineering Plans and accompanying Report are attached as **Appendix 7** and **6** respectively. The civil engineering and infrastructure strategy for the site has been developed which provides a best fit solution within the constraints of the existing landform and proposed estate layout.

Details of the proposed flood and stormwater management design are summarised as follows:

Stormwater Management

- Overview
  In accordance with Fairfield City Council Engineering Guide for Development and generally accepted engineering practice, the piped stormwater drainage (minor) system has been designed to accommodate the 20-year ARI storm event (Q20). Overland flow paths (major) which will convey all stormwater runoff up to and including the Q100 event have also been provided which will limit major property damage and any risk to the public in the event of a piped system failure.

  Rainfall intensity Frequency Duration (IFD) data used as a basis for modelling for the 2 to 100 Year ARI events, was taken from Council's drainage policy with the calculation of the runoff from storms of the design ARI have been be calculated with the catchment modelling software DRAINS.

- Hydraulics
  Hydraulic calculations have been carried out utilising DRAINS modelling software during the detail design stage to ensure that all surface and subsurface drainage systems perform to or exceed the required standard.

  The calculated water surface level in open junctions of the piped stormwater system will not exceed a freeboard level of 150mm below the finished ground level, for the peak runoff from the Major System runoff. Where the pipes and junctions are sealed, this freeboard would not be required.

  The spacing of inlets throughout the site will be such that the depth of flow, for the Major System design storm runoff, will not exceed the top of the kerb (150mm above gutter invert).

  Dedicated flow paths have been designed to convey all storms up to and including the 100-year ARI. These flow paths will convey stormwater from the site to the estate road system to the temporary basins and adjacent creek.

- Drainage
  The proposed stormwater system consists of a major/ minor system which conveys surface water from roadways with provision for connection of individual development lots at strategic locations (i.e. rear lot easements or connection to street drainage).

The property essentially comprises two catchments with areas of 7.56Ha (Catchment C1) and 14.28Ha (Catchment C2). The site is split roughly through the bottom third by a peak and spur with falls to the north and south of the site.

Catchment C1 discharges to the south of the site at the intersection of The Horsley Drive and Cowpasture Road. Catchment C2 discharges to the north of the site via an overland flow path and three 900mm R.C.P. culverts located at the intersection of Cowpasture Road and Victoria Street.

Catchment C2 is part of a greater catchment of approximately 82Ha which drains to this point. The greater catchment comprises agricultural land and Parkland Trust land.

The two catchments will generally be kept at or near to the existing catchment breakup to ensure that pre and post development stormwater flows closely match each other.

Stormwater outlets are to consist of a reinforced concrete pipe and 'natural' energy dissipater. The outlet is to be aligned with the creek to remove the potential for bank scour and shall include rip rap energy dissipaters constructed in accordance with the Outlet Structures Guidelines as published by the Department of Water & Energy and The Blue Book. Details regarding the dimensions, rock size and scour protection can be seen on the Civil Engineering Drawings at **Appendix 7**.

- External Catchments
  The site in its undeveloped state is affected by overland flows from the west, upstream of the Sydney Water Supply Channel. Allowance has been made in the drainage network to convey the two external catchments in the drainage system.

  The southern most of the two catchments is located midway along the estate boundary Flows from this catchment will be piped and diverted through the site via a 2.5m wide easement. As overland flow from this catchment will be blocked from entering the site by the Sydney Water Supply Channel, only minor flows are required to be allowed at this location.

  Discharge from the northern of the two catchments is located 100m south of the north-western corner of the site via two 750mm R.C.P.'s. It is proposed to convey flows from this catchment via an overland channel around the northern extent of the development, crossing the estate road via a three 825mm R.C.P. culvert configuration and into proposed Basin 2 prior to ultimate discharge to the north of Cowpasture Road.

- On-site Detention
  The proposal seeks to limit the runoff discharged from private property into the underground piped drainage system. As part of the Director General's Requirements for the development, the OSD sizing is to be performed in consultation with Fairfield City Council.

  Although a departure from Fairfield City Councils adopted OSD policy (which requires post-development peak flows to be less than pre-development flows), Fairfield City Council Engineers have requested that the OSD strategy for the site be assessed using the principals outlined in document *WSUD: Basic Procedures for 'Source Control' of Stormwater*, by John R Argue. The strategy outlined in this document is to target not only reductions in peak flow from the development but also reduction in peak stormwater volume. This requires an assessment of the greater catchment and the location of the development within the catchment and respective time of concentrations and differing local and regional storm durations.

  To enable modelling, Fairfield Council has advised that the Wetherill Park Catchment has a time of concentration of 30 minutes, hence for outlet controls the basins must be sized for the critical local storm (2hours) and the 30minute duration storm.

The analysis show suitable flow attention for both proposed basins:

- For Basin 1, a total of 2,450m^3 of active storage will be provided with a maximum depth of 1.7m during the Q100 ARI storm event to maintain the flow attenuation.

- For Basin 2, a total of 5,000m^3 of active storage will be provided with a maximum depth of 1.03m during the Q100 ARI storm event to maintain the flow attenuation.

500mm freeboard above the maximum top water level will be provided to the embankments of Basin1 and 2.

In terms of Basin 2, due to the capacity and hydraulic characteristics of the receiving system downstream of the basin at the intersection of Victoria Street and Cowpasture Road, the effect from the development is actually beneficial to downstream flooding with a minor reduction in peak flows and flood levels with a marginal change in the overall outflow hydrographs.

- Stormwater Quality
  Fairfield City Council has nominated the requirements for stormwater quality to be performed on a catchment wide basis and in accordance with the Sydney Catchment Management Authority. These are presented in terms of annual percentage pollutant reductions on a developed catchment and are:

  - Gross Pollutants 90%
  - Total Suspended Solids 85%
  - Total Phosphorus 65%
  - Total Nitrogen 45%
  - Total Hydrocarbons 90%

  Development lots, verges and road areas are required to be treated by the Stormwater Treatment Measures (STM's). The STM's shall be sized according to the whole catchment area. The STM's for the development shall be based on a treatment train approach to ensure that all of the objectives above are met.

  Components of the treatment train for the estate development are as follows:

  - At minimum a vortech style gross pollutant trap will be located on each development lot prior to discharging into the estate stormwater system. This will ensure that the estate system is free from gross pollutants and some sediments and ensure that early onset sedimentation of the estate bioretention basin. This, at source, approach has been adopted over a larger end of line device so that each device can be specified based on individual use on each development lot; and
  - On-site detention/ bioretention basins will act as tertiary treatment for suspended solids and nutrients.

  The two (2) proposed bioretention basins which will be provided in accordance with industry best practice and the guidelines of the Monash University Facility for Advancing Water Biofiltration.

  The MUSIC model was chosen to model water quality using this treatment train. The water quality constituents modelled in MUSIC and of relevance to the proposal include Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN).

  It is noted that as Basin 2 is subject to flows from upstream catchments, source nodes (assuming a developed condition) were included to account for the additional volume of stormwater passing through the stormwater treatment device. Bioretention and gross pollutant trap nodes have also been used in the modelling of the development.

Additionally, as exact areas of land use are not know at this time, pollutants catchments breakdown for development lots have been modelled as following:

Estate Road	As per plan
Roof	50% of development lot.
Hardstand	50% of development lot

The MUSIC modelling predicts that the proposed treatment measures meet the requirements of the Sydney Catchment Management Authority and Fairfield Council.

The reduction rate is shown in **Figure 25** and expressed as a percentage and compares the post-development pollutant loads without treatment versus post-development loads with treatment.

	Source	Residual Load	% Reduction
Flow (ML/yr)	301	285	5.2
Total Suspended Solids (kg/yr)	54000	5070	90.6
Total Phosphorus (kg/yr)	108	29.7	72.6
Total Nitrogen (kg/yr)	689	378	45.2
Gross Pollutants (kg/yr)	7990	0.0	100.0

Figure 25 – Pollutant Reduction Rates (Source: Costin Roe, 2012)

- Stormwater Harvesting
  Rainwater harvesting is proposed for future development lots within this development with re-use for non-potable applications. Internal uses include such applications as toilet flushing while external applications will be used for irrigation. The aim is to reduce the non-potable water demand for the individual future developments in the range of 50-80%.

  Indoor and outdoor water demand and rainwater tanks sizing will be based on individual site requirements and form part of separate future development applications over these development lots in accordance with Fairfield Council requirements. Rainwater falling on roofs is soft, clear and generally low in microbial and chemical contamination. Any contamination of rainwater generally occurs during collection and storage. The use of simple and cost effective rainwater collection and treatment systems ensures reliable operation and water quality for non-potable use. It is envisaged that these systems would involve the following features:

  - In-line tanks for the collection and storage of rainwater.
  - At times when the rainwater storage tank is full rainwater can pass through the tank and continue to be discharged via gravity into the stormwater drainage system.
  - Rainwater from the storage tank will be pumped for distribution throughout the development in a dedicated non-potable water reticulation system.

- Maintenance and Monitoring
  The Civil Engineering Report outlines the recommendations for ongoing operation to ensure the systems implemented continue to operate as intended.

Flooding

The Flooding Assessment of the pre-development Q100 ARI event undertaken by Costin Roe, found that:

Peak flows from the catchment are in the order of 19m3/s and the 2 hour storm is the critical duration.
The culvert configurations have a capacity in the order of 11.5-13.5m3/s depending on the level of water in the adjacent 'basin' area.
Stormwater flows will overtop Cowpasture Road for storm durations greater than or equal to 1 hour. A maximum flow of 2.06m3/s can be expected in an overtopping event.
A maximum water surface level of 58.7m can be expected during the Q100 event. This equates to 200mm flow over Cowpasture road and 4300m^3 of active storage.

Based on the above assessment, it is recommended that a flood planning level of 59.2m be set for developments adjacent to the Cowpasture Road and Victoria Street Intersection.

This allows for a 500mm freeboard to the assessed flood level.

Following the development and implementation of the OSD basin, a minor reduction in flooding levels is expected. We furthermore note that, due to the restrictive nature of the receiving drainage network that there will be little or no change to the outflow hydrograph in a storm event. This means there will be no effect on downstream properties as a result of this development.

6.16 WASTE

Hansen Yuncken has a prepared a Construction Management Plan which includes waste management strategies to be undertaken (**Appendix 18**).

It is noted that prior to demolition works an assessment will be undertaken to investigate the existence of asbestos and other hazardous which may have been used as building materials. In the event such materials are identified, an inventory will be recorded and a qualified professional will be engaged to remedy the issues.

Contaminated materials will be managed in accordance with the Remediation Action Plan prepared by WSP Group (**Appendix 10**).

The Contractor will implement an assessment strategy which measures the volume of materials recycled, re-used or taken to landfill and carry out inspections to ensure waste management procedures are being implemented by site staff.

To ensure that all site personnel adequately control waste, the Contractor will monitor site staff by:

- Visually viewing site works and utilising digital photos to record and witness waste management procedures during random site inspections.
- Undertaking audits on a regular basis to review waste management procedures and practices.
- Reporting on a monthly basis to the Project Control Group.

To increase the environmental benefits of reducing waste, the following measures should be undertaken by the Contractor and site staff:

- Separate waste generated during the construction process into the appropriate recycling containers / bins provided.
- Return unnecessary and/or unwanted packaging back to the supplier so as they become aware that such packaging is not required.
- Promote participation in local and state authority waste reduction policies.

A detailed Waste Management Plan can be provided prior to the issue of a Construction Certificate.

6.17 HERITAGE

A combined *Aboriginal and European Archaeological & Cultural Heritage Assessment* (Heritage Assessment) that includes the outcomes of consultation undertaken with the local Aboriginal community for the project, an evaluation of the results of the site inspections, and a discussion of the Aboriginal and European archaeological and cultural heritage management conclusions has been prepared for the project by Dominic Steele Consulting Archaeology (**Appendix 15**).

The Heritage Assessment has been prepared in accordance with the following heritage recording, assessment and reporting guidelines and standards:

- Australia ICOMOS. 2002 (Revised). The Burra Charter. *The Australia ICOMOS Charter for Places of Cultural Significance*. Australia ICOMOS Inc.
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010a (September). *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. DECCW. Sydney.
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010b (September). *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. DECCW. Sydney.
- NSW Department of Environment, Climate Change & Water. (DECCW) 2010c (April). *Aboriginal Cultural Heritage Consultation Requirements for Proponents. Part 6 National Parks and Wildlife Act 1974*. DECCW. Sydney.
- NSW Heritage Office. 1996. NSW Heritage Manual. *NSW Heritage Office and the Department of Urban Affairs and Planning*. Sydney (revised 2002).
- NSW Heritage Office. 2001. Assessing Heritage Significance. *A NSW Heritage Manual Update*. NSW Heritage Office. Sydney.
- NSW Heritage Office. 2005. *Historical Archaeology Code of Practice*. NSW Department of Planning. Sydney.
- NSW Heritage Council.2008a. *Levels of Heritage Significance. Assessing Heritage Significance Supplement*. NSW Heritage Council. Sydney.
- NSW Heritage Council. 2008b. *Levels of Heritage Significance. Assessing Heritage Significance Supplement*. NSW Heritage Council. Sydney.
- NSW Heritage Office. 2009a. *Levels of Heritage Significance*. NSW Heritage Office, NSW Department of Planning. Sydney.
- NSW Heritage Branch. 2009b. *Assessing Significance for Historical Archaeological Sites and 'Relics'*. NSW Heritage Branch, NSW Department of Planning. Sydney.
- NSW Heritage Branch. 2009. *Guidelines for the Preparation of Archaeological Management Plans*. NSW Heritage Branch, NSW Department of Planning. Sydney.

The following Aboriginal and European heritage registers, lists, and schedules have been reviewed for the project.

- NSW Office of Environment & Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) Sites Register.
- NSW Heritage Council – State Heritage Register (SHR) & State Heritage Inventory (SHI).
- National Heritage List (NHL).
- National Trust of Australia (NT).
- Fairfield Local Environmental Plan (LEP) 1994 and Draft LEP 2011.
- NSW Roads & Maritime Services Heritage & Conservation Register.
- Sydney Water Heritage & Conservation Register.

The following Aboriginal community consultation has been completed for the project.

- The initiation of consultation with the local Aboriginal community with regards to the proposed subdivision and future development of the HDBP.

- The incorporation of the views and management recommendations that have been provided by the local Aboriginal community to inform this study.

Further details of all consultations undertaken for the project are provided in **Part E** above.

The outcomes of the Aboriginal and European cultural heritage management investigations, as well as recommendations that establish a framework for the protection of any documented and/or potential Aboriginal and European archaeological sites (or areas of potential cultural heritage sensitivity) relative to the proposed HDBP development, are outlined in Sections 6.18 and 6.19 below.

6.18 ABORIGINAL HERITAGE

The pre-Contact environment influenced both the availability of resources to Aboriginal people in the past, and strongly determines what types of archaeological sites are likely to be located (and/or will survive) when land is inspected to assess potential Aboriginal archaeological sensitivity in contemporary subdivision and development circumstances. Namely:

- The distribution and availability of resources (such as drinking water, plant and animal foods, stone materials used for artefact manufacture, and wood and vegetable fibres used for other tool production and maintenance needs) were influenced by the nature of soils, the composition of vegetation cover, and other climactic characteristics including temperature and rainfall.
- The location of different types of archaeological sites (such as open campsites, scarred trees, axe grinding grooves and rock engravings etc) are also influenced by the above factors, along with a range of other associated features which are specific to different land-systems and bedrock geologies.
- The nature and extent to which land has been subject to impacts as a consequence of post-Contact land use practices will define what types of Aboriginal archaeological evidence is likely to survive.

A search of the OEH AHIMS Sites Register (Search #68284) was undertaken. This search covered an area of approximately 1km by 1km that was centred on the subject land and revealed seven (7) registered Aboriginal archaeological sites within the local Horsley Park landscape.

Three (3) of these sites are open artefact scatters, and are recorded to comprise small numbers of flaked stone artefacts, and three (3) other consist of isolated artefacts finds. The remaining recording (OEH AHIMS Site #45-5-3082) is an area of Potential Archaeological Deposit (PAD).

The Heritage Assessment investigations reveal that the proposed HDBP site contains no previously documented Aboriginal sites or objects, or any specific areas of potential Aboriginal archaeological sensitivity as evaluated in the course of preparing this report.

Excluding a small number of relatively immature scattered eucalypts, no original timber (trees) survives on the property that may have formerly displayed evidence for Aboriginal cultural modification (bark removal) for the creation of containers, canoes or other equipment useful for day to day activities.

A minor tributary branch of Orphan School Creek runs through the northern half of the site in an east to west direction. The original channel(s), banks, and flats of this watercourse have however been heavily modified over time.

No sources of stone raw materials commonly used by Aboriginal people in the past for artefact manufacture are known to occur on the property itself, or in locations nearby. The principal (documented) sources for silcrete for example (St Marys Formations) occur considerable distances further to the north and west of the study area.

No open campsites or isolated finds of flaked stone have been identified on the site.

The Heritage Assessment finds:

> *"There appears to be no readily identifiable reason to expect that the property itself would have been subject to intensive or repeated visitation and use by Aboriginal people in the past that would have created substantial and significant archaeological deposits.*
>
> *As the land appears today, it would not appear that it would have originally contained significant (and valuable) raw materials resources that were highly sought after by people in the past for subsistence and tool manufacture and maintenance purposes that would have marked the site as overly desirable campsite location. It more likely that the site may have been visited sporadically by people over time as they moved to and from more attractive landscape contexts and resource zones in the local landscape such as the catchments (containing higher stream order tributaries) to the west (such as Eastern Creek) and the north and east (such as Prospect Creek)."*

It is expected that any as yet undetected evidence for past Aboriginal visitation and use of the land will consist of either isolated items or low-density distributions of flaked stone artefacts that will be encountered in highly disturbed contexts.

The potential Aboriginal archaeological resource is assessed to be of low (scientific) archaeological significance due to the highly disturbed nature of the site, and that any finds that may be exposed in the future will be largely unexceptional in nature with minimal archaeological research potential.

Recommendations
The following recommendations are provided within the Heritage Assessment to ensure ongoing management of aboriginal heritage:

1. *Based on the conclusion that the development proposal will not directly impact upon any identified Aboriginal archaeological sites or objects, and also that the potential for undetected Aboriginal archaeological items to occur within the property that may be affected by future uses is assessed to be low, it is therefore recommended that there are no Aboriginal archaeological constraints to the HDBP proposal proceeding as planned intended and that no further Aboriginal archaeological heritage input is warranted.*

2. *In the (largely) unexpected circumstance that any Aboriginal objects are unearthed as a result of residential housing construction works in the future, it is recommended that activities should temporarily cease within the immediate vicinity of the find locality, be relocated to other areas of the site and the OEH be contacted to advise on the course of action to allow the identified item(s) to be appropriately managed.*

6.19 ARCHAEOLOGICAL IMPACTS

Neither the land that comprises the proposed HDBP site itself, nor any of the existing elements that are contained within it (either built or archaeological), are listed on any State or Local European heritage register or schedule, including the State Heritage Register and the Fairfield Local Environmental Plan 1999 (and Draft LEP 2011).

While the site has some local historical associations with one of the earliest Crown land grants that were made in the area in 1805, there is no historical evidence for any nineteenth century improvements to the land until 1930. It appears the land was utilised prior to that time for stock grazing, and that for much of the early twentieth century at least the site comprised a large open and largely cleared 'paddock'.

All of the existing built structures on the site (including farm houses, dams, market garden allotments, and other associated landscape elements such as plantings) relate to the period following the subdivision of the Horsley Estate and its release for sale in 1925 The farm buildings and their allotments have been used continuously for intensive market gardening activities for over 80 years and are unremarkable. There is no

evidence to suggest that the use and occupation of the study area differs in any significant way with how other contemporary farm holdings that continue to operate for small-scale market gardening in the local district have been used and developed over the second half of the twentieth century.

All of the farm buildings on the site, many of which have now been demolished, were constructed between 1930 and 1961. No European occupation (building) of note is reported to have been located within the central portions of the site prior to 1930. There are also no visible (surface) features on the site today that indicate the presence of buried archaeological remains of any earlier farm buildings (or associated evidence for significant landuse activities) that are likely to predate the sale and use of the farm lots from the mid 1920s onwards.

The adjoining 1888 Upper Canal is a recognised state significant piece of water infrastructure as comprising part of the upper Nepean Water Supply scheme and (specific parts of it) is listed on the SHR, along with Sydney Water's Section 170 Register. The section of this water infrastructure feature (and its easement) located at Horsley Park occurs outside of the western boundary of the HDBP site, and will therefore remain unaffected by the proposal.

The Bunya Pine located on the intersection of The Horsley Drive and Cowpasture Road was listed as a heritage item of Regional significance in Schedule 4 of the FLEP 1994 in October 1995 (as Gazette No. 122). The following description is drawn from that listing (which is dated March 1992):

> *Significance: Important landmark tree, relating to Horsley Park homestead ri* (sic) *the west. Tree over 100 years old. Regional significance.*
>
> *Description: Very old Bunya Pine. Tree about 22m high and located on prominent corner. Radiata Pine close by adds visual weight to corner element, approx 14 metres high, from c1950. Telegraph pole and street wires degrade landmark characters of trees, as does the "scruffy" nature of the ground around the bottom of the tree.*
>
> *History: Bunya Pine probably in about 1850-1870, by owners of the Horsley House (about 2 kilometres to the west).*

The listed Bunya Pine is now largely disconnected from its original landscape association with the Horsley Homestead complex (house, outbuildings, garden and farm focused around Jamieson Close 2km to the west) that are listed on the SHR. The view corridor(s) between the Homestead to the west and the Bunya Pine located approximately 2km to the east that existed during the mid nineteenth century are now diminished as a result of increased development. The original landscape values of the 'marker' pine have also been reduced whereby the tree is now situated in an isolated context within a busy road intersection reserve.

The proposal however does not include any specific changes to the intersection of Cowpasture Road and The Horsley Drive itself that would directly affect the existing conditions of the pine trees in their present setting. While the proposal would result in some changes to existing views between the Horsley Homestead to the west and the Bunya Pine to the east, these potential changes would appear to be minor within the context of those that have progressively occurred as a result of subdivision and development of the area since the early 1970s. The heritage assessment concludes that the heritage significance of the tree will not be affected by the proposal.

Furthermore, the (then) Department of Planning and the Heritage Branch have prepared general guidelines and other supporting technical documents for local and state authorities on how to develop management and action plans for heritage 'street trees' in reserves and other publically accessible/used urban and commercial streetscape contexts. Risk management guidelines are also available for the maintenance and conservation of these types of heritage assets.

The Trust's proposal to include the Bunya Pine (currently listed as a heritage item of Regional significance on the FLEP 1994) in the SEPP (Western Sydney Parklands) 2009 as an item of local heritage significance may require existing inspection and maintenance records and schedules to be updated to levels

commensurate with the proposed change to its statutory listing. This may include preparing an 'audit' for the item that would consider its existing condition (health), any potential threats that may be anticipated (either impending or into the future), and short/long-term conservation management strategies in accordance with relevant statutory requirements such as those contained in the *Environmental Planning and Assessment Act 1979*, the *Heritage Act 1977* and the *National Parks and Wildlife Act 1974*.

The Heritage Assessment concludes:

> *"It is reasonable to conclude on the basis of the landuse history previously outlined for the site, and the results of the recent site inspection recorded for the property, that the place retains at best low archaeological potential. This evaluation is based on the fact that the land has been considerably impacted upon by ongoing agricultural use and is unlikely to yield a significant sample of archaeological material of sufficient integrity that can provide us with substantial new information that may not be able to be sourced from other documentary-based avenues of research.*
>
> *It is therefore assessed that the HDBP proposal is unlikely to have an adverse impact upon the European archaeological heritage values of the place and that no significant archaeological constraints are apparent that would restrict the proposal proceeding as planned."*

Recommendations

The property is assessed to be a place of minimal archaeological potential of low Local significance. It is it is therefore concluded that there are no identified European archaeological constraints to the subdivision and future development proposal proceeding as planned.

PART G STATEMENT OF COMMITMENTS

by	Western Sydney Parklands Trust
in relation to	Horsley Drive Business Park
at	Corner of The Horsley Drive and Cowpasture Road, Wetherill Park

The Western Sydney Parklands Trust (the Trust) will undertake the proposed Horsley Drive Business Park development in accordance with the following commitments:

The following defines some of the terms and abbreviations used in the Statement of Commitments:

Approval	The Minister's approval to the Project
BCA	Building Code of Australia
Council	Fairfield City Council
Department	Department of Planning and Infrastructure
Director-General	Director-General of the Department (or delegate)
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
OEH	Office of Environment and Heritage
Project	The development as described in the EIS
Site	Land to which the project application applies

ADMINISTRATIVE COMMITMENTS

Commitment to Minimise Harm to the Environment

1. The Trust will implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the project.

Terms of Approval

2. The Trust will carry out the project generally in accordance with the:

    a) Environmental Impact Statement;
    b) Specialist Reports;
    c) Drawings;
    d) This Statement of Commitments; and
    e) Any Conditions of Approval.

3. If there is any inconsistency between the above, the Conditions of Approval shall prevail to the extent of the inconsistency.

4. The Trust will comply with any reasonable requirement/s of the Director-General of the Department of Planning and Infrastructure arising from the Department's assessment of:

    a) Any reports, plans, programs, strategies or correspondence that are submitted in accordance with this Approval; and

    b) The implementation of any recommended actions or measures contained in reports, plans, programs, strategies or correspondence submitted by the Project Team as part of the application for Approval.

Structural Adequacy

5. The Trust will ensure that all construction on the site is undertaken in accordance with the relevant requirements of the BCA and Australian Standards where applicable.

Construction Traffic Management Plan

6. The Trust will prepare and implement a Construction Traffic Management Plan in consultation with Council, and to the satisfaction of the Director-General. This plan will:

    a) be submitted to the Director-General for approval prior to the commencement of construction;
    b) describe the traffic volumes and movements to occur during construction;
    c) detail proposed measures to minimise the impact of construction traffic on the surrounding network, including driver behaviour and vehicle maintenance; and
    d) detail the procedures to be implemented in the event of a complaint from the public regarding construction traffic.

Operation of Plant and Equipment

7. The Trust shall ensure that all plant and equipment used on site is maintained and operated in proper and efficient manner, and in accordance with relevant Australian Standards.

SPECIFIC ENVIRONMENTAL COMMITMENTS

Noise

8. Construction on the site will only be undertaken between 7am and 6pm Monday to Friday, and 7am and 1pm on Saturdays. No construction will be allowed on site on Sundays or public holidays.

Air

Construction Traffic

9. During construction:

    a) all trucks entering or leaving the site with loads have their loads covered;
    b) trucks associated with the project do not track dirt onto the public road network; and
    c) the public roads used by these trucks are kept clean.

Dust Management

10. During the construction phase of the project, all reasonable and feasible measures to minimise the dust generated by the project.

Waste Management

11. The Trust will ensure that all waste generated on site during operation is classified in accordance with the Office of Environmental and Heritage's *Waste Classification Guidelines: Part 1 Classifying Waste* and disposed of to a facility that may lawfully accept the waste.

END

Name:

Signed:

Date:

PART H PROJECT JUSTIFICATION

The proposal is considered to be justified in the context of environmental, social and economic terms and is compatible with the locality in which it is proposed.

This application is lodged on the basis of:

Supporting State, Regional and Local planning objectives

The proposal is consistent with the objectives and strategies outlined within the *Metropolitan Plan for Sydney 2036*, the *Draft West Central Subregional Strategy*, and *State Environmental Planning Policy (Western Sydney Parklands) 2009*. The proposal is also consistent with all relevant environmental strategies for the locality with particular reference to employment generation, long-term open space provision and environmental protection.

Appropriate use of Parkland Assets

The proposal represents an appropriate use of the Western Sydney Parkland land assets under the *Western Sydney Parklands Plan of Management* and *Western Sydney Parklands Act* in order to maintain a self-sustaining organisation that will provide long term open space and ecological benefits to the Greater Sydney Region.

Environmental impacts have been minimised

Specialist hazard consultants have assessed the risks and determined that the development can be undertaken with minimal environmental impacts. No significant risk to the locality is to result from the proposal.

Compatibility with surrounding development

The proposed use is compatible with existing uses on the subject site and adjacent land. The investigations undertaken as part of this application conclude that no significant cumulative impact is to occur from the proposed use of the site for the Horsley Business Park.

PART I CONCLUSION

The proposed development of land at the corner of The Horsely Drive and Cowpasture Road for the purposes of the Horsley Drive Business Park is consistent with the intended use of the Western Sydney Parklands Plan property assets in accordance with the adopted Plan of Management.

The proposal is also suitably separated from residential areas and can be serviced by adequate infrastructure, including a capable road network. The proposal will complement the adjoining industrial precinct to create further employment opportunities for the Western Sydney Region whilst earning important funds for the Western Sydney Parklands Trust to carry out its functions in the provision and management of Australia's largest open space network.

The proposal is consistent with the State Plan (*NSW 2021: A Plan to Make NSW Number One*) and the Sydney Metropolitan Strategy by providing ongoing support to open space and recreation, forming the basis for long-term environmental management and creating employment opportunities for Western Sydney. The proposed development is also consistent with the legislative and policy framework for the local and regional area.

Based on the findings of this EIS, the proposal supports the continued development of the Western Sydney Parklands, providing employment and contributing to the retention and growth of the Western Sydney Parklands Trust. The proposal is suitable for the local context and is appropriate based on social, cultural, economic and environmental considerations.

As such, it is recommended that the proposal be supported by the Department of Planning and Infrastructure.

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APPENDIX 1
Director Generals Requirements

APPENDIX 2
Concept Plans

APPENDIX 3
Survey Plan

APPENDIX 4
Draft Plan of Subdivision

APPENDIX 5
Landscape Concept Plan

APPENDIX 6
Civil Engineering Report

APPENDIX 7
Civil Engineering Plans

APPENDIX 8
Preliminary Environmental Site Assessment

APPENDIX 9
Preliminary Geotechnical Investigation

APPENDIX 10
Phase 2 Environmental Site and Geotechnical Investigation

APPENDIX 11
Remediation Action Plan

APPENDIX 12
Acoustic Report

APPENDIX 13
Traffic Impact Assessment

APPENDIX 14
Ecological Issues and Assessment Report

APPENDIX 15
Aboriginal and Non-Aboriginal Archaeological and Cultural Heritage Assesssment

APPENDIX 16
Utilities Report and Infrastructure Management Plan

APPENDIX 17
Consultation Record

APPENDIX 18
Construction Management Plan