Mr Chris Ritchie
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Bianca Thornton

Notice Number	1548511
Date	20-Jan-2017

Dear Mr Ritchie

PROPOSED EXPANSION - FAIRFIELD SUSTAINABLE RESOURCE CENTRE, WETHERILL PARK - EPA SEARS

I refer to your request for the Environment Protection Authority's ("EPA") requirements for the environmental assessment ("EA") in regard to the above proposal received by EPA on 10 January 2017

The EPA has considered the details of the proposal as provided by DPE and DFP Planning Pty Ltd on behalf of Fairfield City Council and has identified the information it requires to issue its general terms of approval in Attachment A. In summary, the EPA's key information requirements for the proposal include an adequate assessment of:

1. Waste Management
2. Air - including potential sources, impacts and mitigation measures
3. Noise - including potential sources, impacts and mitigation measures

In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in Attachment B and any relevant industry codes of practice and best practice management guidelines.

Please note that this response does not cover biodiversity or Aboriginal cultural heritage issues, which are the responsibility of the Office of Environment and Heritage.

The Proponent should be made aware that any commitments made in the EA may be formalised as approval conditions and may also be placed as formal licence conditions.

The Proponent should be made aware that, consistent with provisions under Part 9.4 of the *Protection of the Environment Operations Act 1997* ("the Act") the EPA may require the provision of a financial assurance and/or assurances. The amount and form of the assurance(s) would be determined by the EPA and required as a condition of an Environment Protection Licence ("EPL").

In addition, as a requirement of an EPL, the EPA will require the Proponent to prepare, test and implement a Pollution Incident Response Management Plan and/or Plans in accordance with Section 153A of the Act.

Yours sincerely

Ruth Owler

Unit Head

Waste & Resource Recovery

(by Delegation)

SEARS - PROJECT SPECIFIC

PROPOSED EXPANSION - FAIRFIELD SUSTAINABLE RESOURCE CENTRE, WETHERILL PARK - EPA SEARS

The EIS must provide details of the following:

Waste

- The types of waste, classified in accordance with the EPA's Waste Classification guidelines 2014, the likely composition of the waste and the proposed source of the waste;
- The quantities of waste to be stored at the premises; and
- The maximum amount of each type of waste and total amount of waste to be stored at the premises at any one time and per annum and the time proposed for the waste to be processed and removed from the premises.

Air

- Existing air quality in the area;
- A description of all potential sources of air emissions and odour;
- A quantitative assessment of potential air quality impacts arising from the project, particularly dust and odour impacts on surrounding landowners and sensitive receptors;
- The measures that will be utilised to mitigate dust emissions from any activities at the premises, including any material stored outside and the from vehicle traffic generated by the development; and
- The measures that will be utilised to mitigate odour from any activities at the premises, including during the transfer of material for transportation from the facility.

Noise

- All noise sources from the construction and operation of the facility;
- The facilities operating hours and specifications of machinery used during morning, day and night
- periods;
- The predicted number of traffic movements created by the construction and operation of the facility as
- well as the likely routes to be taken to and from the site to main thoroughfares; and
- Any sensitive receivers likely to be affected by activities at the site.

Soil and Water

- Details of how any runoff (leachate and stormwater) will be collected and stored and how odours from that runoff will be mitigated;
- Details of the leachate and waste water treatment systems for the proposed recycling facility giving consideration to the management, storage and re-use of leachate and the sediment removal process;
- Details of any potential sediment and erosion issues and measures to mitigate these from polluting nearby water bodies, water courses and the stormwater system; and
- Details of any proposed discharge points and proposed quality of discharge.

In addition to the above requirements the Environmental Assessment must include:

- Details of ownership of the land and if not owned by Fairfield City Council, then copies of any lease agreement demonstrating permitted occupation of the site.

- A site diagram that includes: site boundaries, the location of weigh bridge; areas for haulage, waste receival, processing and storage, quarantine area for non-compliant material, the location of infrastructure for dust, noise and stormwater environmental controls.
- A detailed plan to address the filling of the 'Canal Road' gully that includes volumes and details of the materials proposed for use in the filling works and the processes adopted to ensure quality control for all incoming material. In addition, the plan will need to address any waste levy implications that may arise as a result of land applying waste material within the boundaries of the EPL footprint.
- A detailed description of how the proponent will deal with the receipt of non-conforming waste including asbestos.

ATTACHMENT A: EIS REQUIREMENTS FOR

PROPOSED EXPANSION - FAIRFIELD SUSTAINABLE RESOURCE CENTRE, WETHERILL PARK

How to use these requirements

The EPA requirements have been structured in accordance with the DIPNR EIS Guidelines, as follows. It is suggested that the EIS follow the same structure:

A. Executive summary

B. The proposal

C. The location

D. Identification and prioritisation of issues

E. The environmental issues

F. List of approvals and licences

G. Compilation of mitigation measures

H. Justification for the proposal

A Executive summary

The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.

B The proposal

1. Objectives of the proposal

- The objectives of the proposal should be clearly stated and refer to:
  a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced
  b) a life cycle approach to the production, use or disposal of products
  c) the anticipated level of performance in meeting required environmental standards and cleaner production principles
  d) the staging and timing of the proposal and any plans for future expansion
  e) the proposal's relationship to any other industry or facility.

2. Description of the proposal

General

- Outline the production process including:
  a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc)
  b) any life-cycle strategies for the products.
- Outline cleaner production actions, including:
  a) measures to minimise waste (typically through addressing source reduction)
  b) proposals for use or recycling of by-products
  c) proposed disposal methods for solid and liquid waste
  d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points
  e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge.
  f) soil contamination treatment and prevention systems.
- Outline construction works including:
  a) actions to address any existing soil contamination
  b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site)
  c) construction timetable and staging; hours of construction; proposed construction methods

d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.

Air

- Identify all sources of air emissions from the development.
  Note: emissions can be classed as either:
  - *point (eg emissions from stack or vent) or*
  - *fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).*
- Provide details of the project that are essential for predicting and assessing air impacts including:
  a) the quantities and physio-chemical parameters (eg concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored
  b) an outline of procedures for handling, transport, production and storage
  c) the management of solid, liquid and gaseous waste streams with potential for significant air impacts.

Noise and vibration

- Identify all noise sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials.
- Specify the times of operation for all phases of the development and for all noise producing activities.
- For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.

Water

- Provide details of the project that are essential for predicting and assessing impacts to waters:
  a) including the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000)
  b) the management of discharges with potential for water impacts
  c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.
- Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts eg effluent ponds) and showing potential areas of modification of contours, drainage etc.

- Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.

Waste and chemicals

- Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes* (NSW EPA, 1999).
- Provide details of liquid waste and non-liquid waste management at the facility, including:
  a) the transportation, assessment and handling of waste arriving at or generated at the site
  b) any stockpiling of wastes or recovered materials at the site
  c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site
  d) the method for disposing of all wastes or recovered materials at the facility
  e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility
  f) the proposed controls for managing the environmental impacts of these activities.
- Provide details of spoil disposal with particular attention to:
  a) the quantity of spoil material likely to be generated
  b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil
  c) the need to maximise reuse of spoil material in the construction industry
  d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material
  e) designation of transportation routes for transport of spoil.
- Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.
- Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.
- Reference should be made to the guidelines: *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (NSW EPA, 1999).

ESD

- Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:

an assessment of a range of options available for use of the resource, including the benefits of each option to future generations

f) proper valuation and pricing of environmental resources

g) identification of who will bear the environmental costs of the proposal.

3. Rehabilitation

- Outline considerations of site maintenance, and proposed plans for the final condition of the site (ensuring its suitability for future uses).

4. Consideration of alternatives and justification for the proposal

- Consider the environmental consequences of adopting alternatives, including alternative:
  a) sites and site layouts
  b) access modes and routes
  c) materials handling and production processes
  d) waste and water management
  e) impact mitigation measures
  f) energy sources
- Selection of the preferred option should be justified in terms of:
  a) ability to satisfy the objectives of the proposal
  b) relative environmental and other costs of each alternative
  c) acceptability of environmental impacts and contribution to identified environmental objectives
  d) acceptability of any environmental risks or uncertainties
  e) reliability of proposed environmental impact mitigation measures
  f) efficient use (including maximising re-use) of land, raw materials, energy and other resources.

C The location

1. General

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:
  a) meteorological data (eg rainfall, temperature and evaporation, wind speed and direction)
  b) topography (landform element, slope type, gradient and length)
  c) surrounding land uses (potential synergies and conflicts)
  d) geomorphology (rates of landform change and current erosion and deposition processes)
  e) soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulfate soils and potential acid sulfate soils)
  f) ecological information (water system habitat, vegetation, fauna)
  g) availability of services and the accessibility of the site for passenger and freight transport.

2. Air

- Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models.
- Describe surrounding buildings that may effect plume dispersion.
- Provide and analyse site representative data on following meteorological parameters:
  a) temperature and humidity
  b) rainfall, evaporation and cloud cover
  c) wind speed and direction
  d) atmospheric stability class
  e) mixing height (the height that emissions will be ultimately mixed in the atmosphere)
  f) katabatic air drainage
  g) air re-circulation.

3. Noise and vibration

- Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality.
- Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.

4. Water

- Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: http://www.environment.nsw.gov.au/ieo/index.htm should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.

5. Soil Contamination Issues

- Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.

D Identification and prioritisation of issues / scoping of impact assessment

- Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account:
  a) relevant NSW government guidelines
  b) industry guidelines
  c) EISs for similar projects
  d) relevant research and reference material
  e) relevant preliminary studies or reports for the proposal
  f) consultation with stakeholders.
- Provide a summary of the outcomes of the process including:
  a) all issues identified including local, regional and global impacts (eg increased/ decreased greenhouse emissions)
  b) key issues which will require a full analysis (including comprehensive baseline assessment)
  c) issues not needing full analysis though they may be addressed in the mitigation strategy
  d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).

E The environmental issues

1. General

- The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution.
- Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements.

Note: The level of detail should match the level of importance of the issue in decision making which is dependent on the environmental risk.

Describe baseline conditions

- Provide a description of existing environmental conditions for any potential impacts.

Assess impacts

- For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers.
- Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts.
- The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts eg assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc.
- The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant.
- The level of assessment should be commensurate with the risk to the environment.

Describe management and mitigation measures

- Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
- Proponents are expected to implement a ‘reasonable level of performance’ to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A ‘reasonable level of performance’ involves adopting and implementing technology and management practices to achieve certain pollutant emissions levels in economically

viable operations. Technology-based criteria evolve gradually over time as technologies and practices change.

- Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts.
- Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include:

  a) operational procedures to manage environmental impacts

  b) monitoring procedures

  c) training programs

  d) community consultation

  e) complaint mechanisms including site contacts

  f) strategies to use monitoring information to improve performance

  g) strategies to achieve acceptable environmental impacts and to respond in event of exceedences.

4. Air

Describe baseline conditions

- Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.

Assess impacts

- Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point.
- Estimate the resulting ground level concentrations of all pollutants. Where necessary (eg potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the DECCW.
- Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals.
- Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.
- For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA / DECCW procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate.

  Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.

- Reference should be made to relevant guidelines e.g. *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC, 2001)*; Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DEC, 2007)*; Assessment and Management of Odour from Stationary Sources in*

NSW (DEC, 2006)*; Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006).*

Describe management and mitigation measures

- Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.

5. Noise and vibration

Describe baseline conditions

- Determine the existing background (LA90) and ambient (LAeq) noise levels in accordance with the *NSW Industrial Noise Policy*.
- Determine the existing road traffic noise levels in accordance with the *NSW Environmental Criteria for Road Traffic Noise*, where road traffic noise impacts may occur.
- The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including:
  a) details of equipment used for the measurements
  b) a brief description of where the equipment was positioned
  c) a statement justifying the choice of monitoring site, including the procedure used to choose the site, having regards to the definition of 'noise sensitive locations(s)' and 'most affected locations(s)' described in Section 3.1.2 of the *NSW Industrial Noise Policy*
  d) details of the exact location of the monitoring site and a description of land uses in surrounding areas
  e) a description of the dominant and background noise sources at the site
  f) day, evening and night assessment background levels for each day of the monitoring period
  g) the final Rating Background Level (RBL) value
  h) graphs of the measured noise levels for each day should be provided
  i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring under Step 1 in Section B1.3 of the *NSW Industrial Noise Policy*
  j) determination of LAeq noise levels from existing industry.

Assess impacts

- Determine the project specific noise levels for the site. For each identified potentially affected receiver, this should include:
  a) determination of the intrusive criterion for each identified potentially affected receiver

b) selection and justification of the appropriate amenity category for each identified potentially affected receiver

c) determination of the amenity criterion for each receiver

d) determination of the appropriate sleep disturbance limit.

- Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible affects on sleep. Where LA1(1min) noise levels from the site are less than 15 dB above the background LA90 noise level, sleep disturbance impacts are unlikely. Where this is not the case, further analysis is required. Additional guidance is provided in Appendix B of the *NSW Environmental Criteria for Road Traffic Noise*.
- Determine expected noise level and noise character (eg tonality, impulsiveness, vibration, etc) likely to be generated from noise sources during:

  a) site establishment

  b) construction

  c) operational phases

  d) transport including traffic noise generated by the proposal

  e) other services.

  Note: The noise impact assessment report should include noise source data for each source in 1/1 or 1/3 octave band frequencies including methods for references used to determine noise source levels. Noise source levels and characteristics can be sourced from direct measurement of similar activities or from literature (if full references are provided).

- Determine the noise levels likely to be received at the most sensitive locations (these may vary for different activities at each phase of the development). Potential impacts should be determined for any identified significant adverse meteorological conditions. Predicted noise levels under calm conditions may also aid in quantifying the extent of impact where this is not the most adverse condition.
- The noise impact assessment report should include:

  a) a plan showing the assumed location of each noise source for each prediction scenario

  b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site

  c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc

  d) methods used to predict noise impacts including identification of any noise models used. Where modelling approaches other than the use of the ENM or SoundPlan computer models are adopted, the approach should be appropriately justified and validated

  e) an assessment of appropriate weather conditions for the noise predictions including reference to any weather data used to justify the assumed conditions

  f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario under any identified significant adverse weather conditions as well as calm conditions where appropriate

  g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived

  h) an assessment of the need to include modification factors as detailed in Section 4 of the *NSW Industrial Noise Policy*.

- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional mitigation measures.
- The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation.
- Where relevant noise/vibration criteria cannot be met after application of all feasible and cost effective mitigation measures the residual level of noise impact needs to be quantified by identifying:
  a) locations where the noise level exceeds the criteria and extent of exceedence
  b) numbers of people (or areas) affected
  c) times when criteria will be exceeded
  d) likely impact on activities (speech, sleep, relaxation, listening, etc)
  e) change on ambient conditions
  f) the result of any community consultation or negotiated agreement.
- For the assessment of existing and future traffic noise, details of data for the road should be included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS.
- Where blasting is intended an assessment in accordance with the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990) should be undertaken. The following details of the blast design should be included in the noise assessment:
  a) bench height, burden spacing, spacing burden ratio
  b) blast hole diameter, inclination and spacing
  c) type of explosive, maximum instantaneous charge, initiation, blast block size, blast frequency.

Describe management and mitigation measures

- Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc.
- For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:
  a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage
  b) control of traffic (eg: limiting times of access or speed limitations)
  c) resurfacing of the road using a quiet surface
  d) use of (additional) noise barriers or bunds
  e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern

f) more stringent limits for noise emission from vehicles (i.e. using specially designed 'quite' trucks and/or trucks to use air bag suspension

g) driver education

h) appropriate truck routes

i) limit usage of exhaust breaks

j) use of premium muffles on trucks

k) reducing speed limits for trucks

l) ongoing community liaison and monitoring of complaints

m) phasing in the increased road use.

4. Water

Describe baseline conditions

- Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).

  Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) *or be approved and analyses undertaken by accredited laboratories).*

- Provide site drainage details and surface runoff yield.
- State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: http://www.environment.nsw.gov.au/ieo/index.htm. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice.
- State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 *Guidelines for Fresh and Marine Water Quality* (http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for groundwater are not available, the ANCECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater.
- State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm).
- Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to

assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.

- Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include:

  a) lake or estuary flushing characteristics

  b) specific human uses (e.g. exact location of drinking water offtake)

  c) sensitive ecosystems or species conservation values

  d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc

  e) an outline of baseline groundwater information, including, but not restricted to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment

  f) historic river flow data where available for the catchment.

Assess impacts

- No proposal should breach clause 120 of the *Protection of the Environment Operations Act* 1997 (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).
- Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.
- Include a rationale, along with relevant calculations, supporting the prediction of the discharges.
- Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).
- Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).
- Identify any potential impacts on quality or quantity of groundwater describing their source.
- Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.
- Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.
- Containment of spills and leaks shall be in accordance with the technical guidelines section 'Bunding and Spill Management' of the *Authorised Officers Manual* (EPA, 1995) (http://www.epa.nsw.gov.au/mao/bundingspill.htm) and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.
- The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered:

a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and

b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.

- Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment.

  Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.

- Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.
- Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact.
- Reference should be made to list relevant guidelines e.g. *Managing Urban Stormwater: Soils and Construction* (DECC, 2008), *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000).

Describe management and mitigation measures

- Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.
- Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.
- Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.
- Outline pollution control measures relating to storage of materials, possibility of accidental spills (eg preparation of contingency plans), appropriate disposal methods, and generation of leachate.
- Describe hydrological impact mitigation measures including:

  a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition)

  b) minimising runoff

  c) minimising reductions or modifications to flow regimes

  d) avoiding modifications to groundwater.

- Describe groundwater impact mitigation measures including:

  a) site selection

b) retention of native vegetation and revegetation
c) artificial recharge
d) providing surface storages with impervious linings
e) monitoring program.

- Describe geomorphological impact mitigation measures including:
  a) site selection
  b) erosion and sediment controls
  c) minimising instream works
  d) treating existing accelerated erosion and deposition
  e) monitoring program.
- Any proposed monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004).

5. Soils and contamination

Describe baseline conditions

- Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.

Assess impacts

- Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of:
  a) disturbing any existing contaminated soil
  b) contamination of soil by operation of the activity
  c) subsidence or instability
  d) soil erosion
  e) disturbing acid sulfate or potential acid sulfate soils.
- Reference should be made to list relevant guidelines e.g. *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011)*; Contaminated Sites – Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report* (EPA, 2003).

Describe management and mitigation measures

- Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including:
  a) erosion and sediment control measures

b) proposals for site remediation – see *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)

c) proposals for the management of these soils – see *Assessing and Managing Acid Sulfate Soils,* Environment Protection Authority, 1995 (note that this is the only methodology accepted by the EPA).

6. Waste and chemicals

Describe baseline conditions

- Describe any existing waste or chemicals operations related to the proposal.

Assess impacts

- Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals.
- Reference should be made to *Waste Classification Guidelines (NSW EPA, 2014).*

Describe management and mitigation measures

- Outline measures to minimise the consumption of natural resources.
- Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste.
- Outline measures to support any approved regional or industry waste plans.

7. Cumulative impacts

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute.
- Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region.
- Identify infrastructure requirements flowing from the proposal (eg water and sewerage services, transport infrastructure upgrades).
- Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (eg travel demand management strategies).

F. List of approvals and licences

- Identify all approvals and licences required under environment protection legislation including details of all scheduled activities, types of ancillary activities and types of discharges (to air, land, water).

G. Compilation of mitigation measures

- Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (eg outline of an environmental management plan).
- The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

H. Justification for the Proposal

- Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.

ATTACHMENT B: GUIDANCE MATERIAL

Title	Web address
Relevant Legislation	
Contaminated Land Management Act 1997	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+140+1997+cd+0+N
Environmentally Hazardous Chemicals Act 1985	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+14+1985+cd+0+N
Environmental Planning and Assessment Act 1979	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+203+1979+cd+0+N
Protection of the Environment Operations Act 1997	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+156+1997+cd+0+N
Water Management Act 2000	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+92+2000+cd+0+N
Licensing	
Guide to Licensing	www.epa.nsw.gov.au/licensing/licenceguide.htm
Air Issues	
Air Quality	
Approved methods for modelling and assessment of air pollutants in NSW (2005)	http://www.epa.nsw.gov.au/resources/air/ammodelling05361.pdf
POEO (Clean Air) Regulation 2010	http://www.legislation.nsw.gov.au/maintop/view/inforce/subordleg+428+2010+cd+0+N
Noise and Vibration	
Interim Construction Noise Guideline (DECC, 2009)	http://www.epa.nsw.gov.au/noise/constructnoise.htm
Assessing Vibration: a technical guideline (DEC, 2006)	http://www.epa.nsw.gov.au/noise/vibrationguide.htm
Industrial Noise Policy Application Notes	http://www.epa.nsw.gov.au/noise/applicnotesindustnoise.htm
Environmental Criteria for Road Traffic Noise (EPA, 1999)	http://www.epa.nsw.gov.au/resources/noise/roadnoise.pdf
Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects (DECC, 2007)	http://www.epa.nsw.gov.au/noise/railinfranoise.htm
Environmental assessment requirements for rail traffic-generating developments	http://www.epa.nsw.gov.au/noise/railnoise.htm

Waste, Chemicals and Hazardous Materials and Radiation	
Waste	
Environmental Guidelines: Solid Waste Landfills (EPA, 1996)	http://www.epa.nsw.gov.au/resources/waste/envguidlns/solidlandfill.pdf
Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998)	http://www.epa.nsw.gov.au/resources/waste/envguidlns/industrialfill.pdf
Waste Classification Guidelines (2014)	http://www.epa.nsw.gov.au/waste/envguidlns/index.htm
Resource recovery exemption	http://www.epa.nsw.gov.au/waste/RRecoveryExemptions.htm
Chemicals subject to Chemical Control Orders	
Chemical Control Orders (regulated through the EHC Act)	http://www.epa.nsw.gov.au/pesticides/CCOs.htm
National Protocol - Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
National Protocol for Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
Water and Soils	
Acid sulphate soils	
Coastal acid sulfate soils guidance material	http://www.environment.nsw.gov.au/acidsulfatesoil/
Acid Sulfate Soils Planning Maps	http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm
Contaminated Sites Assessment and Remediation	
Managing land contamination: Planning Guidelines – SEPP 55 Remediation of Land	http://www.planning.nsw.gov.au/assessingdev/pdf/gu_contam.pdf
Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000)	http://www.epa.nsw.gov.au/resources/clm/20110650consultantsglines.pdf
Guidelines for the NSW Site Auditor Scheme - 2nd edition (DEC, 2006)	http://www.epa.nsw.gov.au/resources/clm/auditorglines06121.pdf
Sampling Design Guidelines (EPA, 1995)	Available by request from EPA's Environment Line

National Environment Protection (Assessment of Site Contamination) Measure 1999 (or update)	http://www.scew.gov.au/nepms/assessment-site-contamination
Soils – general	
Managing land and soil	http://www.environment.nsw.gov.au/soils/landandsoil.htm
Managing urban stormwater for the protection of soils	http://www.environment.nsw.gov.au/stormwater/publications.htm
Landslide risk management guidelines	http://www.australiangeomechanics.org/resources/downloads/
Site Investigations for Urban Salinity (DLWC, 2002)	http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf
Local Government Salinity Initiative Booklets	http://www.environment.nsw.gov.au/salinity/solutions/urban.htm
Water	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html
Applying Goals for Ambient Water Quality Guidance for Operations Officers – Mixing Zones	Contact the EPA on 131555
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf

NSW GOVERNMENT | Office of Environment & Heritage

DOC17/12937

Ms Kelly McNicol
Team Leader, Industry Assessments
NSW Department of Planning and Environment
bianca.thornton@planning.nsw.gov.au

Attention: Bianca Thornton

Dear Ms McNicol

Fairfield Sustainable Resource Centre Expansion SSD 8184

I refer to your letter received by the Office of Environment and Heritage (OEH) on 10 January 2017 requesting input into the Secretary's Environmental Assessment Requirement's (SEARs) for the construction of a proposed expansion of the Fairfield Sustainable Resource Centre (SSD 8184).

OEH's standard requirements for the SEARs and additional specific requirements are provided in Attachment 1. The additional requirements relate to the flood assessment and for consideration of impacts on nearby OEH land as the site is within 500 metres of the Western Sydney Parklands.

The proposal is seeking to expand the facility by filling a gully running north-south through the centre of the site which is known locally as 'Canal Road'. The gully area is mapped as containing vegetation mapped as 'Urban Exotic/Native' in the Sydney Metropolitan Catchment Management Authority vegetation mapping dated 2013. The site was not field assessed.

The information provided by DFP planning consultants states that the flora and fauna report will include a 7-part test if necessary. As the proposal is a State significant development, biodiversity impacts related to the proposed development must be assessed and documented in accordance with the *Framework for Biodiversity Assessment* (FBA) (OEH 2014). If as a result of the assessment, the ecological consultant determines there is no native vegetation or habitat for threatened species on site, the Proponent can seek agreement from OEH that the FBA does not need to be implemented. Any such request should be made via the relevant Department of Planning and Environment planning officer.

The information provided by DFP planning consultants states that part of the site is potentially affected by flooding from Prospect Creek. The area subject to flooding includes a small area of the Canal Road gully and a flood assessment will be undertaken to assess the potential impacts and ensure that there is no loss in flood storage volume as a result of the proposed works. OEH recommends that the flood assessment utilise the latest/refined hydraulic model from Fairfield City Council's *Prospect Creek Floodplain Management Plan Review* (Bewsher, March 2010) to determine base case scenario and the potential impacts post development for the full range of flooding up to the probable maximum flood.

If you have any further questions about this issue please contact Rachel Lonie, Senior Operations Officer on 9995 6837 or by email at rachel.lonie@environment.nsw.gov.au.

Yours sincerely

S. Harrison 16/01/17

SUSAN HARRISON
Senior Team Leader Planning
Regional Operations

Attachment A – Standard Environmental Assessment Requirements

Biodiversity

1. Biodiversity impacts related to the proposed development are to be assessed and documented in accordance with the Framework for Biodiversity Assessment, unless otherwise agreed by OEH, by a person accredited in accordance with s142B(1)(c) of the *Threatened Species Conservation Act 1995.*

Aboriginal cultural heritage

2. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in the EIS. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011) and consultation with OEH regional officers.

3. Where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS.

4. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

Historic heritage

5. The EIS must provide a heritage assessment including but not limited to an assessment of impacts to *State and local heritage* including conservation areas, natural heritage areas, places of Aboriginal heritage value, buildings, works, relics, gardens, landscapes, views, trees should be assessed. Where impacts to State or locally significant heritage items are identified, the assessment shall:
   a. outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996),
   b. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria),
   c. include a statement of heritage impact for all heritage items (including significance assessment),
   d. consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and
   e. where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations (terrestrial and maritime as relevant) and include the results of these test excavations.

Water and soils

6. The EIS must map the following features relevant to water and soils including:
   a. Acid sulfate soils (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Planning Map).
   b. Rivers, streams, wetlands, estuaries (as described in Appendix 2 of the Framework for Biodiversity Assessment).
   c. Groundwater.
   d. Groundwater dependent ecosystems.
   e. Proposed intake and discharge locations.

7. The EIS must describe background conditions for any water resource likely to be affected by the development, including:
   a. Existing surface and groundwater.
   b. Hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations.
   c. Water Quality Objectives (as endorsed by the NSW Government http://www.environment.nsw.gov.au/ieo/index.htm) including groundwater as appropriate that represent the community's uses and values for the receiving waters.
   d. Indicators and trigger values/criteria for the environmental values identified at (c) in accordance with the ANZECC (2000) Guidelines for Fresh and Marine Water Quality and/or local objectives, criteria or targets endorsed by the NSW Government.

8. The EIS must assess the impacts of the development on water quality, including:
   a. The nature and degree of impact on receiving waters for both surface and groundwater, demonstrating how the development protects the Water Quality Objectives where they are currently being achieved, and contributes towards achievement of the Water Quality Objectives over time where they are currently not being achieved. This should include an assessment of the mitigating effects of proposed stormwater and wastewater management during and after construction.
   b. Identification of proposed monitoring of water quality.

9. The EIS must assess the impact of the development on hydrology, including:
   a. Water balance including quantity, quality and source.
   b. Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas.
   c. Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems.
   d. Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (eg river benches).
   e. Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water.
   f. Mitigating effects of proposed stormwater and wastewater management during and after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options.
   g. Identification of proposed monitoring of hydrological attributes.

Flooding and coastal erosion

10. The EIS must map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:
    a. Flood prone land
    b. Flood planning area, the area below the flood planning level.
    c. Hydraulic categorisation (floodways and flood storage areas).
11. The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 1 in 10 year, 1 in 100 year flood levels and the probable maximum flood, or an equivalent extreme event.
12. The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios:
    a. Current flood behaviour for a range of design events as identified in 11 above. This includes the 1 in 200 and 1 in 500 year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.
13. Modelling in the EIS must consider and document:
    a. The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood.
    b. Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories.
    c. Relevant provisions of the NSW Floodplain Development Manual 2005.
14. The EIS must assess the impacts on the proposed development on flood behaviour, including:
    a. Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.
    b. Consistency with Council floodplain risk management plans.
    c. Compatibility with the flood hazard of the land.
    d. Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.
    e. Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.
    f. Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
    g. Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the SES and Council.
    h. Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council.
    i. Emergency management, evacuation and access, and contingency measures for the development considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES.
    j. Any impacts the development may have on the social and economic costs to the community as consequence of flooding.

Attachment B – Project Specific Environmental Assessment Requirements

Biodiversity
As the site is within 500 metres of the Western Sydney Parklands, the assessment of impacts must address the matters to be considered outlined in the *Guidelines for developments adjoining land and water managed by DECCW* (DECCW 2010) and include: i. The nature of the impacts, including direct and indirect impacts. ii. The extent of the direct and indirect impacts. iii. The duration of the direct and indirect impacts. iv. The objectives of the reservation of the land. e. Measures proposed to prevent, control, abate, minimise and manage the direct and indirect impacts including an evaluation of the effectiveness and reliability of the proposed measures. f. Residual impacts.
Flooding
The flood assessment is to utilise the latest/refined hydraulic model from Fairfield City Council's *Prospect Creek Floodplain Management Plan Review* (Bewsher, March 2010) to determine base case scenario and the potential impacts post development for the full range of flooding up to the probable maximum flood.

Department of Primary Industries

OUT17/3153

Ms Bianca Thornton
Industry Assessments
NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Bianca.thornton@planning.nsw.gov.au

Dear Ms Thornton

Fairfield Sustainable Resource Centre Expansion (SSD 8184)
Request for Secretary's Environmental Assessment Requirements

I refer to your email of 10 January 2017 to the Department of Primary Industries (DPI) in respect to the above matter. Comment has been sought from relevant divisions of DPI. Views were also sought from NSW Department of Industry - Lands that are now a division of the broader Department and no longer within NSW DPI.
Any further referrals to DPI can be sent by email to landuse.enquiries@dpi.nsw.gov.au.

DPI has reviewed the request and advises that the Environmental Impact Statement should be required to consider the following:

- Annual volumes of surface water and groundwater proposed to be taken by the activity (including through inflow and seepage) from each surface and groundwater source as defined by the relevant water sharing plan.
- Assessment of any volumetric water licensing requirements (including those for ongoing water take following completion of the project).
- The identification of an adequate and secure water supply for the life of the project. Confirmation that water can be sourced from an appropriately authorised and reliable supply. This is to include an assessment of the current market depth where water entitlement is required to be purchased.
- A detailed and consolidated site water balance.
- Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.
- Full technical details and data of all surface and groundwater modelling.
- Proposed surface and groundwater monitoring activities and methodologies.
- Assessment of any potential cumulative impacts on water resources, and any proposed options to manage the cumulative impacts.
- Consideration of relevant policies and guidelines.

- A statement of where each element of the SEARs is addressed in the EIS (i.e. in the form of a table).

Yours sincerely

Mitchell Isaacs
Director, Planning Policy & Assessment Advice
24 January 2017

DPI appreciates your help to improve our advice to you. Please complete this three minute survey about the advice we have provided to you, here:
https://goo.gl/o8TXWz

Bianca Thornton

From: Shayne Kneen <shayne.kneen@industry.nsw.gov.au>
Sent: Tuesday, 17 January 2017 11:35 AM
To: Bianca Thornton
Subject: Re: Request for SEARs - Fairfield Sustainable Resource Centre Expansion SSD 8184 (GSNSW Response)

Bianca,

Thank you for the opportunity to provide advice on the: **Request for SEARs - Fairfield Sustainable Resource Centre Expansion SSD 8184.**

The Geological Survey of New South Wales (GSNSW) has reviewed the subject area and has determined that there are no resource issues to raise in regard to the proposal and has no SEAR's to issue on this occasion.

Queries regarding the above information, and future requests for advise in relation to this matter, should be directed to the GSNSW Land Use team at landuse.minerals@industry.nsw.gov.au.

Regards

Shayne Kneen | Geoscientist | Minerals and Land Use Assessment | Geological Survey of NSW

NSW Department of Industry | Division of Resources & Energy

516 High St | Maitland | NSW 2320 | PO Box 344 | Hunter Region Mail Centre | NSW 2310

T: 02 4931 6731 | F: 02 4931 6726 | E: shayne.kneen@industry.nsw.gov.au

W: www.industry.nsw.gov.au | www.resources.nsw.gov.au

APPENDIX B

Reporting requirements for the FBA

Table B1 Minimum information requirements for Stage 1 of the Biodiversity Assessment Report

Information	Maps and Data	FBA	BAR
Introduction Section			
Introduction to the biodiversity assessment including: • Identification of development site footprint, including operational footprint, construction footprint (indicating clearing associated with temporary construction facilities and infrastructure) and general description of development site. • Sources of information used in the assessment, including reports and spatial data.	Site Map (as described in Section 3.2) Location Map (as described in Section 3.2) Digital shape files for all maps and spatial data	Chapter 3 and Section 3.2	Chapter 1 Figure 1 Figure 2
Landscape Features Section			
Identification of landscape features at the development site, including: • IBRA bioregions and subregions, NSW landscape region and area (ha) • Native vegetation extent in the outer assessment circle or buffer area • Cleared areas • Evidence to support differences between mapped vegetation extent and aerial imagery • Rivers and streams classified according to stream order • Wetlands within, adjacent to and downstream of development site • Landscape value score components, including identification of method applied (i.e. linear or site-based), percent native vegetation cover in the landscape, connectivity value, patch size, area to perimeter ratio • Landscape value score	IBRA bioregions and subregions (as described in Paragraphs 4.1.1.3–4) NSW landscape regions (as described in Paragraphs 4.1.1.5–6) Rivers and streams (as described in Paragraphs 4.1.1.8–10 Wetlands (as described in Paragraphs 4.1.1.11–13) Other landscape features (as required by SEARs) Native vegetation extent (as described in Paragraphs 4.1.1.12–15) State, regional and local biodiversity links (as described in Paragraphs 4.1.1.16–17) Regional vegetation used to calculate patch size	Section 4.1, Appendix 4 and Appendix 5	Chapter 2 Figure 2
Native Vegetation Section			
Identify native vegetation extent within the development site, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery. Describe PCTs within the development site, including: • vegetation class; • vegetation type; • area (ha) for each vegetation type; • species relied upon for identification of vegetation type and relative abundance; • justification of evidence used to identify a PCT (as outlined in Paragraph 5.2.1.8); • EEC status (as outlined in Subsection 5.2.1); and • estimate of percent cleared value of PCT.	Map of native vegetation extent within the development site (as described in Section 5.1) Map of PCTs within the development site Map of condition class and subcategory (where relevant) Map of plot and transect locations relative to PCTs and condition class Map of EECs Plot and transect field data (MS Excel format) Plot and transect field data sheets Table of current site value scores for each vegetation zone within the development site Map of vegetation zones with a current site value score of <17.	Chapter 5	Chapter 4 Figure 5 Figure 6

Information	Maps and Data	FBA	BAR
Describe vegetation zones within the development site, including: • condition class and subcategory (where relevant); • area (ha) for each vegetation zone; and • survey effort as described in Paragraphs 5.2.1.5–7 (number of plots/transects). Where use of local data is proposed: • identify relevant vegetation type; • identify source of information for local benchmark data; and justify use of local data in preference to database values.			
Threatened Species Section			
Identify ecosystem credit species associated with PCTs on the development site as outlined in Section 6.3, including: • list of species derived; and • justification for exclusion of any ecosystem credit species predicted above. Identify species credit species on the development site as outlined in Sections 6.5 and 6.6, including: • list of candidate species; • justification for inclusions and exclusions based on habitat features; • indication of presence based on targeted survey or expert report; • details of targeted survey technique, effort, timing and weather; • species polygons; and • species that cannot withstand a further loss. Where use of local data is proposed: • identify the relevant species or population; • justify the use of an expert report; • indicate and justify the likelihood of presence of the species or population and information considered in making this assessment; • estimate the number of individuals or area of habitat (whichever unit of measurement applies to the species/individual) for the development site, including a description of how the estimate was made; and • identify the expert and provide evidence of their expert credentials.	Table of vegetation zones and landscape E.g. values, particularly indicating where these have changed due to species exclusion Targeted survey locations Table detailing the list of species credit species and presence status on site as determined by targeted survey, indicating also where presence was assumed and/or where presence was determined by expert report Species credit species polygons (as described in Paragraph 6.5.1.19) Table detailing species and habitat feature/component associated with species and its abundance on site (as described in Paragraph 6.5.1.19) Species polygons for species that cannot withstand a loss	Chapter 6	Chapter 5

Table B2 Minimum information requirements for Stage 2 of the Biodiversity Assessment Report

Report Section	Information	Maps and Data	FBA or BBAM Reference	Report Reference
Avoid and minimise impacts	Demonstration of efforts to avoid and minimise impact on biodiversity values in accordance with Section 8.3. Identification of final project footprint during construction and operation in accordance with Subsection 8.3.3. Assessment of direct and indirect impacts unable to be avoided at the development site in accordance with Sections 8.3 and 8.4. The assessment would include but not be limited to: type, frequency, intensity, duration and consequence of impact. Statement of onsite measures proposed to avoid and minimise direct and indirect impacts of the Major Project.	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility Map of final project footprint, including construction and operation Maps demonstrating indirect impact zones where applicable	Chapter 8	Chapter 6
Impact summary	Identification of areas not requiring assessment in accordance with Section 9.5. Identification of areas not requiring offset in accordance with Section 9.4. Identification of PCTs and species polygons requiring offset in accordance with Section 9.3. Identification of impacts that require further consideration in accordance with Section 9.2, including: • the entity and/or impact for which further consideration is necessary • supporting information relevant to the impact, as outlined in Subsection 9.2.2. Ecosystem credits and species credits that measure the impact of the Major Project on biodiversity values at the development site, including: • future site value score for each vegetation zone at the development site • change in landscape value score • number of required ecosystem credits for the impact of development on each vegetation zone at the development site • number of required species credits for the impact of development on each threatened species that occurs on the development site	Map of areas not requiring assessment Map of PCTs and species polygons not requiring offset Map of PCTs and species polygons requiring offset Map of the occurrence of the entity or impact that requires further consideration Table of PCTs requiring offset and the number of ecosystem credits required Table of species and populations requiring offset and the number of species credits required Full biodiversity Credit Calculator output Submitted proposal in the Credit Calculator	Chapter 9 Subsections 10.4.3 and 10.4.4	Chapter 7
Biodiversity credit report	Credit profiles for ecosystem credits and species credits at the development site.	Table of credit type and matching credit profile Biodiversity credit report from the Credit Calculator	Subsection 10.4.5	Chapter 7

APPENDIX C

Methods Statement

Overview

Field surveys for the Biodiversity Assessment Report were completed in accordance with the *Framework for Biodiversity Assessment* (FBA) (OEH 2014a). The Development Site was surveyed by three SLR ecologists on 24 August 2017, as well as 06 and 07 March 2018 involving:

- Vegetation survey plots and transects- according to the FBA. This involved a one-day survey in August 2017 by two SLR ecologists to conduct plot/transect surveys according to the methods prescribed in the FBA.
- Threatened species surveys, conducted by two ecologists over two days and two nights in March 2018, according to the recommended survey techniques and survey effort set out in the relevant NSW Government guidelines for threatened species surveys (DEC 2004 and DECC 2008).

The aim of the surveys was to gather site data and observations required to inform the *Biodiversity Assessment Report* (BAR) in accordance with the FBA, involving:

- Inspection of areas of native vegetation to refine vegetation community mapping and conditions in accordance with the FBA (OEH 2014a).
- Collection of detailed floristic and habitat data within the plant community types in accordance with the requirements of the FBA.
- Spotlighting surveys throughout woodland and grassland areas and around creeks and drainage lines to detect nocturnal fauna species.
- Call playback of relevant threatened forest owls and threatened amphibian calls during nocturnal surveys.
- Amphibian surveys (searches and call playback).
- Anabat monitoring for microchiropteran bats, focusing on areas where bat activity would be highest.
- Surveys for important fauna habitat features.

Assessing site value

Mapping native vegetation extent

Desktop assessments were undertaken to map areas of native vegetation predicted and/or modelled to occur within the development site prior to field surveys using available regional vegetation data from the *Sydney Metro vegetation mapping* (OEH 2013a), *Cumberland Plain vegetation mapping* (OEH 2015) and aerial imagery. Broad vegetation formations and vegetation classes were mapped across the development site and their respective areas were calculated. The regional vegetation mapping provided the basis for designing the field survey approach and formed a basis for identifying native vegetation types.

Areas of native vegetation were ground-truthed during field surveys to ascertain the extent, type and distribution of native vegetation present within the development site.

Stratifying native vegetation

Based on field survey results, plant community types (PCTs) were identified by matching floristic results from plot surveys (see next section) to floristic descriptions for relevant vegetation types listed for the Sydney Metro CMA in the *VIS Classification Database* (OEH 2017). Patches of native vegetation types were further stratified into broad condition states of 'low condition and 'moderate to good condition' (as per FBA) and thereby identified as distinct vegetation zones, according to Section 5.2.2 of the FBA. The resulting vegetation zones are described and mapped in the accompanying report.

Plot and transect surveys

A plot-based floristic survey of the development site was undertaken according to the methods outlined in Chapter 5 of the FBA. Plot and transect surveys were conducted to gather data on 'site value' for each vegetation zone and sample the environmental variation encountered within each zone. The number of plots sampled per vegetation zone was completed according to the minimum requirements of the FBA, as listed in **Table C1**.

Table C1 Plots/transects required and collected per vegetation zone

Zone	Vegetation Zone	Impact Area (ha)	Min. Plots Required	Plots completed
1	Forest Red Gum - Rough-barked Apple grassy woodland (moderate to good condition)	0.22	1	2
2	Coastal freshwater lagoons (moderate to good condition)	0	0	0
	Total	**0.22**	**1**	**2**

Two FBA plots/transects were completed in vegetation Zone 1 (see **Photos C1** and **C2)**. The locations of FBA plot/transects are displayed in **Figure C1**. As listed in **Table C1**, the minimum number of plots/transects (as required by the FBA) was exceeded for this vegetation zone. No plots were completed within Zone 2 Coastal freshwater lagoons, as this zone lies outside of the development footprint.

Plot/transect surveys were carried out according to the FBA (OEH 2014) and involved:

- Establishing a plot location randomly within a given vegetation zone, based on marking points randomly within each zone on a map of vegetation types (see **Figure C1**).
- A full floristic survey based on a 'nested' 20 m X 20 m quadrat, with all species recorded within the plot, including species name, growth form, and cover-abundance score according to the Braun-Blanquet scoring system (see Poore 1955).
- Establishing a 50 m transect through the centre of the plot and collecting data on six variables at various intervals along the transect (as listed in Table 2 of the FBA). The start point of the 50 m transect was recorded using a hand held GPS unit to allow mapping of the locations of all plot/transects.
- Establishing a 20 m X 50 m plot using the boundaries of the 20 m X 20 m plot and the 50 m transect and recording (i) total length of fallen logs (>10 cm diameter and over 50 cm in length) and (ii) number of trees with hollows.
- Estimating the proportion of canopy trees that are regenerating within the zone.

The above data were collected using FBA field sheets. The completed field data sheets are included in the BAR.

Photo C1 Plot/Transect 1 location within Canal Road Gully

Photo C2 Plot/Transect 2 location within vegetation adjacent to site boundary

Threatened species surveys

Overview

Section 6.6 of the FBA specifies the following requirements for threatened species surveys:

- Should be carried out at the appropriate time of year, as specified in the Threatened Species Profile Database.
- Adopt repeatable methods.
- Must target all 'candidate' species credit species identified according to Section 6.5 of the FBA. All 'species credit' species would be identified during the desktop assessment but are generally always included in the Wildlife Atlas database, so we are confident that our list provided in **Appendix F** includes such species.
- Be conducted according to DEC (2004) guidelines for all species excluding frogs (see below).
- Frog surveys be conducted according to DECC (2009) guidelines.

As discussed in **Section 4.3** of the BAR, a total of 18 candidate 'species credit species' have been determined to be relevant to the study area according to the Credit Calculator. Based on Credit Calculator output and on previous records of threatened species from the Atlas of NSW Wildlife database (within 10 km of the site), a table listing threatened flora and fauna for consideration is provided in the BAR. In identifying survey requirements for the BAR, we have relied on the following key guidelines, where relevant:

- DEC (2004) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities, for threatened species (excluding frogs) listed under the BC Act.
- DECC (2009) Threatened species survey and assessment guidelines: field survey methods for fauna. Amphibians. For threatened frogs listed under the BC Act.
- DEWHA (2010a, b and c) survey guidelines for Australia's threatened birds, bats, and for threatened fauna listed under the EPBC Act.
- DEWSC (2011) survey guidelines for Australia's threatened mammals listed under the EPBC Act.

Survey methods employed for targeted threatened species surveys as part of the preparation of this BAR, are detailed in the following sections.

Spotlighting

Spotlighting surveys were conducted throughout the various vegetation patches across the site, to target nocturnal mammals, birds (owls), amphibians and other nocturnal fauna (refer to **Table C2**). All vegetation and habitats within the Development Site were surveyed, as well as adjoining and nearby areas along Prospect Creek. Special attention was given to habitats and resources of potential value to threatened nocturnal fauna species. Fauna species were detected both visually and aurally.

Table C2 Spotlighting survey effort (March 2018)

Date (2018)	Survey Effort	Survey notes	Fauna groups targeted	Threatened species targeted
06 March (8:00–9:00pm)	2.0	Two ecologists surveyed patches of vegetation on site as well as along Prospect Creek to northeast	Forest Owls, arboreal mammals, megachiropteran bats (ie flying-foxes), amphibians	Masked Owl, Powerful Owl, Grey-headed Flying-fox, Koala, Squirrel Glider, Eastern Pygmy Possum, Green and Golden Bell Frog
07 March (8:00–9:00pm)	2.0	Two ecologists surveyed patches of vegetation on site, as well as along Prospect Creek to north and northeast	As above	As above
Total	**4.0**			

Call Playback

Pre-recorded calls of the Masked Owl and Powerful Owl were broadcast at several locations within the study area during the field surveys (refer to **Table C3**). Each call was broadcast for five minutes, followed by a two-minute listening period. Ten minutes was spent listening for calls prior to and after playback. Call playback was conducted within three hours after sunset. Pre-recorded calls of the Green and Golden Bell Frog were broadcast in locations of potentially suitable habitat, being areas of temporary ponding along the flats adjacent to Prospect Creek. It should be noted that the Development Site (within the Canal Road Gully) does not contain suitable habitat for the Green and Golden Bell Frog, but low lying areas along the flats adjacent to Prospect Creek that supporting temporary pondages or soaks after rain (as observed during the current survey) constitute marginal or suboptimal habitat.

Call playback details are listed in **Table C3** and playback locations are shown in **Figure C1.**

Table C3 Call playback survey details (March 2018)

Date	Survey Effort (hrs)	Calls Broadcast	Survey Area
06 March (9.00 – 9:30pm)	0.5	Masked Owl, Powerful Owl, Green and Golden Bell Frog	Adjacent to the creekline and close to the ponding area
07 March (9.00 – 9:30pm)	0.5	Masked Owl, Powerful Owl, Green and Golden Bell Frog	Adjacent to Canal Gully Rd
TOTAL	**1.0**		

Microchiropteran Bat Surveys

Anabat recorders were deployed to detect flying micro bats. Anabats, which detect ultrasonic frequencies produced by micro bats for navigation during flight, were placed in appropriate areas for bat detection including woodland patches and watercourses. Anabat surveys were conducted passively using two units at stationary points from dusk until dawn during the first nocturnal survey period (August 2017) and from 6 pm until 9.30 pm during the second period (March 2018). Details are listed in **Table C4** and the locations within the site where Anabats were placed are shown in **Figure C1**. Anabat results, in terms of the identification of bat calls recorded on the two Anabat devices, are provided in the BAR.

Table C4 Microchiropteran bat surveys details

Date (2018)	Survey (hours)	Survey effort (Detector nights)	Area Surveyed
06 March	(6pm -6am)	2.0	Two units placed at either end of Canal Gully Rd
07 March	(6pm -9.30pm)	2.0	As above
TOTAL		**4.0**	

Avifauna Surveys

Bird surveys involved direct visual observation of species as well as identification of calls through aural recognition. Surveyors traversed the development site and adjacent areas during a one-hour dusk bird survey conducted on 6th and 7th March 2018. Additionally, birds were recorded opportunistically during the August diurnal survey. **Table C5** lists the details of the survey and bird survey transect locations are shown in **Figure C1.**

Table C5 Avifauna survey details

Date and Time	Survey Effort (person-hours)	Comments
24 August 2017 (9am-3pm)	12	Opportunistic survey during walked meander
06 March (6.00 -8:00pm)	4	Opportunistic survey during walked meander
07 March (6.00 -7:00pm)	2	Opportunistic survey during walked meander
TOTAL	**18**	

306800 306900 307000 307100 307200 307300 307400 307500 307600 307700 307800 307900

6254100 6254000 6253900 6253800 6253700 6253600 6253500

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Biobanking Plot

Green and Golden Bell Frog call playback

Grey-headed Flying Fox Camp

Owl call playback

Anabat Location

Aquatic & Riparian Habitat Assessment

Avifauna Survey

Spotlight Survey

Threatened Amphibian Survey

SLR Track Logs

Site Boundary

Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

Fairfield SRC
Location of Field Survey Sites

FIGURE C1

Threatened Amphibian Surveys

Potential habitat for threatened amphibians throughout the development site and adjacent areas was identified during walking (diurnal) meanders, which provided locations to conduct nocturnal amphibian surveys. Nocturnal amphibian surveys were conducted within waterbodies identified within the study area and included active habitat searches, spotlighting and call playback. All amphibian species were identified both visually and aurally. Survey details are listed in **Table C6** and survey transect locations are shown on **Figure C1.**

Habitat identified was marginally suitable for the Green and Golden Bell Frog *Litoria aurea* despite being highly disturbed. Ephemeral waterbodies to the north of the development site contain some emergent vegetation (primarily Cumbungi *Typha orientalis*); however, introduced aquatic plants, such as Water Hyacinth *Eichhornia crassipes*, which floats on ponds or slow flowing streams forming mats, reduces the suitability of this habitat for Bell Frogs. The waterbodies surveyed within the study area also lack adjacent refugia (which can be used for hibernation or over-wintering) and were highly polluted with rubbish and other gross waste.

Table C6 Amphibian (frog) survey details

Date and Time (2018)	Survey Effort (person-hours)	Surveyed Area
06 March (7.00 -8:00pm)	2.0	Active search throughout areas supporting temporary pondages and soaks.
07 March (7.00 -8:00pm)	2.0	As above
TOTAL	**4.0**	

Habitat Searches

Habitat features within the development site were assessed and considered the specific habitat requirements and preferences for threatened fauna species, including hollow-bearing trees, stags (dead trees), hollow ground logs and leaf litter and woody debris, as well as suitable vegetation types. The presence of tree hollows that potentially provide nesting habitat for threatened owls were mapped (where present) and were targeted during spotlighting surveys. Searches of logs and debris were also conducted, targeting amphibians, reptiles and small ground mammals.

Weather

Weather data for the survey period are summarised in **Table C7**.

Table C7 Weather conditions during the survey period

Date	24-hr Rainfall (mm)	Humidity (%)	Max Wind (km/hr)	Temp Range (ºC)	Moon phase
24 August 2017	8.4	73	6 SE	18-24.6 clear sky	-
06 March 2018 (nocturnal)	3.6	58	15 SSE	17 – 22 overcast with showers	Disseminating moon (75%)
7th March 2018 (nocturnal)	3.6	57	13 SSE	18– 20.5 clear sky	Disseminating moon (75%)

Recorded at the nearest BOM weather station at Bankstown.

APPENDIX D

Flora and fauna species list

Table D1 Key – Flora species

Symbol	Description
STATUS	
i	Exotic species
x	Weed of National Significance (WoNS)
n	Native Australian species not considered to be indigenous to the site
var.	Variety
subsp.	Subspecies
agg.	An aggregate of several yet to be defined species
Cultivar	A species with selected traits that are suitable for cultivation or horticulture
BRAUN BLANQUET	
1	cover less than 5% of site and uncommon
2	cover less than 5% of site and common
3	cover of 6-20% of site
4	cover of 21-50% of site
5	cover of 51-75% of site
6	cover of 76-100% of site
NOTES	
	The SLR 2017 floristic data was collected by SLR Senior Ecologists on the 23 February 2012 and 24 August 2017. Unknown specimens were sampled and identified using the online PlantNET database (Botanic Gardens Trust 2017), and relevant field books. Nomenclature (i.e. species names and common names) used in this Appendix is sourced from PlantNET (BGT 2017).

Table D2 Key – Fauna species

Symbol	Description
U	Exotic
P	Protected native species
O	Observed
S	Scats
H	Heard calling
D	Detected (AnaBat)

Table D3 Flora species recorded within the development site

Family	Species name	Common name	Status	Plot 1	Plot 2
Agavaceae	*Yucca* sp.	Yucca	i		
Alismataceae	*Alisma plantago-aquatica*	Water Plantain			
Alliaceae	*Allium triquetrum*	Three-corned Garlic	i		
Amaranthaceae	*Alternanthera philoxeroides*	Alligator Weed	ix	3	
Apiaceae	*Foeniculum vulgare*	Fennell	i		2
Apocynaceae	*Araujia hortorum*	Moth Vine	i		
Apocynaceae	*Gomphocarpus fruticosus*	Narrow-leaved Cotton Bush	i		
Arecaceae	*Phoenix canarienis*	Canary Island Date Palm	i		
Asparagaceae	*Asparagus aethiopicus*	Asparagus Fern	ix		1
Asparagaceae	*Asparagus asparagoides*	Florists Smilax	ix	1	3
Asteraceae	*Ageratina adenophora*	Crofton Weed	i	2	
Asteraceae	*Artemisia verlotiorum*	Chinese Wormwood	i		
Asteraceae	*Aster subulatus*	Wild Aster	i		
Asteraceae	*Bidens pilosa*	Cobblers Peg	i		1
Asteraceae	*Cirsium vulgare*	Spear Thistle	i		
Asteraceae	*Conyza sp.*	Fleabane	i		
Asteraceae	*Hypochaeris microcephala* var. *albiflora*	White Flatweed	i		
Asteraceae	*Hypochaeris radicata*	Catsear	i		
Asteraceae	*Senecio madagascariensis*	Fireweed	ix		
Asteraceae	*Senecio pterophorus*		i		
Asteraceae	*Sonchus oleraceus*	Common Sow-thistle	i		
Asteraceae	*Tagetes minuta*	Stinking Roger	i		
Asteraceae	*Taraxacum officinale*	Dandelion	i		
Basellaceae	*Anredera cordifolia*	Madeira Vine	ix		
Brassicaceae	*Brassica juncea*	Indian Mustard	i		
Casuarinaceae	*Casuarina glauca*	Swamp Oak		3	
Commelinaceae	*Tradescantia fluminensis*	Wandering Jew	i	2	
Convolvulaceae	*Ipomoea alba*		i		3
Convolvulaceae	*Ipomoea indica*	Blue Morning Glory	i		
Convolvulaceae	*Polymeria calycina*	Woodland Bindweed			1
Cyatheaceae	*Cyathea cooperi*	Scaly Tree-fern			
Cyperaceae	*Carex appressa*	Tussock Tassel-sedge			
Cyperaceae	*Carex fascicularis*	Drooping Tassel-sedge			
Cyperaceae	*Cyperus eragrostis*	Umbrella Sedge	i	1	
Euphorbiaceae	*Ricinus communis*	Castor Oil Plant	i		
Fabaceae-Caesalpinioideae	*Senna pendula* var. *glabrata*	Cassia	i	3	2
Fabaceae-Faboideae	*Erythrina* x *sykesii*	Coral Tree	i		
Fabaceae-Faboideae	*Genista monspessulana*	Montpellier Broom	ix		
Fabaceae-Faboideae	*Glycine clandestina*	Twining Glycine			

Family	Species name	Common name	Status	Plot 1	Plot 2
Fabaceae-Faboideae	*Medicago lupulina*	Black Medic	i		
Fabaceae-Faboideae	*Medicago polymorpha*	Burr Medic	i		
Fabaceae-Faboideae	*Trifolium repens*	White Clover	i		
Fabaceae-Faboideae	*Vicia sativa* subsp. *sativa*	Common Vetch	i		
Fabaceae-Faboideae	*Vicia tetrasperma*	Slender Vetch	i		
Fabaceae-Mimosoideae	*Acacia decurrens*	Fine-leaf Green Wattle			
Fabaceae-Mimosoideae	*Acacia falcata*	Sickle Wattle			
Fabaceae-Mimosoideae	*Acacia fimbriata*	Fringed Wattle			1
Fabaceae-Mimosoideae	*Acacia floribunda*	Sally Wattle			
Fabaceae-Mimosoideae	*Acacia implexa*	Hickory			
Fabaceae-Mimosoideae	*Acacia parramattensis*	Sydney Green Wattle		1	
Fabaceae-Mimosoideae	*Acacia saligna*	Golden-wreath Wattle	i	1	
Iridaceae	*Watsonia meriana* cv. 'Bulbillifera'	Wild Watsonia	i		
Juncaceae	*Juncus acutus*	Spiny Rush	i		
Juncaceae	*Juncus usitatus*	Common Rush			
Juncaginaceae	*Lilaea scilloides*	Lilaea	i		
Lomandraceae	*Lomandra longifolia*	Spiny Mat-rush			
Loranthaceae	*Dendrophthoe vitellina*	Creeping Mistletoe			
Malaceae	*Cotoneaster glaucophyllus*	Cotoneaster	i		
Malvaceae	*Modiola caroliniana*	Red-flowered Mallow	i		
Malvaceae	*Pavonia hastata*	Pavonia	i		
Malvaceae	*Sida rhombifolia*	Paddys Lucerne	i		1
Meliaceae	*Melia azedarach*	White Cedar			
Moraceae	*Morus alba*	Mulberry			
Myrsinaceae	*Anagallis arvensis*	Pimpernel	i		
Myrtaceae	*Angophora floribunda*	Rough-barked Apple			3
Myrtaceae	*Callistemon citrinus* (cultivar)	Crimson Bottlebrush	n		
Myrtaceae	*Callistemon linearis*	Narrow-leaved Bottlebrush			
Myrtaceae	*Callistemon salignus*	Willow Bottlebrush			
Myrtaceae	*Callistemon viminalis* (cultivar)	Weeping Bottlebrush	n		
Myrtaceae	*Corymbia citriodora*	Lemon-scented Gum	n		1
Myrtaceae	*Corymbia eximia*	Yellow Bloodwood	n		
Myrtaceae	*Corymbia maculata*	Spotted Gum		1	3
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum			
Myrtaceae	*Eucalyptus camaldulensis*	River Red Gum	n		
Myrtaceae	*Eucalyptus fibrosa*	Broad-leaf Ironbark			
Myrtaceae	*Eucalyptus moluccana*	Grey Box			
Myrtaceae	*Eucalyptus sideroxylon*	Mugga Ironbark	n		
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum			
Myrtaceae	*Melaleuca decora*	White Feather Honey-myrtle			
Myrtaceae	*Melaleuca linariifolia*	Snow-in-Summer			3

Family	Species name	Common name	Status	Plot 1	Plot 2
Myrtaceae	*Melaleuca quinquenervia*	Broad-leaved Paperbark			1
Myrtaceae	*Melaleuca styphelioides*	Prickly Paperbark			
Ochnaceae	*Ochna serrulata*	Ochna	i		1
Oleaceae	*Ligustrum lucidum*	Large-leaf Privet	i	3	
Oleaceae	*Ligustrum sinense*	Small-leaf Privet	i	2	
Oleaceae	*Olea europaea* subsp. *cuspidata*	African Olive	i		1
Pittosporaceae	*Bursaria spinosa*	Blackthorn			
Plantaginaceae	*Plantago lanceolata*	Plantain	i		
Plantaginaceae	*Plantago major*	Large Plantain	i		
Poaceae	*Arundo donax*	Giant Reed	i		
Poaceae	*Bromus catharticus*	Prairie Grass	i		
Poaceae	*Chloris gayana*	Rhodes Grass	i		3
Poaceae	*Cortaderia selloana*	Pampas Grass	i		
Poaceae	*Cynodon dactylon*	Common Couch			3
Poaceae	*Ehrharta erecta*	Panic Veldtgrass	i	2	1
Poaceae	*Eragrostis curvula*	African Lovegrass	i		
Poaceae	*Panicum maximum* var. *maximum*	Guinea Grass	i		
Poaceae	*Paspalum urvillei*	Vasey Grass	i		
Poaceae	*Pennisetum clandestinum*	Kikuyu	i		4
Poaceae	*Phalaris aquatica*	Canary Grass			
Poaceae	*Phragmites australis*	Common Reed			
Polygalaceae	*Polygala virgata*	Twiggy Polygala	i		
Polygonaceae	*Persicaria decipiens*	Slender Knotweed			
Polygonaceae	*Persicaria hydropiper*	Water Pepper			
Polygonaceae	*Rumex brownii*	Swamp Dock			
Polygonaceae	*Rumex crispus*	Curled Dock	i		
Proteaceae	*Grevillea robusta*	Silky Oak	n		
Proteaceae	*Grevillea spp.* (cultivar)	A Planted Grevillea Hybrid	n		
Rosaceae	*Rubus fruticosus* agg.	Blackberry	i	3	
Rubiaceae	*Galium aparine*	Cleavers	i		
Sapindaceae	*Cardiospermum grandiflorum*	Balloon Vine	i		
Solanaceae	*Cestrum parqui*	Green Cestrum	i	2	2
Solanaceae	*Solanum americanum*	Glossy Nightshade	i		
Solanaceae	*Solanum mauritianum*	Wild Tobacco	i		
Solanaceae	*Solanum nigrum*	Black Nightshade	i		
Typhaceae	*Typha domingensis*	Narrow-leaf Cumbungi			
Typhaceae	*Typha orientalis*	Broad-leaf Cumbungi			3
Verbenaceae	*Lantana camara*	Lantana	i	6	4
Verbenaceae	*Verbena bonariensis*	Purple Top	i		
Verbenaceae	*Verbena rigida*	Creeping Verbena	i		

Table D4 Fauna species recorded within the development site and study area

Group	Family	Scientific Name	Common Name	Status
Aves	Acrocephalidae	*Acrocephalus australis*	Australian Reed-warbler	P, H
Aves	Anatidae	*Anas gracilis*	Grey Teal	P, O
Aves	Anatidae	*Anas superciliosa*	Pacific Black Duck	P, O
Aves	Anatidae	*Chenonetta jubata*	Australian Wood Duck	P, O
Aves	Artamidae	*Cracticus torquatus*	Grey Butcherbird	P, O
Aves	Artamidae	*Gymnorhina tibicen*	Australian Magpie	P, O
Aves	Artamidae	*Strepera graculina*	Pied Currawong	P, O
Aves	Ardeidae	*Nycticorax caledonicus*	Nankeen Night Heron	P, O
Aves	Acanthizidae	*Sericornis frontalis*	White-browed Scrubwren	P, O
Aves	Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	P, O
Aves	Charadriidae	*Thinornis rubricollis*	Hooded Plover	P, O
Aves	Columbidae	*Phaps chalcoptera*	Common Bronzewing	P, O
Aves	Columbidae	*Streptopelia chinensis*	Spotted Dove	U, O
Aves	Corvidae	*Corvus coronoides*	Australian Raven	P, O
Aves	Dicruridae	*Rhipidura albiscapa*	Grey Fantail	P, O
Aves	Dicruridae	*Rhipidura leucophrys*	Willie Wagtail	P, O
Aves	Estrildidae	*Lonchura punctulata*	Nutmeg Mannikin	U, O
Aves	Estrildidae	*Neochmia temporalis*	Red-browed Finch	P, O
Aves	Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra	P, O
Aves	Hirundinidae	*Hirundo neoxena*	Welcome Swallow	P, O
Aves	Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet	P, O
Aves	Ptilonorhynchidae	*Ptilonorhynchus maculatus*	Spotted Bowerbird	P, O
Aves	Maluridae	*Malurus cyaneus*	Superb Fairy-wren	P, O
Aves	Maluridae	*Malurus pulcherrimus*	Blue-breasted Fairy-wren	P, O
Aves	Meliphagidae	*Anthochaera carunculata*	Red Wattlebird	P, O
Aves	Meliphagidae	*Caligavis chrysops*	Yellow-faced Honeyeater	P, O
Aves	Meliphagidae	*Lichenostomus penicillatus*	White-plumed Honeyeater	P, O
Aves	Meliphagidae	*Manorina melanocephala*	Noisy Miner	P, O
Aves	Meliphagidae	*Meliphaga lewinii*	Lewin's Honeyeater	P, O
Aves	Meliphagidae	*Phylidonyris niger*	White-cheeked Honeyeater	P, O
Aves	Meliphagidae	*Phylidonyris novaehollandiae*	New Holland Honeyeater	P, O
Aves	Monarchidae	*Grallina cyanoleuca*	Magpie-Lark	P, O
Aves	Monarchidae	*Myiagra inquieta*	Restless Flycatcher	P, O
Aves	Pycnonotidae	*Pycnonotus jocosus*	Red-whiskered Bulbul	U, O
Aves	Rallidae	*Gallinula tenebrosa*	Dusky Moorhen	P, O
Aves	Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	P, O
Aves	Timaliidae	*Zosterops lateralis*	Silver-eye	P, O
Aves	Threskiornithidae	*Threskiornis molucca*	Australian White Ibis	P, O
Mammalia	Canidae	*Vulpes vulpes*	Red Fox	U, S
Mammalia	Leporidae	*Oryctolagus cuniculus*	European Rabbit	U, O

Group	Family	Scientific Name	Common Name	Status
Mammalia	Macropodidae	*Macropus giganteus*	Eastern Grey Kangaroo	P, S
Mammalia	Molossidae	*Mormopterus norfolkensis*	Eastern Freetail-bat	V, D
Mammalia	Muridae	*Rattus rattus*	Black Rat	U, O
Mammalia	Pseudocheiridae	*Pseudocheirus peregrinus*	Common Ringtail Possum	P, O
Mammalia	Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox	V, O
Mammalia	Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	P, D
Amphibia	Hylidae	*Litoria fallax*	Eastern Dwarf Tree Frog	P, O, H
Amphibia	Hylidae	*Litoria peronii*	Peron's Tree Frog	O, H
Amphibia	Myobatrachidae	*Limnodynastes peronii*	Striped Marsh Frog	P, H
Reptilia	Agamidae	*Physignathus lesueurii*	Common Eastern Water Dragon	P, O

APPENDIX E

Plot and transect data

Table E1 Plot and transect data

Plot Name	NPS	NOS	NMS	NGCG	NGCS	NGCO	EPC	NTH	OR	FL	Easting	Northing	Zone
1	3	7.5	5	0	0	0	62	0	0	0	269785	6588417	55
2	8	14	5	0.5	0	0	88	0	0	0	268779	6588146	55

APPENDIX F

Likelihood of occurrence of threatened biota

Table F1 Key to likelihood of occurrence

Symbol	Description
STATUS	**Listing under the *Biodiversity Conservation Act 2016***
CH	Critical Habitat
E1	Endangered
E2	Endangered Population
E3	Endangered Ecological Community
E4	Presumed Extinct
E4A	Critically Endangered
E4B	Critically Endangered Ecological Community
KTP	Key Threatening Process
V	Vulnerable
V2	Vulnerable Ecological Community
	Species listed under the Sensitive Species Data Policy (BioNet Atlas of NSW Wildlife)
^	rounded to 0.1Â
^^	rounded to 0.01Â
1	Sensitivity Class 1
2	Sensitivity Class 2
3	Sensitivity Class 3
Likelihood	**The potential relevance that the study area might have for threatened biota**
P	Present
H	High
M	Moderate
L	Low
VL	Very low
N	None
NOTES	The table below is based on data obtained from the Atlas of NSW Wildlife website http://www.bionet.nsw.gov.au/, and the following notes accompany this dataset: Data from the BioNet Atlas of NSW Wildlife website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1Â°; ^^ rounded to 0.01Â°). Copyright the State of NSW through the OEH. Search criteria: Licensed Report of all Valid Records of Threatened (listed on BC Act) Entities in selected. [North: -33.74 West: 150.81 East: 151.03 South: -33.92] returned a total of 5,562 records of 58 species. Report generated on 31/05/2017 3:05 PM. Descriptions of species and habitats are sourced from OEH 2017

Table F2 Threatened species of flora

Species Name	Description	Status	Likelihood
Acacia bynoeana Bynoe's Wattle	Semi-prostrate shrub to a metre high best when flowering (September-March). Occurs in heath or dry sclerophyll forest on sandy soils. Not associated with vegetation on site. No nearby records.	E1	N
Acacia pubescens Downy Wattle	Easily identified spreading shrub, 1-5 m high with yellow flowers from August to October. Occurs on alluviums, shales and at the intergrade between shales and sandstones, where soils are characteristically gravely, often with ironstone. Recorded on site 2010. Few records nearby.	V	L
Callistemon linearifolius Netted Bottle Brush	3-4 m tall, with linear (long and narrow) to linear-lanceolate (lance shaped) leaves Grows in dry sclerophyll forest on the coast and adjacent ranges Best detected when in flower between September and March. Not associated with vegetation on site. No nearby records.	V,3	N
Cynanchum elegans White-flowered Wax Plant	A woody vine with white tubular flowers between August and May. Occurs in dry rainforest vegetation, forest, woodland and open scrub. Not associated with vegetation on site. No nearby records.	E1	N
Dillwynia tenuifolia	Low spreading pea-flower shrub to one metre high which is easiest to detect when flowering from August to March. Not associated with vegetation on site. No nearby records.	V	N
Diuris aequalis Buttercup Doubletail	Terrestrial orchid with distinct yellow flower appearing late October and mid-December. Historic records around Sydney. Typically recorded in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands. Not associated with vegetation on site. No nearby records.	E1,2, ^^	N
Epacris purpurascens var. *purpurascens*	An erect shrub, 50 - 180 cm high; older stems with prominent short, broad leaf scars. Found in a range of habitat types, most of which have a strong shale soil influence Flowers all year, but easiest during flowering (July-Sept. on coast, mainly Oct.-Nov. on tablelands) Not associated with vegetation on site. No nearby records.	V	N
Eucalyptus nicholii Narrow-leaved Black Peppermint	Medium sized eucalypt with fibrous bark to larger branches. Natural distribution is restricted to the New England Tablelands and records around Sydney are likely to be of horticultural origin. Not associated with vegetation on site. No nearby records.	V	N
Eucalyptus scoparia Wallangarra White Gum	Small smooth-barked eucalypt. Natural distribution is restricted to the border of NSW and QLD and records around Sydney are likely to be of horticultural origin. Not associated with vegetation on site. No nearby records.	E1	N
Grammitis stenophylla Narrow-leaf Finger Fern	Little fern, growing in small colonies, with hanging or erect fronds Occurs in eastern Queensland and eastern NSW in moist places, usually near streams, on rocks or in trees, in rainforest and moist eucalypt forest. Not associated with vegetation on site. No nearby records.	E1,3	N
Grevillea juniperina subsp. *juniperina* Juniper-leaved Grevillea	Easily identified medium-sized shrub with green prickly leaves. Endemic to Western Sydney. Occurs on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium. Not associated with vegetation on site. No nearby records.	V	N
Hibbertia sp. Bankstown	Prostrate shrub with spreading, hairless, wiry branches up to 40 cm in length. Currently known to occur in only one population at Bankstown Airport in Sydney's southern suburbs Flowers spring and early summer. Not associated with vegetation on site. No nearby records.	E4A	N
Hibbertia superans	A low spreading shrub to 30 cm high. Occurs from Baulkham Hills to South Maroota in the northern outskirts of Sydney. Flowering time is July to December. Essential habitats are Ridgetop. . Not associated with vegetation on site. No nearby records.	E1	N

Species Name	Description	Status	Likelihood
Persoonia nutans Nodding Geebung	Shrub to 2.5 m with flat linear leaves and drooping yellow flowers that occur predominately from November to March. Occurs in Woodland to dry sclerophyll forest on laterite and alluvial sand. Associated with REFCF vegetation types. Not associated with vegetation on site. No nearby records.	E1	N
Pilularia novae-hollandiae Austral Pillwort	Semi-aquatic fern, resembling a small fine grass. Grows in shallow swamps and waterways, often among grasses and sedges. I's essential habitat requires. periodically waterlogged sites (including table drains) Associated with the vegetation on site on the site. No nearby records.	E1,3	L
Pimelea curviflora var. *curviflora*	A much-branched subshrub or shrub 20 to 120cm high with hairy stems. Flowers are red to yellow and flower year round. Not associated with vegetation on site. No nearby records.	V	N
Pimelea spicata Spiked Rice-flower	Small erect or spreading shrub best detected when producing distinctive white/pink tubular flowers from October to May. Not associated with vegetation on site. Recorded nearby.	E1	L
Pterostylis saxicola Sydney Plains Greenhood	Small terrestrial orchid only recognised by reddish brown and green translucent flowers appearing from October to December. Usually found in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. Not associated with vegetation on site. No recent nearby records.	E1,2, ^^	N
Pultenaea parviflora	Small shrub with yellow pea flowers from August to November. Usually associated with scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. Not associated with vegetation on site. Numerous records to northwest of site.	E1	N
Pultenaea pedunculata Matted Bush-pea	Cryptic mat-forming shrub, difficult to detect unless flowering (August to December). Favours sites in clay or sandy-clay soils (Blacktown Soil Landscape) on Wianamatta Shale-derived soils, usually close to patches of Tertiary Alluvium (Liverpool area). All sites have a lateritic influence with ironstone gravel (nodules) present. Not associated with vegetation on site. No nearby records.	E1	N
Syzygium paniculatum Magenta Lilly Pilly	Medium-sized rainforest tree. Occurs in littoral rainforest on grey soils over sandstone, or on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities. Not associated with vegetation on site. No nearby records.	E1	N
Triplarina imbricata Creek Triplarina	Open shrub with fine upright or weeping branches, growing about 2.8 m in height. Its bark is grey and scaly. The paired leaves are flat, narrow-oval in shape. Not associated with vegetation on site. No nearby records.	E1	N

Table F3 Threatened species of fauna

Species Name	Description	Status	Likelihood
Anthochaera phrygia Regent Honeyeater	Eucalypt forests, mostly occurs on western slopes of the Great Dividing Range Breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Associated with vegetation on site. Recorded nearby.	E4A	M
Artamus cyanopterus cyanopterus Dusky Woodswallow	A woodland dependent bird with a wide distribution and occurrence in a variety of habitats. The Tasmanian breeding population migrates north during the cooler months and can be found in southeast NSW. The species is an aerial forager and prefers woodland habitats. Associated with vegetation on site. Recorded nearby.	V	M

Species Name	Description	Status	Likelihood
Callocephalon fimbriatum Gang-gang Cockatoo	Tall mountain forests and woodlands, with dense shrubby understoreys in summer, drier, more open forests and woodlands in winter. Not associated with vegetation on site. No nearby records.	V,3	N
Cercartetus nanus Eastern Pygmy-possum	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Associated with vegetation on site. No nearby records.	V	N
Chalinolobus dwyeri Large-eared Pied Bat	Sandstone cliffs and fertile woodland valley habitat. Associated with vegetation on site. No nearby records.	V	N
Daphoenositta chrysoptera Varied Sittella	Eucalypt woodlands and forests with rough-barked trees like stringybarks and ironbarks or mature trees with hollows or dead branches. Associated with vegetation on site. Recorded nearby.	V	L
Dasyurus maculatus Spotted-tailed Quoll	Range of forest types; mostly denser old growth forests with suitable den sites such as rock crevices Associated with vegetation on site. No nearby records.	V	N
Falco subniger Black Falcon	Tree-lined watercourses and in isolated woodlands, mainly in arid and semi-arid areas. Not associated with vegetation on site. No nearby records.	V	N
Falsistrellus tasmaniensis Eastern False Pipistrelle	Tall, mature, wet forests with hollow-bearing trees. Hibernates in winter. Females are pregnant in late spring to early summer. . Associated with vegetation on site. Recorded nearby.	V	M
Glossopsitta pusilla Little Lorikeet	Dry, open sclerophyll forests and woodlands, usually dominated by tall eucalypts, especially box–ironbark species including White Box and Yellow Box, where they forage in the canopy of flowering trees Associated with vegetation on site. No nearby records.	V	L
Haliaeetus leucogaster White-bellied Sea-Eagle	Foraging habitat includes coastal seas, rivers, fresh and saline lakes, lagoons, reservoirs and terrestrial habitats such as grasslands. Nests in large usually live trees. Not associated with vegetation on site. No nearby records.	V	N
Hieraaetus morphnoides Little Eagle	Occupies open eucalypt forest, woodland or open woodland. Preys on birds, reptiles and mammals. Associated with vegetation on site. Few nearby records.	V	L
Lathamus discolour Swift Parrot	Dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees. Following winter they return to Tasmania where they breed from September to January. Associated with vegetation on site. Few nearby records.	E1,3	L
Litoria aurea Green and Golden Bell Frog	Inhabits marshes, dams and stream-sides. Habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (Gambusia holbrooki), have a grassy area nearby and diurnal sheltering sites available. Associated with vegetation on site. Recorded on site 1963.	E1	M
Lophoictinia isura Square-tailed Kite	Open eucalypt woodlands with mature trees. Breeding is from July to February. Associated with vegetation on site. No nearby records.	V,3	N
Melithreptus gularis gularis Black-chinned Honeyeater	Upper levels of open eucalypt forests and woodlands dominated by box and ironbark eucalypts. Associated with vegetation on site. No nearby records.	V	N
Meridolum corneovirens Cumberland Plain Land Snail	Open woodlands and grasslands with logs and wood debris. Not associated with vegetation on site. Recorded nearby.	E1	L
Miniopterus australis Little Bentwing-bat	Tall open forests, favours areas with caves or other shelters. Associated with vegetation on site. No nearby records.	V	N
Miniopterus schreibersii oceanensis Eastern Bentwing-bat	Tall open forests, favours areas with caves or other shelters. Caves are the primary roosting habitat. Associated with vegetation on site. Recorded nearby.	V	M

Species Name	Description	Status	Likelihood
Mormopterus norfolkensis Eastern Freetail-bat	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests. Roost mainly in tree hollows but will also roost under bark or in man-made structures. Associated with vegetation on site. Recorded nearby.	V	P
Myotis macropus Southern Myotis	Open forests with mature hollow-bearing trees, usually close to water courses. In NSW females have one young each year usually in November or December. Associated with vegetation on site. Recorded nearby.	V	M
Ninox connivens Barking Owl	Open woodlands and forest edge habitats where forest meets farmlands, more common in dry forest types with large mature trees. Associated with vegetation on site. No nearby records.	V,3	N
Ninox strenua Powerful Owl	Areas of old growth forests that contain mature hollow-bearing eucalypt trees. Main prey items are medium-sized arboreal marsupials. Nesting occurs from late autumn to mid-winter, but is slightly earlier in north-eastern NSW (late summer - mid autumn) . Associated with vegetation on site. No nearby records.	V,3	N
Petroica boodang Scarlet Robin	Open forests and woodlands; frequents open grassland areas during winter. Breed between the months of July and January Associated with vegetation on site. No nearby records.	V	N
Petroica phoenicea Flame Robin	Forests and woodlands up to about 1800m above sea level Associated with vegetation on site. No nearby records.	V	N
Phascolarctos cinereus Koala	Open eucalypt forests. Inactive for most of the day, feeding and moving mostly at night. Associated with vegetation on site. No nearby records. Associated with vegetation on site. No nearby records.	V	N
Polytelis swainsonii Superb Parrot	Found throughout eastern inland NSW. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. Breed between September and January. Not associated with vegetation on site. No nearby records.	V,3	N
Pseudophryne australis Red-crowned Toadlet	Sandstone ridges, creeks and drainage lines of the Sydney Basin. Have not been recorded breeding in waters that are even mildly polluted or with a pH outside the range 5.5 to 6.5. Not associated with vegetation on site. No nearby records.	V	N
Pteropus poliocephalus Grey-headed Flying-fox	Rainforests, open forests, closed and open woodlands, melaleuca swamps and banksia woodlands. Annual mating commences in January. Feed on the nectar and pollen of native trees. Associated with vegetation on site. Recorded nearby.	V	M
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Roosts singly or in groups of up to six, in tree hollows and buildings. Breeding has been recorded from December to mid-March. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Associated with vegetation on site. Recorded nearby.	V	L
Scoteanax rueppellii Greater Broad-nosed Bat	Rainforest, dry and wet sclerophyll forest and eucalypt woodland. Forages after sunset. Little is known of its reproductive cycle, however a single young is born in January. Associated with vegetation on site. Recorded nearby.	V	M
Tyto novaehollandiae Masked Owl	A medium-sized owl to 40 - 50 cm long, with dark eyes set in a prominent flat, heart-shaped facial disc that is encircled by a dark border. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. Associated with vegetation on site. No nearby records.	V,3	N

Table F4 Endangered populations of flora and fauna

Species Name	Description	Status	Likelihood
Marsdenia viridiflora R. Br. subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith LGAs	A climber to 4 m high with twining stems, tubular flowers and large pear-shaped fruit. Grows in vine thickets and open shale woodland. The species is associated with CPW. Associated with vegetation on site. Recorded nearby.	E2	H
Pomaderris prunifolia P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	Shrub 1 - 3 metres high, stems with rusty stellate hairs. Known from only three sites within the listed local government areas, at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. Not associated with vegetation on site. No nearby records.	E2	N
Wahlenbergia multicaulis Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	A perennial, tufted herb, typically few-stemmed, 10 - 75 cm high. Hairless or sometimes with few hairs. Leaves are mostly long and thin, smooth edged or with small serrations. Not associated with vegetation on site. No nearby records.	E2,	N

Table F5 Threatened ecological communities

Community Name	Description	Status	Likelihood
Agnes Banks Woodland in the Sydney Basin Bioregion	Low woodland dominated by *Eucalyptus sclerophylla* and *Angophora bakeri* with a diverse understorey of sclerophyllous shrubs species including *Banksia oblongifolia*, *Conospermum taxifolium*, *Leptospermum trinervium*, *Dillwynia sericea*, *Monotoca scoparia* and *Persoonia nutans*, and ground stratum species including *Lepidosperma urophorum*, *Platysace ericiodes*, *Pimelea linifolia*, *Mitrasacme polymorpha*, *Trachymene incisa* and *Stylidium graminifolium*. Restricted to small areas of sand dunes overlying Tertiary Alluvium at Agnes Banks on the east bank of the Hawkesbury River in the Penrith LGA. Not associated with vegetation on site. No nearby records.	E4B	N
Blue Gum High Forest in the Sydney Basin Bioregion	Blue Gum High Forest is dominated by a tall canopy of eucalypts that may exceed 30 m in height. Its understorey is typically multi-layered with a midstorey of mesophyllous shrubs and small trees and a diverse ground layer of herbs, ferns and some grasses. Dominated by either *Eucalyptus pilularis* (Blackbutt) or *E. saligna* (Sydney Blue Gum). Typically associated with soils derived from Wianamatta Shale (Tozer 2003), though may occur in adjacent areas underlain by Hawkesbury Sandstone . Found on the north shore and northern suburbs of Sydney and has been recorded from the LGAs of Lane Cove, Willoughby, Ku-ring-gai, Hornsby, Baulkham Hills, Ryde and Parramatta within the Sydney Basin Bioregion and may occur elsewhere in the Bioregion. Not associated with vegetation on site. No nearby records.	E4B	N
Blue Mountains Shale Cap Forest in the Sydney Basin Bioregion	Blue Mountains Shale Cap Forest is found on deep fertile soils formed on Wianamatta Shale, on moist sheltered sites at lower to middle altitudes of the Blue Mountains and Wollemi areas. Extensive occurrences of shale are at Springwood, Berambing to Kurrajong Heights, Mountain Lagoon and Colo Heights. Not associated with vegetation on site. No nearby records.	E3	N

Community Name	Description	Status	Likelihood
Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	Dominated by *Eucalyptus parramattensis* subsp. *parramattensis*, *Angophora bakeri* and *E. sclerophylla*. Occurs almost exclusively on soils derived from Tertiary alluvium, or on sites located on adjoining shale or Holocene alluvium. Occurs within the LGAs of Bankstown, Blacktown, Campbelltown, Hawkesbury, Liverpool and Penrith (James 1997). The main occurrence of Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion is in the Castlereagh area of the Cumberland Plain, with small patches occurring at Kemps Creek and Longneck Lagoon. Not associated with vegetation on site. No nearby records.	V2	N
Castlereagh Swamp Woodland Community	Low woodland, often having dense stands of Paperbark trees *Melaleuca decora* along with other canopy trees, such as *Eucalyptus parramattensis*. Occurs in western Sydney in the Castlereagh and Holsworthy areas, on deposits from ancient river systems along today's intermittent creeklines, often in poorly drained depressions. There is now only 616 hectares remaining intact, which mainly occurs in the Hawkesbury, Liverpool and Penrith LGAs. Not associated with vegetation on site. No nearby records.	E3	N
Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion	Predominantly open-forest to low woodland structure usually with trees of *Eucalyptus fibrosa* and *Melaleuca decora*, sometimes with *E. longifolia*. Relatively dense shrub stratum is typical, commonly with *M. nodosa* and *Lissanthe strigosa*, and to a lesser extent *M. decora*. Usually occurs on clay soils on Tertiary alluvium, or on shale soils on Wianamatta Shale including the Birrong Soil Landscape and associated shale lowlands. Known to occur in the Auburn, Bankstown, Blacktown, Canterbury, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Strathfield LGAs. Not associated with vegetation on site. No nearby records.	E3	N
Cumberland Plain Woodland in the Sydney Basin Bioregion	Typically comprises an open tree canopy, a near-continuous groundcover dominated by grasses and herbs, sometimes with layers of shrubs and/or small trees. Associated with clay soils derived from Wianamatta Group geology, or more rarely alluvial substrates, on the Cumberland Plain. The community typically occurs on flat to undulating or hilly terrain up to about 350 m elevation but may also occur on locally steep sites and at slightly higher elevations. Restricted to the Sydney Basin bioregion and is currently known to occur within the LGAs of Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly, but may occur elsewhere within the bioregion. Not associated with vegetation on site.	E4B	N
Elderslie Banksia Scrub Forest in the Sydney Basin Bioregion	Scrub community dominated by Banksia integrifolia subsp. integrifolia. Other canopy species include Angophora subvelutina. Occurs only in the Elderslie area, near Camden, in Sydney's south-west. Remaining remnants are 15 ha in total. Occurs on sand deposits on the old terraces deposited by ancient river systems of what is now the Nepean River. Not associated with vegetation on site.	E4B	N
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes Not associated with vegetation on site.	E3	N

Community Name	Description	Status	Likelihood
Moist Shale Woodland in the Sydney Basin Bioregion	Similar to CPW. It differs in having a shrub understorey that contains plants from moist habitats. Dominant canopy trees include Eucalyptus tereticornis, E. moluccana, E. crebra and Corymbia maculata. Moist Shale Woodland usually occurs on soils derived from Wianamatta Shale on high country in the southern half of the Cumberland Plain, and occurs mainly in Wollondilly LGA. Not associated with vegetation on site.	E3	N
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. Dominant trees include *Eucalyptus tereticornis*, *E. amplifolia*, *Angophora floribunda* and *A. subvelutina*. Known to occur within Fairfield, Holroyd, Liverpool, Bankstown, Wollondilly, Camden, Campbelltown, Sutherland, LGAs. Associated with vegetation on site.	E3	H
Shale Gravel Transition Forest in the Sydney Basin Bioregion	Open-forest structure, usually with trees of *Eucalyptus fibrosa* sometimes with *E. moluccana* and *E. tereticornis*. *Melaleuca decora* is frequently present in a small tree stratum. Occurs primarily in areas where shallow deposits of Tertiary alluvium overlie shale soils but may also occur in association with localised concentrations of iron-indurated gravel. Shale Gravel Transition Forest grades into C as alluvial and ironstone influences decline. Not associated with vegetation on site.	E3	N
Shale Sandstone Transition Forest in the Sydney Basin Bioregion	Occurs at the edges of the Cumberland Plain, where clay soils from the shale rock intergrade with earthy and sandy soils from sandstone, or where shale caps overlay sandstone. The main tree species include *Eucalyptus tereticornis*, *E. punctata*, *E. globoidea*, *E. eugenioides*, *E. fibrosa* and *E. crebra*. Occurs in the Hawkesbury, Baulkham Hills, Liverpool, Parramatta, Penrith, Campbelltown and Wollondilly LGAs. Not associated with vegetation on site.	E4B	N
Southern Sydney sheltered forest on transitional sandstone soils in the Sydney Basin Bioregion	Primarily associated with the heads and upper slopes of sandstone gullies, which are downslope from residual shale or ironstone caps. Dominant trees include *Angophora costata*, *Eucalyptus piperita* and occasionally *E. pilularis*, particularly around Helensburgh. *Corymbia gummifera* occurs frequently within the community, although generally at lower abundance than the other eucalypts. Recorded from the LGAs of Campbelltown, Hurstville, Kogarah, Sutherland, Wollondilly and Wollongong. Not associated with vegetation on site.	E3	N
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Found on the coastal floodplains of NSW. It has a dense to sparse tree layer in which Casuarina glauca is the dominant species northwards from Bermagui. Other trees including *Acmena smithii*, *Glochidion* spp. and *Melaleuca* spp. may be present as subordinate species. Present within Penrith, Fairfield, Liverpool, Bankstown, Wollondilly, Camden, Campbelltown LGAs (+ many more). Associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. Generally occurs below 20 m (rarely above 10 m) elevation. Associated with vegetation on site.	E3	H

Community Name	Description	Status	Likelihood
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains. Dominant trees include *Eucalyptus robusta*, *Melaleuca quinquenervia* and, south from Sydney, *E. botryoides* and *E. longifolia*. Generally occurs below 20 m (though sometimes up to 50 m) elevation. Sydney LGAs where this occurs include; Hornsby, Pittwater, Warringah, Manly, Liverpool, Rockdale, Botany Bay, Randwick, Sutherland Associated with vegetation on site.	E3	H
Sydney Turpentine-Ironbark Forest	Open forest, with dominant canopy trees including *Syncarpia glomulifera*, *Eucalyptus punctata*, *E. paniculata* and *E. eugenoides*. Remnants mostly occur in the Baulkham Hills, Hornsby, Ku-ring-gai, Parramatta, Ryde, Sutherland and Hurstville LGAs. Not associated with vegetation on site	E3	N
Western Sydney Dry Rainforest in the Sydney Basin Bioregion	A dry vine scrub community of the Cumberland Plain, western Sydney. Canopy trees include *Melaleuca styphelioides*, *Acacia implexa* and *Alectryon subcinereus*. There are many rainforest species in the shrub layer, such as *Notolaea longifolia*, *Clerodendrum tomentosum* and *Pittosporum revolutum*. Restricted to hilly country where it occurs on the sheltered lower slopes and in gullies. Generally found at higher elevation, in areas receiving higher rainfall than much of the CPW. Occurs on clay soils derived from Wianamatta shale. There are 338 hectares remaining intact, the majority of these occurring in the Wollondilly LGA, but occurring to a lesser extent in the Baulkham Hills, Camden, Hawkesbury, Parramatta and Ryde LGAs. Not associated with vegetation on site	E3	N

APPENDIX G

BioBanking credit reports

Biodiversity credit report

This report identifies the number and type of biodiversity credits required for a major project.

Date of report: 11/08/2020 Time: 2:47:45PM Calculator version: v4.0

Major Project details

Proposal ID:	0087/2017/4604MP
Proposal name:	Proposed Expansion of Fairfield Sustainable Resource Centre
Proposal address:	Widemere Road Wetherill Park NSW 2289
Proponent name:	Fairfield City Council
Proponent address:	86 Avoca Road Wakeley NSW 2165
Proponent phone:	97250222
Assessor name:	Andrew Carty
Assessor address:	Honeysuckle Drive NEWCASTLE NSW 2302
Assessor phone:	4927 3204
Assessor accreditation:	0087

Summary of ecosystem credits required

Plant Community type	Area (ha)	Credits created
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	0.22	0.00
Total	0.22	0

Credit profiles

1. Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion, (HN526)

Number of ecosystem credits created 0

IBRA sub-region Cumberland - Hawkesbury/Nepean

Offset options - Plant Community types	Offset options - IBRA sub-regions
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion, (HN526)	Cumberland - Hawkesbury/Nepean and any IBRA subregion that adjoins the IBRA subregion in which the development occurs

Summary of species credits required

BioBanking Credit Calculator

Ecosystem credits

Proposal ID :	0087/2017/4604MP
Proposal name :	Proposed Expansion of Fairfield Sustainable Resource Centre
Assessor name :	Andrew Carty
Assessor accreditation number :	0087
Tool version :	v4.0
Report created :	11/08/2020 14:55

Assessment circle name	Landscape score	Vegetation zone name	Vegetation type name	Condition	Red flag status	Management zone name	Management zone area	Current site value	Future site value	Loss in site value	Credit required for bio diversity	Credit required for TS	TS with highest credit requirement	Average species loss	Species TG Value	Final credit requirement for management zone
1	9.00	HN526_Moderate/Good_Poor	Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Moderate/Good_Poor	No	1	0.22	14.06	0.00	14.06	3	2	Little Lorikeet	33.33	1.80	0

BioBanking Credit Calculator

Species credits

Proposal ID :

Proposal name :

Assessor name :

Assessor accreditation number :

Tool version : v4.0

Report created : 11/08/2020 14:55

Scientific name	Common name	Species TG value	Identified population?	Can Id. popn. be offset?	Area / number of loss	Negligible loss	Red flag status	Number of credits
			No					

BioBanking Credit Calculator

Threatened species predicted on site

Proposal ID :	0087/2017/4604MP
Proposal name :	Proposed Expansion of Fairfield Sustainable Resource Centre
Assessor name :	Andrew Carty
Assessor accreditation number :	0087
Tool version :	v4.0
Report created :	11/08/2020 15:41

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common name	Scientific name	Vegetation type(s)
Little Lorikeet	Glossopsitta pusilla	HN526 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion
Swift Parrot	Lathamus discolor	HN526 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

BioBanking Credit Calculator

Threatened species loss summary

Proposal ID :

Proposal name :

Assessor name :

Assessor accreditation number :

Tool version : v4.0

Report created : 11/08/2020 15:39

Common name	Scientific name	Is it an identified population?	Can identified population be offset?	Loss	Units	Red flagged?
		No				

BioBanking Credit Calculator

Threatened species requiring survey

Proposal ID :	0087/2017/4604MP
Proposal name :	Proposed Expansion of Fairfield Sustainable Resource Centre
Assessor name :	Andrew Carty
Assessor accreditation number :	0087
Tool version :	v4.0
Report created :	11/08/2020 15:45

List of species requiring survey

Common name	Scientific name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austral Pillwort	Pilularia novae-hollandiae	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Black Bittern	Ixobrychus flavicollis	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brown Pomaderris	Pomaderris brunnea	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Camden White Gum	Eucalyptus benthamii	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cumberland Plain Land Snail	Meridolum corneovirens	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Eastern Pygmy-possum	Cercartetus nanus	N	N	N	N	N	N	N	N	N	N	N	N
Green and Golden Bell Frog	Litoria aurea	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y
Hibbertia sp. Bankstown	Hibbertia sp. Bankstown	N	N	N	N	N	N	N	N	Y	Y	Y	Y
Hypsela sessiliflora	Hypsela sessiliflora	N	N	N	N	N	N	N	N	Y	Y	Y	N
Koala	Phascolarctos cinereus	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Marsdenia viridiflora subsp. viridiflora in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	Marsdenia viridiflora subsp. viridiflora - endangered population	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Regent Honeyeater	Anthochaera phrygia	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Squirrel Glider	Petaurus norfolcensis	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Tall Knotweed	Persicaria elatior	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y

Common name	Scientific name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wahlenbergia multicaulis (Tadgells Bluebell) population, Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield local government areas	Wahlenbergia multicaulis - endangered population	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
White-flowered Wax Plant	Cynanchum elegans	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

BioBanking Credit Calculator

Vegetation zones requiring transects/plots survey

Proposal ID :	0087/2017/4604MP
Proposal name :	Proposed Expansion of Fairfield Sustainable Resource Centre
Assessor name :	Andrew Carty
Assessor accreditation number :	0087
Tool version :	v4.0
Report created :	11/08/2020 15:40

Vegetation zone name : HN526_Moderate/Good_Poor

Vegetation type: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

Vegetation condition: Moderate/Good_Poor **Ancillary code:** HN526

Total area of zone (ha): 0.22 **Number of TS subzones in the zone:** 4

Minimum number of survey transects/plots required within the zone: 1

APPENDIX H

EPBC Act PMST results

Australian Government
Department of the Environment and Energy

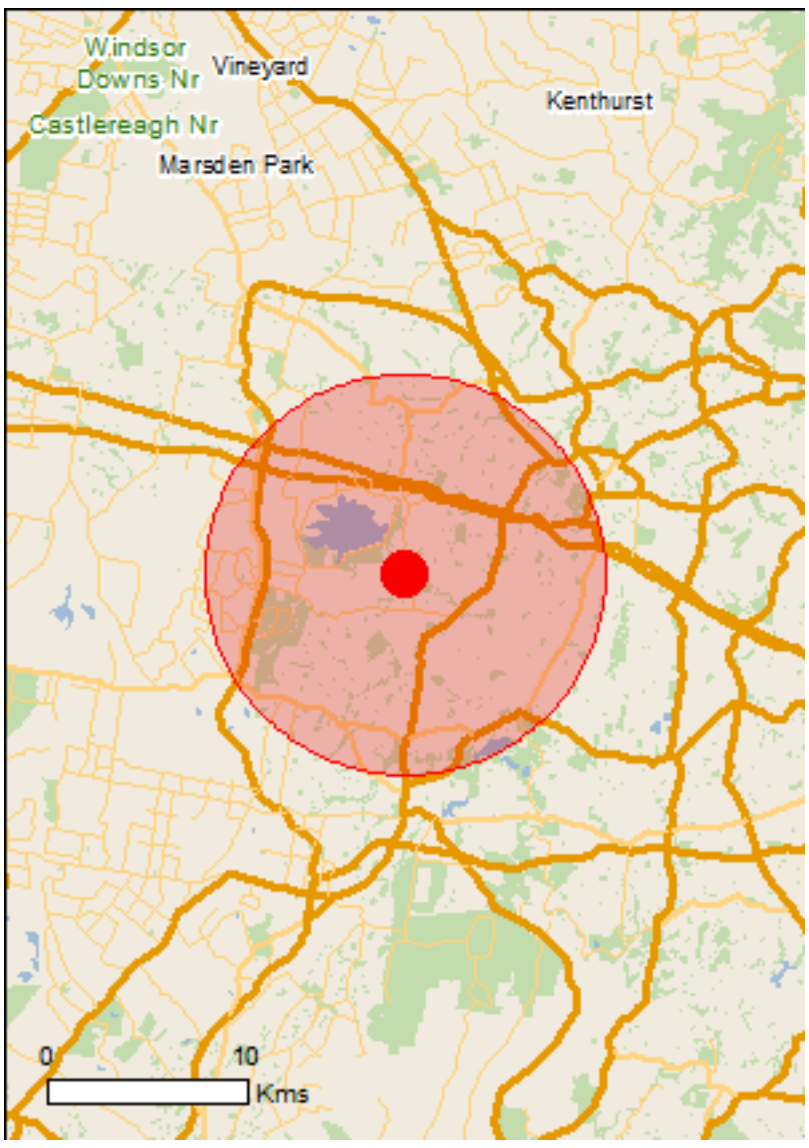
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 27/09/17 07:50:26



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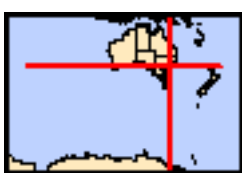

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	45
Listed Migratory Species:	17

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	20
Commonwealth Heritage Places:	3
Listed Marine Species:	24
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	55
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Status
Australian Convict Sites (Old Government House and Domain Buffer Zone)	NSW	Buffer zone
Australian Convict Sites (Old Government House and Domain)	NSW	Declared property

National Heritage Properties		[Resource Information]
Name	State	Status
Historic		
Old Government House and the Government Domain	NSW	Listed place

Listed Threatened Ecological Communities		[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	Community may occur within area
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Community likely to occur within area
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Turpentine-Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Limosa lapponica baueri		
Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri		
Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica		
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat known to occur within area
Prototroctes maraena		
Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
Frogs		
Heleioporus australiacus		
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans		
Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata		
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Other		

Name	Status	Type of Presence
[Pommerhelix duralensis](#) Dural Land Snail [85268]	Endangered	Species or species habitat likely to occur within area
Plants		
[Acacia bynoeana](#) Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area
[Acacia pubescens](#) Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat known to occur within area
[Allocasuarina glareicola](#) [21932]	Endangered	Species or species habitat may occur within area
[Asterolasia elegans](#) [56780]	Endangered	Species or species habitat may occur within area
[Cryptostylis hunteriana](#) Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
[Cynanchum elegans](#) White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
[Genoplesium baueri](#) Yellow Gnat-orchid [7528]	Endangered	Species or species habitat known to occur within area
[Grevillea parviflora subsp. parviflora](#) Small-flower Grevillea [64910]	Vulnerable	Species or species habitat likely to occur within area
[Haloragis exalata subsp. exalata](#) Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat may occur within area
[Leucopogon exolasius](#) Woronora Beard-heath [14251]	Vulnerable	Species or species habitat likely to occur within area
[Pelargonium sp. Striatellum (G.W.Carr 10345)](#) Omeo Stork's-bill [84065]	Endangered	Species or species habitat may occur within area
[Persoonia nutans](#) Nodding Geebung [18119]	Endangered	Species or species habitat likely to occur within area
[Pimelea curviflora var. curviflora](#) [4182]	Vulnerable	Species or species habitat known to occur within area
[Pimelea spicata](#) Spiked Rice-flower [20834]	Endangered	Species or species habitat known to occur within area
[Pomaderris brunnea](#) Rufous Pomaderris [16845]	Vulnerable	Species or species habitat likely to occur within area
[Pterostylis gibbosa](#) Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area
[Pterostylis saxicola](#) Sydney Plains Greenhood [64537]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pultenaea parviflora [19380]	Vulnerable	Species or species habitat likely to occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -
Commonwealth Land - Australian & Overseas Telecommunications Corporation
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Postal Corporation
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation
Commonwealth Land - Australian Wool Testing Authority Limited
Commonwealth Land - Commonwealth Scientific & Industrial Research Organisation
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of Defence Service Homes
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Telstra Corporation Limited
Defence - 1/15 RNSWL - LANCER BARRACKS - PARRAMATTA
Defence - ADFRU PARRAMATTA
Defence - BLACKTOWN TRAINING DEPOT
Defence - MERRYLANDS
Defence - Suite 8, Library Plaza
Defence - VILLAWOOD - MOTOR REPAIR W/SHP (VILLAWOOD GEMS BASE)

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Lancer Barracks	NSW	Listed place
Lancer Barracks Precinct	NSW	Listed place
Villawood Immigration Centre	NSW	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Prospect	NSW

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.83821 150.9184

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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APPENDIX I

Bat analysis results

Bat Results

Date Surveyed: 6 and 7 March, 2018
Location: Fairfield, NSW

Key:

- indicates species listed under the NSW *Biodiversity Conservation Act 2016.*
* - indicates species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*
C - Confident Identification. Small possibility of confusion of calls with those of other bat species.

Note:
In relation to the analysis of those microchiropteran calls obtained, it is noted that some insectivorous bat species have distinctive echolocation calls that are unlikely to be confused with those of other species. Other bat species overlap in both call frequency and structure making identification problematic in some cases. The degree of confidence attached to call identifications will depend on the quality of the recordings as well as the activity of the bat at the time of recording and its direction of flight. In some instances a particular species may be identified with confidence, while at other times its identification will be less certain. For this report, echolocation call identifications have been assigned to three categories with regard to certainty of identification. These are:

Survey Date	Common Name	Scientific Name	Call Confidence	Time of 1st pass
Unit 1				
6 March				
	Gould's Wattled Bat	*Chalinolobus gouldii*	C	1915
	# East-coast Freetail Bat	*Micronomus norfolkensis*	C	0130
Unit 1				
7 March				
	Gould's Wattled Bat	*Chalinolobus gouldii*	C	1906
Unit 2				
6 March				
	Gould's Wattled Bat	*Chalinolobus gouldii*	C	1915
Unit 2				
7 March				
	Gould's Wattled Bat	*Chalinolobus gouldii*	C	1925

APPENDIX J

Site photographs

Photo J1 Canal Road facing north from top of gully

Photo J2 Canal Road facing south from base of gully

Photo J3 View southeast towards southern site boundary from top of existing fill embankment

Photo J4 Southern site boundary facing east towards drainage line

Photo J5 Southern site boundary drainage line with surrounding remnant vegetation

Photo HJ6 Riparian forest on Prospect Creek

Photo J7 Freshwater wetlands on Prospect Creek floodplain

Photo J8 Planted rehabilitating riparian forest on Prospect Creek