

1 Introduction

This masterplan presents the proposed ecologically sustainable development (ESD) initiatives, for the Stage 2 subdivision, of Horsley Park. The site for stage 2 is located immediately north of Horsley Drive Business Park (SSD-5169) on Cowpasture Road, Wetherill Park within the Western Sydney Parklands.

Western Sydney Parklands Trust (WSPT) has obtained Secretary’s Environmental Assessment Requirements (SEARs) for preparation of a State Significant Development (SSD) application for the Stage 2 of Horsley Drive Business Park.

The SSD application will include a Concept Proposal for development of general industrial, light industrial, warehouse and distribution uses, and a Stage 1 DA including subdivision, bulk earthworks, estate landscaping and infrastructure works including services and road works.

Furthermore, ESD initiatives as outlined in the SEARs will include:

- an assessment of how the development will incorporate ecologically sustainable development principles; and
- a description of the measures that would be implemented to minimise consumption of resources, water and energy.



Figure 1 Aerial photograph and Western Sydney Parklands showing location of Horsley Drive Business Park Stage 2.

2 Aim

It is intended that the ESD initiatives adopt the SEARs and SSD requirements as well as facilitate the achievement of the relevant Western Sydney Parklands objectives:

- a) Improve access and promote passive and active recreation
- b) Provide education opportunities
- c) Minimise environmental impacts by:
 - Improving biodiversity
 - Aiming towards carbon neutrality by reducing carbon footprint
 - Improving water quality and sustainable water use
 - Increasing the percentage of on site water capture and reuse.
 - Increasing the percentage of renewable energy use
 - Managing, developing and promoting assets sustainably and in line with the NSW Government Sustainability Policy
- d) Integrate with the surrounding urban farming precinct

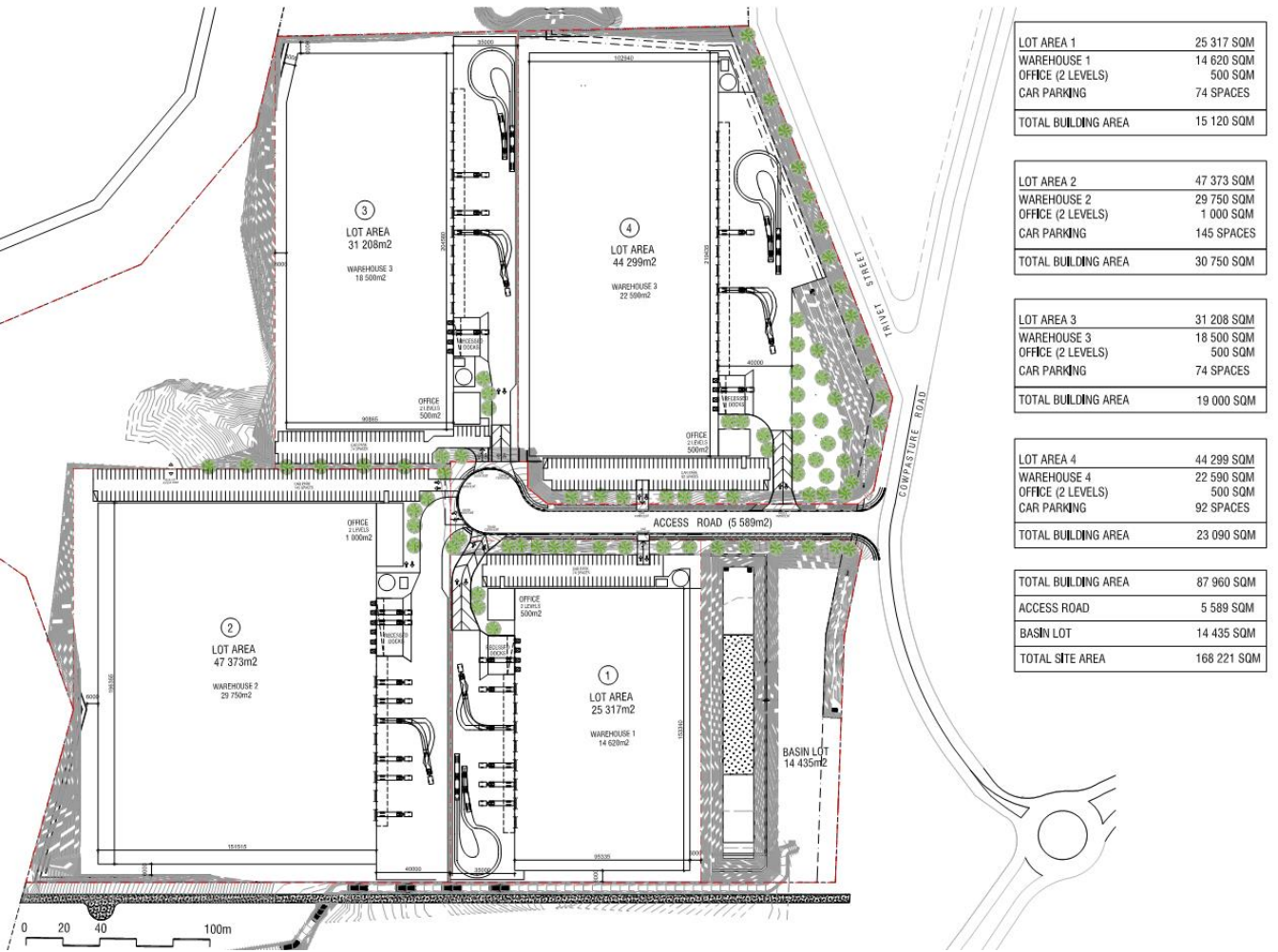


Figure 2 Horsley Park Stage 2 indicative masterplan

3 Methodology

The ESD initiatives have been identified and refined from stage 1 and have been incorporated into the stage 2 masterplan which are presented in the following sections:

- Governance
- Water and energy infrastructure
- Construction materials and waste
- Transport infrastructure
- Ecology and landscaping

4 Governance

4.1 Environmental Management Plan (EMP)

An environmental management plan for construction is a document to assist the developer, their contractors and subcontractors to manage environmental performance and conformity with the environmental conditions of the subdivision project.

Section 3 of the NSW Environmental Management System guidelines 2009 suggests identifying risks and opportunities with respect to environmental impacts including air and noise pollution, soil and biodiversity conservation, water use and pollution, and waste generation and disposal. The construction stage EMP should take into account:

- The environmental impacts of the design and material/product/system selection decisions, during the whole life of the infrastructure to be constructed,
- The impacts of the decisions made regarding the manufacture, packaging and transport of products,
- Reasonably anticipated impact events such as disturbance, damage, spillages, breakdowns and inclement weather changes, which could affect and result from day-to-day construction activities, and
- The potential for impacts, after the infrastructure has been constructed, of the decisions and other actions during its construction.

Appropriate management strategies are then required to be determined and documented to minimise the identified risks. Roles and responsibilities also have to be assigned to ensure these procedures are carried out.

The main components of the EMP are:

1. Commitment and policy

Objectives of the Environmental Management Plan related to the Western Sydney Parklands Trust’s environmental policy and associated commitment.

2. Planning

Identification of the environmental aspects and significant impacts associated with the work, including:

- Relevant Director General’s Requirements or development consent conditions,
- Pollution control approvals and any conditions attached to the approvals,
- Other statutory and contract obligations,
- Identified environmental risks and opportunities with significant impacts, and
- Environmental objectives and targets for the significant impacts, risks and opportunities.

3. Implementation

Documented procedures to be followed to manage the aspects and significant impacts, risks and opportunities identified, in accordance with the requirements of the responsible agency and the contract involved.

A clear indication of the respective environmental management roles and responsibilities of the developer and subcontractors has to be established.

4. Monitoring, measurement, evaluation and review

This includes:

- Monitoring, measurement, evaluation and review (including audit) procedures.
- Provisions for review criteria/measures/scope/personnel/program.
- Addressing the consequences of nonconformities.
- Investigation, analysis, evaluation, corrective/preventive action and follow-up verification.

Environmental Management Plan (EMP)	
Description	Develop a construction EMP to identify and manage environmental risks during bulk earthworks and infrastructure provision
Benefits	Clarify environmental objectives and targets
Approximate cost	\$4,000-\$7,000 to set up, \$1,000/month for ongoing reviews
Design implications	All decisions to account for environmental impacts of identified concerns – could cause some delays

4.2 Developer Guide

Develop a set of guidelines recommending that the developers of the individual lots implement cost effective ESD initiatives:

- Requirement for the developer and/or tenant to produce a construction and operation environmental management plan in line with Section 3 of the NSW Environmental Management System Guideline identifying major impacts on the environment.
- Requirement for energy and water saving initiatives with a payback of less than 5 years to be implemented.
- Requirement for smart metering for electricity, gas and water in tenant buildings.
- Recommend following through on the 80% construction waste recycling target.
- Consider an environmental rating such as Green Star Design and As-Built.
- Consider heat island effect when selecting construction materials and landscaping layout.
- Encourage renewable energy use.

Developer Guide	
Description	Develop a guideline document recommending actions for the individual industrial lot developers
Benefits	Clarify environmental objectives and targets Influence the design of the industrial buildings and lots Align with Western Sydney Parklands objectives
Approximate cost	\$5,000
Design implications	Time required during subdivision stage to develop guidelines Potential implications for future work on the lots

5 Water and Energy Infrastructure

All of the lots will be provided with mains water supply and sewer connections. Water use for these industrial lots is expected to be minimal for ancillary office amenity only. Cost effective water efficiency fixtures, fittings and appliances will be required to be implemented through the Developer Guide. It is not considered feasible to provide a sitewide recycled water network at this stage. However, to futureproof the site, it is recommended to install non-potable water distribution pipework in parallel with mains water supply. This will allow future connection if a district system is set up and is required by the industrial processes.

Furthermore, it is recommended that alternative pricing and program implications for the following is considered:

- Using rainwater instead of potable water for toilet flushing and irrigation.
- Using native/low water use plants in garden areas.

Stormwater is collected via swales into onsite water detention basins that are being provided to mitigate the impact of increased hard surfaces and to ensure the water leaving the site is of adequate quality. A stormwater management plan is being prepared.

All of the lots will be provided with mains electricity connections. While no specific sustainable energy infrastructure is planned, renewable energy use will be encouraged for future development of the industrial lots. Cost effective energy efficiency initiatives will be considered and implemented during the construction and operation of these lots in the future.

Gas supply will only be required if one of the tenants requests it.

Dual reticulation	
Description	Non-potable water pipework for future connection
Benefits	Futureproof the site
Approximate cost	\$250-\$400/m
Design implications	Possibly redundant pipework if it is never required

6 Construction Materials and Waste

6.1 Infrastructure Tender

Clauses should be included in the infrastructure tender to request the tenderer to provide a base cost and additional cost for ESD upgrades to facilitate cost benefit analysis. It is preferable that the tenderers demonstrate the following:

- Environmental management system complying with ISO 14001
- Quality management system complying with ISO 9001
- OH&S management system complying with AS 4804
- Remediate contaminated land
- Balance cut and fill on site
- Recycle / reuse 80% demolition and construction waste to reduce waste to landfill
- Minimise demolition waste that is removed from site

In addition it is recommended to obtain alternative pricing and program implications for:

- All concrete paving to have 40% fly ash / slag content replacing Portland Cement
- All concrete to have a minimum of 20% recycled aggregate
- Steel reinforcement to be 50% post-consumer recycled
- Recycled aggregate for roadbase
- PVC alternatives to pipes and conduits used on site - such as clay, concrete and HDPE
- Re-use of existing materials (crushed demolition materials, etc)
- Any timber used on site to be from recycled source or from sustainably managed plantation

Infrastructure Tender	
Description	Establish tender clauses to assess tenderers’ environmental capability and obtain alternative prices for eco-friendly materials and processes
Benefits	Obtain sufficient data for effective cost-benefit analysis to be completed and inform decision making Reduced material use and resultant reduced embodied environmental impact Reduced waste to landfill
Approximate cost	\$6,000
Design implications	Possibly an extended construction stage to take into account procurement of non-standard materials Potential for recycled items to become costly if supply and demand swings

7 Transport Infrastructure

The site is well located for car travel near the M7, not far from the M4 and the M5, and the lots will be provided with road access and ample parking. It is recommended that alternative pricing should be considered for the use of electric vehicle charging stations within the site.

To encourage alternative transport modes, a shared pedestrian/cycleway will traverse the site adjacent to the proposed road. The site is next to the regional cycleway through the Western Sydney Parklands.

The nearest train station is Fairfield which is approximately 30 minutes away by bus. Regional bus routes go along The Horsley Drive and Cowpasture Road and the site is not far from the Parramatta to Liverpool T-way.

8 Ecology and Landscaping

Cut and fill on the site is expected to be balanced with no net import or export required.

Landscaping will be predominantly native species, including groundcovers, grasses, shrubs and trees, and will provide passive screening and stormwater treatment.

9 Greenhouse Gas and Energy Efficiency

The energy use of the facilities is mostly dependent on the tenant usage and operation which cannot be assessed at this stage given the tenants design and usage is unknown. It is however proposed to request that thier designs include energy efficient features such as the following where appropriate to the final design

- Thermal insulation to meet or exceed BCA section J
- Energy efficient lighting with timeclock controls or sensors to control usage
- The use of natural ventilation in preference to AC where feasible
- Tenant recommendations for energy efficient operation can also be provided by the Developer Guide (se section 4.2 of this document)
 - Requirement for energy and water saving initiatives with a payback of less than 5 years to be implemented.
 - Requirement for smart metering for electricity, gas and water in tenant buildings