

Environmental Sustainability Planning Study

Large Erecting Shop (LES)

Job No: 1034862
Doc Ref: ESD Planning Report
Revision: E
Revision Date: 17 August 2022

Project title	Large Erecting Shop (LES)	Job Number
Report title	Environmental Sustainability Planning Study	1034862

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
-	13 May 2022	Draft Environmental Sustainability Planning Study for planning approval
A	9 June 2022	Updated Draft Environmental Sustainability Planning Study for planning approval
B	11 July 2022	Updated with comments from DPIE
C	01 Aug 2022	Updated with comments from DPIE & Planner
D	11 Aug 2022	Updated with loading dock Option 2 layout
E	17 Aug 2022	Updated with amended sub-division

Document Validation (latest issue)

17/08/2022

X 

Principal author

X

Checked by

X

Verified by

Signed by: Bott, Julian

Executive Summary

The following report provides an outline of the Environmental Sustainability, Climate Change and Waste Management initiatives that will be incorporated within the proposed Large Erecting Shop (LES) .

The Large Erecting Shop (LES) is a large industrial building with a footprint of approximately 6,000sqm located at the north west of the South Eveleigh Precinct. The LES ceased formal operation in 1988 and has been largely unoccupied since approximately 2017. Transport for NSW (TfNSW) is therefore seeking to adaptively use the LES for a mix of uses, including commercial office and retail premises.

The following minimum regulatory requirements currently apply to the development:

- NCC Section J for Energy Efficiency (NCC 2019)

In addition to these minimum compliance requirements, the developer and the design team are committed to providing the occupants and the local community with a sustainable and environmentally conscious development, in its design, construction and operation. The focus of the ESD initiatives is to provide an excellent indoor environmental quality and amenity, while minimising on-going energy and water consumption.

The project will be designed in accordance with the following ratings and frameworks which represent best practice sustainable design for a commercial building of around 11,000m² :

- 5.5 Star NABERS Energy for Office Base Building rating
- 5 Star Green Star Buildings (New tool released by GBCA in 2021)
- Carbon Neutral in operation
- All electric building powered by renewable energy.

The ESD measures outlined below will be developed through the detailed design stages:

- Minimising energy and water consumption and greenhouse gas emissions
- Providing sustainable transport facilities
- Water efficiency including rainwater reuse WC, irrigation and potential export.
- Dual piping to enable future connection to district recycled water main.
- Low toxic materials to be used in construction and fitout.
- Healthy indoor environment for staff and occupants.
- NCC 2019 or 2022 section J compliance (dependent on construction certification application date)
- Target at least 80% of construction waste to be diverted from landfill

Contents

1.0	Introduction	1
1.1	State-Led Rezoning Study Requirements	1
1.2	Overview	1
1.3	Proposed Controls	2
1.4	Site overview	2
2.0	Environmental Sustainability, Climate Change and Waste Management	4
2.1	Project's Existing Situation , constraints, opportunities and key issues	4
2.2	Impacts of the proposal in relation to energy use, greenhouse gas emissions, water use, waste water, solid waste and climate change resilience'	4
2.3	The Sustainable Design Commitment	5
2.4	Net Zero emissions response	5
2.5	Integrated Water Cycle Management Strategy	5
2.6	Integrated Waste Management Strategy	7
2.7	Climate change impacts	7
2.8	Biodiversity and Landscaping	8

1.0 Introduction

1.1 State-Led Rezoning Study Requirements

This document is prepared to respond to the Environmental Sustainability, Climate Change and Waste Management Study requirements as outlined in the planning requirements for NSW State Significant Precincts (April 2022).

A request was made to DPE in February 2022 to request the NSW Minister for Planning and Public Spaces undertake a State-led rezoning to enable the adaptive reuse of the LES site. Specifically, a letter was sent to formally request that DPE prepare Study Requirements to inform a future State Significant Precinct (SSP) Study for the LES site.

Table 1.1 provides a summary of the Study Requirements addressed by this report and where the relevant requirement is addressed.

Study Requirements		Reference
6.1	Environmental Sustainability Study:	
	a) Identifies the existing situation, including constraints, opportunities and key issues;	Refer to page 4 Section 2.1 of this Report.
	b) Outlines the likely impacts of the proposal in relation to energy use, greenhouse gas emissions, water use, waste water, solid waste and climate change resilience;	Refer to page 4 Section 2.2 of this Report
	c) Provides detail of proposed sustainability principles and how they will be incorporated into the proposal including appropriate sustainability benchmarks;	Refer to pages 5-7 Sections 2.3 to 2.7 of this Report
	d) Includes an integrated water cycle management strategy;	Refer to page 5 Section 2.5 of this Report
	e) Includes an integrated waste management strategy that maximises resource recovery;	Refer to page 7 Section 2.6 of this Report
	f) Includes measures to address the impact of climate change including urban heat and extreme weather events; and	Refer to page 7 Section 2.7 of this Report
	g) Informs and supports the preparation of the proposed planning framework including any recommended planning controls that would deliver an appropriate sustainability outcome.	Refer to page 5 Section 2.3 of this Report

Table 1.1 – Study Requirements

1.2 Overview

The Large Erecting Shop (LES) is a large industrial building with a footprint of approximately 6,000sqm located at the north west of the South Eveleigh Precinct. The LES ceased formal operation in 1988 and has been largely unoccupied since approximately 2017.

The NSW Government is committed to working with the local community to develop the biggest innovation district of its kind in Australia, being Tech Central. The South Eveleigh Precinct is a key neighbourhood within Tech Central, delivering workplaces and collaboration spaces that support the vision for a new tech and innovation ecosystem. The inclusion of the LES within the broader South Eveleigh Precinct has the potential to support further innovation, collaboration and jobs for the future.

Transport for NSW (TfNSW) is therefore seeking to adaptively use the LES for a mix of uses, including commercial office and retail premises. Such land uses are currently not permitted within the planning controls that apply to the LES building, which still reflect its former infrastructure function. As such, a State-led rezoning application is being proposed to the Department of Planning and Environment (DPE) to amend the planning controls that currently apply to the site under *State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021* (Precincts SEPP).

The proposed new planning controls are intended to facilitate the following:

- Alterations within the existing LES to convert the ground level into commercial office and retail premises,
- Creation of two new ‘internal’ storeys within the existing LES building envelope for use as commercial office premises,
- External upgrade and conservation work to the existing LES building to ensure it is fit for purpose and environmentally sustainable,
- Heritage interpretation and conservation work generally throughout the LES site,
- Services augmentation, and
- Publicly accessible space upgrades.

While external works are required, the proposal does not seek to significantly alter the existing building footprint of the LES. Further it is proposed that the general form of the existing building and key architectural features of the existing building are retained in any future reuse of the building for commercial purposes, noting that the LES is part of the Eveleigh Railway Workshops complex included on the State Heritage Register.

1.3 Proposed Controls

The proposed amendments to the Precincts SEPP involve the inclusion of the LES site within the ‘Business Zone—Business Park’ zone, which applies to the majority of the South Eveleigh Precinct and notably is the existing zoning for the adjacent Locomotive Sheds.

Further, the State-led rezoning application proposes new development standards including a maximum gross floor area (GFA) control on the LES site of up to 15,000m². Other minor changes as required may be proposed to the Precincts SEPP to facilitate the reuse of the LES building for commercial office and retail purposes.

1.4 Site overview

The LES is an isolated building at the north west of the South Eveleigh Precinct as identified at **Figure 1**. The South Eveleigh Precinct is located approximately 200m to the south west of Redfern Train Station and approximately 200m to the west of the future Sydney Metro Waterloo Metro Station. The South Eveleigh Precinct includes an overall area of approximately 13.2 hectares.

The LES site is currently legally described as being part of Lot 5, in Deposited Plan 1175706. This allotment also includes the North Eveleigh Precinct, the rail lines separating the North and South Eveleigh Precincts, and Redfern Railway Station. It is proposed that the LES building will be subdivided from this overall allotment

The LES is owned by the Transport Asset Holding Entity of New South Wales (TAHE) NSW and managed by Transport Heritage NSW. It is currently being used as a maintenance facility for heritage locomotives but it requires significant capital investment to bring it up to the required standards for continued use and avoid further deterioration.

Figure 1 Site Location



The LES is a rectangular building consisting of two main bays with twin gable roofs running the length of the workshop. Internally, the workshops are articulated with regular cast-iron columns supporting both roof and overhead cranes. Main elevations are regularly articulated with twin semi-circular arched windows with smaller arched windows above. Existing site photographs can be seen in **Figure 2**.

Figure 2 LES Site Photographs



Picture 1 Eastern Elevation of LES

Source: Mirvac



Picture 2 Southern Elevation of LES with train in-situ

Source: Mirvac

2.0 Environmental Sustainability, Climate Change and Waste Management

2.1 Project’s Existing Situation , constraints, opportunities and key issues

The LES is an existing heritage building that presents significant opportunity for adaptive re-use. By retaining the structure and form it will be possible to complete this as a sustainable office building.

The constraints of the site include its fixed location, heritage aspects and surrounding railway and existing development.. While there are significant opportunities for ESD and adaptive re-use some of the more specific restrictions include:

- 1) Acoustic impacts from the railway may impact the ability for natural ventilation to office areas.
- 2) The ground contamination and existing ground conditions limit the ability to easily increase underground plant or rainwater tanks. As such the rainwater tanks will need to be optimised to match average rather than peak rainfall events.
- 3) The adaptive re-use enables a significant reduction in resources within construction materials which will help reduce the upfront carbon emissions.

2.2 Impacts of the proposal in relation to energy use, greenhouse gas emissions, water use, waste water, solid waste and climate change resilience’

The LES is primarily an office building with some potential supporting small retail such as a café or food and beverage offering. It will have sustainability impacts similar to other office developments.

As such the the primary impacts of the development will be

1. Energy use – By the tenants and landlord, othwise known as base building and tenant energy. The base building energy is estimated to be in the range of 5.0-5.5 Star NABERS with PV sized for the 5.5 Star target.

Initial Estimates for Energy are as follows

	NLA m2	Energy
Base Building	11,500	750,000 kWh per year
Whole Building (inc tenants)	11,500	1,400,000 kWh per year

2. Greenhouse gas emissions - By the tenants and landlord. This will be estimated in detail at later stages. A commitment to be all electric with 100% renewable electricity will significantly reduce GHG emissions.
3. Water Use - By the tenants and landlord. The project will avoid HVAC water cooled cooling tower water use which will dramatically reduce the potable water useage. Refer to section 2.6 of this report for more details. Total Potable Water consumption is expected to be in the order of 2,000-2,500kL per year. Rainwater of around 1,600kL per year will be used to meet the total demand of around 3,600kL per year
4. Waste Water. Waste water discharged to sewer is estimate to be in the order of 3,000 kL per year

Stormwater is estimated to be in the order ofr 5,500kL litres per year from roof and pavement runoff.

5. Solid Waste. Approximate waste volumes per year are estimated from the City of Sydney waste generation rates.

Total m ³ /year	Landfill m ³ /year	Comingled Recycling m ³ /year	Paper/Card m ³ /year	Organics m ³ /year
3,670	960	570	1,700	440

2.3 The Sustainable Design Commitment

The project will consider best sustainable practice in its design. The project aims to implement sustainability measures which are cost effective and promote opportunities to reduce the long-term cost of operating and maintaining the building. Sustainability targets and commitments outlined in this report will help inform the design excellence strategy and should inform any future ESD assessment at later development stages.

The following commitments are made:

- Carbon neutral in operation
- NABERS 5.5 Star Energy
- NABERS 4.5 Star Water (~30% less than a typical office building)
- 5 Star Green Star Buildings (New tool released by GBCA in 2021)

The ESD measures outlined below will be developed through the detailed design stages:

- Minimising energy and water consumption and greenhouse gas emissions
- Providing sustainable transport facilities
- Water efficiency including rainwater reuse for WC, irrigation and potential export.
- Dual piping to enable future connection to district recycled water main.
- Low toxic materials to be used in construction and fitout.
- Healthy indoor environment for staff and occupants.
- NCC 2019 or 2022 section J compliance (dependent on construction certification application date).
- Target at least 80% of construction waste to be diverted from landfill

2.4 Net Zero emissions response

The project plans to incorporate design initiatives to minimise greenhouse gas emissions and meet the anticipated energy consumption targets for the base building, including:

- Adaptive re-use of the majority of the existing building will reduce upfront carbon emission of the building construction and materials. This is anticipated to save around 40-60% of upfront carbon emissions compared to an equivalent new building.
- Target a 5.5 Star NABERS Energy for Office Base Building rating.
- All electric building design with no gas for space heating, domestic hot water or cooking
- Commitment to procure 100% Renewable Electricity for base building services.
- On site PV subject to detailed roof design to enable an appropriately sized renewable energy on site; in addition to the 100% renewable electricity power supply commitment.
- During detailed design explore the feasibility for the lobbies to be mixed mode or naturally ventilated in favourable conditions .
- The building roof will be upgraded with insulation to reduce heat loss and heat gain.

2.5 Integrated Water Cycle Management Strategy

The project has considered the end uses and opportunities for water recycling along with the available options for water capture and recycling (Rainwater, Greywater, Blackwater etc). Given the very large rooftop area the potential for rainwater collection has enough capacity for the site collect all the water required for non-potable used and to export excess rainwater collected.

The water demand is based on a typical office with small retail and estimated for preliminary plant sizing and options to be developed in the later design stages.

Water Demand -Uses	Suitable for Non-Potable Supply	Additional water savings measures
Toilets	Non-Potable	Low flow / dual flow toilets will be specified
Urinals	Non-Potable	Ultra-low flow urinals will be specified
Taps	Potable	Low flow taps with sensors will be specified
Showers - occupants	Potable	Water saving shower heads will be specified
Tenant Kitchenettes	Potable	Tenants will be required to use low water use appliances and fittings
Landscape Irrigation	Non-Potable	Native & drought tolerant landscaping along with sub-soil drip irrigation

Potential captured and recycled water sources

1. Rainwater – Utilise large rooftop area with rainwater tanks for onsite storage
2. Greywater – Potential to recycle water from showers and basins
3. Blackwater – Connection to future district recycled water

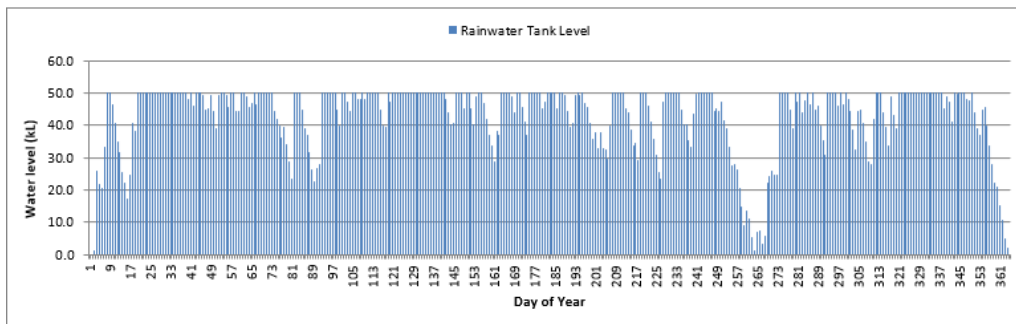
Proposed strategy

The strategy is to provide separate piping to all non-potable water uses and use rainwater to provide the majority of non-potable water use this will also enable all non-potable uses to be connected to a district recycled water connection if it is provided in the future.

One the largest potable water uses has been avoided by selecting air cooled HVAC plant which if water cooled (with cooling towers) would otherwise consume around 40% of potable water supply. This has substantially reduced the water demand of the building. All remaining water consuming fixtures and fittings will be selected to be water efficient.

The project has also considered rainwater capture and greywater recycling options, with the preference to use rainwater capture and reuse due to the large rooftop area and lower water treatment and processing requirements compared to greywater recycling systems.

Based on the large rooftop area, >6,400m², rainwater tanks are expected to be sized around 50kL and will serve ~80-95% of the non-potable end-uses.



Providing additional greywater systems are not considered necessary and if a future recycled water network is installed the dual piping will enable it to be used in extreme dry periods in the future.

2.6 Integrated Waste Management Strategy

The project will engage a waste specialist to work with the design team to include provisions for waste management and separation on site. The project will also meet the City of Sydney Guidelines for Waste Management in New Developments.

The project has included waste storage area to enable collection and sorting of at least the following

1. General waste
2. Comingled recycling
3. Container Deposit Scheme
4. Paper/cardboard
5. Organic waste
6. E-waste

These will be sized to suit the demand of both the retail and office users and align with operational commitments to reduce waste to landfill. The project will also seek to recycle or divert at least 90% of construction waste from landfill through best practise construction waste minimisation.

2.7 Climate change impacts

A Climate Adaptation Plan will be prepared to identify and mitigate risks associated with climate change for agreed scenarios to protect communities and strengthen resilience.

The mitigation measures may include:

- Design internal and external spaces to cope with more extreme temperatures.
- Design cooling system capacity for higher design temperatures to allow for increasing peak temperatures.
- Design buildings and infrastructure to cope with more extreme storms and flooding.
- Rainwater collection & storage for resilience to increasing drought frequency.
- Provide external shading and planting to make external spaces more comfortable on extreme temperature days.
- Use of green landscaping and roof and pavement finishes with higher Solar Reflective Indexes (SRIs) – light colours – to reduce heat island effect.

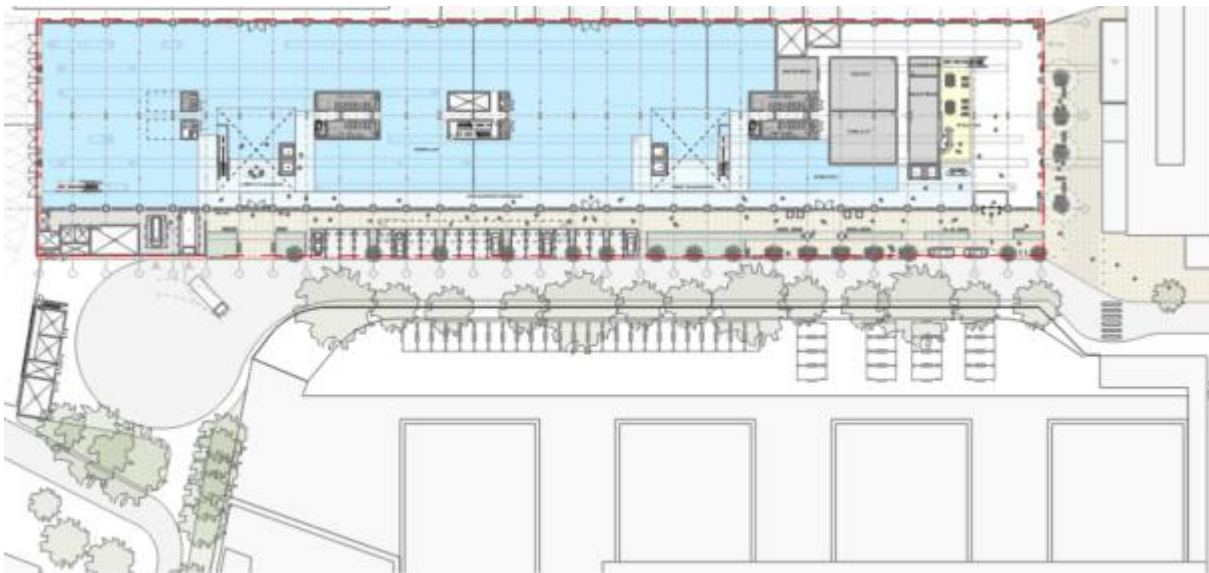
2.8 Biodiversity and Landscaping

The project site is in an urban area adjacent to a railway line.

The proposal will seek to introduce as much landscape as feasible around the site to provide tree-shading and natural cooling effects.

Other strategies to reduce the Urban Heat Island Effect (UHIE) will be explored in the next stage and will consider

- Rooftop and paving to have light colours to reduce UHIE
- Rooftop landscaping should it become feasible



MYLES-002 -- Proposed Ground Floor Plan
SERIAL -- LARGE ERECTING SHOP

Scale
1:750 @ A3
0 7.5 15

