# VICTORIA CROSS OSD

**SUSTAINABILITY REPORT FOR SSD DA SUBMISSION**

lendlease

## Document History

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|---|---|
| **Prepared By** | Tristan Goodchild |
| **Checked By** | Tristan Goodchild Lend Lease Design QA |
| **Approved By** | |
| **Project Manager** | Cherylene Teoh |
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| Technical Enquiries | General Enquiries |
|---|---|
| Tristan Goodchild | Daniel Grunbaum |
| Senior Environmental Design Consultant | Manager Environmental Design |
| Lendlease, Integrated Solutions | Lendlease, Integrated Solutions |
| Mobile: 0452 482 015 | Mobile: 0412 447 511 |
| Email: Tristan.Goodchild@lendlease.com | Email: Daniel.Grunbaum@lendlease.com |

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# 1.0 Introduction

This report has been prepared to accompany a detailed State Significant Development (SSD) development application (DA) for a commercial mixed-use Over Station Development (OSD) above the new Sydney Metro Victoria Cross Station. The detailed SSD DA is consistent with the Concept Approval (SSD 17_8874) granted for the maximum building envelope on the site, as proposed to be modified.

The Minister for Planning, or their delegate, is the consent authority for the SSD DA and this application is lodged with the NSW Department of Planning, Industry and Environment (NSW DPIE) for assessment.

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 6 May 2019. Specifically, this report has been prepared to respond to the following SEARs:

*(7) Ecologically Sustainable Development (ESD)*

- *demonstrate how ESD principles (as defined in clause 7(4) Schedule 2 of the EP&A Regulation 2000) will be incorporated in the design, construction and ongoing operation of the development*
- *include a framework for how the proposed development will reflect best practice sustainable building principles to improve environmental performance, including energy and water efficient design and technology and use of renewable energy. This shall include commitments to relevant ESD benchmarks*
- *outline any specific sustainability initiatives that will minimise/reduce the demand for drinking water, including any alternative water supply and its use, water sensitive urban design and any water conservation measures proposed.*

This report has also been prepared in response to the following condition of consent for the State Significant Development Concept (SSD 8874) for the OSD:

(B5) Environmental Performance / ESD

- Future detailed development application(s) must demonstrate how the principles of ecologically sustainable development (ESD) have been incorporated into the design, construction and ongoing operation of the proposal. The ESD credentials of the detailed development application shall be in accordance with the framework, core objectives and visions of the ESD Report lodged with the EIS prepared by AECOM Australia.

The detailed SSD DA seeks development consent for:

- Construction of a new commercial office tower with a maximum building height of RL 230 or 168 metres (approximately 42 storeys).
- The commercial tower includes a maximum GFA of approximately 61,500sqm, excluding floor space approved in the CSSI
- Integration with the approved CSSI proposal including though not limited to:
  - Structures, mechanical and electronic systems, and services; and
  - Vertical transfers;

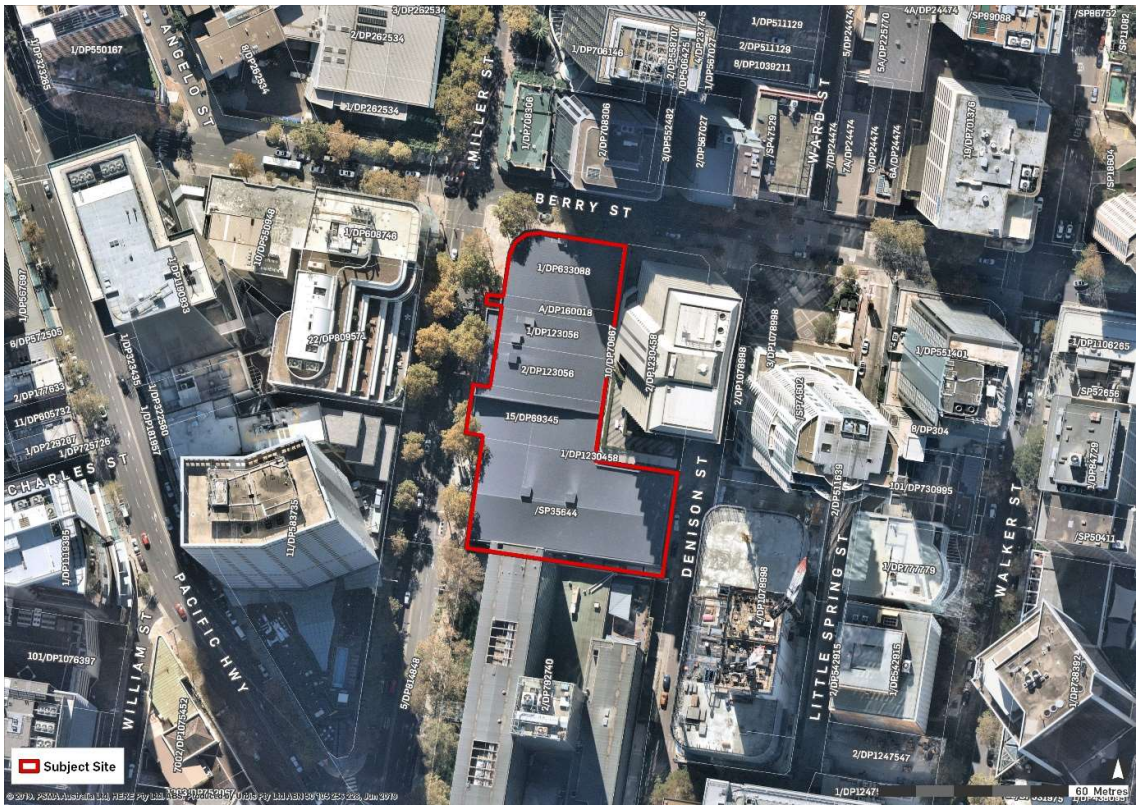
- Use of spaces within the CSSI 'metro box' building envelope for the purposes of:
  - Retail tenancies;
  - Commercial office lobbies and space;
  - 161 car parking spaces within the basement for the purposes of the commercial office and retail use;
  - End of trip facilities; and
  - Loading and services access.
- Utilities and services provision.
- Signage locations (building identification signs).
- Stratum subdivision (staged).

## 1.1 The Site

The site is generally described as 155-167 Miller Street, 181 Miller Street, 187-189 Miller Street, and part of 65 Berry Street, North Sydney (the site). The site occupies various addresses/allotments and is legally described as follows:

- 155-167 Miller Street (SP 35644) (which incorporates lots 40 and 41 of Strata Plan 81092 and lots 37, 38 and 39 of Strata Plan 79612)
- 181 Miller Street (Lot 15/DP 69345, Lot 1 & 2/DP 123056, Lot 10/DP 70667)
- 187 Miller Street (Lot A/DP 160018)
- 189 Miller Street (Lot 1/DP 633088)
- Formerly part 65 Berry Street (Lot 1/DP 1230458)

*Figure 1 – Site Aerial*



## 1.2 Sydney Metro Description

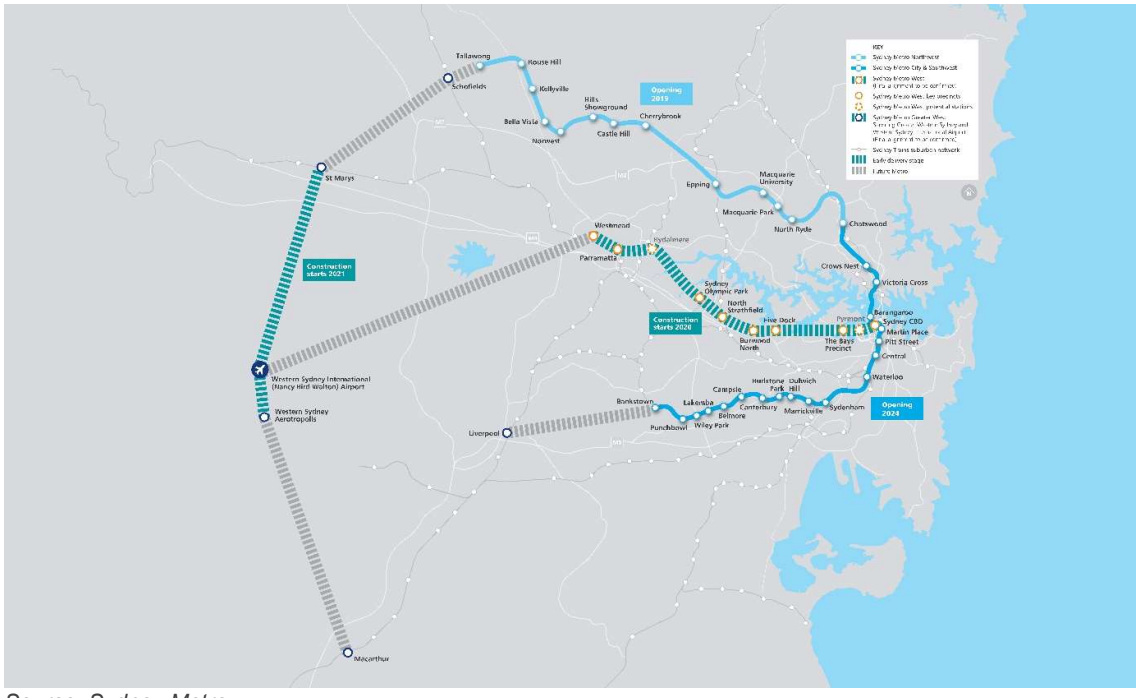
Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. Metro rail will be extended into the CBD and beyond to Bankstown in 2024. There will be new metro railway stations underground at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and new metro platforms under Central.

In 2024, Sydney will have 31 metro railway stations and a 66 km standalone metro railway system – the biggest urban rail project in Australian history. There will be ultimate capacity for a metro train every two minutes in each direction under the Sydney city centre. The Sydney Metro project is illustrated in the Figure below.

On 9 January 2017, the Minister for Planning approved the Sydney Metro City & Southwest - Chatswood to Sydenham project as a Critical State Significant Infrastructure project (reference SSI 15_7400) (CSSI Approval). The terms of the CSSI Approval includes all works required to construct the Sydney Metro Victoria Cross Station, including the demolition of existing buildings and structures on both sites. The CSSI Approval also includes construction of below and above ground improvements with the metro station structure for appropriate integration with the OSD.

With regards to CSSI related works, any changes to the "metro box envelope" and public domain will be pursued in satisfaction of the CSSI conditions of approval and do not form part of the scope of the detailed SSD DA for the OSD.

*Figure 2 – Sydney Metro Alignment Map*




*Source: Sydney Metro*

# 2.0 Environmental Planning and Assessment Regulations 2000

The Department of Planning Environment have provided Secretary's Environmental Assessment Requirements (SEARs) to be addressed by the applicant, the first requirement seeks the following:

*demonstrate how ESD principles (as defined in clause 7(4) Schedule 2 of the EP&A Regulation 2000) will be incorporated in the design, construction and ongoing operation of the development*

The ESD principles defined within the Environmental Planning and Assessment (EP&A) Regulations are addressed within the Sustainability Framework, outlined within Section 4.0 of this report, but summarised in line with the relevant ESD principles below.

## 2.1 Precautionary Principle

Victoria Cross – commercial office tower is committed to achieving a 6 Star Green Star – Design and As-Built v1.2 rating, considered world leadership in sustainable design by the Green Building Council of Australia. Green Star is fundamentally aligned with the holistic precautionary principles, capturing and espousing best practice strategies, design techniques and operational excellence throughout its various categories. Furthermore, the OSD Tower is targeting a Gold WELL Core - Building Standard rating – v2.

Project specific examples, expanded upon within subsequent sections:

- Passive design techniques to reduce façade loads
- Mechanical plant selected based upon its energy efficiency
- Lighting designed optimised to minimise lighting loads, whilst maintaining occupant amenity
- Responsible material selection, considering embodied carbon and supply chain implications
- Stormwater management to reduce impact to wider infrastructure
- Building commissioning and tuning to optimise operational performance
- Water efficient fixtures and fittings to reduce potable water consumption

## 2.2 Inter-Generational Equity

The Victoria Cross OSD seeks to establish a legacy of design excellence that not only conserves the health, diversity and productivity of the environment, but strives to enhance and improve it at every opportunity.

The following identifies project specific examples:

- Reduced carbon emissions
- Responsibly sourced materials
- Reduced operational energy usage through high performance façades incorporating passive design techniques, and highly efficient mechanical systems
- Investigation of renewable energy opportunities
- Reduced construction waste to landfill
- Reduced potable water consumption
- A soft landings approach to minimise operational energy
- Enable accessibility to all generations

## 2.3 Conservation of Biological Diversity and Ecological Integrity

The project is located on a brownfield site that is already being developed to improve transportation links. Whilst the existing site doesn't offer any opportunity to conserve existing ecology, the development will investigate any opportunities to increase ecological value via a greening strategy which will preference native species.

## 2.4 Improved Valuation, Pricing and Incentive Mechanisms

The development is committed to delivering an environmentally responsible product by addressing the various categories within Green Star, and by targeting a NABERS Energy rating reflective of best practice. Significant analysis and optioneering will be employed to ensure the most cost-effective method of achieving the most sustainable outcome is delivered. Whilst this approach will increase capital expenditure, the life cycle outcome of the project will be greatly enhanced, whilst reducing operational expenditure, and delivering an OSD with improved indoor environmental quality.

Products and materials will be selected based on their environmental merit, with preference given to products and materials with Environmental Product Declarations (EPDs), a project life cycle assessment will be commissioned, identifying cost effective means of further reducing embodied carbon.

The project has committed to a construction and demolition waste diversion from landfill target of 90%. This will be achieved by responsibly procuring standardised products that require limited manual manipulation before installation, preferencing recyclable products and by engaging waste management companies with responsible management practices and reporting processes.

# 3.0 Sustainability Framework

The sustainability framework for the project utilises both the Green Star rating scheme and the WELL Building Standard, both voluntary sustainable design rating tools designed and managed by the Green Building Council of Australia (GBCA) and the International WELL Building Institute (IBWI). Furthermore, the Sustainability Framework responds to the ESD Framework outlined within the ESD Report approved for the Concept SSD DA submission.

The Green Star scheme is a comprehensive rating system that evaluates the environmental design and construction of buildings and communities - 4, 5 and 6 Star ratings can be awarded by the GBCA. Whereas the WELL Building Standard focuses on optimising the experience of the occupant by delivering healthy and productive workplaces.

This section discusses at a high level the initiatives associated with achieving the targeted Green Star rating and the implications on each of the disciplines forming part of the overall building design.

Green Star assesses projects given their performance in the following categories:

- Management
- Indoor Environmental Quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

Credits are awarded based on meeting criteria in each of the categories; there are 100 Credits available. A score of 45-59 Credits is equal to 4 Stars (Best Practice), a score of 60-74 Credits is equal to 5 Stars (Australian Excellence) and a score of 75 or more credits is equal to 6 Stars (World Leadership).

The following sections outline in some detail how the sustainability initiatives currently being considered can be recognised under the Green Star tool. The initiatives described below are those currently being considered by the project and will be confirmed through design development.

## 3.1 Management

Lendlease has a proven track record in the management of sustainability in its projects. Many credits relate to the way in which the project is delivered and Lendlease has in place the necessary controls and procedures to achieve the outcomes targeted. Sustainability initiatives being targeted include:

- **Green Star Accredited Professional.** The majority of Lendlease's sustainable design personnel are Green Star Accredited Professionals and the OSD project ESD consultant has been accredited for numerous years and worked on a range of different projects.

- **Commissioning and Tuning.** A comprehensive commissioning and tuning process will be implemented for the project, ensuring that the base building systems' operation is optimised for efficiency and occupant comfort. A comprehensive commissioning and tuning plan will be prepared, a full services and maintainability review will be undertaken with all members of the design team and staff with experience in facilities management. An Independent Commissioning Agent will be appointed to oversee the commissioning process; their involvement will continue through a 12-month tuning period post-occupancy, aimed at ensuring that controls are optimised for seasonal conditions.
- **Climate Change Adaptation and Resilience**. A climate change risk assessment will be undertaken for the site and an adaptation and resilience plan developed for the OSD. Where necessary, key recommendations will be implemented in the design of OSD and or identified as operational considerations to ensure that the building is designed and operated to be resilient to the impacts of future changes in the climate.
- **Building Information**. A comprehensive Operations and Maintenance Manual and Building Users' Guide will be prepared for the building to ensure that both building occupants and facilities managers have ready access to important information about how the building works and how to use the facilities most efficiently.
- **Metering and Monitoring.** A comprehensive energy and water monitoring strategy will be prepared. The metering and monitoring strategy will include sub-metering of key energy and water end uses to ensure ongoing ability to manage energy and water consumption.
- **Construction Environmental Management.** The construction team will operate the site using a site-specific Environmental Management Plan prepared in accordance with the requirements of Lendlease's ISO14001 accredited Environmental Management System.
- **Operational Waste Management.** A waste management specialist will prepare a comprehensive waste management plan for the project, aimed at maximising the amount of waste recycled during operation of the building.

## 3.2 Indoor Environmental Quality (IEQ)

The overall planning and design of the building will be developed to maximise IEQ outcomes. This is a process of balancing daylight, glare control, thermal comfort and air quality whilst not impacting energy efficiency. Sustainability initiatives being targeted include:

- **Provision of Outdoor Air.** Outdoor air ventilation will be increased beyond minimum standards to improve air quality through the building. $CO_2$ sensors will be provided to control outdoor air to ensure occupied spaces receive sufficient ventilation given varying occupancy levels. The design of the outdoor air supply system will ensure the ingress of pollutants is minimised and a dedicated mechanical exhaust riser will be provided for tenant general exhaust to enable tenants to remove pollutants associated with equipment such as printers and photocopiers.
- **Acoustic Comfort.** The design of the building will ensure that background noise levels within the office spaces are well below recommended levels.
- **Lighting Comfort.** The design of the typical open plan lighting solution will maximise user visual comfort through ensuring appropriate levels of lighting are provided to task spaces while glare from electric lighting is avoided.
- **Visual Comfort.** Design of the building's façade will be optimised to maximise access to daylight and views while minimising glare from direct sunlight through provision of fixed external shading.

- **Indoor Pollutant Minimisation.** Low VOC paints, adhesives & sealants and floor coverings will be specified. Additionally, all composite wood products to be utilised on the project will have low formaldehyde content to ensure contaminants within the building are reduced.
- **Thermal Comfort**. Design of the building's façade and mechanical systems will ensure that a high level of thermal comfort is achieved.

### 3.3 Energy

Energy efficiency is a high priority for the development, being designed and delivered with the capability of achieving a 5.5 star NABERS Energy rating. Consistent with this target the project will be targeting a number of points within the Green Star energy category, recognising the project for energy efficiency and peak energy demand reduction in comparison to a code-compliant reference building.

A number of strategies are currently being developed to deliver the targeted energy efficiency performance. Underpinning the project's approach to energy efficiency will be the high-performance building façade reducing the need for air conditioning in the first instance through the inclusion of external shading which manages both peak loads and subsequently annual energy consumption. Air conditioning will be provided by a highly efficient hybrid distribution system, relying on low temperature variable air volume (VAV) for centre zones and VAV Active Chilled Beams (ACBs) for perimeter zones. In comparison to traditional VAV, low temperature VAV technology ensures fan energy consumption is minimised through the delivery of air at low supply air temperatures, achieved through the selection of modern air diffusers which provide highly effective air distribution at low air velocity.

Cooling plant energy will be reduced through the selection of high efficiency water-cooled chillers with sophisticated controls, optimised for energy efficiency during the building tuning period to ensure performance is maximised through all seasonal variations. $CO_2$ controls on the outside air supply will allow the outdoor air supply to reduce during times of low occupancy; and implementation of an outdoor air economy cycle will further minimise cooling plant energy during periods of optimum ambient conditions.

Selection of high efficiency LED lighting throughout base building areas will minimise lighting energy, while design of a low energy open plan lighting solution will ensure that base building air conditioning loads remain low and support tenants in reducing their energy consumption. Automated lighting controls will be provided to base building and open plan office areas to minimise lighting consumption during times of low occupancy.

Through the implementation of energy efficient air conditioning and lighting as well as a high-performance facade, peak summer demand on the electricity grid will be reduced in comparison to a code-compliant approach.

## 3.4 Transport

A holistic approach to sustainable transport planning is taken for the project. The project benefits from an ideal location in North Sydney and above the proposed Victoria Cross Sydney Metro station, providing excellent public transport links for office staff.

Secure bike storage and supporting end of trip facilities including secure showers and lockers, will be provided for office staff to encourage the use of active transport. This not only reduces reliance on private cars and public transport but also encourages health and wellbeing. When coupled with the project's excellent public transport links, the number of car parking spaces required for the project is minimal.

Office and retail staff will also benefit from the project's location in the heart of North Sydney, nestled amongst a wide variety of retail and food outlets, ensuring that staff can accomplish many daily errands on foot.

End of trip facilities for regular occupants:

| Area | NLA / GLA ($m^2$) | Regular Occupant Density ($m^2$/person) | Regular Occupants | Bikes | Lockers | Showers |
|---|---|---|---|---|---|---|
| Office | 55,190 | 10 | 5,519 | 414 | 497 | 49 |
| Retail | 2,423 | 20 | 121 | 10 | 12 | 5 |
| Podium Office | 1,933 | 10 | 193 | 15 | 18 | 6 |
| Total | 59,546 | - | 5,833 | 439 | 527 | 60 |

## 3.5 Water

The project is seeking a water sensitive urban design by targeting a high level of performance with regards to water efficiency. Consistent with this target the project will be targeting a number of points within the Green Star water category, recognising the project for implementation of water efficient technologies in comparison to a standard practice reference building.

Water use is heavily dependent on occupant behaviour; accordingly, the project's approach to water efficiency is underpinned by selection of water efficient fixtures and fittings including low-flow tapware and showerheads and water efficient dual-flush toilets and water efficient urinals.

The project's high-performance building façade will reduce the need for air conditioning in the first instance, which coupled with highly energy efficient chillers will result in a substantial reduction in water demand from cooling towers. During the 12-month building tuning phase controls of the condenser water system will be further optimised to maximise both water efficiency and energy efficiency in a range of ambient conditions. Water used in fire services testing will also be collected for reuse.

## 3.6 Materials

An environmental life cycle assessment of the proposed project will be undertaken in the early design phase of the project to identify key opportunities to reduce the environmental impact of material selection. Consideration will be given to strategies such as supplementary cementitious materials reducing Portland cement content in concrete, façade mullion design optimisation to reduce Aluminium use on the project, reduced extent of finishes, and the selection of finishes with high recycled content.

Beyond opportunities identified through the life cycle assessment process, additional sustainability initiatives being targeted include:

- **Steel**. Steel will be sourced from 'responsible steel makers' in accordance with GBCA requirements. In addition, reinforcement steel will be procured from a supplier who produces steel using energy reducing processes during its manufacture.
- **PVC.** Alternative materials to PVC will be sought for common uses such as pipes, flooring, blinds, and cable. Where PVC alternatives cannot be sourced OSD will utilise PVC that complies with the Green Building Council Best Practice guidelines.
- **Sustainable Timber**. All timber used on the project will be either certified under the FSC or PEFC schemes or reused timber.
- **Construction and Demolition Waste Management.** The construction team will aim to recycle at least 90% of construction and demolition waste using a waste contractor that meets the requirements of the GBCA's Green Star Construction and Demolition Waste Operational and Reporting Criteria.

## 3.7 Land Use and Ecology

The OSD will be constructed on a brownfield site. This will minimize the ecological impact of the project through the reuse of previously developed land, rather than developing a greenfield site. The OSD therefore meets the conditional requirements in the Green Star Land Use and Ecology category as the site is home to no endangered, threatened or vulnerable species, nor land uses with high ecological value such as old growth forests or wetlands of significance.

## 3.8 Emissions

Emissions from the site will be minimised as far as possible. Through the use of refrigerants and insulants with zero ozone deletion potential (ODP),and addressing stormwater appropriately any negative impact of the building can be significantly reduced. Sustainability initiatives being targeted include:

- **Stormwater.** The stormwater system will be designed to ensure that run-off from the site will not exceed the pre-development condition when assessed on current climate data as well as under the projected impacts climate changes. Treatment will be implemented such that stormwater released from the site meets pollution reductions consistent with CSIRO best practice guidelines.

## 3.9 Innovation

Consistent with the project's sustainability targets, numerous innovative features are being considered by the project. Examples of initiatives being considered by the project team include:

- The provision of sustainable site sheds and sustainability training for subcontractors.
- The integrity of energy metering data will be improved through the provision of a sophisticated automatic data validation process.
- Prospective tenants will be educated about the sustainability benefits of the building, with tenants being engaged post occupancy to identify opportunities to improve the occupant experience in this building, as well as future buildings.

# 4.0 Conclusion

The Victoria Cross Over Station Development will target a high level of energy efficiency, a reduction in potable water consumption, a focus on improved indoor environmental quality, waste reduction and low environmental impact materials. The initiatives proposed will ensure that the projects sustainability targets are achievable. The OSD is offering high quality indoor environments and easy access to public transport, bike facilities and a variety of retail offerings, ensuring world leadership in sustainability.

Victoria Cross OSD's strong commitment to sustainability is demonstrated through its increased environmental performance targets relative to the ESD Report approved for the Concept SSD DA submission. Victoria Cross OSD is now committed to delivering a commercial office tower capable of achieving a 5.5 Star NABERS Energy rating and a 6 Star Green Star rating. Furthermore, the commercial office tower is committed to delivering a building capable of a Gold WELL Core - Building Standard rating.