

Attachment 7



CDC Hazelmere

Sustainability Report

Canberra Data Centres

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Executive summary

This report outlines the Sustainability Strategy for the proposed development at 179–196 Bushmead Road, in Hazelmere, Western Australia. The location of the development falls within the City of Swan local area boundary. The new CDC data centre aims to minimize its ecological footprint while meeting the demand for digital infrastructure by adopting sustainable design, energy-efficient technologies, and resource management practices.

Under the City of Swan District Planning Scheme, the site is currently zoned for non-residential land use development. The City’s official sustainability framework outlines six mandatory focus areas that guide assessment of development, including industrial areas like Hazelmere. These areas are:

- 1. Water Efficiency
 - a. Reduction of water use across developments.
 - b. Use of efficient fixtures, irrigation controls and reduced potable water use.
- 2. Water Quality
 - a. Protection of waterways by controlling nutrients, run-off and contaminants.
 - b. Requires compliant stormwater management, filtration, and landscaped bio-retention where appropriate.
- 3. Carbon Reduction
 - a. Encouragement of low-carbon design, energy-efficient systems and reduced emissions.
 - b. Adoption of renewable energy is highly supported.
- 4. Biodiversity Retention
 - a. Avoid vegetation clearing where possible.
 - b. Retain and protect habitat, particularly near Swan River, Helena River and ecological corridors.
- 5. Waste Minimization
 - a. Reduce construction and operational waste.
 - b. Prioritize recycling, reuse and sustainable materials procurement.
- 6. Climate Adaptation
 - a. Measures to improve resilience to heat, storm events, and long-term climate impacts.
 - b. Includes heat-resilient landscaping, shading and thermally efficient buildings.

Western Australian Climate Policy

Table 1: Western Australian Climate Policy

Applicable action or target	Requirement will be met	Comments
Transition towards net zero by 2050	✓	No gas within the development. High thermally performing tinted double-glazed glass unit Refer to Section 4.0 for further information.
Energy efficient housing, reducing carbon emissions.	✓	The project will not require NatHERS assessment. However, various energy efficiency measures are in place to ensure carbon is reduced. Refer to Section 3.0 for further information.

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1.0 Introduction

The proposed development at 179 -196 Bushmead Road, Hazelmere is comprised of two purpose-built, four-storey data centre buildings designed to support high-performance digital infrastructure within the strategically located Hazelmere industrial precinct. The facilities are configured to deliver robust, secure and energy-efficient operations while aligning closely with the City of Swan's sustainability, environmental and planning requirements.

Situated within the Hazelmere locality, the development responds to the City's adopted sustainability framework, which establishes mandatory focus areas including water efficiency, water quality protection, carbon reduction, biodiversity retention, waste minimisation and climate adaptation. These focus areas form the basis of the project's environmental and design approach.



Figure 1 Location of the proposed development in Hazelmere.

1.1 Design guidelines – City of Swan

The proposed building is within the City of Swan and therefore must conform to the following policies and guidelines.

1.1.1 Local Planning Scheme No. 17 (LPS17)

The City's primary statutory planning instrument containing zoning, land-use controls and general development requirements.

1.1.2 City of Swan Local Planning Strategy

Council-endorsed strategic framework guiding land use, environmental protection, infrastructure planning and long-term development requirements, ensuring that developments meet environmental performance and design criteria.

1.1.3 Sustainable Environment Strategy (2022)

City of Swan's environmental and sustainability policy framework required basis for sustainability content in Development Applications (DA).

1.2 Sustainability initiatives

In alignment with the City of Swan Council, this report details the project's current sustainability targets and initiatives across the following categories:

- **Water Efficiency & Water Quality Protection**
 - The proposal incorporates a comprehensive stormwater management system, ensuring on-site detention, filtration and treatment consistent with best-practice water quality outcomes. These measures help prevent nutrient and contaminant run-off into local waterways, supporting citywide water protection objectives.
- **Carbon Reduction and Energy Efficiency**
 - Given the energy intensive nature of data centre operations, the development adopts a series of high efficiency systems aligned with the City's carbon reduction objectives. This includes:
 - High performance cooling technologies to reduce PUE.
 - Opportunities for integration of renewable energy.
 - Low carbon and durable materials selected to minimise embodied emissions.
- **Biodiversity Retention & Environmental Protection**
 - The Hazelmere locality includes areas of recognised ecological value, with the City's Local Biodiversity Action Plan and EPA advice identifying the presence of priority flora, fauna habitats & waterways. The development therefore adopts a design approach that:
 - Minimises unnecessary clearing
 - Uses native and drought tolerant plant species, while maintaining existing trees on site.
 - Provides landscape buffers that enhance ecological value and mitigate thermal impacts
 - This approach aligns with the City's biodiversity and natural area protection objectives
- **Waste Minimisation & Sustainable Materials**
 - The project integrates a construction and operational waste management strategy addressing the City's waste minimisation focus area. Measures include:
 - Maximising construction material recycling
 - Reducing packaging waste
 - Sustainable procurement pathways for equipment and materials
- **Climate Adaptation & Resilience**
 - Consistent with the City's climate adaptation focus area, the proposal enhances long term resilience through:
 - Heat resistant, water efficient landscaping

- Flood and bushfire protection
- Thermal performance improvements in the building envelope
- Storm event resilience within civil and drainage systems



Figure 2 CDC Hazelmere View precinct.

1.3 Western Australia Climate Policy

Western Australia's Climate Policy produced in November 2020 by the Government of Western Australia is a policy to commit to a low carbon future for Western Australia. Relevant actions from the Climate Policy are summarised below:

Climate Resilience Action Plan 2022–25:

- Develop a coordinated, collaborative plan to support Western Australian industries, cities, and regions to identify and manage climate impacts and enhance climate resilience.

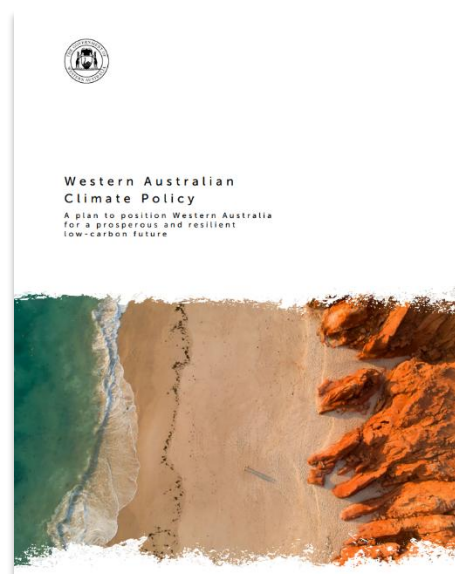


Figure 3 WA Climate Policy, November 2020

2.0 Water Efficiency & Water Quality Protection

The water consumption of Western Australian is the second highest in Australia with an average of 241,000 litres per household per annum, well above the Australian average of 190,000 litres (Australian Bureau of Statistics, 2017). A reduction of water usage does not only alleviate pressure from the local water supply but also means reduced costs of living in WA.

The following sections set out design strategies utilised for this development to reduce the building's water consumption.

2.1 Design Initiatives

The following table summarizes the specific initiatives included in the design in relation to water efficiency:

Table 2: Water efficiency initiatives

Design Issue	Design initiatives
Potable water consumption	1. All water fittings and fixtures to be water efficient. 2. Potable water will not be used for irrigation.
Water metering	1. Separate sub-metering for major energy and water uses. 2. Smart metering installed. 3. All metering data will be accessible to inform behaviour of equipment and inhabitants.
Landscape irrigation	1. All projects will aim to use minimal potable water for irrigation. 2. On-site grey water treatment and management will be explored. 3. All stormwater will be dealt with and treated without chemicals for further use.
Heat rejection water	The HVAC system will use minimal potable water for heat rejection.
Sanitary fixture efficiency	All sanitary fixtures and fittings will be water efficient.

2.2 Water fixtures & fittings

Occupant & equipment consumption is a major contributor to potable water usage. The following water fixture WELS ratings will be considered to ensure the efficient use of potable water by building occupants (must be within 1-star).

Table 3: Water Fixture WELS Rating

Fixture / Fitting Type	WELS Rating
Taps	6-star
Urinals	6-star
Toilets	5-star
Showers	3-star
Dishwasher	6-star

2.3 Rainwater harvesting

Rainwater harvesting involves the collection, storage and distribution of rainwater from the roof and other areas, for use inside and outside the building. The collected water can be used for irrigation as well as toilet flushing. The design is exploring the idea of implementing a rainwater tank to capture enough rain to last short dry periods.



Figure 4 Use of harvested rainwater and drip irrigation system for landscaping

2.4 Drip irrigation

A significant portion of potable water consumption is typically attributed to landscape irrigation. To help reduce water demand on this site, a high-efficiency drip irrigation system with moisture-sensor controls may be installed only along the site's frontage areas, where supplemental watering is required to maintain the intended landscape presentation.

The remainder of the landscaped areas across the site are planted with drought-tolerant, water-wise species that are specifically selected to thrive without ongoing irrigation. These areas are designed to be self-sustaining under local climatic conditions and therefore do not require permanent irrigation infrastructure.

2.5 Stormwater management

Stormwater is precipitation runoff that flows across surfaces without soaking into the ground or entering natural waterways. For data centres, this runoff can be captured and reused for landscape irrigation, dust suppression, and other non-potable needs, reducing demand on potable water supplies, an important consideration given Western Australia's long-term decline in water availability. Climate-resilient measures such as permeable paving and bio-retention areas will be considered to manage increasing rainfall intensity projected under WA's changing climate.

3.0 Energy Efficiency

The construction industry is responsible for more than 20% of Australia's carbon footprint. These emissions include embodied energy and water consumption that goes into the building during construction as well as operational energy and water usage of the completed building, maintenance during the life span and the demolition at the end of the building's life. The following sections set out design strategies utilised for this development to reduce the buildings energy demand and greenhouse gas emissions.

3.1 Design initiatives

The following table summarises the specific initiatives included in the design in relation to energy efficiency:

Table 4 Energy efficiency initiatives

Design Issue	Design initiatives targeted
Building fabric enhanced over NCC requirements	High-performance fabric and insulation.
Energy generation	The building will be designed to be "zero ready" through strategies such as designating area(s) and pre-installing wiring and connections for both electric vehicle charging and future installation of renewable energy systems.
Energy sub-metering	Separate sub-metering for major energy and water uses. All metering data will be accessible to inform inhabitant & equipment behaviour.
Lighting efficiency	All lighting will be dimmable LED with low energy lighting. Reduction in reliance on artificial lighting.
Air-conditioning	Energy-efficient HVAC will be installed for both data centre equipment area & administrative areas.
Appliances and equipment	All appliances installed will be energy and water efficient

3.2 Section J

The development is required to comply with the National Construction Code (NCC) Section J 2019 for Energy Efficiency. NCC Section J covers items including:

- a. Building fabric
- b. External glazing
- c. Building sealing
- d. Air movement
- e. Air conditioning
- f. Artificial lighting and power
- g. Access to maintenance

The project is seeking to go beyond NCC 2019 Section J energy efficiency requirements, by reducing its energy consumption by 10% compared to the NCC's reference building.

3.3 Artificial lighting and controls

Energy-efficient lighting will be targeted for the development, with low-energy LED fixtures proposed. Motion sensors will be installed in selected areas to optimise energy use, primarily in transient spaces and server halls, ensuring energy efficiency is improved without compromising occupant or staff safety.

It will be considered to specify all light fittings as LED fittings including lighting in the offices, server halls, corridors, stairwells, and external lighting. All common area lighting will incorporate light controls to reduce lighting consumption when lighting is not required.

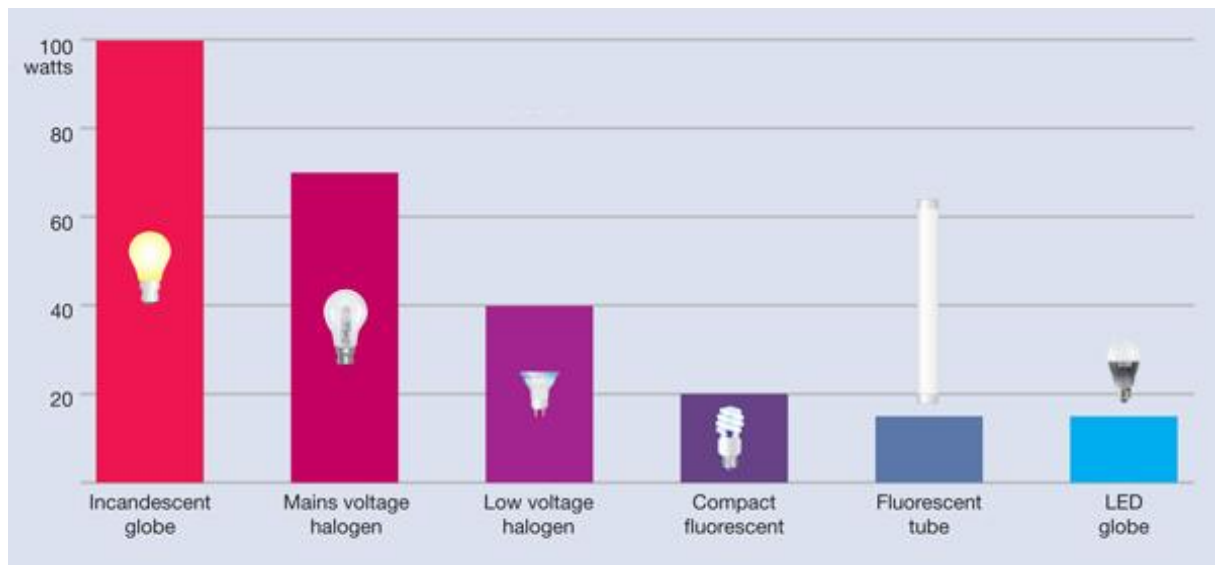


Figure 5 Comparison of LED lighting with other conventional lighting system

3.4 Electric approach and on-site renewable

The development adopts an all-electric approach designed to reduce operational emissions and support Western Australia's transition toward a low-carbon energy system. In line with WA's climate projections and decarbonisation direction, which emphasise reduced greenhouse-gas emissions and increased integration of renewable energy sources, the data centre prioritises high-efficiency electrical systems, low-loss power distribution, and optimised cooling technologies to minimise total electrical demand.

Opportunities for on-site renewable generation, such as renewable supply may be secured through power purchase agreements to support continuous low-carbon operation. This approach also aligns with insights from Western Australia's emerging green-data-centre sector, which highlights the role of renewable-powered facilities in reducing emissions and meeting growing corporate net-zero commitments.

In regard to electricity generation, the onsite standby generators are designed to operate using conventional diesel but are also fully compatible with Hydrotreated Vegetable Oil (HVO), a low-carbon renewable fuel alternative. This compatibility enables the facility to significantly reduce lifecycle emissions associated with backup-power generation while maintaining the same performance and reliability standards required for a data-centre environment. The integration of HVO-ready generators would typically fall under low-carbon operations and emissions-reduction measures, supporting broader sustainability objectives and ensuring future compliance with evolving environmental frameworks.

3.5 Transparent consumption

3.5.1 Smart metering

Provision of smart metering for the energy and water usage recording, tracking with user interface would be a novel feature on this development. The software could also provide a snapshot view of how the building is performing. This provides a means to inform the building occupants well as engage them to support data centres mechanisms to run more sustainably.

3.5.2 Live display

Live displays could be installed on each floor that show the building's energy, water and waste consumption. This would be linked to the BMS and other inputs and could display live data about the building's consumption and how it is performing in relation to a typical building.



Figure 6 Common Smart Metering visuals

3.6 Commissioning and building tuning

Comprehensive pre-commissioning and commissioning activities will be undertaken for all building systems as a standard practice for the development.

Further to commissioning, seasonal building tuning would be considered on the building for at least 12 months following occupancy to ensure systems are performing to their design potential at full and part load conditions. Quarterly adjustments and measurement for the first 12 months after occupation and a review of building system manufacturer warranties will help improve on the building's energy performance

3.7 Monitoring

Sub-metering will be provided, with smart meters implemented to enable easy monitoring of energy consumption and the identification of faults or abnormalities.

4.0 Carbon Reduction

Buildings consume considerable natural resources in their construction, operation and demolition. This section of the report will provide details about the potential impacts caused by the building and how these impacts have been reduced when compared to typical buildings of this nature. The building will aim to reduce the total embodied energy and carbon considered in the construction and then aim to maximise the operational efficiency of the building. Furthermore, methods for maintaining operational efficiency over the life of the building will be investigated to ensure that the benefits are maximised over the life of the building.

The intent of this initiative is to set a baseline for a materials economy that is non-toxic, ecologically beneficial, and transparent. To positively impact the building products market, the development must meet certain materials selection criteria.

4.1 Design initiatives

The following table summarises the specific initiatives included in the design in relation to building materials:

Table 5 Building materials initiatives

Design Issue	Design initiative included in the project design
Embodied carbon in the building materials	The building design and material selection will reduce the extent of environmental impact as much as possible. Through careful selection of local materials, the design will target a percentage reduction in the embodied carbon of primary materials compared to an equivalent baseline.
Concrete	All concrete in the building will aim to reduce Portland cement use.
Permanent formwork, pipes, ducts, cables	PVC as such will not be used where possible. When used PVC products will meet Best Practice Guidelines for PVC.
Structural and reinforcing steel	Steel will be procured from an energy-reducing processing plant.

The design team will actively target reduced carbon footprint during construction and embodied energy within building materials. Timber, if used for construction works, shall be either certified as responsibly sourced or recycled material.

4.2 Embodied carbon

While building operations such as the use of electricity or water generate greenhouse gases, carbon and carbon equivalent gases are also emitted through the production and delivery of products and materials for construction.

For example, to produce Portland cement, a main ingredient in concrete, raw materials are crushed and then heated to over 1400 degrees Celsius. This requires a significant amount of energy and emits large amounts of greenhouse gases during this production process. These gases are accounted as carbon equivalents in form of 'embodied carbon' in a building.

Embodied carbon, therefore, comprises a major proportion of the total carbon footprint of a building. The following measures will be considered throughout the design development to reduce the amount of embodied carbon:

- **Sub-structure**
 - Maximise recycled content of materials in structural components.
- **Super-Structure**
 - Maximise recycled content like calcined clay or fly-ash in concrete and formwork;
 - Use of lightweight and reusable materials where possible.

- **Envelope**

- Adopt a low-carbon, lightweight approach.
- Consider necessity of massing elements.
- Consider composite materials or dual function elements.
- Considering the use of recycled materials

- **Internal Walls**

- Consider necessity of internal walls by using materials like mycelium-based panels.
- Consider recycled content or reused materials.
- Consider low carbon steel framing.
- Designing for flexibility and futureproofing to reduce renovation efforts.

- **Internal Finishes**

- Consider setting a recycled content target for all finishes.
- Consider long life and highly durable finished is areas of high foot traffic.
- Considering Carbon Neutral certified products.

4.3 Upfront carbon

Carbon emissions produced by the building industry are not only released during a building's operation, but also during the sourcing, processing, and transportation of building materials. Embodied carbon is an often-overlooked source of emissions which acts a significant source of emissions, estimated at around 11% of global carbon emissions (World Green Building Council, 2019).

The project aims to address the issue of upfront carbon by considering various design initiatives, including but not limited to:

- Reducing concrete mass by optimising structural design.
- Minimise foundation mass where possible, in coordination with geotechnical requirements.

The above initiatives are significant as they help reduce concrete consumption, which can lower upfront carbon emissions given the high energy intensity of producing Portland cement.



Figure 7 A typical concrete production facility, which comprises several energy-intensive processes.

4.4 Responsible Sourcing

The intent of this initiative is to support sustainable extraction of materials and transparent labelling of products. Through responsibility in supply chains, a responsible sourcing program helps to eliminate sustainability risks by integrating social and environmental factors into the selection process for suppliers. Increased communication with suppliers through an ethical sourcing strategy provides opportunities for building trust among suppliers as well as increasing efficiency throughout supply chains. Additional focus will be placed on procuring local materials and supporting local businesses where possible.

4.5 Limited fossil fuels

Natural gas is a fossil fuel that when burnt releases significant amounts of greenhouse gas emissions, contributing to the negative effects of climate change.

This project will target to be fully electric, reducing the use of fossil fuels.

4.6 Sustainable transport

Sustainable transport options are a major feature of the proposed development, with several sustainable modes of transport to be accommodated and encouraged within the development.

Provision of several electric (EV) vehicle bays will form 10% of the car parking spaces and bicycle racks are under consideration, which help to encourage lower-carbon transport.

5.0 Indoor Environmental Quality

The Indoor Environment Quality (IEQ) of a data centre is crucial for optimising equipment performance, ensuring staff comfort, and minimising operational risks. A holistic approach to sustainability enhances energy efficiency, supports equipment reliability, and creates an environment that fosters seamless operations for both equipment and occupants.

Key strategies include improving air quality through effective ventilation, maintaining optimal thermal conditions for sensitive equipment and staff comfort, and reducing noise levels to minimise disturbances. Additionally, maintaining a low-toxicity environment and controlling pollutants will help improve the longevity and efficiency of critical systems, as well as the wellbeing of staff working within the facility.

5.1 Thermal comfort

Maintaining optimal internal conditions is essential for both equipment performance and occupant comfort. Extreme temperatures can impact system functionality, leading to failures and higher operational costs, while also affecting occupant wellbeing and productivity. To regulate conditions and minimise heat loss in winter and heat gain in summer, the following strategies will be considered for the proposed data centre:

- **High-performance insulation and glazing:** Advanced materials will improve thermal performance and reduce energy consumption.
- **Sealed building envelope:** The envelope will be sealed to prevent air leakage and maintain stable temperatures.
- **Shading and cooling:** External fin blades will reduce heat gain, optimising energy use.
- **Reflective materials:** Light-coloured roofing (SRI > 81) cladding will minimise solar heat absorption and improve efficiency.

5.2 Visual comfort

Ensuring proper lighting and visual comfort is crucial for staff wellbeing and the efficient performance of sensitive equipment. While natural daylight and external views are important in many buildings, the primary focus in a data centre is minimising glare, optimising lighting for equipment, and creating a comfortable work environment for staff. The following strategies are being considered to enhance both equipment performance and staff comfort:

- **Natural light:** Strategically placed windows with optimal VLT to allow light entry without affecting equipment.
- **Shading and glare control:** Shaded windows to reduce glare, protecting equipment and staff.
- **Landscaping:** Green spaces and outdoor areas to enhance the visual environment.
- **Building height:** Sufficient height for visual access to the surrounding environment.
- **Flicker-free lighting:** Lighting designed to reduce flicker, improving visibility and comfort for staff

5.3 Exposure to toxins

Volatile Organic Compounds (VOCs) are gaseous pollutants emitted from materials such as paints, cleaning agents, office equipment, and construction materials. These compounds can negatively impact both equipment performance and

staff health. In a data centre, minimising VOC exposure is crucial for maintaining equipment integrity and ensuring a healthy environment for staff.

To address this, the project will use low-VOC and low-formaldehyde materials, reducing indoor air contamination. In addition, passive ventilation strategies, including operable windows and outdoor areas, will be incorporated to further enhance air quality, ensuring optimal conditions for both equipment and personnel.

5.4 Acoustic comfort

Acoustic comfort is essential in to maintain a productive and safe environment for both staff and equipment. Proper acoustic separation between spaces will be prioritised to minimise noise disturbances, which could negatively affect both staff productivity and sensitive equipment. The design will consider strategies to control and reduce noise levels, ensuring that areas such as server rooms and workspaces remain conducive to efficient operations.

To achieve this, the project will consider acoustic insulation and the impact noise transfer between floors and spaces. These measures will reduce sound transmission and vibrations, protecting both staff and equipment. By integrating these strategies, the data centre would provide a quieter, more focused working environment while safeguarding the integrity and performance of critical systems.

6.0 Waste Minimisation & Sustainable Materials

The main objectives for the waste management strategies for construction and operational waste are to ensure that waste is avoided and recycled during design, construction, and operation. Waste within a building construction context can be avoided by encouraging the selection of lower-impact and long-term materials.

6.1 Design initiatives

The following table summarises the specific initiatives included in the design in relation to waste management:

Table 6 Waste initiatives

Design Issue	Design initiative included in the project design
Construction waste management plan	The head contractor will have an Environmental Management Plan (EMP) and Environmental Management System (EMS) in place The project will divert most of the construction waste material from the landfill and provide dedicated infrastructure for the collection of recyclables and compostable food scraps during occupancy.
Construction waste	As above

6.2 Building materials and resource minimisation

In 2014-15 Australia produced the equivalent of 565 kg per capita of municipal waste and 831 kg of construction and demolition waste. While around 60% of this waste is recycled, a large part still goes to landfill (Pickin & Randell, 2017). A reduction of construction is therefore an important target for the development of CDC Hazelmere. Operational Waste can be treated as negligible.



Figure 8 Typical sources of VOCs within a residential or hotel setting.

6.3 Design for off-site construction

Prefabricated construction methods considered to be more energy and waste efficient because production processes can be better controlled and made more efficient in the factory than on site, for example. better machinery, less cut-offs, better reuse of materials, material cycles, etc

The project will Implement a comprehensive three-bin waste management system (general, co-mingled recycling, and green/organics waste). This will enable material recovery and landfill diversion through clearly labelled stations.

7.0 Biodiversity Retention & Environmental Protection

With continuously growing cities, urban ecology plays a large role in conserving biodiversity and improving life quality for urban residents. Well planned buildings and landscape architecture protects and enhances biodiversity, provides sustainable landscaping such as low water use, low fertiliser requirements and local native and indigenous plant species selection. If possible, remnant indigenous plant communities should be managed and protected.

The project places a strong emphasis on biodiversity retention, with a commitment to preserving the majority of existing trees across the site. Early site planning has been undertaken to avoid unnecessary disturbance to established vegetation, ensuring that local habitat value, canopy cover, and ecological continuity are maintained wherever possible. By retaining these trees and integrating them into the final landscape design, the development supports site biodiversity, contributes to urban cooling, and strengthens the ecological character of the area while allowing essential infrastructure to be sensitively accommodated.

Table 7 summarises the specific initiatives included in the design in relation to urban ecology.

Table 7: Urban ecology initiatives

Item	Design initiative target for inclusion in the development's design
Landscaping	Use native, drought-tolerant species for landscaping. Provide productive garden areas
Mitigation of Light Pollution	Design exterior lighting to minimise spill and glare, specifically restricting vertical uplighting.
Heat Island Effect Reduction	The use of vegetation, green spaces, and low solar-absorptance materials for roofing and paving will help mitigate the urban heat island effect.

7.1 Landscaping

The site design integrates the retention of existing vegetation of high ecological value with the planting of native, drought-tolerant species adapted to the local climate. Water-efficient landscaping and drip irrigation will be implemented to minimise water use, support local biodiversity, and ensure plants require minimal maintenance once established. Some established trees have been retained as key landscape assets.

Fig 9 summarises the specific initiatives included in the design in relation to landscaping:

1. Ensure that all site works are managed to avoid impacts on tree root zones and prevent the loss of any existing or council-managed trees.
2. Prioritise feature planting at the main entrances and front-of-house areas to enhance overall street presence, incorporating opportunities for targeted reuse of onsite water to support irrigation within key landscape zones.
3. Deliver a dedicated staff amenities breakout area that includes standardised shade structures designed and constructed in accordance with applicable accessibility requirements.
4. Retain existing mature canopy trees within undeveloped sections of the site and coordinate early with service providers to minimise the underground spread of electrical conduits, thereby preserving opportunities to protect existing trees and introduce additional canopy planting. Thereby maximising opportunities to preserve existing canopy trees and incorporate additional canopy planting

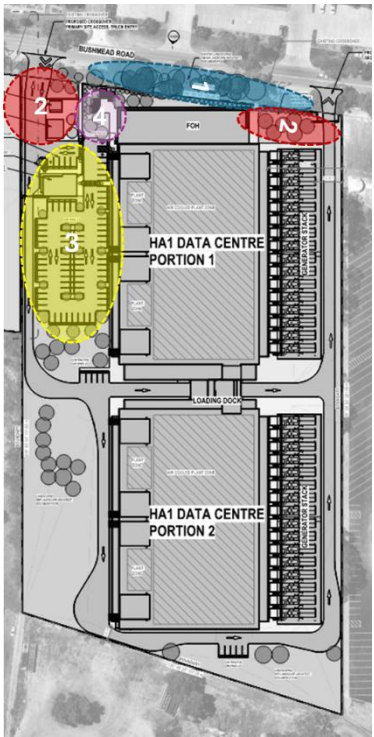


Figure 9 Landscape Design Intent

7.2 Light pollution

Light pollution is an increasing environmental concern as urban areas grow in size and density. Excessive upward-directed lighting wastes energy and can negatively affect local wildlife. The project will minimise uplighting and tightly control exterior lighting to reduce light spill and glare, specifically restricting vertical illumination. These measures help preserve night-sky visibility, prevent light trespass onto neighbouring properties, and protect nocturnal ecosystems.

Importantly, this approach is aligned with Perth Airport's airspace protection requirements, which identify artificial or reflected light that exceeds acceptable intensities or may confuse pilots as a controlled activity requiring careful management and approval. By limiting upward illumination and avoiding high-intensity or misdirected lighting, the project supports these aviation safety principles and ensures compatibility with the lighting expectations in the vicinity of Perth Airport.

7.3 Prevent heat island effect

The heat island effect (HIE) describes the condition where urban areas have a higher average temperature than its rural surroundings owing to the make-up of the built environment. The use of light roof materials combined with shaded and landscaped areas can reduce the heat island effect significantly and contributes to further energy savings

To mitigate the heat island effect, the development will maintain acceptable solar absorptance values for roof coverings and will incorporate substantial landscaping and shaded outdoor common areas to further reduce heat build-up within the site.

Additionally, the selection of light roof colours is aligned with Perth Airport's airspace protection requirements, which identify artificial or reflected light that exceeds acceptable intensities as a controlled activity that could pose a risk to aviation safety. By choosing lighter-coloured, low-absorptance roof materials that minimise glare and avoid high-intensity reflections, the project meets the intent of these airport guidelines and supports safe aviation operations.



Figure 10 View highlighting substantial landscaping and shading to mitigate HIE

8.0 Climate Adaptation & Resilience

Climate adaptation and resilience planning is essential to ensure that new developments can withstand the increasing impacts of Western Australia's changing climate, including higher temperatures, more frequent extreme-heat days, shifting rainfall patterns and greater fire danger. Western Australia's Climate Policy and climate-projection programs highlight the need for infrastructure, particularly energy-intensive and heat-sensitive facilities such as data centres, to be designed for long-term climatic shifts, protect critical assets from emerging environmental hazards, and continue operating safely during climate-related disruptions. Effective climate-resilient design reduces vulnerability, supports reliable service delivery, protects natural systems, and contributes to the State's overarching transition toward a low-carbon and climate-robust future.

8.1 Flood protection

Flood protection is a core component of resilient site planning and ensures that new developments remain safe, functional, and protected during extreme rainfall or river-level events. Effective flood-management strategies typically combine elevation, drainage, and hydrological controls to prevent inundation of critical infrastructure. These measures may include ensuring buildings are located outside designated flood-risk areas, incorporating adequate site grading to divert overland flow, designing stormwater systems with sufficient capacity for projected high-intensity rainfall, and using natural or engineered features such as swales, retention basins, and flood-mitigation buffers. Together, these approaches help safeguard assets, reduce long-term maintenance risks, and support broader climate-resilience outcomes by ensuring developments can continue operating safely under future climate-change scenarios that may bring more intense or frequent flood events.



Figure 11 Flood line map with location of site highlighted

The mapping (Refer Fig 11) shown indicates that the subject site (marked by the red pin) is located well outside all identified flood-prone areas. The shaded flood extents follow the nearby river corridor, remaining concentrated along the low-lying riparian zone, while the site itself sits on significantly higher ground and at a substantial distance from any modelled inundation. This confirms that the proposed development is not exposed to riverine flooding risk under current flood-mapping conditions, providing a robust basis for safe development and supporting the site's overall climate-resilience profile.

8.2 Bushfire protection

Bushfire protection refers to the range of planning, design, and management measures used to reduce the risk that a development will be affected by bushfire and to ensure safe, resilient operation during a fire event. It involves understanding local vegetation, fire-weather conditions, and landscape hazards, and then applying strategies such as maintaining appropriate asset-protection zones, ensuring defensible space around buildings, selecting low-flammability landscaping, and designing structures and access routes that support emergency response. Together, these measures help safeguard people, property, and critical infrastructure from the impacts of bushfire while enhancing overall site resilience under a changing climate.

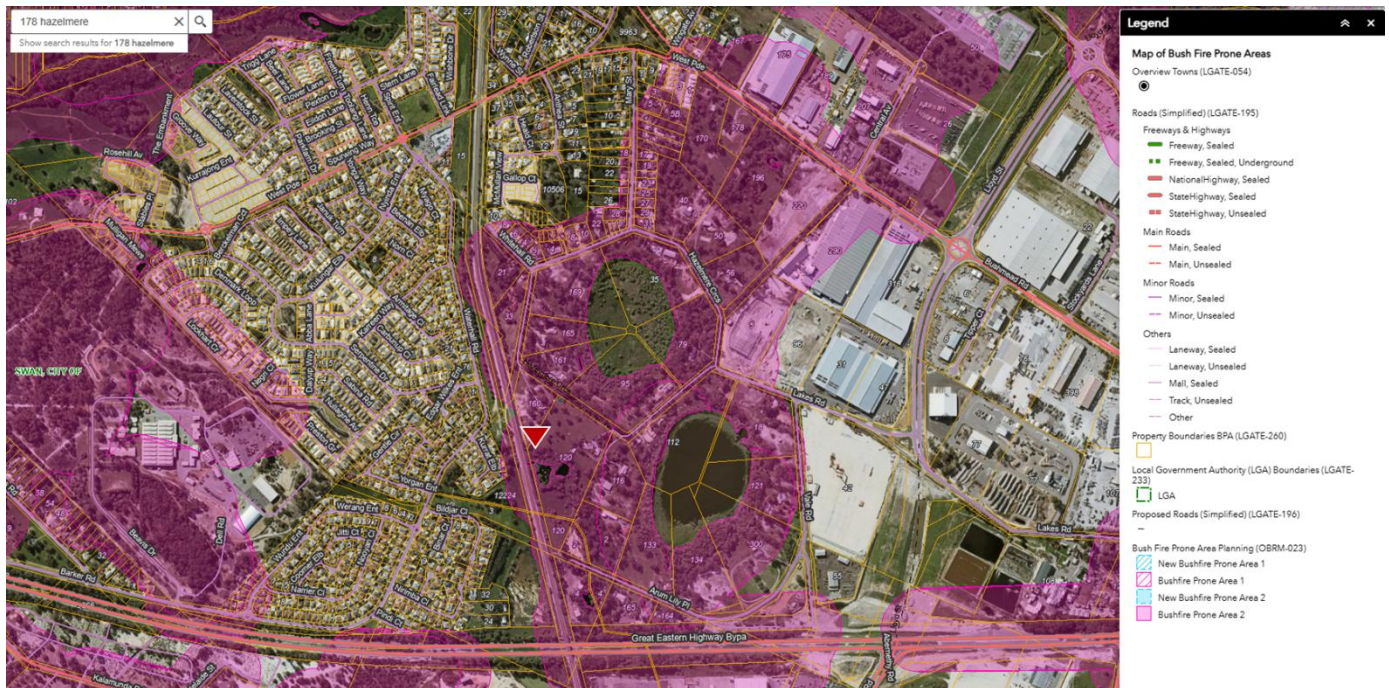


Figure 12 Bushfire Map highlighting location of Site

Although the site is located within a designated Bushfire Prone Area, the Bushfire Management Plan confirms that the proposed development is well protected due to a combination of site conditions and mitigation measures. The BMP demonstrates that, once developed, the entire site will present low-threat vegetation, with buildings set back within extensive hardstand and driveway areas that ensure radiant heat levels do not exceed BAL-29, and in most cases remain at BAL-12.5 or BAL-19.

The Bushmead Road verge will be maintained as low-threat vegetation in accordance with City of Swan Verge Guidelines, further reducing potential fire spread. Additional protection is provided through reticulated water supply, compliant vehicle access for emergency services, and the ability to evacuate safely via a public through-road network. Together, these measures ensure that the data-centre development remains safeguarded against bushfire impacts and achieves compliance with State Planning Policy 3.7 and the Planning for Bushfire Guidelines (2024).

8.3 Long-Term Adaptation Pathways

Long-term adaptation pathways provide a structured approach for preparing developments to cope with the impacts of a changing climate over several decades. They recognise that climate risks such as rising temperatures, more intense rainfall events, reduced water availability, and increased bushfire danger will continue to evolve, and therefore developments must be able to adjust over time. Western Australia's climate projections highlight ongoing warming and shifts in rainfall patterns, reinforcing the need for infrastructure to remain flexible and upgrade-ready as conditions change. Under an adaptation-pathways approach, the design anticipates future upgrades to cooling systems, renewable-energy integration, water-efficiency measures, and resilience features, ensuring the facility remains safe, reliable and compliant as climate risks increase. This method enables staged, cost-effective improvements rather than reactive, disruptive responses in later decades.



Figure 13 Aerial View of Data centre.

The project will be designed with structural capacity for future retrofits, ensuring that additional building elements, such as expanded cooling infrastructure, extra chillers, supplementary mechanical plant, or upgraded rooftop equipment, can be safely integrated as operational demands evolve. This forward-planning approach aligns with long-term climate-adaptation pathways, acknowledging that rising temperatures, shifting environmental conditions and changes in technological requirements may necessitate increased cooling loads or new resilience features over time.

To support this, all major building systems including electrical distribution, cooling networks, and mechanical plant layouts will be designed with built-in flexibility, enabling adjustments or expansions in response to emerging climatic phenomena or future performance requirements without disrupting core operations.

8.4 Heat Resilience & Thermal Performance

The data centre will be designed to achieve strong heat resilience and thermal performance, ensuring reliable operation under both current and future climate conditions. With Western Australia projected to experience continued warming and more frequent extreme-heat days, the building structure and mechanical systems will be engineered to manage elevated ambient temperatures without compromising capacity. This includes designing the facility to support future cooling-system upgrades, such as additional chillers, enhanced heat-rejection plant or alternative cooling technologies, allowing these elements to be integrated as climate conditions evolve. All thermal-management systems HVAC, chilled-water networks, air-intake systems and heat-rejection equipment will be configured with built-in flexibility, enabling modifications or increases in performance to respond to changing environmental phenomena. This approach ensures the data centre maintains stable, efficient thermal conditions while remaining adaptable to long-term climate shifts.

9.0 Honouring Cultural and Natural Heritage

Honouring culture and natural heritage involve recognising the deep historical, environmental, and cultural significance of the land, ensuring that development respects its past while supporting its long-term protection. This includes acknowledging traditional custodianship, preserving natural features such as waterways, vegetation, and landforms, and ensuring that new development complements rather than disrupts the cultural and ecological values of the area.

Within the City of Swan, this commitment is embedded in council strategy and planning processes, which emphasise protecting local natural areas, supporting cultural recognition, and ensuring that development contributes positively to the region's cultural landscape and environmental identity.

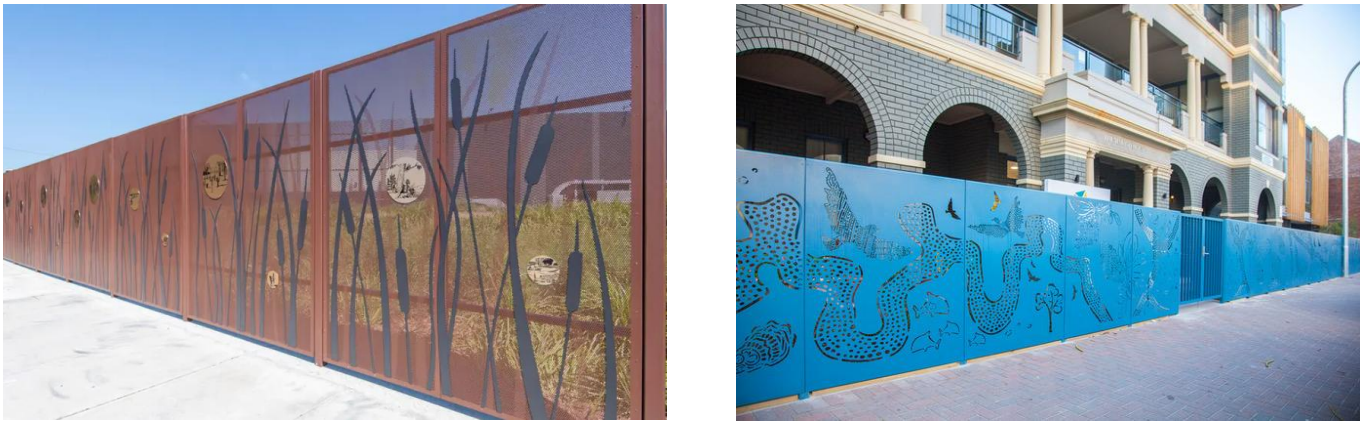


Figure 14 Connections and community through local artworks on elements like fences

As part of honouring local culture and natural heritage, the project embraces a Place-First design approach that recognises the significance of the Wagyl (Rainbow Serpent) as creator of the nearby waterways. This cultural narrative provides an opportunity to subtly embed meaning within the built environment. The development will aim to explore incorporating artwork, patterns and landscape expressions inspired by the sinuous forms and flowing movement associated with the Wagyl, ensuring cultural acknowledgement is woven into everyday elements rather than expressed as a single gesture. Various ideas to incorporate these motifs are under exploration across multiple disciplines, with the goal to pursue the most idea way for the project to embrace the soul of Place-First design and the significance of Wagyl.

This approach will aim to support culturally responsive design outcomes while reinforcing a sense of place and connection to the broader Swan Coastal Plain.

10.0 Codes and ratings

The development will be subject to voluntary and mandatory building codes and metrics to measure the performance of the building. This section of the report outlines the main codes and ratings and identifies the project's response.

10.1 NCC Section J – Building Energy Efficiency

All non-residential building compliance must satisfy the energy efficiency requirements laid out in Section J of the National Construction Code (NCC) Volume 1 Amendment 1. Compliance can be achieved through two separate pathways.

The first pathway is prescriptive, where a development must meet the Deemed to Satisfy (DTS) requirements for construction. In the event the DTS requirements cannot be met, the second pathway uses a modelling approach to verify that the building energy efficiency is equal to or better than what would be achieved under DTS.

The proposed development will look to satisfy the Section J requirements through either one of these two pathways, based on later versions of the design.

11.0 References

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