

Marsden Park Data Centre

ESD SSDA Report

Ecologically Sustainable Development (ESD) Report for
State Significant Development Application (SSDA)

Prepared for: CDC Data Centres

Date: 18/02/2025

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For and on behalf of

Stantec Australia Pty Ltd

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Disclaimer

This report has been developed based on the Development level of information provided to Stantec. Stantec has taken every effort to ensure the information presented in this report is an accurate reflection of the development but cannot guarantee the final performance of the building. The content of the development, including systems, materiality and finishes is subject to final architectural and client approval and subject to change.

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1. Executive Summary

This Ecological Sustainable Development (ESD) report has been prepared by Stantec at the request of CDC Data Centres for the proposed construction of data centre campus located at 105-113 Hollinsworth Road, Marsden Park, 2765 NSW. The data centre campus consisting of one 79MW building and five 84MW buildings is proposed to be constructed at the site with a total GFA of 285,266 square meters, including 15,415 square meter GFA of office area.

The report provides an overview of the ESD principles including greenhouse gas emission reduction strategies (reflecting the Government's goal of net zero by 2050), water sensitive urban design and material resource management, which will be implemented across the development and will form part of the project's State Significant Development Application SSD-70889211 (SSDA) submitted to the Department of Planning, Housing and Infrastructure.

Information contained within this report has been prepared in direct response to the Planning Secretary's Environmental Assessment Requirements (SEARS) for Marsden Park Data Centre, State Environmental Planning Policy 2022 (Sustainable Buildings), and the Blacktown City Council Growth Centre Precincts Development Control Plan (DCP) 2010 (2022 Amendment). The table below outlines how the development intends to respond to the relevant ESD SEARs requirements within this report.

Table 1: ESD SEARs requirements

SEARS requirements – Marsden Park Data Centre	
Climate Change	Response location within this report
Including the preparation of a Greenhouse Gas Mitigation Plan and a Climate Change Adaptation Plan in accordance with the relevant EPA requirements	Refer to GHG Assessment report and GHG Mitigation Plan in SSDA submission
SEARS requirements – Marsden Park Data Centre	
Ecologically Sustainable Development (ESD)	Response location within this report
A description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development	Section 4
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	Section 5.1.1
If Chapter 3 of SEPP (Sustainable Buildings) 2022 applies, include: - demonstration of how the development has been designed to address the provisions set out in Chapter 3.2(1) - provision of a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35BA of the EP&A Regulation.	Section 4 & 5 Attached in SSDA submission

In accordance with the above, and in alignment with CDC's ESG strategy the project intends to implement best-practice sustainability design initiatives such as:

- The development's daily operational energy demand is to be met using electricity to ensure that the development is future-proof as the electrical grid progressively decarbonises



- Purchasing electricity that is 100% backed by renewable electricity sources for both customer IT electricity and overhead electricity to run the data centres. CDC currently achieves this by purchasing Large-scale Generation Certificates (LGCs). From 2031 onwards, CDC understands that LGCs may no longer be available as the scheme will be retired, therefore, for clarity, CDC will continue to purchase and surrender renewable energy certificates under a scheme which will replace LGCs.
- High performance building envelope, strategic shading, and rationalised window to wall ratios of occupied zones.
- High COP of chillers, fans and pumps to reduce operational energy use and therefore greenhouse gas emissions.
- Water sensitive urban design principles including:
 - rainwater harvesting and reuse for irrigation, toilet flushing and washdown
 - selection of native & drought tolerant landscaping;
 - strategic stormwater volume and pollutant discharge control.
 - selection of water efficient sanitary fixtures including toilets, taps and urinals
- Air cooled chillers to significantly reduce the usage of potable water for primary cooling purposes.
- Specification of sustainable, certified, low-carbon content equipment and materials.

The impacts of these sustainability strategies on energy, GHG emissions and water consumption of the proposed data centre campus were estimated and summarised below:

Table 2: Summary of estimated **Energy, GHG Emissions** and **Water** reduction

Resource	Benchmark (Market average performance)	Proposed	% Improvement compared to Benchmark
PUE	1.61	1.3	
Data centre total energy (kWh/yr)	7,085,552,897	5,683,574,212	20%
GHG emission Scope 1 and 2 throughout project life cycle (tCO ₂ -e)	4,284,076	3,417,690	20%
		1,173	99% including purchase of renewable energy
Date Centre Water Use (l/kWh)	1.8	0.01	Nearly 100%

Resource	Benchmark (Market average performance)	Proposed	% Improvement compared to Benchmark
Office NABERS Target	4.5	5.5	22%
Office energy (kWh/year)	1,558,242	956,822	39%
Office Water Use (kL/year)	15,750	2,307	85%

- Agreement to rate the operational energy and water performance of the commercial office components of each building against NABERS upon the achievement of at least 70% occupancy within the office space. The performance targets shall be aligned with the SEPP requirements as follows:
 - 5.5-star base building NABERS Energy for office space only.
 - 3-star NABERS Water for office space only.



2. Introduction

2.1 Purpose

The purpose of this Ecologically Sustainable Development (ESD) report is to support a project's State Significant Development Application SSD-70889211 (SSDA) submitted to the Department of Planning, Housing and Infrastructure. This report directly responds to Secretary's Environmental Assessment Requirements (SEARs) for Marsden Park Data Centre and Blacktown City Council Growth Centre Precincts DCP 2010 (2022 Amendment) by providing a description of how the proposed development will incorporate the principles of ecologically sustainable development (ESD) into the design and ongoing operation of the data centre. Consideration has been given to the design initiatives included for the proposed development, or recommendations for further evaluation which relate to ESD principles.

2.2 Project Overview

2.2.1 Site context

The site is within the Blacktown local government area (LGA). The proposed development is located in a logical and highly accessible location along the Hollinsworth Road corridor which provides the site with direct access to Marsden Park town centre. The proposal is consistent with the vision set out for Marsden Park Industrial Precinct and the North West Growth Area.



Figure 1: Aerial map of the site and surrounding context - Source: Urbis (2023)

2.2.2 Description of proposed development

The development proposed comprises of 6 new data centres each containing 12 'data halls' and a FOH office area for on-site users. Each data centre is coupled with a bank of 40 standby generators to ensure uninterrupted operation of the facility. The site neighbours other light industrial or commercial zones to the East and West with residential streets to the South.

The overall site is bound by:

- Hollinsworth Road North-West of the site
- Langford Drive to the East
- Industrial Developments to the North and South-West.
- Undeveloped land to the South of the Site

Property Title	Marsden Park Data Centre
Address	105 -113 Hollinsworth Rd, Marsden Park NSW 2765
Number of storeys	4
Building Description	Data centre and Office
ABCB Climate Zone	Zone 6
Building Class	Class 7b (data storage) and Class 5 (office)

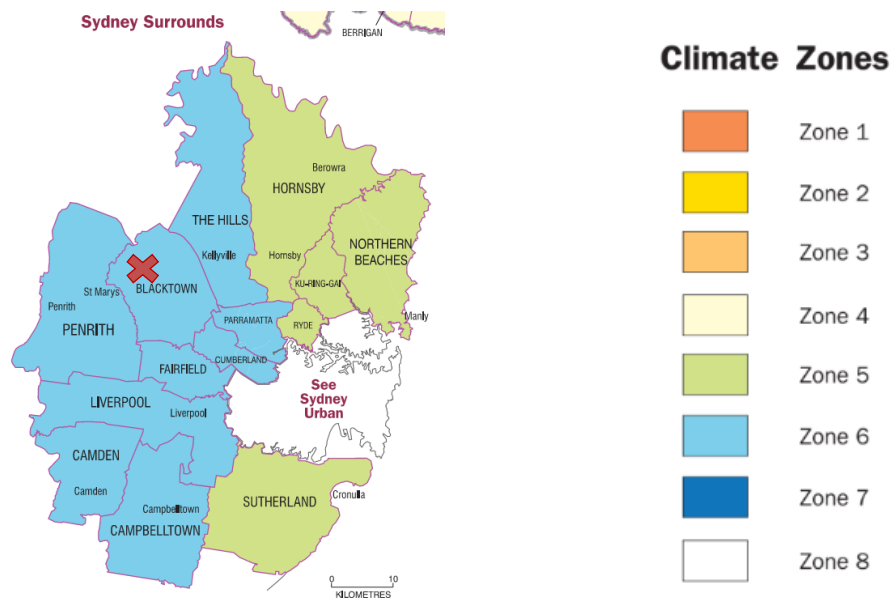


Figure 2: Climate zone map and location of development (abcb.gov.au)

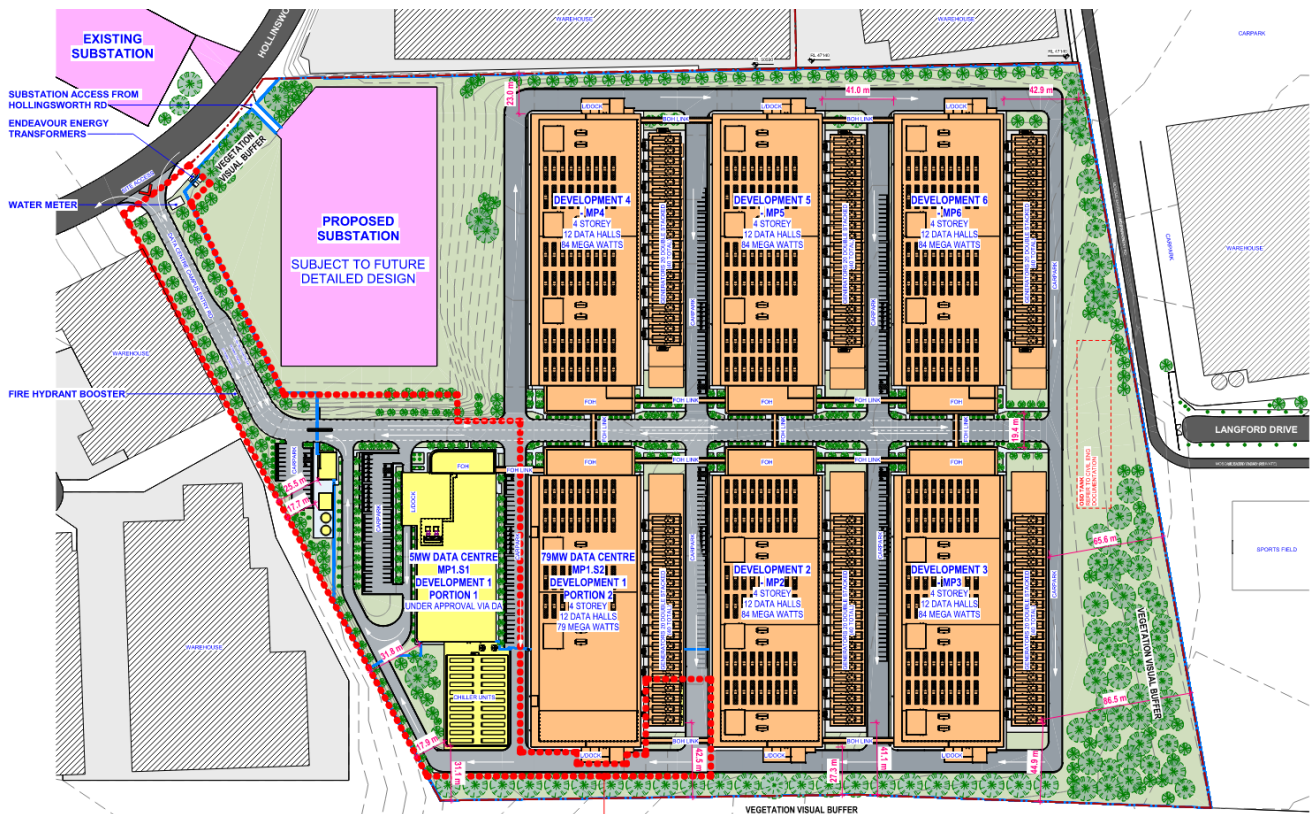


Figure 3: Campus site plan - Source: EJE Architecture (Dated 09 September 2024)

2.3 SEARs and DCP requirements relevant to this report

Table below identifies the SEARs and Development Control Plan (DCP) requirements which are relevant to this development application and indicates the location within the report where each requirement is addressed.

SEARS requirements – Marsden Park Data Centre	
Climate Change	Response location within this report
Including the preparation of a Greenhouse Gas Mitigation Plan and a Climate Change Adaptation Plan in accordance with the relevant EPA requirements	Greenhouse Gas Mitigation Plan and a Climate Change Adaptation Plan will be addressed in a separate report in the submission.
SEARS requirements – Marsden Park Data Centre	
Ecologically Sustainable Development (ESD)	Response location within this report
A description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development	Section 4
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	Section 5.1.1
If Chapter 3 of SEPP (Sustainable Buildings) 2022 applies, include:	

- demonstration of how the development has been designed to address the provisions set out in Chapter 3.2(1) - provision of a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35BA of the EP&A Regulation.	Section 4 & 5 Attached in SSDA submission
DCP Requirements	
6.5 Ecologically sustainable development	
6.5.2 Controls	
1) A Site Water Management Plan must be prepared in accordance with Appendix F.	Section 5.6
2) Development Applications are required to demonstrate consideration of: - measures that will reduce waste and conserve water through water recycling; - measures to minimise run-off and stormwater generation; - implementing total water cycle management by including measures that reduce consumption of potable water for non-potable uses, minimise site run-off and promote stormwater re-use; - utilising recycled materials and renewable building resources; - promoting biological diversity through appropriate retention, planting and maintenance of indigenous flora of the area; - implementing a waste management strategy that promotes the overall reduction of waste levels. - and promoting the achievement of the 60 percent waste reduction target for New South Wales; and - implementing energy conservation measures that include reducing energy consumption and increasing inherent energy efficiency through design and materials selection, and adopting energy management plans.	Section 5.2 Section 5.3 Section 5.6 Section 5.1.2
3) Development Applications are required to demonstrate that consideration has been given to promoting ecologically sustainable transport by complementing and reinforcing the development and use of the existing and planned integrated public transport, pedestrian and cycling networks servicing the site.	Section 5.1.2
4) Roof stormwater should be collected in tanks or street level reticulation which would serve as a retention system. The water in the retention system would be available for use for non-potable uses such as the watering of landscaped areas and use in toilet and hot water systems.	Section 5.2
5) Consideration should be given to the feasibility of any measures to substitute grid-source power with environmentally sustainable alternatives such as tri-generation (green transformers), co-generation (i.e. recovery of waste energy) or photovoltaics.	Section 5.1.2
6) New commercial buildings must achieve a minimum 4-star Green Star rating from the Green Building Council of Australia. Refer to the 'Green Star – Office as Built v3 Technical Manual'.	N/A



7) New industrial and light industrial buildings must achieve a minimum 4-star Green Star rating from the Green Building Council of Australia from such time that an Industrial Tool has been adopted	N/A
8) Development shall incorporate water efficient fixtures such as taps, showerheads, and toilets. The fixtures must be rated to at least AAA under the National Water Conservation Rating and Labelling Scheme. Where the building or development is water intensive (i.e. high-water user), specific water conservation objectives must be resolved with council	Section 5.2
9) Appropriate use of energy efficient materials during construction is to be demonstrated.	Section 5.3
10) Development should incorporate energy efficient hot water systems, air-conditioning, lighting and lighting control systems.	Section 5.1.2

3. Sustainable Design Framework

In pursuit of the ecological design principles, the development located at 105 Hollinsworth Rd, Marsden Park NSW 2765 will pursue excellence benchmarked from a number of sources. These include best practice design initiatives from the following regulatory frameworks:

- NSW Environmental Planning and Assessment Act 1979;
- NSW Environmental Planning and Assessment Regulation 2021;
- NSW Environment Protection Authority (EPA) Climate Change Policy 2023;
- NSW Department of Planning, Industry and Environment (DPIE) Net Zero Plan Stage 1: 2020-2030
- Planning Secretary's Environmental Assessment Requirements (SEARS) – Marsden Park Data Centre;
- State Environmental Planning Policy (Sustainable Buildings) 2022;
- Blacktown City Council Growth Centre Precincts Development Control Plan (DCP) 2010 (2022 Amendment), and;
- NCC 2022 Section J.

3.1 NSW Environmental Planning and Assessment Act 1979

“Section 4.15 Evaluation (1) Matters for consideration—general” states the following:

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application—

(1) the provisions of—

- a) any environmental planning instrument, and
- b) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and
- c) any development control plan, and
- d) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and
- e) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),
- f) (Repealed)

that apply to the land to which the development application relates,

- (2) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,
- (3) the suitability of the site for the development,
- (4) any submissions made in accordance with this Act or the regulations,
- (5) the public interest.



3.2 NSW Environmental Planning and Assessment Regulation 2021

Section 193 “Principles of ecologically sustainable development” under division 5 “Environmental impact statements” of the Environmental Planning and Assessment Regulation 2021 states the following:

- (6) The principles of ecologically sustainable development are the following-
 - g) the precautionary principle,
 - h) inter-generational equity,
 - i) conservation of biological diversity and ecological integrity,
 - j) improved valuation, pricing and incentive mechanisms.
- (7) The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty, should not be used as a reason for postponing measures to prevent environmental degradation.
- (8) In applying the precautionary principle, public and private decisions should be guided by—
 - a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - b) an assessment of the risk-weighted consequences of various options.
- (9) The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
- (10) The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.
- (11) The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as—
 - a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and
 - b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and
 - c) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

3.3 NSW Environment Protection Authority (EPA) Climate Change Policy 2023

Climate Change Policy 2023 describes the causes and consequences of climate change in NSW and outlines EPA’s commitment to deliver on the statutory objectives and duty to address climate change and the Strategic Plan 2021–24 commitments. It states:

“We adopt and support the delivery of the NSW Government’s Climate Change Policy Framework, including the:

- Net Zero Plan Stage 1: 2020–2030



- Net Zero Plan Stage 1: 2020–2030 Implementation Update
- Net Zero Plan Implementation Update 2022
- Climate Change Adaptation Strategy
- Waste and Sustainable Materials Strategy.

Our climate change policy and the associated action plan (Climate Change Action Plan 2023–26) complement, support and build on the foundations set in those documents.

Our Strategic Plan 2021–24 identifies climate change and ecologically sustainable development as two of our key focus areas.

We are committed to:

- taking action to reduce greenhouse gas emissions, mitigate climate change impacts and build greater environmental and community resilience aligned with the principles in the NSW Net Zero Plan
- championing sustainable approaches to mitigate the cumulative impacts of industry on local communities and environments.”

3.4 NSW Department of Planning, Industry and Environment (DPIE) Net Zero Plan Stage 1: 2020-2030

The Net Zero Plan Stage 1: 2020-2030 is the foundation for NSW’s action on climate change and goal to reach net zero emissions by 2050.

It outlines the NSW Government’s approach to protect our future by growing the economy, creating jobs and reducing emissions over the next decade. The plan aims to strengthen the prosperity and quality of life of the people of NSW, while helping to achieve the State’s objective to deliver a 70% cut in emissions by 2035 compared to 2005 levels.

The plan supports a range of initiatives targeting energy, electric vehicles, hydrogen, primary industries, technology, built environment, carbon financing and organic waste.

3.5 Planning Secretary’s Environmental Assessment Requirements (SEARS) – Marsden Park Data Centre;

Ecologically Sustainable Development (ESD)

- (1) a description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development
- (2) demonstration of how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards
- (3) if Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022 applies, include:
 - demonstration of how the development has been designed to address the provisions set out in Chapter 3.2(1)
 - provision of a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35BA of the EP&A Regulation.



3.6 State Environmental Planning Policy (Sustainable Buildings) 2022;

3.2) Development consent for non-residential development

- (1) In deciding whether to grant development consent to non-residential development, the consent authority must consider whether the development is designed to enable the following—
 - a) the minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials,
 - b) a reduction in peak demand for electricity, including through the use of energy efficient technology,
 - c) a reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design,
 - d) the generation and storage of renewable energy,
 - e) the metering and monitoring of energy consumption,
 - f) the minimisation of the consumption of potable water,
- (2) Development consent must not be granted to non-residential development unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified.

3.3) Development consent for non-residential development

- (1) In deciding whether to grant development consent to large commercial development, the consent authority must consider whether the development minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.
- (2) Development consent must not be granted to large commercial development unless the consent authority is satisfied the development is capable of achieving the standards for energy and water use specified in Schedule 3.
- (3) For the purposes of subsection (2), development is capable of achieving a standard specified in Schedule 3 if there is a NABERS commitment agreement in place to achieve the standard.

3.4) Development consent for non-residential development

- (1) This section applies to non-residential development that is declared to be State significant development by State Environmental Planning Policy (Planning Systems) 2021, section 2.6(1) and specified in that policy, Schedule 1, sections 13–15.
- (2) In deciding whether to grant development consent to development to which this section applies, the consent authority must consider whether the development will minimise the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.

Schedule 3: Standards for energy and water use for large commercial development.

- (1) Energy Use;
 - The standard for energy use for development for the purposes of prescribed office premises is a 5.5 star NABERS energy rating.
- (2) Water Use;
 - The standard for water use for large commercial development is a 3 star NABERS water rating.



Schedule 4: Dictionary.

Large commercial development means non-residential development that involves—

- (a) the erection of new prescribed office premises, prescribed hotel or motel accommodation or prescribed serviced apartments, or
- (b) alterations, enlargement or extension of prescribed office premises, prescribed hotel or motel accommodation or prescribed serviced apartments, if the development has a capital investment value of \$10 million or more

Prescribed office premises means office premises with a net lettable area of at least 1,000m².

3.7 Blacktown City Council Growth Centre Precincts DCP 2010 (2022 Amendment);

6.5 Ecologically Sustainable Development.

(1) 6.5.1 – Objectives;

- a) To improve energy efficiency through the design and siting of buildings;
- b) To ensure that developments are environmentally sustainable in terms of energy and water use, and management of waste and discharge
- c) To encourage the utilisation of materials and construction techniques with low energy inputs in their production for construction energy systems.

(2) 6.5.2 – Controls;

- (1) A Site Water Management Plan must be prepared in accordance with Appendix F.
- (2) Development Applications are required to demonstrate consideration of:
 - i. measures that will reduce waste and conserve water through water recycling;
 - ii. measures to minimise run-off and stormwater generation;
 - iii. implementing total water cycle management by including measures that reduce consumption of potable water for non-potable uses, minimise site run-off and promote stormwater re-use;
 - iv. utilising recycled materials and renewable building resources;
 - v. promoting biological diversity through appropriate retention, planting and maintenance of indigenous flora of the area;
 - vi. implementing a waste management strategy that promotes the overall reduction of waste levels.
 - vii. and promoting the achievement of the 60 percent waste reduction target for New South Wales; and
 - viii. implementing energy conservation measures that include reducing energy consumption and increasing inherent energy efficiency through design and materials selection, and adopting energy management plans.
- (3) Development Applications are required to demonstrate that consideration has been given to promoting ecologically sustainable transport by complementing and reinforcing the development and use of the existing and planned integrated public transport, pedestrian and cycling networks servicing the site.



- (4) Roof stormwater should be collected in tanks or street level reticulation which would serve as a retention system. The water in the retention system would be available for use for non-potable uses such as the watering of landscaped areas and use in toilet and hot water systems.
- (5) Consideration should be given to the feasibility of any measures to substitute grid-source power with environmentally sustainable alternatives such as tri-generation (green transformers), co-generation (i.e. recovery of waste energy) or photovoltaics.
- (6) New commercial buildings must achieve a minimum 4-star Green Star rating from the Green Building Council of Australia. Refer to the 'Green Star – Office as Built v3 Technical Manual'.
- (7) New industrial and light industrial buildings must achieve a minimum 4-star Green Star rating from the Green Building Council of Australia from such time that an Industrial Tool has been adopted
- (8) Development shall incorporate water efficient fixtures such as taps, showerheads, and toilets. The fixtures must be rated to at least AAA under the National Water Conservation Rating and Labelling Scheme. Where the building or development is water intensive (i.e. high-water user), specific water conservation objectives must be resolved with council.
- (9) Appropriate use of energy efficient materials during construction is to be demonstrated.
- (10) Development should incorporate energy efficient hot water systems, air-conditioning, lighting and lighting control systems.

3.8 NCC 2022 Section J

The project will be required to demonstrate compliance with the National Construction Code (NCC) 2022 Section J – energy efficiency provisions.

Section J outlines minimum performance requirements including:

- Maximum greenhouse gas emissions (GHG) levels;
- Minimum thermal envelope performance for building elements such as walls, floors, roof and external glazing;
- Minimum performance requirements for building sealing;
- Maximum lighting power densities for internal lighting design;
- Minimum performance levels for building air-conditioning and ventilation systems;
- Minimum requirements for energy and water metering;
- Minimum requirements for energy and water data collection; and
- Minimum access for maintenance requirements.

The proposed performance standards for Section J 2022 will outline the thermal performance requirements for code compliant façade designs, meaning consideration must be shown for the amount of exposed glazing included within the façade design.

The development will need to seek to optimise energy efficiency & thermal performance via design elements which improve the building façade performance including façade design, thermal envelope, HVAC system selection and lighting design.

The development must be provided with sufficient electrical allowance to support Electric Vehicle (EV) parking infrastructure as applicable under part J9D4.



4. Project Design Response

The development aims to mitigate potential environmental impacts through application of best practice design and construction processes through the ESD commitments and initiatives outlined in the following Section. The documented initiatives to be implemented – which are the basis for the response to the Sustainable Design Frameworks outlined above include:

- Electrification of non-emergency infrastructure and systems;
- Project design Power Usage Efficiency (PUE) of 1.3 exceeds both Australian and global best practice for PUE
- Rainwater harvesting and reuse for irrigation, toilet flushing and washdown
- Smart metering
- Best practice façade thermal performance;
- Solar gain reduction through strategic design;
- Efficient Heat rejection/management systems for the occupied offices and data halls;
- Energy efficient lighting systems (internal and external) and lighting controls;
- Explore opportunities to reduce embodied carbon/other emissions associated with the construction and manufacture of materials;
- Explore opportunities to embed circularity principles including responsible procurement, efficient use and end of life treatment for consumed resources;
- Ample access to natural daylight where possible within occupied office spaces;
- Low VOC paints for reduced indoor pollutants
- Provision of electric vehicle charging bays;
- Water efficient fixtures and fittings (WELS rating);
- Selection of native & drought tolerant landscaping;
- Application of Water Sensitive Urban Design (WSUD) principles;
- Waste management plan including strategies for construction and operation;
- Implement best practice procedures and operational guidelines to ensure appropriate monitoring of systems control networks

Contractors will also be requested to provide and abide by an Environmental Management System to be in accordance with NSW Environmental Management Systems Guidelines or similar standard. This places value on environmentally responsible building practices to ensure responsibility is held for the environmental management of the building site as they complete their associated works. Once the new development is activated, a detailed handover package should be coordinated to ensure clear operational procedures and targets are defined with the building owner. This will be in accordance with the sustainable strategies adopted by the development and will be distributed to the tenants to ensure environmental impacts associated with operational processes are minimised through operation.



5. ESD Opportunities & Initiatives

The following section addresses the Greenhouse Gas Emissions, Energy Efficiency and Ecologically Sustainable Development aspects in response to the Sustainable Design Frameworks (as per Section 3) for the project. It highlights best practice sustainable design principles and aligns with elements from existing sustainability tools employed across industry to develop a set of metrics for the development.

There are several ESD opportunities and initiatives that should be implemented in the project. The following recommendations are to be read in conjunction with all other design documentation prepared. Stantec note that the design is in its very early stages, and the following concepts will be considered going forward.

Fundamental to the success of improving the ESD outcome for the project is a strong design philosophy. Early adoption of ESD design features and initiatives will lead to a better integrated design outcome and will result in:

- Lower operational energy demand;
- Promote greater indoor environmental quality;
- Reduce the requirements for artificial lighting & power;
- Optimise the efficiency of HVAC systems;
- Improve building occupant comfort; and
- Improve the project's capacity to deliver a responsible development.

5.1 Greenhouse Gas Emissions & Energy Efficiency

A variety of greenhouse gas emission reduction and energy efficiency measures are applicable to the proposed development and should form part of the initial design and operation plan. The final strategy will account for aspects such as sustainability, operational feasibility, architectural intent and site-specific appropriateness.

The energy efficiency strategy follows the hierarchy pyramid (figure 4). Best practice energy conservation dictates that in the first instance demand is reduced. This has a much greater benefit to the overall long-term sustainability of the site compared to reliance on grid renewable energy or carbon offsets. As such, the focus will be on the elements that provide the greatest impact and return on investment.

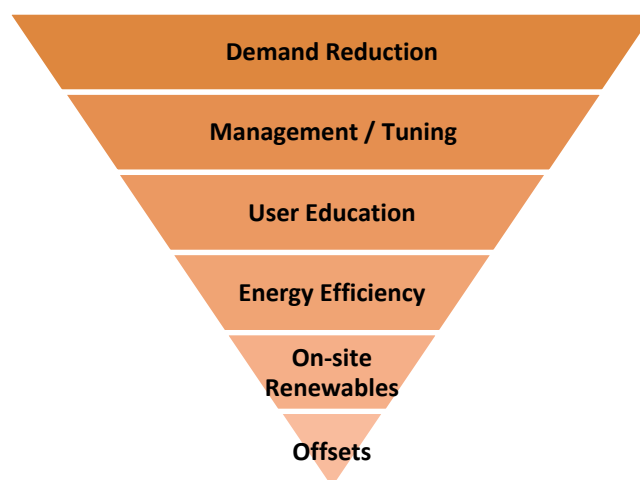


Figure 4: Energy efficiency strategy hierarchy

5.1.1 Design PUE

Project design Power Usage Efficiency (PUE) of 1.3 exceeds both Australian and global best practice for PUE. The design PUE is approximately equivalent to NABERS Energy for Data Centres 5 Star benchmark. A NABERS Energy for Data Centres rating of 3 stars is considered market average, whereas 5 Star represents superior performance. As such this development will exceed relevant industry data centre performance standards.

5.1.2 Base Building NABERS Energy Rating for office

Project contains office space large than 1,000 m² NLA and will target Base building NABERS Energy rating of 5.5 Star benchmark for office portion only. A NABERS Energy for office rating of 4.5 stars is considered market average, whereas 5.5 Star represents superior performance.

5.1.3 Energy Efficiency Measures

Energy efficiency measures which should be applied across the development to reduce operational energy consumption include:

- **Electrification** – 100% of the development's non-emergency infrastructure and systems will be electric. This will ensure the development is future-proof as the electrical grid progressively decarbonises. This aligns with the Australian Public Service Net Zero Policy.
- **Architecture** – Buildings are to be designed to deliver comfort, practicality, connection to the outside through views while considering energy conservation through strategic architectural form. The development will also offer fresh air and daylight access to occupants in many forms throughout habitable spaces. The development should adopt an optimized window to wall area to balance solar heat gain and daylight exposure. Light coloured façade and roof finishes (SRI>64) should be specified pending reflectivity implications (<0.45 Absorptance) to reduce solar heat gain through the building envelope. Different design strategies are applied to the office spaces and the data centre component to achieve the most sustainable outcomes and meet each space intent.
- **High Performance Building Fabric** – Insulation should be installed to minimize undesirable heat/energy flows into/out of the thermal boundary of conditioned spaces. Thermal bridging should also be mitigated to minimize the loss of energy from the thermal boundary. To improve energy performance window systems should consider; double glazed systems, low-E glass coatings, thermally broken or low thermal conductance frames and operable windows for improved thermal comfort and ventilation control.
- **High quality light and views** – Focusing on the wellbeing of the occupant to achieve daylight comfort and healthy indoors office spaces with high quality views to nature and the outside.
- **Shading and Blinds** – Design of external shading and use of internal blinds will reduce direct solar heat gains, control radiant heat and increase comfort through glare reduction without compromising the connection to the outside.
- **Efficient HVAC System** – Selection of efficient HVAC systems with high COPs, appropriately sized to meet the needs of internal loads. HVAC systems will require adequate efficiency, with economy cycle and monitoring/control integration for temperature band fluctuation to promote energy efficiency in the design. Legionella risks may be eliminated by opting for air-based HVAC systems.
- **Efficient IT Equipment (CDC Infrastructure)** – The proposed development will utilise highly efficient IT equipment, surpassing the standard equipment commonly used in the data centre industry. This includes selecting energy star qualified equipment, optimising power distribution units, improving battery charging, and implementing UPS systems. By reducing energy consumption for CDC Infrastructure IT equipment, this development will improve energy efficiency.
- **Efficient DHW Systems** – Providing high efficiency air source heat pump for domestic hot water systems to service end of trip facilities.
- **Water Efficient Fixtures and Fittings** – Selection of low-flow showers and taps, to reduce hot water demand across the development associated with showering, sinks and hand basins.



- **Efficient Lighting Systems** – Providing high efficiency LED and fluorescent lighting with lighting controls including timing, occupancy and daylight sensors to reduce the demand on the lighting system.
- **Energy Efficient Appliances** – Specifying high energy star rated refrigerators/freezers, dishwashers, etc Targeting 1 star below the maximum star rating for the applicable appliance e.g.
 - Dishwashers – 3.5 stars (4.5 stars is the maximum)
 - Fridge/freezers – 5 Stars (6 stars is the maximum)
- **Smart Energy Metering and Monitoring** - Metering shall be designed to meet metering guidelines as outlined under the current National Measurement Regulations. A detailed monitoring system should be installed to help with early identification of excessive energy use and points of potential failure. Hydraulic plant and equipment shall be monitored for faults or failures. The automatic monitoring system must be capable of:
 - Collecting data from all meters
 - Alert to any fault or failures of primary building systems
- **Sustainable Transport:** Dedicated and site-specific transport plan including suitable provision for low-carbon modes of transport to be utilised by the occupants. The following options to support low-carbon transport as outlined in Transport Impact Assessment report are being proposed:
 - Providing EV charging provisions to NCC requirements
 - Provide lockers and bicycle parking spaces for employees and visitors

5.2 Water Efficiency

5.2.1 Water Usage Effectiveness

The design data centre facility will target a Water Usage Effectiveness (WUE) of 0.01 because the design of mechanical system is 100% air cooled to minimise the water usage. WUE is an industry recognized metric representing the ratio of total data centre facility water consumption (L), to the IT equipment energy consumption (kWh). To achieve this target the facility will optimise water efficiency through several water conservation strategies. The following water-saving measures are being considered for the development:

- Monitoring water withdrawal, consumption, and disposal across the building using multi-layered metering strategies.
- Deploying high-efficiency equipment that can achieve a balance between energy consumption and water consumption.
- Water efficient fittings for toilets, taps, showers and irrigation.
- Developing an integrated water management plan.

5.2.2 NABERS Water Rating for office

The project contains office space larger than 1,000 m² NLA and will target a 3 star NABERS Water for offices rating as per requirements of State Environmental Planning Policy (Sustainable Buildings) 2022. Each office will be rated after one year of operation and at least 70% occupancy has been achieved.



5.2.3 Potable Water Saving Measures

A variety of water efficiency measures can be applied to the proposed development. Best practice water efficiency measures implemented to reduce water consumption may include:

- **Water efficient fixtures and fittings (WELS rating):** By implementing low-flow water fixtures, the consumption associated with amenities can be reduced. This includes taps, wash basins, WCs, Urinals, showers and supplementary water uses.
- **Rainwater harvesting and reuse:** One (1) 22.5KL concrete Rainwater tanks will be installed per building with a surface area of 10.5m², and tank depth of 2.2m each. Adopting the water demand rates, the site achieves the 80% reuse target set within Part J, Section 4 of the Blacktown Council DCP. Refer to the Stormwater Management Plan by Civil consultant. It is proposed that reuse will be used for the toilet flushing, urinal flushing, washdown and irrigation of a limited area of the soft landscaped areas within the site.
- **Water use metering and monitoring:** Which can identify leaks aiming to avoid significant water loss due to leakage
- **Selection of native & low water plants / trees:** Native plants which have adapted to thrive in the Australian environment and are typically more resilient than their exotic counterparts. Low water demanding species will reduce further irrigation demand. Refer to Landscape architect report.
- **Irrigation:** sub-soil irrigation systems should be favoured with a time clock to water planter beds/substrate at night. Doing so can significantly reduce water lost to evaporation and hence overall water demand.
- **Integrated water management plan (IWMP)** has been developed by the project team to integrate water monitoring and management for the facility. Refer to the IWMP report for details.



Figure 5: Illustration of WELS rating label

5.2.4 Water Sensitive Urban Design (WSUD)

A site Water Management Plan must be prepared for the development per the Blacktown City Council Growth Centre Precincts DCP. Water conservation should be prioritized by adopting WSUD principles which:

- Maintain the natural water balance;
- Make more efficient use of water resources by conserving water, particularly potable (drinking) water;
- Reduce general flood risk;
- Reduce erosion of waterways, slopes and banks;
- Control stormwater and waste water pollution and improve water quality in waterways and groundwater;
- Integrate stormwater management with water supply and wastewater treatment; and
- Integrate stormwater treatment into the landscape so as to maximise the visual and recreational amenity of urban development.

The following stormwater control measures have been proposed to be adopted across the development to meet the stormwater strategy objectives:

- **Gross pollutant traps** are proposed to be used as a means of primary stormwater flow treatment before discharging into the proposed bioretention basin.
- A **Bio-retention systems** is proposed for the development to filter and remove pollutants from surface water runoff as it flows through the vegetation layer and underlying filter media.

- An **Underground onsite detention tank** has been proposed for the site that will treat flows via storm filter medium devices and controlled within the tank. Flow control is added by using orifice plate in the minor event (5% AEP) and an overflow weir in the major event (1% AEP).

5.3 Reduced Environmental Impact Materials

In accordance with the project's sustainability principles, the development should investigate the use of responsibly procured materials with respect to the following initiatives:

- **Reduce carbon concrete** procurement for concrete used in the project to mitigate upfront carbon emissions during the construction phase.
- **Circularity Principles:** CDC aims to achieve a Zero waste to landfill certification (in operations)
- **Steel sourced** from manufacturers who are members of the Australian Steel Institute Sustainability Charter for sustainable and energy reducing steel manufacture.
- **Best practice PVC** plastics in formwork, piping, cables and conduits. These materials have a reputation for damaging the environment in their production, both upstream and downstream of the manufacturing process. PVC certification demonstrating Best Environmental Practice (BEP) is preferred.

5.4 Indoor Environmental Quality

Indoor Environment Quality (IEQ) has been defined as a key sustainable building category to improve indoor environments for building occupants, which in turn improves their overall wellbeing. Consideration to improving indoor environmental quality will be a vital step within the development's design process.

The proposed development seeks to improve the overall IEQ for building occupants by addressing the following elements:

- Glazing to wall ratio should be selected to maximise access to daylight while prioritising the thermal performance necessary to achieve the targeted energy consumption outcomes.
- Low Volatile Organic Compound (VOC) – Selection of internally applied paints, carpets, adhesives and sealants used on site with low volatile organic compound (VOC) content.
- Low Formaldehyde Emission Wood – Selection of internally applied engineered wood products from low formaldehyde emission products.

5.5 Building Management

In line with industry recognised best practice frameworks, the project design and built form will seek to respond to the ongoing environmental challenges of urban development and ensure the project implements a range of ESD initiatives aimed at improving ongoing building management.

Through specific contractual commitments and documented design intent the project proposes to address environmental management & building operational performance through the following initiatives.

- **Building Commissioning & Tuning Procedures:** Prior to practical completion and 12-months post practical completion. By implementing this via project contract documents the project ensures operational efficiency & building operation is optimised in accordance with the intended building design.
- **Smart Metering:** Smart metering will provide relevant data to ensure the efficient use of systems & management by building staff. This will provide detailed information about the project energy & water use and profile on a regular basis through an accessible platform. This information will aid in the understanding of the development usage



profile so that adjustments can be made to improve performance and manage supply and demand trends, aiming to reduce operating costs. This supports operational efficiency and facilitates detection of systems failures.

- **Building Management Control System:** A Building Management Control System (BMCS) with automatic intelligent controls for infrastructure equipment and systems will be used. This allows plant efficiency to be optimised. A BMCS also allows equipment and energy consumption to be monitored, facilitating troubleshooting efficient operations.

5.6 Waste Management

In order to facilitate sustainable waste management in accordance with the principles of Ecologically Sustainable Development; waste minimisation and resource recovery, easy access to waste systems, pollution prevention associated with waste management practices will be taken into consideration as part of waste management strategy.

The development aims to increase on-site recycling and resource optimisation through adoption of the Waste Management Hierarchy with the ultimate goal of reducing waste going to landfill, which is in line with *The Waste Avoidance and Resource Recovery Act, 2001* and the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*. The waste management strategy will adhere to targets outlined within the Blacktown City Council Growth Centre Precincts DCP requirement of the achievement of the 60 percent waste reduction target for New South Wales.

The key objectives for the management of waste generated by the demolition, construction and operation will include:

- Minimise waste generation on site;
- Segregate waste on site to increase recycling potential;
- Store wastes on site appropriately to prevent cross-contamination and/or mixing of different waste streams;
- Segregate hazardous waste for appropriate treatment and disposal, where applicable;
- As appropriate, investigate the source of waste streams and undergo analysis of the operational waste generation profiles to identify opportunities to reduce waste generation.

The waste management plan will include actions to minimise waste during construction and operation. By implementing these actions (and specifically the waste hierarchy) the development will assist in achieving the government's waste targets.



5.7 Climate Resilience

Climate Change in Australia have the potential to change the future amenity and wellbeing of the built environment. Natural disasters such as bushfires, floods, drought, dust and strong wind constitute threats to buildings in operation, and the long-term effects of climate change are likely to increase the frequency of such events. It's paramount to future-proof building design and improve its adaptability and resilience to long-term climate change effects. **In response to Climate Change, the following design solutions are recommended to be implemented in the development to improve the project's resilience against climate hazards:**

Climate Variable	Proposed Design Solutions
Extreme Temperatures	• Light-coloured roof with high solar reflective index (SRI) and other finishes selections to mitigate urban heat island effect • Provide a mixture of high-performance glazed façade systems and external shading. • Passive design elements incorporated into the design such as shading, orientation and insulation. • HVAC systems efficiently designed to maintain indoor comfort during peak conditions. • Landscape areas across the site
Water	Water Conservation: • Preferential use of drought tolerant and native plants • Provide subsoil irrigation system to improve watering effectiveness • Recycled water from rainwater tank for irrigation, toilet flushing and washdown • Install water-efficient fittings • Water efficient HVAC systems to avoid the use of water for primary cooling Flood Mitigation: • Provide safer access routes that are above the peak flood levels. • Provide multiple access routes to the site. • Provide early warning system for a risk of a flood. • Increased drainage considered for the development to reduce roof and surfaces flooding. • Increased building entrance height. • Design assessment to mitigate post development probable maximum flood (PMF) level. • Incorporate best practice maintenance strategies for stormwater system. • Install additional power sources such as back-up generators or battery storage above the flooding heights.
Energy	• Design for energy efficiency and grid resilience • Install additional power sources such as back-up generators or battery storage located above the flooding heights.

Fire	• Provide additional filtration for carbon filters and smoke removal. • Provisions of compliant fire and life safety design of the building to protect fire and life safety strategy (e.g., provisions of exits and egress, fire sprinkler and hydrant systems, smoke hazard management, etc.). • Provide multiple access routes to the site.
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A Climate Change Adaptation Plan is recommended to be developed to further assess the projected climate risks for the site. This will allow for early mitigation for any elements found to be at high-risk to be designed for long-term safety, security, and operation.

5.8 First Nations Engagement

The development will work closely with local aboriginal community to celebrate the culture and heritage in alignment with CDC values:

- Opportunities for indigenous employment and skills training will be provided. CDC currently employ the early works builder, BY Group, which is a supply nation indigenous member. They provide a large portion of the early earthworks and site establishment in the project.
- Local indigenous plantings will be integrated in the implementation of design.
- Aboriginal knowledge will be represented in the creation of design.
- The diversity of Aboriginal culture will be respected by following community specific cultural protocols, such as the Welcome to Country and smoking ceremony performed at the sod-turning event.

5.9 Diversity, Equity, and Inclusion

The development will contribute to diversity, gender equity and inclusion through the following measures:

- CDC have a DEI Champions committee to promote and support the development of a diverse and inclusive workplace.
- The building's design and construction will be able to be navigated and enjoyed by stakeholders of diverse ages, genders, and physical and mental abilities. This applies to common spaces, bathroom facilities, and amenities provided within the building.
- Equal access to the building and diverse wayfinding will be provided by the building design.



6. Energy Consumption Reduction

The proposed project's main energy consumption is the data centre facility operational energy inclusive of the office space operational energy. By implementing the energy efficiency initiatives outlined in Section 5 of the report, the following outcome of energy reduction can be achieved:

- The proposed data centre facility is designed for **52%** reduction of operational energy use compared to a benchmark market average (PUE 1.61) colocation data centre.
- The proposed office spaces can achieve **39%** significant reduction of operational energy use compared to a benchmark market average (4.5-star NABERS) Office base building.

The detailed estimated energy demand and reduction for the project when the whole campus is operational are presented below:

6.1 Data Centre Energy Reduction

The proposed CDC data centre design facility design PUE is 1.3 through the best practice of building services design. The facility energy including building services energy is estimated using PUE and a maximum IT Capacity of 499MW.

The estimated operational energy reduction of the data centre is summarised below:

Item	Benchmark (Market average)	Proposed	% Improvement compared to Benchmark
PUE	1.61	1.3	
Facility energy (kWh/yr)	2,670,512,897	1,268,534,212	52%
Data centre total energy (kWh/yr)	7,085,552,897	5,683,574,212	20%

Note: IT Loads are for reference as the data centre is intended for co-location and CDC is not responsible for its customers ITC equipment.

6.2 Office Energy Reduction

The proposed office space design NABERS target is 5.5 Star through the best practice of integration of architecture and building services design. The estimated operational energy reduction of the office space is summarised below:

Item	Benchmark (Market average)	Proposed	% Improvement compared to Benchmark
NABERS	4.5	5.5	22%
Office energy (kWh/year)	1,558,242	956,822	39%

The office base building energy including building services energy is estimated using NABERS reverse calculator. A summary of the NABERS reverse calculator input is attached in Appendix A.



7. Greenhouse Gas Emission Reduction

This section summarises GHG emissions reduction quantities through the following mitigation measures. This GHG assessment uses location-based approach to estimate Scope 1 and 2 emissions. Projected emission factors for Australia's grid electricity have been retrieved Emission factors reported for NSW in the latest Australian National GHG accounts factors report from DCCEEW 2023, Australia's emissions projections 2023. The operational throughput has been based on the projected utilisation forecast for the development.

The detailed information can be found from GHG emission assessment report and mitigation report.

Resource	Benchmark	Proposed	% Reduction compared to Benchmark
PUE	1.61	1.3	
Scope 1 and Scope 2 GHG emissions (tCO ₂ -e)	4,284,076	3,417,690	20%
Mitigation scenario: Scope 1 and Scope 2 GHG emission (tCO ₂ -e)	4,284,076	1,173	99% including purchase of renewable energy

7.1 Avoid

Motion sensors and lighting timers will be installed and controlled via BMS to avoid use of energy in office spaces when these are unoccupied.

7.2 Reduce

A combination of active and passive design strategies will be implemented to reduce energy consumption throughout the development.

High performance building fabric will aim to reduce heat ingress, improving thermal comfort and reducing air conditioning load.

Reduce emissions by using more efficient technologies, like generators which can run on alternative fuels, e.g. biodiesel.

Efficient mechanical and electrical services design will aim to reduce PUE and office operational energy consumption.

CDC's water efficient HVAC design aims to reduce emissions by reducing water pumping requirements and embodied carbon in hydraulic services infrastructure.

7.3 Substitute

Investigate the use of reduced-emission raw materials and energy sources such as renewable energy.

- Purchase of renewable electricity – for example LGCs
- Reduced embodied structural materials – for example steel, concrete and blockwork
- Certified sustainable products, equipment and materials– services equipment, ceiling tiles, insulation, carpet, vinyl and paints

7.4 Offset

Consider the purchase of verified high-integrity carbon offsets to reduce residual emissions in alignment with CDC's Net Zero Carbon target.



8. Water Consumption Reduction

The water use by the data centre cooling system is negligible compared to conventional data centre HVAC designs based on evaporative cooling systems. The proposed project has taken a deliberate approach to design and implement a closed-loop cooling system, which does not use water for primary cooling. Therefore, water consumption for Marsden Park Campus is mainly driven by the potable water use serving the office area of the campus.

By applying water efficiency initiatives in Section 5 of the report, the following outcome of water reduction can be achieved:

- The proposed data centre facility can achieve close to **100%** reduction in operational water use compared to a benchmark market average colocation data centre.
- The proposed office spaces can achieve **85%** reduction in operational water use compared to a benchmark market average (3-star NABERS water) Office.

8.1 Data Centre Water Reduction

The proposed CDC data centre facility design WUE is 0.01 through the innovative closed-loop cooling system design. The estimated operational water reduction of the data centre is summarised below:

Resource	Benchmark (Market average performance)	Proposed	% Improvement compared to Benchmark
WUE	1.8	0.01	Nearly 100%
Water Use l/kWh	1.8 l/kWh	0.01 l/kWh	Nearly 100%

8.2 Office Water Reduction

The estimated operational water demand and reduction for Project are tabled below:

Resource	Benchmark (3 Star NABERS Water)	Proposed	% Reduction compared to Benchmark
Office Potable Water Usage (kL/year)	15,750	2,307	85%

The benchmark water consumption is determined by NABERS reverse calculator (<https://www.nabers.gov.au/rating-tools/our-calculators/setting-targets-using-reverse-calculators>). A summary of the NABERS reverse calculator input is attached in Appendix B.

The proposed water consumption is based on the latest Green Star Potable Water Calculator. A summary of the Green Star Potable Water Calculator input is attached in Appendix B. Note landscaping water use will be offset by rainwater collection as demonstrated in attached Green Star Potable Water Calculator.



9. Conclusion

Ecologically Sustainable Design is to be a driving consideration in the ongoing development of the Marsden Park Data Centre Campus. The proposed development will incorporate ESD initiatives - which are aligned with CDC's ESG Strategy and the requirements of the applicable regulations - to seek to reduce greenhouse gas emissions, potable water consumption and material resource use of the site. These constitute the sustainability response from the project to the site applicable sustainable design frameworks, as listed within section 3 of this report.

The ESD initiatives outlined in this report are intended to be used as a design guide for the development. The specific initiatives that will be implemented across the development will be determined throughout the upcoming stages and will be subject to feasibility analysis. The initiatives shall be designed to comply with the guidelines set out by the relevant authorities and driving requirements.

CDC's commitment to long-term sustainability and mitigating environmental impact is evident of the holistic approach taken to planning and early design. Refer to Appendix C for CDC Sustainability Report 2024 for detailed information.

Proposed initiatives for consideration cover a holistic range of sustainability categories including:

- Energy & Greenhouse gas emissions reduction
- Water Efficiency
- Sustainable Certified and Reduced Environmental Impact Materials
- Indoor Environment Quality
- Building Management
- Waste Management
- Climate Resilience

We trust this report provides sufficient overview of the project's commitment to environmentally sustainable design, greenhouse gas emission reduction and energy efficiency for the proposed development.



Appendix A Energy Consumption Assumptions



Rating details

What type of rating would you like to estimate?

☒ Energy

☐ Water

What type of building?

☒ Office

☐ Hotel

☐ Shopping centre

☐ Data centre

☐ Residential aged care and retirement living

☐ Apartment building

What is the postcode of the building?

2765

What is the scope of your rating?

☒ Base building

☐ Whole building

☐ Tenancy

Enter the star rating you wish to achieve

4.5

Stars (Energy)

Building details

What is the floor space of the building?

Enter the total net lettable area of office space within the building.

 m²

How many hours per week is the building occupied?

Use the standard business hours of the building.

 hours

Energy use

What is the Percentage of Electricity in the total Energy Consumption?

Enter the percentage of office energy use that will be met through electricity.

 %

What is the Percentage of Gas in the total Energy Consumption?

Enter the percentage of office energy use that will be met through gas.

 %

What is the Percentage of Diesel in the total Energy Consumption?

Enter the percentage of office energy use that will be met through diesel.

 %

Results

Benchmarking factor at 4.5 stars NABERS Energy:	84
Maximum Benchmarking Emissions at 4.5 Stars NABERS Energy:	1,402,418.6 kgCO ² -e/year
Benchmarking Emissions Intensity at 4.5 Stars NABERS Energy:	90.978 kgCO ² -e/m ² .year
Energy Intensity at 4.5 Stars NABERS Energy:	363 MJ/m ² .year
Reporting Emissions for this office – Scope 1, 2 and 3:	1,137,516 kgCO ² -e/year
Reporting Emissions for this office – Scope 1 and 2:	1,059,604 kgCO ² -e/year

Maximum Allowable Energy Consumption:

Target Max Electricity:	1,558,242 kWh per annum
Target Max Gas:	0 MJ per annum
Target Max Diesel:	0 L per annum

Rating details

What type of rating would you like to estimate?

☒ Energy

☐ Water

What type of building?

☒ Office

☐ Hotel

☐ Shopping centre

☐ Data centre

☐ Residential aged care and retirement living

☐ Apartment building

What is the postcode of the building?

2765

What is the scope of your rating?

☒ Base building

☐ Whole building

☐ Tenancy

Enter the star rating you wish to achieve

5.5

Stars (Energy)

Building details

What is the floor space of the building?

Enter the total net lettable area of office space within the building.

 m²

How many hours per week is the building occupied?

Use the standard business hours of the building.

 hours

Energy use

What is the Percentage of Electricity in the total Energy Consumption?

Enter the percentage of office energy use that will be met through electricity.

 %

What is the Percentage of Gas in the total Energy Consumption?

Enter the percentage of office energy use that will be met through gas.

 %

What is the Percentage of Diesel in the total Energy Consumption?

Enter the percentage of office energy use that will be met through diesel.

 %

Results

Benchmarking factor at 5.5 stars NABERS Energy:	NaN
Maximum Benchmarking Emissions at 5.5 Stars NABERS Energy:	861,140.2 kgCO ² -e/year
Benchmarking Emissions Intensity at 5.5 Stars NABERS Energy:	55.864 kgCO ² -e/m ² .year
Energy Intensity at 5.5 Stars NABERS Energy:	223 MJ/m ² .year
Reporting Emissions for this office – Scope 1, 2 and 3:	698,480 kgCO ² -e/year
Reporting Emissions for this office – Scope 1 and 2:	650,638 kgCO ² -e/year

Maximum Allowable Energy Consumption:

Target Max Electricity:	956,822 kWh per annum
Target Max Gas:	0 MJ per annum
Target Max Diesel:	0 L per annum

Appendix B Water Consumption Assumptions



Potable Water, Performance Pathway (18A) - All projects, except Hotels & Residential

Links to - Project information:	Building occupancy, areas, and operation	Water systems checklist	Rainfall data		
Links to - Water systems:	1. Sanitation	2. Whitegoods	3. Heat rejection	4. Washdown	5. Landscape irrigation
	6. Swimming pools	7. Fire protection systems	8. Process cooling		
Links to - Reclaimed water sources:	Reclaimed water sources	Rainwater collection	Greywater collection	Blackwater collection	Stormwater and off-site reclaimed water supply
Links to - Results:	Total water demand for each system	Total water demand per month	Potable water results	Domestic hot water	Discharge to sewer

Weighted Points Achieved

11.2

Instructions:

Enter information into light blue cells

For details on what information is required and how this information is used to calculate the reduction in potable water consumption against the Standard Practice Benchmark, please refer to the Green Star - Potable Water Calculator Guide, available from the GBGA website.

GENERAL

Building occupancy, areas and operation

Space type description	Area (m ²)	Peak days of operation (remaining days assumed off-peak)	Occupancy profile	Maximum design occupancy used in water use calculations (m ² /person) (Enter manually OR use default)		Percentage of building users who occupy the space continually for periods greater than one hour.
				Proposed Building design occupancy (m ² /person)	Default design occupancy (Not applicable for residential areas)	
Offices (6 buildings)	15,415	5 days a week	Class 5, Class 7 Class 8 or Class 9a	10	Office (10m ² /person)	60%
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
		Please Select	Please Select		Please select	
Non occupied areas		n/a	n/a			
TOTAL AREA	15,415					

Water systems checklist Please provide responses to the following questions. Detailed inputs will be requested further on in the calculator .

WATER USES - ALL QUESTIONS MUST BE ANSWERED

1. Sanitation

Are fixtures and fittings provided for building occupant sanitation?	Yes
Does the project provide for sports activities?	No
Have showers been installed for positive activity use?	Yes

2. White Goods

Does the project include any dishwashers or washing machines?	No
---	----

3. Heat rejection

Does the project utilise water based heat rejection (building cooling)?	No
Does the project have cooling towers?	No
Does the project contain any other water cooled systems that are not conventional	No

4. Wash Down

Does the project include washdown areas?	Yes
--	-----

5. Landscape irrigation

Are there any landscaped areas within the project?	Yes
Are any irrigation systems included in the project?	Yes

6. Swimming Pools

Are there any swimming pools within the project?	No
--	----

7. Fire Protection System

Does the project include a fire protection system?	No
--	----

8. Process cooling

Does the project include any water based process cooling?	No
---	----

WATER REUSE - ALL QUESTIONS MUST BE ANSWERED

9. Water Reclamation

Does any water collection, reclamation and/or reuse occur on the project site?	Yes
Does the project include rainwater capture and reuse systems?	Yes
Does the project include greywater capture, treatment and reuse systems?	No
Does the project include blackwater capture, treatment and reuse systems?	No
Does the project include other stormwater reuse or an off-site supply of non-potable water?	No

Rainfall data

Select the average rainfall data location for the project	Sydney (1996 - 2005) (mm)
---	---------------------------

1. SANITATION

Water demand from sanitation fixtures and fittings (Annual water demand from fixtures and fittings is calculated using assumed usage rates based on the space types and occupancies entered above. See pages 10-13 of the Green Star - Potable Water Calculator Guide for further details.)

TOILETS

Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Water efficiency used in calculations (L/flush)	Percentage of each type	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
	Manufacturer's data (L/flush)	WELS Star Rating selection				
Toilets (32 per building)		5 Star	3.0	100%		
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Enter description>		Select star rating				
Total				100%	1,084	1,458

(The Standard Practice Benchmark is based on 3 StarWELS rated toilets)

URINALS

Are urinals installed?	Yes
Would urinals normally be installed in the building type?	Yes

(Note: if "No" is selected, the project team should provide justification within the short report as to why the standard practice building does not have urinals.)

Urinals on auto timer

Enter average L/flush	
Enter number of urinals on autotimer	

Percentage of total number of Urinals	
---------------------------------------	--

Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Water efficiency used in calculations (L/min)	Percentage of each type	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
	Manufacturer's data (L/min)	WELS Star Rating selection				
Urinals (12 per building)	0.0	Waterless	0.0	100%		
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
<enter description here>		Select star rating				
			Total	100%	0	0

(The Standard Practice Benchmark is based on 3 Star WELS rated urinals)

INDOOR TAPS						
Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Water efficiency used in calculations (L/min)	Percentage of each type	Proposed Building water demand (KL/year)	Standard Practice Building water demand (KL/year)
	Manufacturer's data (L/min)	WELS Star Rating selection				
Taps (24 per building)		5 Star	6.0	100%		
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
<enter description>		Select star rating				
			Total	100%	631	789

(The Standard Practice Benchmark is based on 4 Star WELS rated taps)

SHOWERS - OCCUPANTS		
Shower demand by occupants (reference)	5%	For residential buildings: Enter 100% for both "reference" and "current" shower demand For other building Types: Use the reference and proposed building bicycle accommodation percentage from the Sustainable
Shower demand by occupants (current)	2%	Transport Calculator, or percentages determined under 17.B.4 'Active Transport Facilities' criterion to determine the number of building occupants that are likely to shower each day

Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Water efficiency used in calculations (L/min)	Percentage of each type	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
	Manufacturer's data (L/min)	WELS Star Rating selection				
Shower (8 per building)		3 Star	9.0	100%		
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
			Total	100%	156	391

(The Standard Practice Benchmark is based on 3 Star WELS rated showers)

Indicate the number of people expected to participate in sporting activities each day. (Use an average based on weekly figures if required)	
Indicate the number of days/year that the sports facilities are in use	

Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Water efficiency used in calculations (L/min)	Percentage of each type	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
	Manufacturer's data (L/min)	WELS Star Rating selection				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
-enter description-		Select star rating				
			Total	0%	0	0

(The Standard Practice Benchmark is based on 3 Star WELS rated showers)

RESULTS: WATER DEMAND FROM FITTINGS

	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
Toilets	1,094	1,458
Urinals	0	0
Indoor Taps	631	789
Showers - Occupants	156	391
Showers - Sports Facilities	0	0
TOTAL	1,881	2,638

2. WHITE GOODS

Water demand from washing machines

The project team is to provide documentary evidence in accordance with the water calculator guide and technical manual to substantiate the number of cycles per year. Otherwise, leave blank and a default value will be applied.

WASHING MACHINES									
Description	Water efficiency (Enter manually OR nominate WELS Star Rating)		Machine capacity (kg)	Water efficiency used in calculations (L/kg)	Number of each type	Number of cycles per year (leave blank if unknown)	Proportion of water per cycle that is sourced from DHW (%)	Proposed Building water demand (kL/year)	Standard Practice Building water demand (kL/year)
	Manufacturer's data (L/kg)	WELS Star Rating selection							

Water demand from dishwashers

[illegible]

				Total	0			0	0

3. HEAT REJECTION

This section requires outputs from the energy simulation undertaken for Conditional Requirement and Greenhouse Gas Emissions (Credit 15).

GENERAL INFORMATION

Proposed Building	
Site elevation (m above sea level)	
Maximum combined cooling tower air flow (L/s)	
Peak building cooling load (kW)	

Standard Practice Building	
Select one of the following building types:	
Standard Practice HVAC system type assumed for Energy and Water Category	
Maximum combined cooling tower air flow (L/s)	
Peak building cooling load (kW)	

Water demand from cooling towers The project team has indicated that there are no water based heat rejection systems included in the project. Please complete the Standard Practice cooling load.

Please enter the average air temperature, relative humidity and heat rejection load for the standard practice building.

EVAPORATION				
Month	Proposed Building monthly cooling load (kWh/month)	Average dry bulb temperature (°C)	Average relative humidity (%)	Standard Practice Building monthly cooling load (kWh/month)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Enter the total monthly cooling load (in kWh) for all zones conditioned by the Standard Practice HVAC system below.

Visit the Bureau of Meteorology's website to obtain average dry bulb and relative humidity data relevant to your site:
<http://www.bom.gov.au/climate/data/index.shtml?bookmark=20>

DRIFT

	Proposed Building	Standard Practice Building
Condenser Water Δt (°C)		
Drift coefficient (%)		

(as per the requirements of the Greenhouse Gas Emissions Calculator Guide)
(as required in AS3666.1 clause 4.4)

BLEED

	Proposed building	Standard Practice Building
Cycles of concentration		

Standard practice cycles of concentration

Proposed Building					Standard Practice Building			
Month	Evaporation (kL)	Drift (kL)	Bleed (kL)	TOTAL kL/month	Evaporation (kL)	Drift (kL)	Bleed (kL)	TOTAL kL/month
January				0	1,850	3	370	2,223
February				0	1,114	2	223	1,339
March				0	1,211	2	242	1,455
April				0	630	1	126	757
May				0	365	1	73	439
June				0	219	0	44	263
July				0	238	0	46	287
August				0	319	1	64	383
September				0	446	1	89	536
October				0	1,039	2	208	1,249
November				0	1,093	2	219	1,313
December				0	1,420	2	284	1,707
Total (kL/year)	0	0	0	0	9,944	17	1,989	11,950

Water demand from heat rejection systems that are not conventional cooling towers

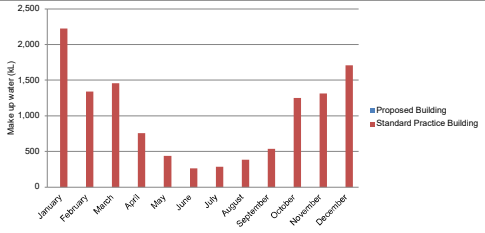
THE PROJECT TEAM HAS INDICATED THAT

Please proceed to following section.

Month	Water demand per month (kL/month)
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	
Total make up water (kL/year)	0

RESULTS: WATER DEMAND FROM HEAT REJECTION

Month	Proposed Building (kL)	Standard Practice Building (kL)
January	0	2,223
February	0	1,339
March	0	1,455
April	0	757
May	0	439
June	0	263
July	0	287
August	0	383
September	0	536
October	0	1,249
November	0	1,313
December	0	1,707
Total make up water (kL/year)	0	11,950



4. WASHDOWN

Washdown hoses

Description	Hose Flowrate (L/min)	Number of Hoses	Average daily use (minutes)	Proposed consumption (kL/day)	Standard Practice consumption (kL/day)
Hose Taps 20	12.0	20	5	1	1
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Hander description>				0	0
Total				1	1

5. LANDSCAPE IRRIGATION

(The irrigation requirement for the site is calculated for each month of the year, for each landscaped 'zone' in the site (a zone being a landscaped area that has the same soil type, irrigation system and as far as possible, types of plants). Please see pages 17-22 of the Green Star- Calculator Guide for further details.)

Evaporation losses (L/day)	
Water discharged to sewer (L/day)	
Percentage of open loop process cooling water demand sourced from non-potable (reclaimed) water	

Reclaimed water sources

DISTRIBUTION OF WATER SOURCES

DISTRIBUTION OF WATER SOURCES					
Water fittings / systems	Percentage of fittings/systems connected to the following water sources				
	Rainwater	Greywater	Blackwater	Stormwater recycling or other off-site reclaimed water	Waste water only (this column must be completed - enter a figure between 0% and 100% for each water system)
Toilets	100%			0%	0%
Urinals	100%				0%
Indoor taps					100%
Showers - occupants					100%
Showers - sports					100%
Laundries					100%
Dishwashers					100%
Heat rejection					100%
Washdown					100%
Fire protection systems	100%				0%
Swimming pools					100%
Process cooling					

- Where fittings or systems are supplied with water from more than one source, it is assumed that they are first supplied with water from any greywater and blackwater systems, followed by rainwater, stormwater and off-site reclaimed water systems.

WATER DEMAND FROM OTHER WATER SYSTEMS (NOT INCLUDED IN THE CALCULATOR) WHICH ARE COMPLETELY OR PARTIALLY SOURCED BY RECLAIMED WATER

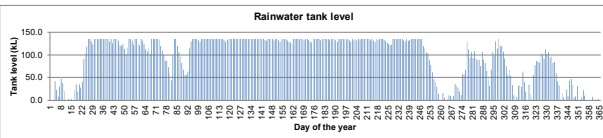
	Water demand (kL)		
Month	<Enter description of any other uses of rainwater or re-used water>	<Enter description of any other uses of rainwater or re-used water>	<Enter description of any other uses of rainwater or re-used water>
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

If reclaimed water is not used for these end uses, leave these cells blank.

When reclaimed water is used, enter the total demand for each month regardless of whether it is fully or partially met by the reclaimed water supply. In the table below, the percentage of the demand met by reclaimed water/connected to the reclaimed water supply is entered

Water system	Rainwater	Greywater	Blackwater	Stormwater recycling or other off-site reclaimed water	Mains water only (this column must be completed - enter a figure between 0% and 100% for each water use)
<Enter description of any other uses of rainwater or re-used water>					
<Enter description of any other uses of rainwater or re-used water>					
<Enter description of any other uses of rainwater or re-used water>					

Rainfall collection area (m2)		10,678
Run-off co-efficient	Flat roof with gravel	0.8
Storage capacity (kL)		135
Rainwater tank reliability %		77%



Water system	% discharge water collected for re-use
Toilets	
Urinals	
Indoor taps	
Showers - occupants	
Showers - sport	
Washing machines	
Dishwashers	
Cooling tower bleed +other heat rejection	
Washdown	
Fire protection systems	
Swimming pools	
Process cooling	

[illegible]

Water system	% discharge water collected for re-use
--------------	--

Toilets	
Urinals	
Indoor taps	
Showers - occupants	
Showers - sport	
Washing machines	
Dishwashers	
Cooling tower bleed +other heat rejection	
Washdown	
Fire protection systems	
Swimming pools	
Process cooling	

Other sources e.g. Chiller condensate, cooling tower washdown or sewer mining etc.

Month				Total collected (KL)

Stormwater and off-site reclaimed water supply

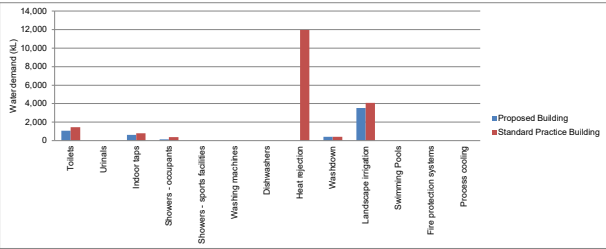
Month	Stormwater collected for re-use (KL)	Off-site reclaimed water supplied to site (KL)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

WATER DEMAND SUMMARY

Total water demand summary for each system and per month

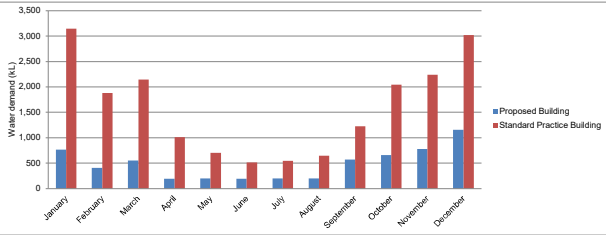
TOTAL WATER DEMAND FOR EACH SYSTEM

Water system	Proposed Building (KL)	Standard Practice Building (KL)
Toilets	1,094	1,458
Urinals	0	0
Indoor taps	631	789
Showers - occupants	156	391
Showers - sports facilities	0	0
Washing machines	0	0
Dishwashers	0	0
Heat rejection	0	11,950
Washdown	438	438
Landscape irrigation	3,540	4,094
Swimming Pools	0	0
Fire protection systems	0	0
Process cooling	0	0
Total	5,859	19,119



TOTAL WATER DEMAND PER MONTH

Month	Proposed Building (KL)	Standard Practice Building (KL)
January	766	3,149
February	407	1,878
March	553	2,145
April	191	1,010
May	197	700
June	191	516
July	197	548
August	197	644
September	568	1,223
October	657	2,045
November	779	2,240
December	1,156	3,022
Total	5,859	19,119



POTABLE WATER RESULTS

Month	Proposed Building						Standard Practice Building
	Total water demand	Rainwater used to meet demand	Greywater used to meet demand	Blackwater used to meet demand	Stormwater and off-site reclaimed water used	Potable water demand	Potable water demand
January	766	460	0	0	0	306	3,149
February	407	313	0	0	0	94	1,878
March	553	449	0	0	0	104	2,145
April	191	90	0	0	0	101	1,010
May	197	93	0	0	0	104	700
June	191	90	0	0	0	101	516
July	197	93	0	0	0	104	548
August	197	93	0	0	0	104	644
September	568	361	0	0	0	208	1,223
October	657	553	0	0	0	104	2,045
November	779	671	0	0	0	108	2,240
December	1,156	387	0	0	0	769	3,022
Total	5,859	3,553	0	0	0	2,307	19,119

Percentage reduction in Potable Water Consumption compared to the Standard Practice Building

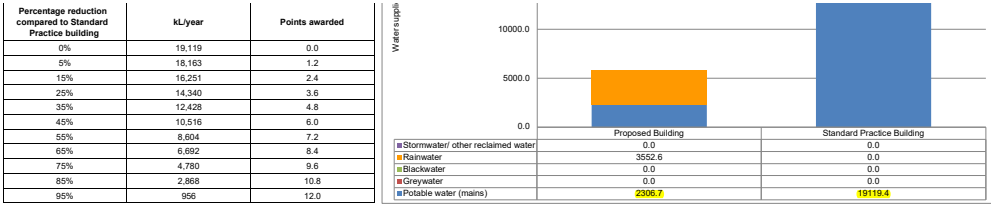
88%

Points Achieved - General	11.2
Points Achieved - Fire protection systems	N/A
Points Achieved - Process cooling	N/A

POINTS ALLOCATION

Water supplied to the Proposed and Standard Practice Buildings





Outputs from this calculator required for Ene-Conditional Requirement and Credit 15: Greenhouse Gas Emissions.

The annual domestic hot water usage figures determined in this calculator must be used in the energy modelling required for Ene-Conditional Requirement and Credit 15: Greenhouse Gas Emissions to estimate the domestic hot water energy requirement of the Proposed and Standard Practice Buildings. For more details see the Green Star - Greenhouse Gas Emissions Calculator Guide, available www.gbaa.org.au.

The estimates of annual hot water consumption usage of the Proposed Building are based on the water efficiency of the fittings entered into this calculator. The estimates for the Standard Practice Building are based on the Standard Practice Building's fittings - for further details see the Green Star - Potable Water Calculator Guide, available www.gbaa.org.au.

NOTE: THESE FIGURES CAN ONLY BE USED IF THE 'Building input, areas and operation' and 'Water consumption due to fittings' sections of THIS CALCULATOR are COMPLETED.

	Proposed Building	Standard Practice Building
Annual Domestic Hot Water Usage (kL/year)	998	990

DISCHARGE TO SEWER

SEWERAGE REDUCTION DUE TO WATER RECYCLING

Percentage reduction in discharge to sewer compared to Standard Practice Building	85%	An innovation point may be claimed for a 90% of greater reduction in flow to sewer
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Innovation Point Achieved	0
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RAINFALL DATA

The average rainfall data for the location selected in the General section is shown below (white shaded cells). The project team may supply their own data (see Potable Water calculator guide) by selecting 'User defined' as the location and entering the data in the blue column of the table.

10 YEAR AVERAGE RAINFALL DATA

Day	User defined (mm)	Melbourne (1998 - 2007) (mm)	Sydney (1996 - 2005) (mm)	Brisbane (1997 - 2006) (mm)	Adelaide (1996 - 2005) (mm)	Hobart (1996 - 2005) (mm)	Perth (1997 - 2005) (mm)	Darwin (1998 - 2005) (mm)	Canberra (1997 - 2006) (mm)	Mackay (1991 - 2000) (mm)	Townsville (1994 - 2003) (mm)
1 Jan	0.0	0.0	0.0	1.0	0.0	1.7	0.0	22.6	0.0	11.3	0.0
2 Jan	0.0	0.0	0.0	1.1	0.0	1.7	0.0	21.9	1.0	10.9	0.0
3 Jan	5.5	0.0	5.5	3.2	0.0	1.5	0.0	30.4	0.0	20.9	0.0
4 Jan	0.9	1.1	0.9	2.0	0.0	1.0	0.0	20.0	1.4	20.0	1.6
5 Jan	1.4	1.1	1.4	3.7	0.0	4.3	1.2	8.8	2.1	37.4	3.8
6 Jan	4.1	0.0	4.1	1.7	0.0	0.7	0.0	15.1	0.0	6.0	12.0
7 Jan	5.2	0.7	5.2	4.2	0.0	2.0	0.0	4.9	4.4	9.8	11.7
8 Jan	2.0	1.0	2.0	0.6	1.1	3.0	0.0	6.8	1.2	4.0	3.4
9 Jan	1.0	0.0	1.0	1.2	0.0	0.0	0.0	9.2	1.0	16.4	0.0
10 Jan	0.5	0.0	0.5	7.7	0.0	0.0	0.0	22.0	0.0	4.2	10.0
11 Jan	0.0	0.0	0.0	1.1	0.0	0.0	0.0	11.4	0.0	30.0	30.0
12 Jan	1.0	0.7	1.0	1.4	0.0	1.6	0.0	16.1	0.7	18.4	15.0
13 Jan	0.0	0.0	0.0	1.4	1.2	0.0	1.0	20.4	0.0	7.8	10.0
14 Jan	1.0	0.0	1.0	2.2	0.0	0.0	0.0	8.0	0.0	0.8	1.0
15 Jan	0.7	0.0	0.7	1.4	0.0	0.0	1.6	10.7	0.0	0.8	1.0
16 Jan	3.1	0.0	3.1	11.7	0.0	0.7	0.0	16.1	1.3	6.0	1.0
17 Jan	4.7	0.0	4.7	1.9	0.0	0.0	1.1	10.1	4.7	7.3	2.4
18 Jan	1.2	0.0	1.2	5.7	0.0	0.0	0.0	15.3	2.4	5.4	2.4
19 Jan	4.7	0.7	4.7	0.0	0.0	0.0	0.0	8.0	0.0	1.3	4.0
20 Jan	2.3	0.0	2.3	1.0	2.0	0.0	0.0	12.0	0.0	0.0	3.0
21 Jan	4.6	0.0	4.6	0.0	1.4	1.4	0.0	20.0	0.0	3.0	1.6
22 Jan	9.0	1.4	9.0	0.0	2.4	0.0	0.1	14.0	0.0	1.6	0.0
23 Jan	4.7	1.0	4.7	0.0	0.0	0.0	4.7	10.4	1.2	0.0	1.1
24 Jan	4.8	0.0	4.8	0.0	0.0	0.0	0.0	7.0	0.0	6.0	6.0
25 Jan	7.9	0.0	7.9	7.0	0.0	4.0	0.0	11.7	2.4	0.0	0.0
26 Jan	3.1	1.0	3.1	0.1	0.0	3.1	0.0	14.0	0.0	4.4	0.0
27 Jan	2.6	0.0	2.6	0.7	0.0	0.0	0.0	10.0	0.0	0.0	0.0
28 Jan	2.3	1.0	2.3	0.2	0.0	0.0	0.0	8.1	0.0	7.1	0.0
29 Jan	5.5	2.0	5.5	10.7	0.0	1.7	0.0	10.7	2.0	0.0	0.0
30 Jan	9.4	0.0	9.4	4.1	0.7	0.0	0.0	0.0	0.0	1.1	4.0
31 Jan	13.7	0.7	13.7	3.2	0.0	1.1	0.0	0.0	0.0	3.0	0.0
1 Feb	7.5	0.0	7.5	10.0	0.0	0.7	0.0	7.0	0.0	0.0	0.0
2 Feb	7.6	0.1	7.6	10.7	0.0	1.1	1.7	0.0	0.0	0.0	0.1
3 Feb	2.6	11.0	2.6	10.7	0.0	1.0	0.0	14.7	0.0	11.0	0.0
4 Feb	6.5	0.0	6.5	0.0	0.7	0.4	0.0	0.0	0.0	0.0	0.0
5 Feb	13.3	0.0	13.3	5.1	0.0	1.2	0.0	6.7	10.0	0.0	0.0
6 Feb	6.6	0.0	6.6	1.1	0.0	1.4	0.0	21.0	2.1	0.0	0.0
7 Feb	2.1	1.0	2.1	0.0	0.0	4.4	1.0	10.0	1.0	0.0	0.0
8 Feb	1.3	4.0	1.3	0.4	0.0	0.1	0.0	11.7	4.0	0.0	0.0
9 Feb	7.5	0.0	7.5	10.1	0.7	7.0	0.0	0.7	10.0	0.0	0.1
10 Feb	0.9	2.2	0.9	2.1	0.0	0.0	0.0	17.0	0.0	11.0	10.7
11 Feb	3.1	1.0	3.1	1.4	0.0	0.0	0.0	17.0	0.0	0.0	0.0
12 Feb	9.9	0.0	9.9	1.4	0.0	0.0	0.0	21.0	2.1	16.0	1.0
13 Feb	6.3	2.1	6.3	1.0	0.7	1.0	0.0	22.0	4.1	0.0	0.0
14 Feb	1.5	0.0	1.5	0.0	0.0	0.0	0.0	20.1	1.2	7.1	22.2
15 Feb	0.8	0.0	0.8	4.7	0.0	1.4	0.0	10.0	0.0	10.0	10.0
16 Feb	1.7	4.1	1.7	0.0	0.0	2.0	0.0	0.4	0.0	20.0	10.0
17 Feb	2.4	0.7	2.4	0.0	0.0	0.0	0.0	24.7	0.0	0.0	17.1
18 Feb	0.7	0.0	0.7	0.7	0.0	0.0	0.0	21.0	1.0	18.1	21.0
19 Feb	0.6	0.0	0.6	1.1	0.0	0.0	0.0	11.0	0.0	0.0	12.0
20 Feb	3.8	0.0	3.8	1.4	0.1	1.0	0.0	0.0	0.0	0.0	4.0
21 Feb	6.2	0.0	6.2	0.0	2.2	0.0	0.0	0.0	3.0	0.0	0.0
22 Feb	2.4	1.1	2.4	1.0	1.0	1.1	0.0	14.0	4.4	0.0	0.0
23 Feb	1.5	0.0	1.5	0.0	0.0	0.0	0.0	17.4	1.0	18.4	4.1
24 Feb	0.9	1.0	0.9	11.4	0.0	1.0	0.0	17.4	0.0	15.1	12.2
25 Feb	11.0	0.0	11.0	3.0	0.0	0.0	0.0	10.0	0.0	22.7	0.0
26 Feb	3.6	7.1	3.6	2.0	0.0	0.7	0.0	21.0	0.0	10.4	13.0
27 Feb	0.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	12.4	10.0
28 Feb	1.6	0.0	1.6	4.1	0.0	0.0	0.0	16.0	1.1	0.0	12.0
1 Mar	5.3	0.0	5.3	3.4	0.0	1.4	0.0	12.2	0.0	17.4	11.4
2 Mar	1.9	0.0	1.9	7.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0
3 Mar	1.4	1.0	1.4	0.0	0.0	1.0	0.0	20.0	2.0	10.0	0.0
4 Mar	1.0	0.0	1.0	4.0	0.0	0.0	0.0	20.0	0.0	10.0	1.0
5 Mar	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0
6 Mar	3.1	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	11.7	0.0
7 Mar	0.9	0.0	0.9	10.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0
8 Mar	7.6	0.0	7.6	1.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0
9 Mar	7.9	0.0	7.9	1.1	0.0	1.0	0.0	11.7	0.0	16.4	0.0
10 Mar	6.7	0.7	6.7	0.0	0.7	0.0	1.0	7.0	1.0	0.0	0.0
11 Mar	8.0	0.0	8.0	0.1	0.0	0.0	1.0	0.0	1.0	4.0	1.0
12 Mar	5.3	0.0	5.3	4.1	0.0	0.0	0.0	10.0	0.0	4.0	0.0
13 Mar	2.2	1.0	2.2	1.4	0.0	1.0	0.0	0.1	1.0	4.0	0.0
14 Mar	0.0	0.0	0.0	2.4	0.0	0.0	0.0	7.0	0.0	0.0	0.0
15 Mar	1.1	0.0	1.1	0.0	0.0	0.7	0.0	7.1	0.0	0.0	0.0
16 Mar	1.2	0.0	1.2	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0
17 Mar	0.9	0.0	0.9	0.0	1.0	0.0	0.0	10.0	0.0	0.0	0.0
18 Mar	0.9	0.0	0.9	0.0	1.0	0.1	0.0	0.4	0.0	0.0	0.0
19 Mar	0.0	0.0	0.0	0.0	2.0	0.0	0.0	10.0	0.0	0.0	0.0
20 Mar	0.0	0.0	0.0	1.1	0.0	2.0	0.0	0.0	0.0	27.0	0.0
21 Mar	0.6	1.0	0.6	0.0	2.0	7.1	1.1	10.0	2.4	1.0	0.0
22 Mar	8.8	2.4	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23 Mar	11.0	4.7	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24 Mar	8.4	4.0	8.4	0.1	1.0	0.0	0.0	0.0	0.0	0.1	0.0
25 Mar	0.6	0.0	0.6	0.0	0.0	1.0	0.0	0.0	0.0	4.0	0.0

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27 Jul	2.9	1.7	2.9	2.5	2.5	3.8	3.0	3.9	2.1	3.9	3.0
28 Jul	1.9	1.3	1.9	-2.2	4.6	2.5	2.9	3.2	1.1	2.5	-0.7
29 Jul	6.1	1.7	6.1	3.1	2.1	1.1	0.0	3.9	1.2	0.5	3.9
30 Jul	3.4	2.0	3.4	0.0	1.8	1.3	12.0	0.0	0.0	0.0	0.0
31 Jul	0.0	1.3	0.0	0.0	0.0	1.1	2.9	0.0	0.0	0.0	0.0
1 Aug	1.3	1.8	1.3	0.0	1.9	0.0	2.7	0.0	0.0	0.0	0.0
2 Aug	0.0	0.0	0.0	0.0	2.7	1.8	0.0	0.0	0.0	0.0	0.0
3 Aug	0.0	0.7	0.0	0.0	1.9	0.0	4.5	0.0	0.0	2.1	0.0
4 Aug	1.7	2.3	1.7	0.0	2.9	1.5	4.7	0.0	3.9	2.9	0.0
5 Aug	0.5	1.1	0.5	2.9	2.9	1.5	3.2	0.0	2.9	1.9	0.0
6 Aug	6.1	0.0	6.1	2.5	1.6	0.7	4.0	0.0	1.9	0.0	3.8
7 Aug	13.9	0.0	13.9	0.0	2.4	2.3	5.5	0.0	2.1	0.0	4.0
8 Aug	13.7	1.2	13.7	0.0	2.9	1.9	1.7	0.0	0.0	1.9	0.0
9 Aug	0.8	2.1	0.8	-2.4	2.4	1.9	0.5	0.0	2.5	0.0	-0.7
10 Aug	0.0	2.4	0.0	0.0	0.7	1.7	2.9	0.0	3.5	0.0	0.0
11 Aug	0.0	0.0	0.0	0.0	3.9	0.5	0.0	0.0	0.0	0.0	0.0
12 Aug	0.0	1.6	0.0	0.0	1.3	0.0	1.8	0.0	1.8	0.0	0.0
13 Aug	0.5	1.8	0.5	0.0	1.3	4.8	2.7	0.0	1.8	0.0	0.0
14 Aug	1.1	1.1	1.1	0.0	1.2	1.7	3.7	0.0	2.3	0.0	0.0
15 Aug	6.1	1.9	6.1	0.0	2.5	4.1	0.4	0.0	1.9	0.0	0.0
16 Aug	5.5	1.6	5.5	0.0	1.9	0.0	2.2	0.0	0.0	2.4	0.0
17 Aug	3.5	1.7	3.5	0.7	0.0	2.4	0.3	0.0	1.9	0.0	0.0
18 Aug	6.6	1.5	6.6	0.0	0.0	2.8	0.4	0.0	2.1	0.0	0.0
19 Aug	10.7	0.0	10.7	1.0	1.1	1.4	2.3	0.0	0.0	0.0	0.0
20 Aug	6.6	1.8	6.6	0.0	1.3	1.5	1.3	0.0	0.0	0.7	0.0
21 Aug	2.5	0.0	2.5	1.0	0.4	1.0	0.9	0.0	0.7	0.0	0.0
22 Aug	0.0	1.9	0.0	-2.4	0.5	2.2	0.7	0.0	3.6	0.0	-0.7
23 Aug	0.7	0.0	0.7	0.0	1.4	2.4	0.0	0.0	1.1	0.0	0.0
24 Aug	1.5	3.2	1.5	1.1	3.5	3.0	5.2	0.0	4.1	2.0	0.0
25 Aug	0.0	1.2	0.0	0.0	1.2	5.8	3.5	0.0	1.3	0.0	0.0
26 Aug	1.2	1.2	1.2	1.7	1.2	1.4	1.7	0.0	1.1	0.0	0.0
27 Aug	3.5	1.7	3.5	3.3	0.0	0.8	3.4	0.0	4.3	0.0	0.0
28 Aug	2.7	1.3	2.7	2.4	2.2	0.0	0.4	0.0	0.9	0.0	0.0
29 Aug	1.8	0.0	1.8	3.8	0.0	0.0	7.0	0.0	1.9	2.7	2.1
30 Aug	3.0	0.5	3.0	0.0	2.9	1.5	0.0	0.0	0.0	13.2	13.8
31 Aug	1.7	2.7	1.7	1.3	1.4	1.5	3.0	0.0	2.5	12.3	12.3
1 Sep	13.3	1.5	13.3	4.5	1.6	0.7	7.5	0.0	3.6	2.7	3.2
2 Sep	3.8	0.0	3.8	1.6	3.3	0.0	3.0	0.0	3.9	0.0	1.0
3 Sep	2.5	0.0	2.5	0.4	2.5	1.9	3.1	0.0	3.6	2.0	0.0
4 Sep	0.0	2.0	0.0	0.0	2.9	0.9	2.2	0.0	1.9	0.0	0.0
5 Sep	1.8	2.0	1.8	0.0	0.9	1.9	0.0	0.0	4.3	0.0	0.0
6 Sep	1.5	1.2	1.5	0.7	4.1	0.0	7.3	0.0	0.0	0.0	0.0
7 Sep	2.2	1.0	2.2	0.0	1.7	1.8	4.0	0.0	0.0	0.0	0.0
8 Sep	0.0	0.0	0.0	0.0	0.0	0.8	3.4	0.0	1.9	0.0	0.0
9 Sep	1.2	0.7	1.2	0.5	2.9	0.0	4.0	0.0	3.1	0.0	0.0
10 Sep	0.0	1.9	0.0	0.7	1.2	2.5	1.9	0.0	1.3	1.3	0.0
11 Sep	0.5	0.0	0.5	0.1	0.0	1.3	4.6	0.0	3.4	0.0	0.0
12 Sep	1.7	3.5	1.7	2.1	1.7	0.5	1.8	0.0	3.8	0.0	0.0
13 Sep	1.3	1.2	1.3	0.0	1.0	0.0	1.6	0.0	3.1	0.0	0.0
14 Sep	0.0	0.0	0.0	0.0	2.3	1.9	1.3	0.0	2.4	0.0	0.0
15 Sep	0.0	0.0	0.0	3.0	1.9	3.7	4.0	0.0	1.6	1.4	0.0
16 Sep	0.0	1.2	0.0	0.0	2.5	3.4	0.0	0.0	0.5	0.0	0.0
17 Sep	2.5	1.9	2.5	1.0	2.0	1.6	2.1	0.0	6.8	0.7	0.0
18 Sep	1.2	0.0	1.2	0.0	0.8	3.5	0.7	0.0	1.3	0.0	0.0
19 Sep	0.0	0.0	0.0	0.0	1.5	2.4	0.0	0.7	0.0	0.0	0.0
20 Sep	0.0	1.0	0.0	0.0	1.2	4.4	1.9	0.0	2.3	0.0	0.0
21 Sep	1.9	0.0	1.9	3.8	0.7	0.8	2.4	0.0	0.0	0.0	0.0
22 Sep	1.7	0.0	1.7	0.0	0.0	1.0	0.7	0.0	0.7	2.1	0.0
23 Sep	0.9	0.5	0.9	0.0	2.9	2.5	2.4	0.0	0.0	0.0	0.0
24 Sep	1.7	1.8	1.7	0.0	3.9	2.9	1.2	0.0	2.7	0.0	0.0
25 Sep	4.8	1.9	4.8	5.3	2.0	2.9	1.4	0.0	1.9	0.0	0.0
26 Sep	2.0	1.1	2.0	0.0	1.6	2.0	0.6	0.0	1.2	0.0	0.0
27 Sep	2.0	3.0	2.0	2.4	0.0	0.0	2.2	0.0	3.9	0.0	0.0
28 Sep	1.4	1.7	1.4	-2.7	1.1	1.2	0.0	0.0	3.5	0.7	0.0
29 Sep	1.6	2.1	1.6	0.0	1.2	1.9	4.7	0.0	4.2	0.0	0.0
30 Sep	7.3	2.7	7.3	0.0	2.0	0.0	3.2	0.0	0.0	2.5	0.0
1 Oct	2.7	1.3	2.7	0.7	2.5	1.8	2.6	1.7	0.0	2.4	0.0
2 Oct	3.9	1.2	3.9	0.0	1.2	1.9	0.6	0.0	4.3	2.4	1.0
3 Oct	10.9	2.2	10.9	0.0	4.1	2.1	0.0	0.0	4.0	0.0	0.0
4 Oct	0.7	1.1	0.7	0.0	0.0	0.8	1.3	0.0	2.3	1.3	0.0
5 Oct	0.6	0.0	0.6	0.0	0.0	0.7	0.7	0.0	0.8	1.9	0.0
6 Oct	4.1	1.9	4.1	0.0	2.9	1.5	3.2	1.0	2.9	0.0	0.0
7 Oct	1.2	1.3	1.2	2.4	2.9	3.3	2.4	0.0	2.4	0.0	0.0
8 Oct	4.5	2.6	4.5	4.5	1.9	2.3	3.6	0.7	2.0	0.0	0.0
9 Oct	0.0	0.0	0.0	0.0	1.7	1.9	2.3	0.0	0.0	1.2	0.0
10 Oct	2.4	3.0	2.4	0.0	1.3	0.6	1.2	0.0	0.0	1.4	4.5
11 Oct	2.9	1.0	2.9	0.0	1.3	3.0	0.0	0.0	1.1	0.0	1.6
12 Oct	1.0	1.6	1.0	0.5	0.0	6.2	1.2	0.0	0.0	0.0	4.1
13 Oct	6.4	0.0	6.4	0.0	1.8	4.8	3.1	0.0	0.0	4.1	0.0
14 Oct	0.7	1.3	0.7	4.5	0.7	2.8	2.6	1.2	2.8	0.0	0.0
15 Oct	1.9	1.9	1.9	4.8	0.0	1.9	4.8	0.0	0.0	0.0	0.0
16 Oct	0.0	0.0	0.0	2.5	1.2	0.0	3.6	0.0	1.2	0.0	1.2
17 Oct	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	3.3	1.3	0.0
18 Oct	0.8	0.5	0.8	-2.2	0.0	0.0	1.1	0.0	0.0	0.0	0.0
19 Oct	6.9	0.0	6.9	5.4	4.0	1.3	0.0	0.7	4.0	0.0	0.0
20 Oct	7.2	2.8	7.2	5.2	3.2	2.3	0.0	0.0	4.6	0.0	0.0
21 Oct	1.9	1.9	1.9	1.9	1.0	0.0	1.2	14.6	1.0	0.0	0.0
22 Oct	6.3	2.7	6.3	2.1	0.0	1.0	2.8	0.0	0.0	0.0	0.0
23 Oct	0.9	1.1	0.9	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
24 Oct	5.4	1.9	5.4	0.0	0.7	0.0	0.0	2.9	1.9	1.9	0.0
25 Oct	1.0	3.6	1.0	5.0	0.7	0.0	0.5	2.4	2.8	1.4	0.0
26 Oct	2.5	4.6	2.5	6.3	0.0	3.8	0.0	1.1	7.8	2.8	1.9
27 Oct	1.3	1.3	1.3	1.7	0.0	0.0	0.5	0.0	0.0	0.0	0.0
28 Oct	1.0	0.7	1.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29 Oct	0.0	0.1	0.0	0.0	0.7	2.4	0.0	1.1	0.0	0.7	1.8
30 Oct	0.0	0.5	0.0	1.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
31 Oct	3.9	1.8	3.9	0.0	0.7	1.1	0.0	4.1	0.0	10.4	4.8
1 Nov	1.8	0.0	1.8	2.5	2.9	3.4	2.2	1.3	1.6	3.5	0.0
2 Nov	0.9	1.0	0.9	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
3 Nov	0.0	2.9	0.0	0.0	0.7	2.3	0.0	2.1	2.1	1.0	0.0
4 Nov	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.0	0.0
5 Nov	1.5	0.0	1.5	-7.3	2.4	1.2	0.9	3.2	0.0	0.0	0.0
6 Nov	4.4	4.4	4.4	2.3	1.9	1.8	0.0	1.7	2.4	0.0	1.3
7 Nov	3.3	1.5	3.3	4.5	3.4	4.8	0.0	2.6	0.7	3.7	0.0
8 Nov	2.9	3.3	2.9	3.7	2.4	0.0	0.0	4.1	7.4	1.9	3.9
9 Nov	7.2	1.8	7.2	3.7	0.0	1.3	0.0	0.1	1.2	0.0	0.0
10 Nov	0.0	0.0	0.0	1.3	1.0	0.0	1.1	13.1	0.0	0.0	1.8
11 Nov	0.8	1.1	0.8	1.3	2.5	0.7	1.4	0.0	0.0	2.1	4.5
12 Nov	0.0	0.5	0.0	2.1	0.7	2.7	0.0	4.8	2.3	0.0	0.1
13 Nov	4.6	3.7	4.6	0.0	0.0	2.7	0.0	0.0	0.0	0.0	1.7
14 Nov	0.6	0.1	0.6	0.2	0.0	2.3	0.0	0.0	1.8	2.1	0.1
15 Nov	0.9	0.9	0.9	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0
16 Nov	7.1	0.0	7.1	3.8	0.0	1.4	0.0	0.1	0.7	13.0	3.2
17 Nov	5.8	0.0	5.8	3.3	0.0	0.0	2.8	0.4	0.0	8.4	1.4
18 Nov	4.4	1.0	4.4	4.1	0.0	2.0	1.6	0.0	1.0	32.9	4.1
19 Nov	3.1	0.0	3.1	0.0	0.0	1.2	2.5	0.5	0.0	14.6	4.8
20 Nov	3.0	0.0	3.0	1.8	0.0	0.0	0.0	1.7	0.0	1.0	3.8
21 Nov	5.7	0.7	5.7	4.9	0.0	0.0	0.0	7.1	0.0	3.8	0.5
22 Nov	1.8	1.8	1.8	0.0	0.0	2.4	0.0	0.7	2.8	1.4	0.0
23 Nov	2.2	1.8	2.2	3.5	1.0	1.9	0.0	2.1	2.9	4.0	1.0
24 Nov	5.8	0.5	5.8	-2.7	0.0	1.3	0.0	0.4	0.0	12.4	0.1
25 Nov	2.0	0.0	2.0	0.2	0.0	0.0	0.0	0.0	1.0	2.3	0.0
26 Nov	3.8	0.0	3.8	0.0	1.7	1.4	1.0	0.0	0.0	6.8	1.6

27 Nov	1.9	1.4	1.9	1.3	0.5	1.2	0.6	16.5	1.5	0.7	6.7
28 Nov	3.5	1.5	3.5	2.3	0.0	1.5	1.4	5.2	0.0	2.2	4.1
29 Nov	1.7	0.0	1.7	1.7	0.0	0.7	0.9	5.5	0.0	0.5	0.1
30 Nov	3.4	0.0	3.4	1.4	0.0	1.3	0.0	4.6	1.1	0.0	1.0
1 Dec	1.7	0.0	1.7	2.7	0.0	0.7	0.0	2.7	0.0	1.4	0.0
2 Dec	2.5	0.7	2.5	0.0	0.7	1.4	0.0	1.5	1.4	2.4	0.0
3 Dec	3.5	0.0	3.5	1.4	1.3	0.7	0.0	3.9	0.0	4.0	0.0
4 Dec	0.8	0.0	0.8	0.6	0.0	0.0	0.0	9.7	0.0	4.2	0.0
5 Dec	2.4	0.7	2.4	3.2	0.0	1.0	0.0	3.7	1.4	0.5	0.2
6 Dec	1.3	0.0	1.3	3.7	0.0	0.5	0.0	15.7	0.0	6.4	0.1
7 Dec	0.0	4.7	0.0	6.0	1.3	0.0	0.0	0.6	1.5	1.5	0.0
8 Dec	3.4	1.7	3.4	1.5	0.0	0.5	0.0	7.1	1.0	1.1	0.0
9 Dec	1.6	0.0	1.6	0.3	1.3	1.5	0.0	27.1	2.9	0.0	1.3
10 Dec	5.7	0.0	5.7	10.1	0.0	1.6	0.0	20.2	4.1	4.0	1.2
11 Dec	5.0	0.0	5.0	0.3	1.0	0.9	0.0	0.7	0.0	11.5	0.0
12 Dec	3.1	1.4	3.1	5.2	0.0	0.5	0.0	4.4	2.3	6.5	0.0
13 Dec	1.3	2.0	1.3	2.0	0.0	2.0	0.0	2.0	0.0	1.1	4.9
14 Dec	1.6	1.2	1.6	1.3	0.0	0.0	0.0	0.2	0.0	1.0	0.0
15 Dec	4.3	0.7	4.3	4.1	0.0	0.0	0.0	3.4	2.0	0.0	3.5
16 Dec	0.0	1.7	0.0	4.6	0.0	0.0	0.0	0.0	0.7	4.2	0.7
17 Dec	0.7	0.7	0.7	4.1	0.0	0.0	0.0	3.7	0.0	1.0	0.7
18 Dec	1.3	0.0	1.3	3.2	2.4	1.9	0.0	0.1	0.0	7.3	0.2
19 Dec	3.2	1.5	3.2	2.7	0.0	0.8	0.0	5.9	0.0	4.8	7.2
20 Dec	1.8	0.0	1.8	0.0	0.0	0.7	0.0	6.6	0.0	11.1	0.7
21 Dec	0.6	2.0	0.6	0.0	0.7	2.0	0.0	5.0	0.0	7.0	1.7
22 Dec	0.0	3.1	0.0	0.0	0.0	0.7	0.0	0.0	1.0	4.7	11.4
23 Dec	0.0	2.4	0.0	0.0	1.0	0.0	0.0	12.0	0.0	0.7	10.3
24 Dec	0.0	0.0	0.0	5.2	0.0	0.0	0.0	20.1	1.0	7.0	0.0
25 Dec	1.5	0.0	1.5	4.4	0.0	4.0	0.0	16.5	0.0	1.0	0.1
26 Dec	0.6	1.0	0.6	1.0	0.0	1.0	0.0	17.9	0.0	5.0	0.0
27 Dec	0.8	0.0	0.8	10.4	0.0	0.3	0.0	11.0	0.0	11.3	12.0
28 Dec	0.5	1.4	0.5	0.1	0.0	1.2	0.0	0.0	1.0	2.4	0.0
29 Dec	1.0	1.0	1.0	11.7	0.0	0.0	0.0	20.0	1.0	11.0	0.7
30 Dec	0.0	0.0	0.0	2.7	0.0	0.0	0.0	13.0	1.1	7.0	0.0
31 Dec	0.8	0.0	0.8	10.7	0.0	0.0	0.0	11.0	0.0	0.0	0.0

Rating details

What type of rating would you like to estimate?

- ☐ Energy
- ☒ Water

What type of building?

- ☒ Office
- ☐ Hotel
- ☐ Shopping centre
- ☐ Residential aged care and retirement living
- ☐ Apartment building

What is the postcode of the building?

2765

What is the scope of your rating?

- ☒ Whole building

Enter the star rating you wish to achieve

3

Stars (Water)

Building details

What is the floor space of the building?

Enter the total net lettable area of office space within the building.

15415

m²

How many hours per week is the building occupied?

Hours each week with occupancy levels of 20% or more (hrs/week).

hours

Results

Maximum Water Consumption at 3 Star NABERS Water:

15,750 kL/year

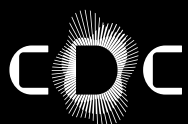
Water Intensity at 3 Star NABERS Water:

1.022 kL/m².year

Appendix C CDC Sustainability Report 2024



Sustainability Report 2024



Stable planet. Thriving people. Trusted company.

CDC embraces an unwavering commitment to excellence and fostering a culture of inclusivity, diversity and sustainability.

Our efforts span from pioneering world-class designs and providing renewable electricity¹ to implementing strategies that minimise construction and operational waste across all facilities.

CDC's innovative approach to business drives initiatives that deliver impactful solutions to pressing environmental challenges.



Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

CDC's First Nations recognition

Dungala Dreaming is inspired by a traditional Yorta Yorta creation story. Baimi the Creator Spirit called out to Gane, the great Rainbow Snake who was asleep beneath the earth. Gane awoke and set off across Country, pushing the earth into deep crevices, hills and valleys as colours from his great body spread throughout the land covering trees, plants and all creatures. Baimi called out in a loud voice and thunder cracked as lightning flashed across the sky and rain fell. The rain filled the deep crevices and the river Dungala was formed.

CDC proudly acknowledges the traditional owners of the land on which we work and live and pays respects to elders' past, present and emerging. We are committed to fostering and supporting relationships with these communities.

We recognise and value the continuing rich cultures and the contribution of Aboriginal and Torres Strait Islander peoples in Australia.



Original Artwork "Dungala Dreaming" by Siena Tieri c.2023.



Te Haumanu Toi, experts in Māori art, crafted this carving, to embody both tradition and modernity. The artwork represents data's invisible yet vital role, blending ancient Māori wisdom with contemporary progress. The design incorporates significant Māori symbols, such as the deity Tane-nui-a-Rangi, representing knowledge and protection, and the Korowai, denoting status and unity. These elements honour cultural heritage while signifying CDC's role as a guardian of information in the digital age.

At CDC, we recognise and value the Māori as the Tangata Whenua of Aotearoa New Zealand.

Original Artwork "Tāne-nui-a-Rangi - The holder of knowledge" by Wyvern Rosieur, Uenuku Hawira, Maryanne Rosieur, Rerekapua Rosieur, Hokimai-anahera Rosieur c.2024.

Statement of qualification

Transparent and accurate reporting is important to CDC. As a non-listed company, we are not required to publicly report, so the disclosures in this report are voluntary and are for general information purposes only.

We have sought to provide accurate information, but we do not represent that the information in this report is free from errors, omissions or is suitable for your intended use. We caution reliance being placed on these representations which may be subject to risks, uncertainties, changing methodologies and/or assumptions.

In general, calculations and estimations in this report are based on established methodologies such as standards, protocols and guidelines. There may be some exceptions and these are explained in the notes. Some estimation methodologies rely on assumptions and when this is the case we use the best information available at the time to provide an estimate that is as accurate as possible.

This report provides general information that is intended to inform CDC's stakeholders, customers and interested parties of CDC's sustainability and ESG approach and progress. Please do not base any legal, investment or other decisions solely on the information in this report. The standards, vision statement and targets described in this report are not guarantees or promises. Various factors may cause material deviations from these standards and goals such as market conditions, regulatory changes and unexpected events.

We have intentionally aimed to avoid making forward-looking statements in this report, preferring to let our actions speak more loudly than words and inviting readers of this report to follow our progress in our annual Sustainability Reports. Where future statements are made you should be cautious and not rely solely on these statements, as they are based on our current expectations and understandings. These statements and opinions may involve assumptions, forecasts and projections about present and future strategies and the ecosystem (economy, technology, supply chain, climate, political) in which we may operate in the future, which are inherently uncertain and subject to change outside of CDC's control. There are limitations to available data inputs and information which may also be subject to change. We base our forward statements and opinions on reasonable information available to us at the date of publication.

We do not:

- represent that our statements and opinions will not change or will remain correct after publishing this report, or
- promise to revise or update those statements and opinions if events or circumstances change or unanticipated events happen after publishing this report.

CDC does not represent, guarantee or provide assurance that actual outcomes or performance will not materially differ from the statements in this report. We do not accept any liability whatsoever for any loss arising directly or indirectly from any use of the information contained in this report.

An ESG strategy
for today and
tomorrow

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Introduction

Welcome from CEO



CDC's inaugural Sustainability Report marks an important milestone in our history as a mission-critical data centre provider.

I founded the organisation in Canberra in 2007, during the Millennium Drought, with a vision to provide purpose-built data and digital infrastructure for the most important entities that underpin Australia's security, social and economic wellbeing. Faced with ongoing water scarcity and wary of compounding this environmental strain, I adopted a 'clean and green' ethos from day one, which included world-leading water conservation practices as a core part of the early vision for the company.

The trust of our customers in the years since has enabled our organisation to work hard to grow from a small data centre provider with an ambitious mission, to become a critical infrastructure provider for organisations across Australia and New Zealand, committed to deliberate and thoughtful approaches to identifying, tackling and reporting on a wide range of ESG themes.

This journey fills us with great pride and inspires us for the future.

We know that as our business has grown, so have the expectations of our stakeholders. We also know that in the broader community, the debate continues on a wide range of policy options and approaches and public discourse is not settled on a single path for Australia's energy transition.

CDC plays a critical role in supporting operations, systems and services required for national progress. Our large-scale and highly secure infrastructure supports customers across industries which keep the world and our society functioning and thriving, accelerating economic growth and enabling scientific research and innovation.

In that regard, our business is at the centre of 21st century industry and innovation, powering and enabling critical services, from aviation and banking to

social welfare, communications and emergency forecasting, which help futureproof Australia's and New Zealand's continued progress.

CDC is a security-focused organisation with its facilities achieving some of the highest protective security standards. We know our customers can trust their data is secure with CDC, now and in the future.

Data centres aggregate the energy demand required to power customer critical systems. They do so while being optimised for power efficiency, thus contributing to grid power savings when compared to on-premises energy consumption. At the same time, the data centres help provide stability in the grid due to their constant load.

As technology continues to evolve and underpin more of everyday life, the demand for data centre services is expected to increase in the decades to come. As such, we are very mindful of our role as an individual organisation and as a leader in the digital infrastructure sector as we embark on the journey ahead.

This Sustainability Report outlines our three ESG pillars: Stable planet, Thriving people and Trusted company – and explains the action we are taking across each one to make a difference.

It is not only a story of a job well done. It is the start of an ongoing evolution. We will celebrate our successes and progress while remaining ambitious and realistic about the work still ahead.

I look forward to continuing to update you on our progress in the years to come.

Regards,



Greg Boorer
Chief Executive Officer

Welcome from Board Chair



It is exciting to see the progression of CDC's ESG journey through clear documentation of its sustainable action, innovative solutions and transparent reporting.

This report highlights the company's achievements, cementing CDC's standing as a progressive organisation committed to driving positive change across the sector and the communities in which it operates.

In particular, the board welcomes the following milestones:

- Launching our 2030 ESG Strategy, which sets our targets for net zero carbon by 2030 for Scope 1, 2 and defined Scope 3²
- Installing ~90 kW of solar panels at our Eastern Creek campus
- Producing our first Indigenous Participation Plan³
- The certification of Toitū enviromark diamond for our New Zealand Data Centres⁴

This report offers information for our investors, customers and the communities in which we operate on how we are actively managing the threats and opportunities inherent to ESG issues. Strengthening resilience to climate and social-related risk is imperative for our industry and this report represents the significant work we are undertaking to safeguard our financial future against these risks.

Transparency and responsibility are long-standing pillars of the organisation and the publication of our ESG targets and goals demonstrates CDC's ongoing commitment to accountability.

Explaining our approach to ESG matters encourages all stakeholders to understand the business's position and how we aim to improve in certain areas. We hope that this will ultimately enable CDC to attract long-term capital from like-minded investors who are aligned with the national interest and care about sustainability the way we do.

This enables us to move from strength to strength and steadily grow our portfolio with those who align with our values over the coming years.

On behalf of the board, I sincerely congratulate the team at CDC, its external partners and their suppliers for their important role in driving a positive change across the industry. The incredible dedication, hard work and effort are truly appreciated.

The board is excited to continue to support the CDC team to provide industry leadership and deliver on their commitments, targets and Sustainability Reporting.

Regards,



Brett Chenoweth
Board Chair

Note: All references on this page are detailed in the Notes section at the end of the report.

Executive summary

“A 2024 Reputation Pulse Check revealed that CDC has a very strong reputation with stakeholders and is considered a leader in data security, operational success and commercial growth.”

CDC's inaugural Sustainability Report highlights CDC's commitment to sustainability, community development and operational excellence, setting a strong foundation for future growth and leadership in the industry.

This report covers 1 April 2023 to 31 March 2024 and includes both historical and up-to-date data points to provide context to our progress. CDC drew from the United Nations Sustainable Development Goals and the Global Reporting Initiative Standards to guide our approach to performance analysis and measurement.

CDC's ESG strategy focuses on three pillars: Stable planet, Thriving people and Trusted company.

The Stable planet pillar encompasses CDC's environmental efforts, focusing on operational carbon and energy use, water and waste management. Thriving people explains how CDC is developing individual and community prosperity, while Trusted company captures CDC's core mission of providing secure and trusted operations.



ESG highlights FY24



Stable planet

Renewable energy:

100% renewable electricity offered to Australian customers⁵.

Environmental certifications:

Achieved "Toitū net carbonzero"⁶ and "Toitū enviromark diamond"⁷ certifications in New Zealand.

Water efficiency:

Achieved a Water Usage Effectiveness (WUE) of 0.01⁸.

Waste management:

Diverted over 90% of operational waste from landfill at NSW campuses⁹.



Thriving people

Mental health program:

Introduced to support employee wellbeing.

CDC Academy:

Launched as a dedicated training hub for employees.

Indigenous plan:

Developed to increase Aboriginal and Torres Strait Islander employment.

Women Rising:

Empowered women's careers through a four-month training and mentoring initiative.

Reservist leave:

Employees took 15 days of ADF leave.

Job creation:

Added 80 new roles across Australia and New Zealand.



Trusted company

Customer satisfaction:

Achieved a Net Promoter Score (NPS) of over 82¹⁰.

CSIRO partnership:

Selected to host the supercomputer Virga.

Data security and privacy:

Achieved ISO 27001 certification, ensuring the highest standards in information security and data privacy.

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

CDC’s facilities have achieved and maintain the highest level of security accreditations¹¹ under the Australian and New Zealand governments’ hosting frameworks and security requirements.

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

About CDC

“In an ever-evolving world where data shapes the way we live, CDC is committed to safeguarding national progress.”

CDC is **the** critical infrastructure for critical infrastructure. It houses the data that keeps countries running and industries innovating. We provide security for social and economic wellbeing. Our work has never been more crucial as we help society achieve the one thing that it thrives on: progress.

And at CDC, we secure this progress.

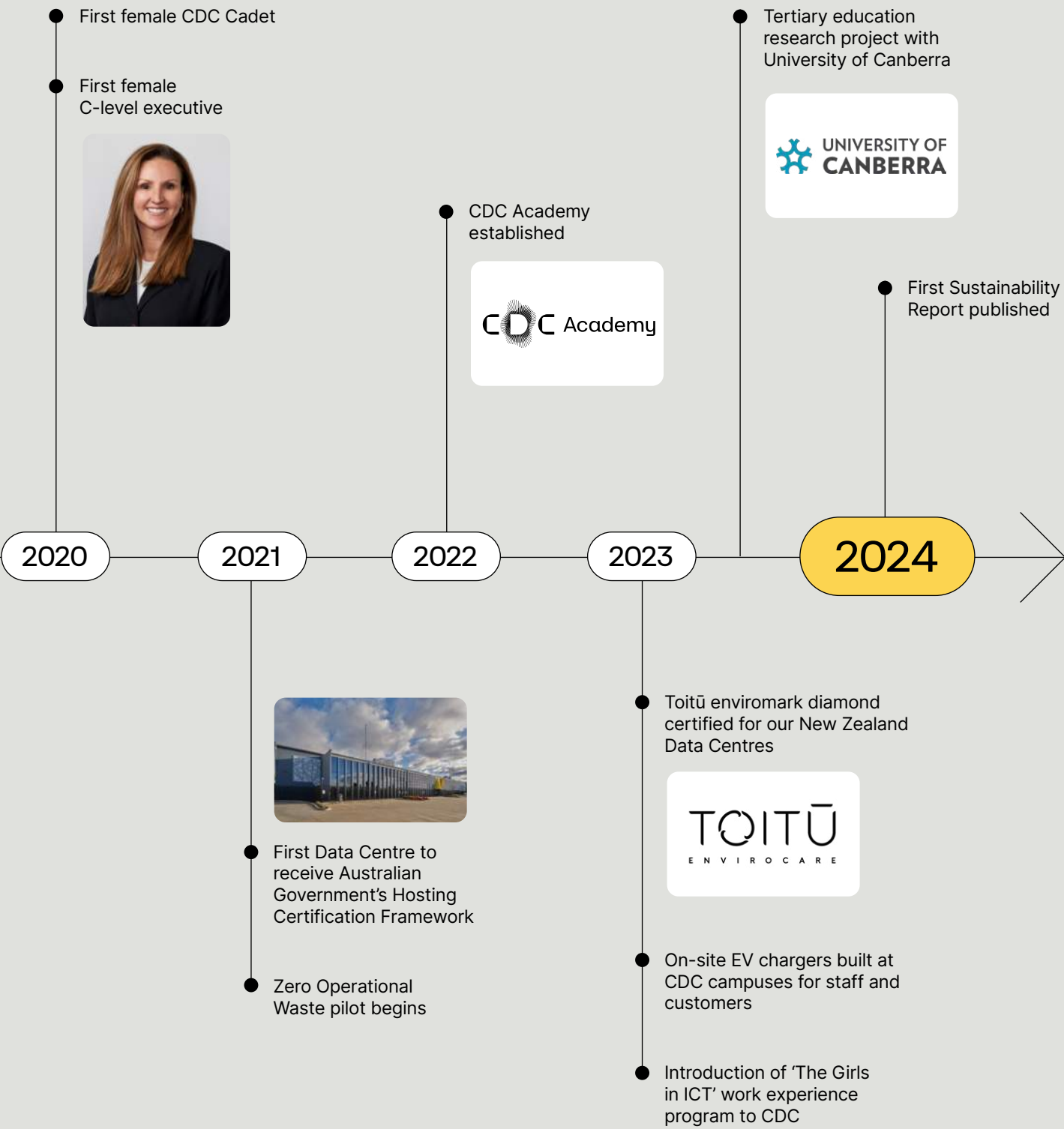
Our efforts are deliberate. We do not wait to see how our peers address an industry challenge; we actively seek solutions and implement them within our business.

This approach has seen sustainability considerations included in our decision-making since our inception in 2007. This is why, despite this being our first Sustainability Report, we can confidently and proudly say that sustainability has been a focus of CDC since its beginning.

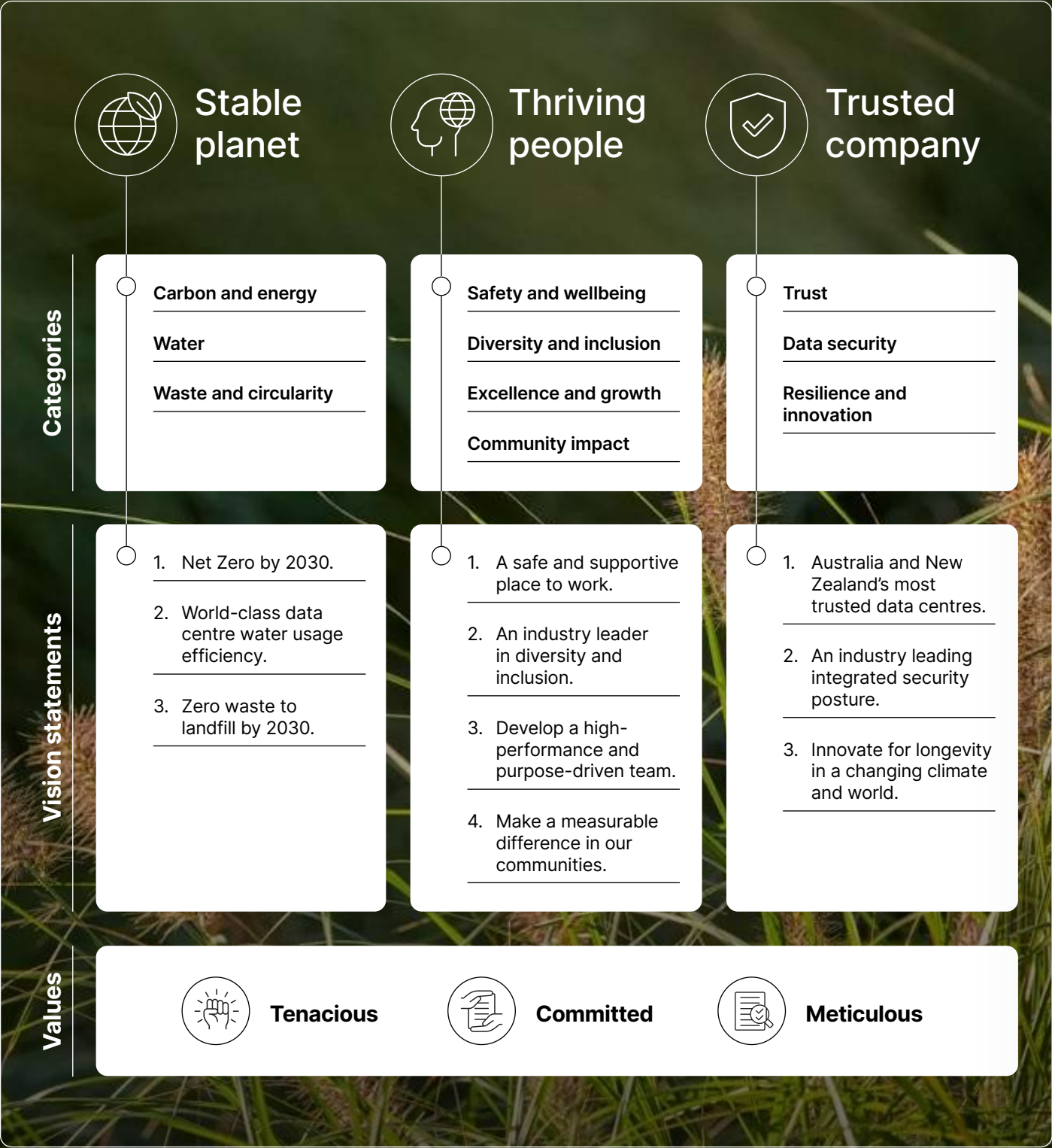
Through a tenacious, meticulous and committed approach, CDC founder and CEO Greg Boorer transformed the company from a forward-thinking start-up to the pre-eminent owner-operator and developer of highly secure, sovereign, connected, large-scale data centres in Australia and New Zealand.



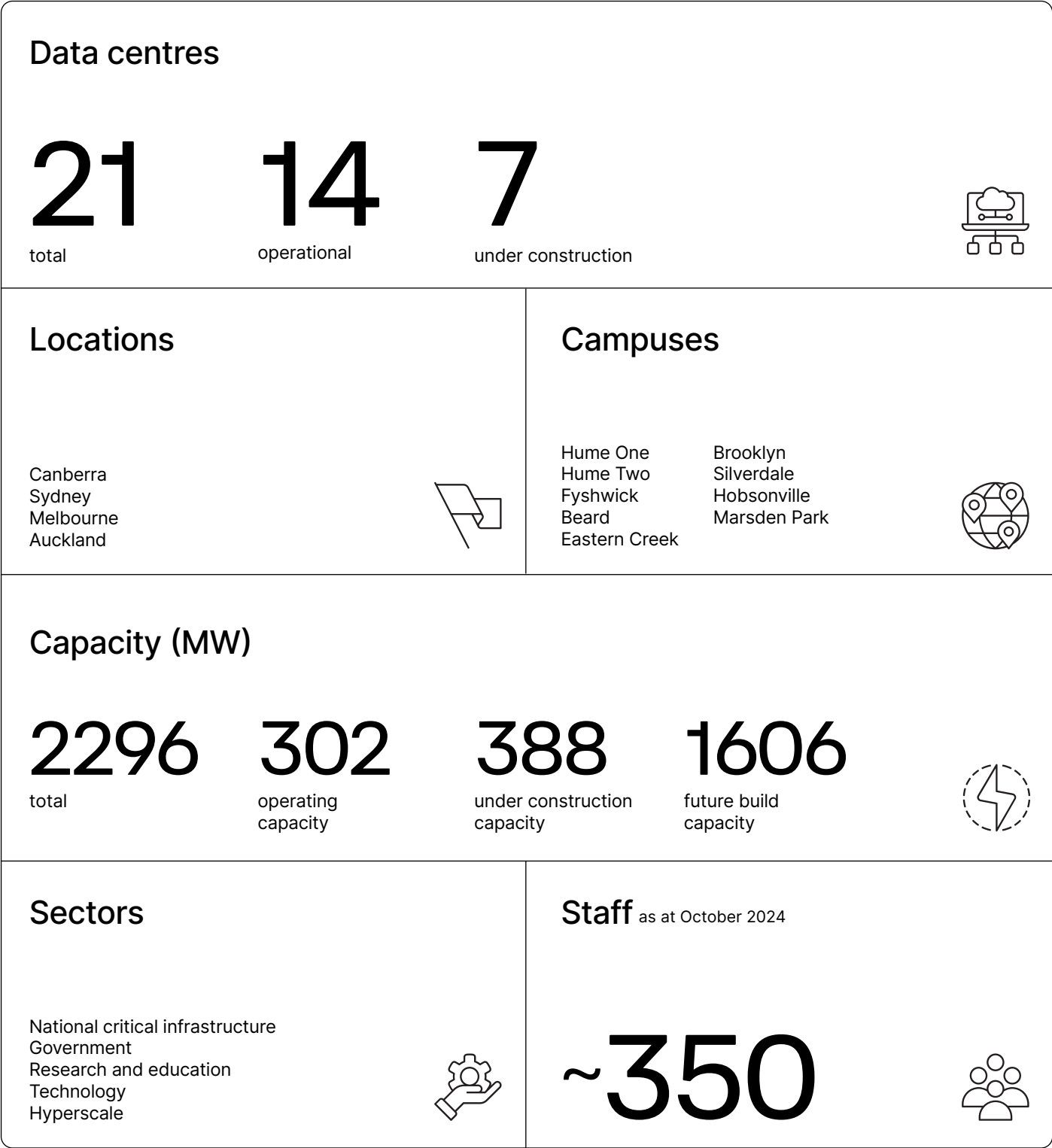
CDC's ESG journey so far



CDC's ESG pillars

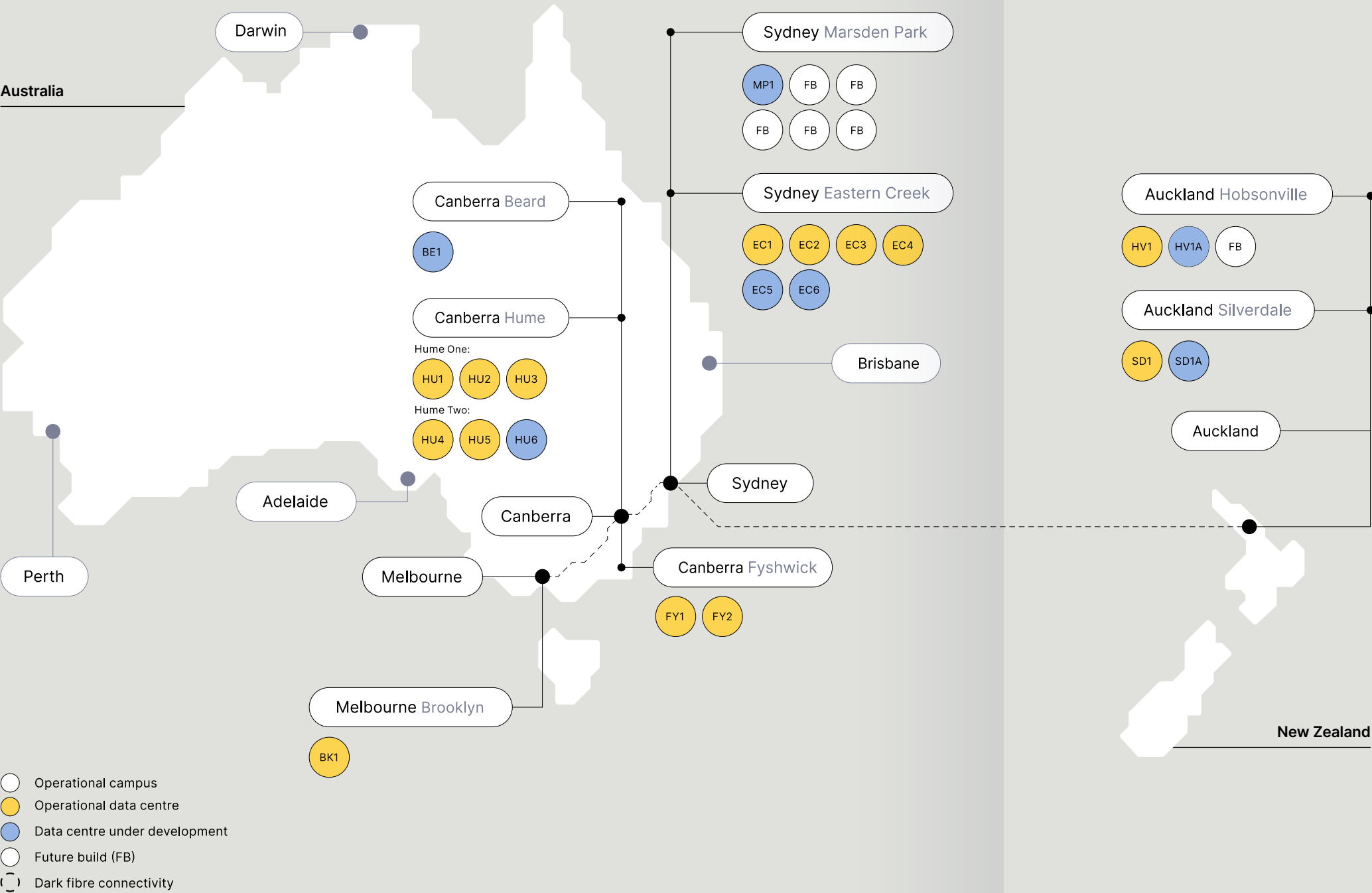


Business at a glance



Our footprint

Since 2007, CDC has championed sustainability, integrating environmental and social responsibility into our data centres across Australia and Aotearoa New Zealand.



Our operating environment

CDC's growth and continued evolution is taking place against the backdrop of the following global megatrends and issues:

 AI multi-modal race	 Geopolitical polarisation and conflicts within and between nation states
 Climate change	 Digitisation, data regulation, cyber security and AI
 Increased pressure on global supply chains	 Increased demand for energy and resources

About this report

This report formally covers the financial reporting period from 1 April 2023 to 31 March 2024 (FY24). It also includes data points that are historical and up-to-date at the time of publishing, to further contextualise our continuous sustainability progress. It outlines the ESG activities and initiatives completed during this financial year and analyses the performance metrics relevant to stakeholders and investors. The United Nations Sustainable Development Goals (SDGs) and the Global Reporting Initiative (GRI) Standards have helped to guide the analysis and measurement of CDC's ESG performance.

We recommend reading the 2024 Sustainability Report in conjunction with our ESG Statement of Commitment, annual Modern Slavery Statement, public NGRS data and Workplace Gender Equality Agency report. Together these documents provide a comprehensive overview of CDC's sustainability approach.

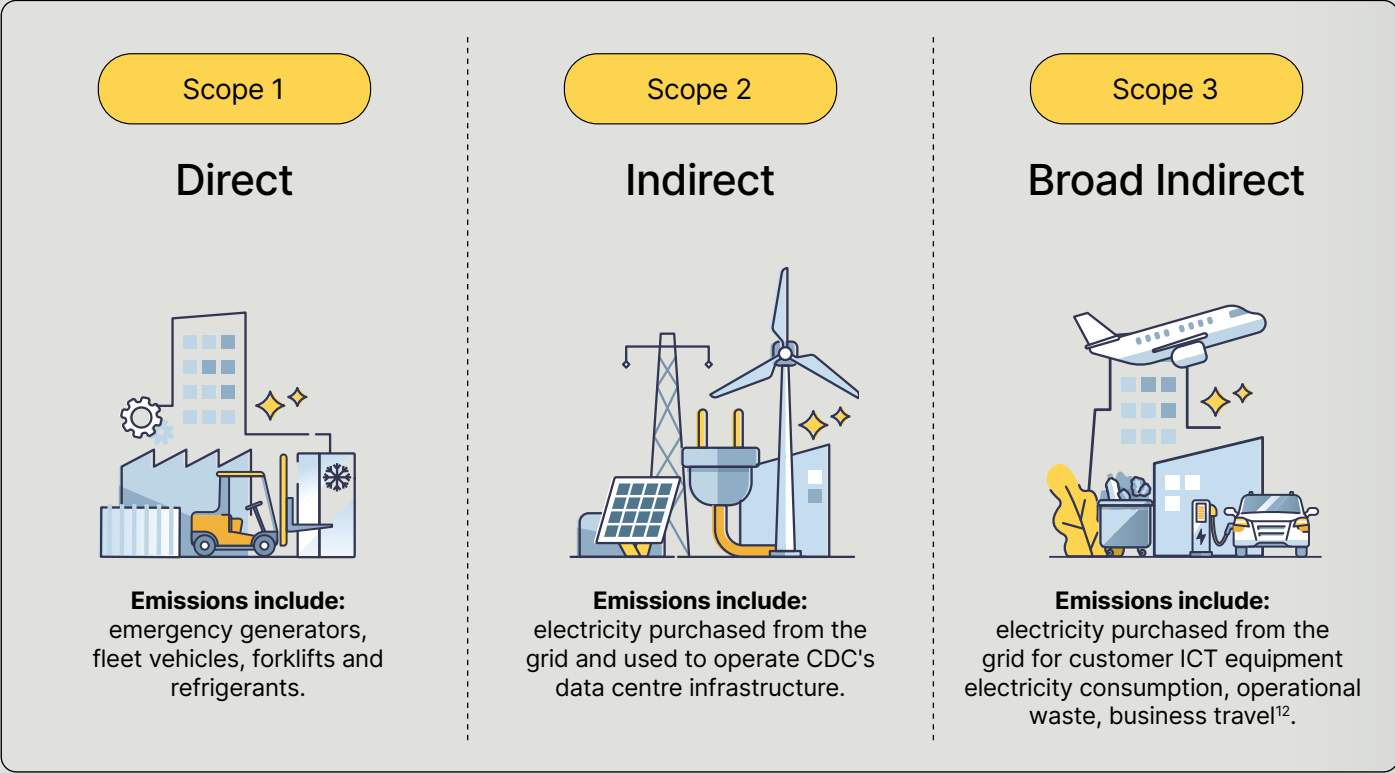
Scope and boundaries

This report applies to the entire CDC entity, including Australia and New Zealand businesses. A range of standards, methodologies, assumptions and limitations have been used in reporting the performance data included in this document.

Greenhouse Gas Protocol (GHG Protocol)

Scope 1, 2 and 3 emissions refer to different categories of greenhouse gas (GHG) emissions, which are defined under the Greenhouse Gas Protocol, which companies and organisations need to manage. CDC reports Scope 1 and 2 emissions in this report and intends to include defined Scope 3 emissions in the future.

Overview of CDC's scopes of emissions



Note: All references on this page are detailed in the Notes section at the end of the report.



Assurance

KPMG have provided limited assurance over selected sustainability metrics presented in this Sustainability Report, covering Total Scope 1 GHG Emissions, Total Scope 2 GHG Emissions (location-based method) and Total Scope 2 GHG Emissions (market-based method). KPMG's limited Assurance Report¹³ is presented on page 44 (or Appendix 2F) of this Sustainability Report.

Alignment with global standards

CDC has sought to broadly align its approach to sustainability with the following global standards in preparing this report.

United Nations Sustainable Development Goals (SDGs)

The United Nations Sustainable Development Goals have guided CDC's Sustainability Reporting. The goals provide a blueprint for peace and prosperity for all people and the planet, now and in the future.

The Sustainable Development Goals are an urgent call to action for all countries to take part in a global partnership aimed at ending poverty and other deprivations while developing strategies that improve health and education, reduce inequality and spur economic growth – all while tackling climate change and working to preserve the environment.

Global Reporting Initiative (GRI)

The Global Reporting Initiative has influenced this report and its approach to transparency. It has served as an important benchmark when assessing organisational accountability with respect to CDC's impact on the economy, environment and people.

Feedback

We value your feedback on our Sustainability Report. Visit cdc.com/contact or scan the QR code to access our feedback submission page.



Note: All references on this page are detailed in the Notes section at the end of the report.

Governance

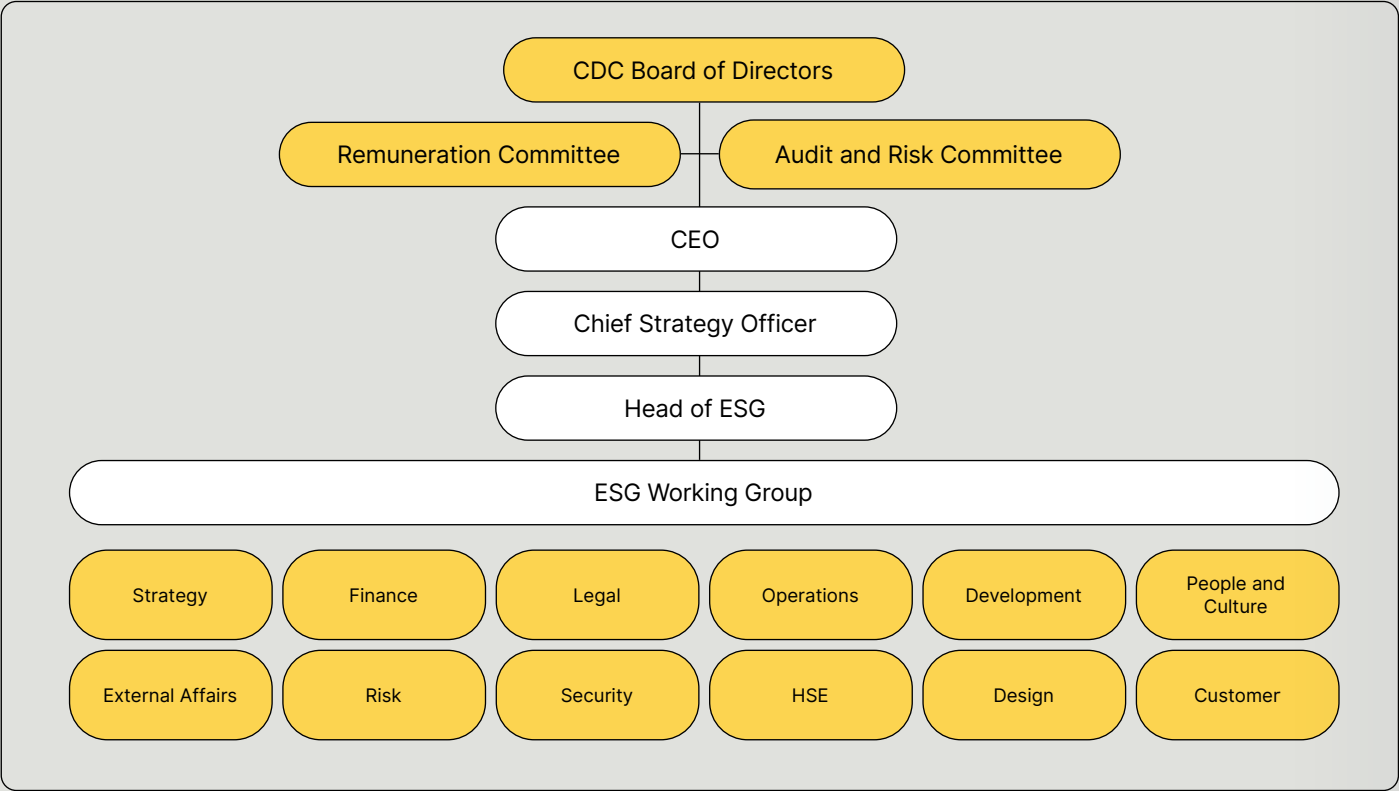


CDC’s governance framework is essential for the long-term performance and sustainability of our company. Governance practices provide the structure through which our strategy and business objectives are set, our performance is monitored and the risks we face are managed.

CDC’s Board of Directors has overall responsibility for sustainability governance. The board approves CDC’s ESG Strategy, ESG Statement of Commitment, implementation plan and public disclosures. The Remuneration Committee and Audit and Risk Committee support the board to fulfill its duties.

The Chief Strategy Officer reports to the CEO and the board on implementation and progress of the ESG Strategy. CDC’s Head of ESG leads the ESG Working Group to deliver on the CDC’s ESG targets by implementing initiatives and integrating sustainability throughout business processes.

ESG Governance



Key governance documents

CDC uses a well-established framework of sustainability-related policies and practices covering:

Environment and Social	Governance
Diversity, Equity and Inclusion Statement	Annual Modern Slavery Statement
Equal Opportunity and Anti-Discrimination Policy	Code of Conduct
ESG Statement of Commitment	Conflicts of Interest Procedure
ESG Strategy	Fraud and Corruption Control Plan
Grievance Handling Policy	IT and Systems Policy
HSE Policy	Information Security Policy
Parental Leave Policy	Media Relations Policy
	Privacy Policy
	Protective Security Policy
	Social Media Policy
	Supplier Code of Conduct
	Whistleblower Policy

CDC promotes a fair and responsible culture through its Code of Conduct, CDC policies, mandatory training and awareness sessions. Our behaviours, Code of Conduct, supporting CDC policies and standards guide our people and partners to uphold our expectation to act fairly, ethically and in accordance with the law.



Materiality assessment

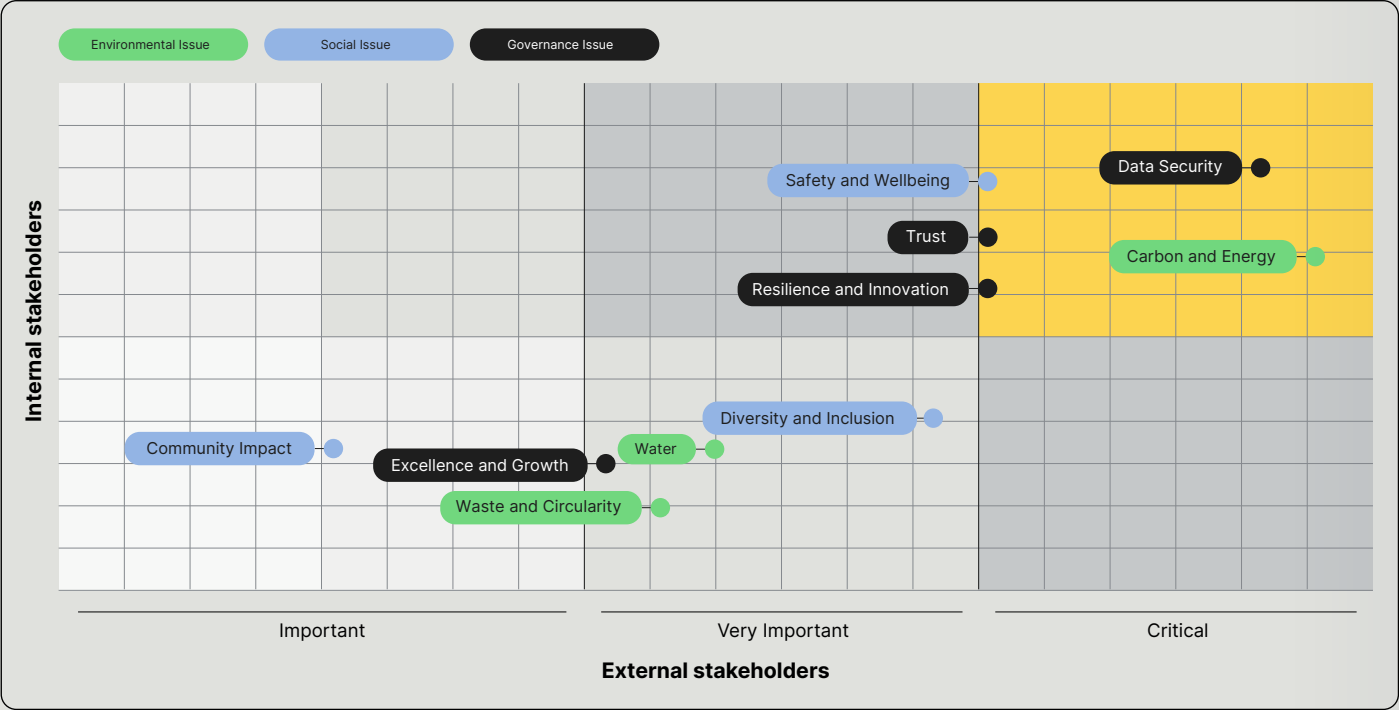
Sustainability has been a constant consideration for CDC, but in recent years, there has been an effort to accelerate and formalise its approach.

One of the first steps was developing a materiality assessment in 2021 to understand the impacts of business activities on the environment, society and the economy, hear about stakeholders priorities and concerns and inform decision-making and prioritisation in relation to sustainability challenges.

An external advisor undertook desktop research, benchmarking, stakeholder interviews and workshops to inform the materiality assessment and validate the findings. The information was then used to inform CDC's ESG approach.

The information was collected from both internal and external stakeholders through a range of interviews. Almost 100 respondents were asked how important it is for CDC to play a role in helping improve a variety of ESG issues, revealing the following results:

How important it is for CDC to play a role in helping to improve (impact/influence) each issue?



The materiality assessment was instrumental to establishing CDC's ESG pillars:

Stable planet	Thriving people	Trusted company
Carbon and energy	Safety and wellbeing	Trust and transparency
Water	Diversity and inclusion	Data security
Waste and circularity	Engagement and growth	Resilience and adaption
	Community impacts	

Since the materiality assessment was completed in 2021, stakeholder research has been conducted to assess CDC's performance in these areas.

Stakeholder engagement

CDC undertakes a wide variety of stakeholder engagement activities throughout the year. This report focuses on CDC's engagement approach for matters relevant to sustainability.

Sustainability and reputation research

Key details from the 2024 Reputation Pulse Check, conducted as a follow up to the 2021 materiality assessment, are outlined in this section. The report contains feedback from interviews with CDC's stakeholders, including investors and customers, conducted between 11 June – 2 July 2024.

CDC has a very strong reputation among the stakeholders who participated in the study. All stakeholders rated its reputation as a 7 or more out of 10 and two-thirds rated it a 9 or 10. Half felt that CDC's reputation has improved over the last 12 months and the vast majority felt CDC is a leader among its peers.

Key strengths

CDC was considered a leader on data security, operational success and commercial growth, evidenced by its growing list of high-profile, hyperscale

and government clients. Its stakeholders commended CDC's strong corporate focus on having exceptional security measures and customer service. While this focus may increase CDC's cost base, it was justified that customers are still receiving value for their money.

Future roadmap

Stakeholders had very little feedback for CDC on how it could improve its reputation from an operational perspective and many described it as a 'leader' amongst its peers in terms of operations and customer service. However, many felt CDC could advance its ESG and sustainability offerings by better communicating its progress and goals.

This demand for greater transparency and detailed information on CDC's ESG initiatives - including how it is achieving its goals and the progress it is making- was a major sentiment influencing the development of this report. While some noted that a lack of transparency may be a result of privacy or security restrictions, they encouraged CDC to take pride in their achievements and adopt a more transparent approach – something we are actively trying to embrace through the publication of this report.



Our engagement approach

		
Who we engage	How we engage	Focus areas
Government	Forums	Promoting the role of data centres as key national infrastructure
Customers	Submissions	Enabling a digital nation
Community	Briefings	Contributing to the advancement of energy, infrastructure, AI and cyber industries
Board and Investors	Public events	Progress against ESG targets
Employees	Customer success team	Maintaining the highest levels of health, safety and environment; security and sustainability
Supply chain stakeholders	Community and stakeholder research surveys	Strengthening customer experience and community satisfaction
Industry	Sport and community sponsorships	Fostering a culture of 'giving back' and supporting communities to thrive
Lenders/Financers	Volunteer leave for employees	Creating a safe work environment
	Ongoing training	Advancing diversity and inclusion across our business
	Industry group board membership (AIIA)	
	Ideas exchange through Australian American Leaders Dialogue (AALD) and Young Australian American Leaders Dialogue (YALD)	



Stable planet



Categories

- Carbon and energy
- Water
- Waste and circularity

Vision statements

- Net Zero by 2030.
- World-class data centre water usage efficiency.
- Zero waste to landfill by 2030.

Reducing our environmental impacts and improving sustainability practices is a major focus for our team. This extends from our efficient designs and the provision of 100% renewable electricity¹⁴, to using reduced embodied carbon and certified sustainable materials in construction and seeking to minimise operational waste across campuses.

We are proud of our industry-leading water conservation practices, particularly our closed-loop chilled water system design. The technology requires almost no operational water consumption for primary cooling from our cooling systems, possibly making CDC one of the most water efficient data centre operators¹⁵ in Australia and New Zealand.

Looking to work harder and build on this achievement, we have set the ambitious target of net zero carbon by 2030 for Scope 1, 2 and defined Scope 3¹⁶.

CDC's approach to net zero is to focus on material emissions through energy efficiency improvements, the provision of renewable electricity¹⁷ and on-site solar generation. We are addressing embodied carbon in our new data centres through the specification of sustainable certified,

recycled content and reduced carbon materials¹⁸. We intend to develop a detailed climate transition plan to align with ASSB standards and to address fossil fuels and refrigerants, although these represent a small component of CDC's emissions.

Our New Zealand data centres have been Toitū net carbonzero certified since 2022, whilst in Australia, we have offered our customers 100% renewable electricity¹⁹ from 1 January 2024.

CDC seeks to undertake best practice for operational waste management to lead us towards achieving our zero waste to landfill by 2030 target²⁰. This includes on-site weighing of waste and multiple waste streams to optimise recycling including paper and cardboard, organic waste, co-mingled recycling, metals, timber, batteries and e-waste.

When we consider the 'Stable planet' pillar, our focus is not just to meet expectations but to exceed them. We are seeking to drive innovation and set a benchmark for our industry colleagues to follow, as the sector shifts towards a lower carbon future.

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

FY24 performance

Stable planet

Carbon and energy

1. Net Zero by 2030.

Water

2. World-class data centre water usage effectiveness (WUE) from 2023 baseline.

Waste and circularity

3. Zero waste to landfill by 2030.

Targets

1. Targeting net zero carbon by 2030 for Scope 1, 2 and defined 3 (customer electricity consumption, operational waste and business travel).

2. Improve CDC's industry leading water usage effectiveness (WUE) from 2023 baseline.

3. Zero waste to landfill certification at all campuses by 2030.

How we seek to achieve our targets

1. CDC's operations team focuses on energy efficiency improvements as the first step in carbon reduction. We intend to account for any remaining unavoidable emissions using 100% renewable electricity²¹ and high-quality carbon credits (offsets). Facilities in New Zealand have been Toitū net carbonzero certified since their opening in November 2022 and Australian operations aim to be net zero carbon for Scope 1, 2 and defined Scope 3 by 2030. In Australia, CDC provides 100% renewable electricity²² to match customer equipment and data centre electricity use through the surrender of an equivalent amount of renewable energy certificates (LGCs).

2. CDC is possibly one of the most water efficient data centre operators in Australia and New Zealand with an average Water Usage Effectiveness of 0.01. CDC's closed-loop chilled water system consumes almost no water in operation for primary cooling with the organisation using minimal water for operations.

3. CDC specifies sustainable, certified, low-carbon content products and repurposes waste to reduce landfill. It is also establishing systems to change the 'buy, use, throw away' economic model and facilitate reduced waste.

4. CDC seeks to undertake best practice for operational waste management to reduce landfill, which includes on-site weighing of waste and multiple waste streams (paper/cardboard, organic waste, co-mingled recycling, metals, timber, batteries and e-waste) to optimise recycling.

5. CDC's approach is guided by our [ESG Statement of Commitment](#) and ESG strategy.

Progress

CDC's achievements for the financial year ending in March 2024 included establishing systems and procedures to improve operational waste quality data, resource management, setting targets (waste) and baselines (water and carbon) as well as procuring 100% renewable electricity²³ to match customer and data centre electricity consumption through surrendering renewable energy certificates (LGCs). New Zealand achieved "Toitū environmark diamond" certification for its environmental management systems and Toitū net carbon zero certification for its carbon emissions.

We installed a ~90kW solar generation system and added more EV chargers to our carpark at NSW campus.

Related UN SDGs to Vision statements

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

Case study 1.



A leader in water efficiency

Context

Data centre facilities historically have used significant volumes of water to operate, consuming water to transfer heat away from servers to maintain optimal IT performance and prevent critical equipment failure. Whether through cooling towers or chiller systems, this generates huge amounts of water waste through evaporation. Determining a way to reduce this waste is a particularly pertinent challenge in countries like Australia, where severe droughts can significantly limit water resources.

Approach

CDC sought to address this issue at its inception, fostering an innovative approach in its initial facility design plans back in 2007. By successfully implementing an advanced 'closed-loop' cooling system design, CDC has managed to eliminate the

Outcome

This innovation is considered a genuine game changer, CDC's closed-loop cooling systems are designed to save up to 5 billion litres of water each year. This is equivalent to about 2,000 Olympic sized swimming pools of water savings, per year²⁴. As a result, CDC's facilities are considered some of the most water efficient data centres in Australia and New Zealand, with its approach firmly positioning the business as an industry leader as an industry leader in water usage.



Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

Case study 2.



Innovative approaches to construction that deliver meaningful impacts



Context

The construction of large-scale, highly secure data centres presents numerous sustainability impacts. They rely upon large quantities of cement, the key ingredient in concrete. According to the [World Economic Forum](#) the manufacture of cement is responsible for around 8% of total global CO2 emissions. Furthermore, traditionally the building industry produces significant waste – in New Zealand, waste generated from construction and demolition contributes to almost half of the country’s annual landfill waste²⁵.

A critical aspect of CDC’s sustainability approach is to consider and manage potential environmental impacts at the beginning of the project. As such, CDC sought to address these issues in its initial designs when developing its data centre in Hobsonville, New Zealand.

Approach

CDC partnered with digital-first contractor, Built, to deliver its Hobsonville facility. Following a thorough assessment, the best opportunity to decarbonise the project was by procuring lower carbon concrete mixes, prompting Built to request concrete mix data from its subcontractors. This information enabled Built to engage a concrete supplier that offered 20% less

embodied carbon in its product when compared to a typical mix.

To reduce the amount of construction waste sent to landfill by the project, Built implemented monthly reporting and tracking of waste produced to identify inefficiencies in its construction output. Additionally, Built hired an offsite subcontractor to sort through waste and recycle materials where possible, to increase diversion of construction waste from landfill.

Outcome

These two sustainability initiatives are estimated by Built to have resulted in the following approximate outcomes:

- 30% reduction in cement used
- 263 tonnes reduction in CO2 emissions associated with the construction of the data centre – roughly equivalent to the annual emissions of 57 cars
- 194 tonnes or 90% of construction waste diverted from landfill

CDC’s Hobsonville data centre has been operational since 2022, with the construction process of its extension delivering reduced embodied carbon and construction waste in New Zealand.

Source: Built, data from June 2024

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.



Thriving people



Categories

- Safety and wellbeing
- Diversity and inclusion
- Excellence and growth
- Community impact

Vision statements

1. A safe and supportive place to work.
2. An industry leader in diversity and inclusion.
3. Develop a high-performance and purpose-driven team.
4. Make a measurable difference in our communities.

Our people

Our people are foundational to our ability to develop and maintain the critical infrastructure that comprises CDC’s operations.

Creating a safe place for our employees to thrive is achieved through our commitment to continual improvement in the areas of health and safety–evidenced by our ISO45001 certification²⁶–as well as our significant efforts to foster a culture of diversity and inclusivity. We take action to increase the number of women and gender diverse people across the business²⁷, including launching the Women Rising Program and Girls in ICT work experience Program. At CDC, we also incorporate gender pay gap analysis in the annual remuneration review process to work towards closing these gaps.

To help our people grow and excel in their careers we have established the CDC Academy. The CDC Academy is CDC’s proprietary designed, dedicated learning hub for educating and training our people with the skills, knowledge and competencies required to deliver excellence and perform to the highest standards. We are currently extending this across new domains and are on track to establish it as the sole training hub for the entire business from 2025 onwards.

Our communities

CDC is a proud supporter of a wide range of community organisations, including social charities and sporting associations. We are passionate about creating positive benefit in the communities in which we operate and encourage our staff to do the same using their annual days of volunteering leave. CDC seeks to make a measurable difference in our communities by achieving the targets with respect to volunteering hours and charity support set out in the following section of this report.

CDC has longstanding relationships with Aboriginal and Torres Strait Islander Peoples organisations in Australia and Māori organisations in New Zealand. We have developed an Indigenous Participation Plan with a vision to provide employment opportunities for Aboriginal and Torres Strait Islander people and through employment foster the growth and development of people belonging to these cultural groups within our business. This plan is in alignment with the Australian Commonwealth Government Indigenous Procurement Policy.

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

FY24 performance				
Thriving people	Safety and wellbeing 1. A safe and supportive place to work.	Diversity and inclusion 2. An industry leader in diversity and inclusion.	Excellence and growth 3. Develop a high-performance and purpose-driven team.	Community impact 4. Make a measurable difference in our communities.
Targets	1. Continue to achieve ISO 45001 (safety) certification at all data centres annually. 2. Continue to develop and implement a mental wellness program, training CDC employees and incorporating a variety of external mental health resources. 3. Increase the number of women and gender diverse people across the business from 2024 levels. 4. Develop a framework to embed the principles and purpose of a First Nations Reconciliation in Australia and Māori Reconciliation in New Zealand. 5. Achieve 100% of CDC employees utilising the CDC Academy annually from 2025. 6. Establish local support causes in new markets within the first year of being operational. 7. Increase volunteering hours and support of causes annually.			
How we seek to achieve our targets	1. CDC maintains ISO45001 (safety) certification to support its commitment to health, safety and wellbeing. It also follows a robust framework based on CDC's HSE Policy and the ISO45001 standards, seeking to meet the highest safety standards and continually improve its approach. CDC leadership regularly reviews health and safety for improvement. 2. CDC fosters a culturally diverse work environment with equality and fairness analysed by industry metrics, like the Workplace Gender Equality criteria. Its policies include gender-neutral parental leave and it is commencing an Indigenous Participation Plan to increase employment opportunities. We have created programs to help women in construction and STEM. 3. A culture of purpose and high-performance is fostered through varied training methods and personalised business development plans. 4. CDC supports a range of community groups, charities and sporting organisations that make a difference in its communities. It also provides volunteer leave, for employees to invest this in their chosen community.			
Progress	CDC's social achievements for the financial year ending in 2024 included maintaining its safety certification, improving its systems and procedures for training and workplace diversity, and implementing policies and programs for social equity and community support. CDC maintained its ISO 45001 (safety) certification at all data centres. A wellbeing program was established, the Indigenous Participation Plan was developed, CDC staff received training through CDC Academy, over 14 local charity causes were supported and initiatives were undertaken in each locality.			
Related UN SDGs to Vision statements	3 GOOD HEALTH AND WELL-BEING 4 QUALITY EDUCATION 5 GENDER EQUALITY 8 DECENT WORK AND ECONOMIC GROWTH 10 REDUCED INEQUALITIES 11 SUSTAINABLE CITIES AND COMMUNITIES			

Case study 3.



CDC Academy

Context

The data centre industry is still in its early stages across Australia and New Zealand, with a relatively small workforce servicing the region. As a result, CDC quickly discovered that there is no existing 'off the shelf' training package to provide to staff.

To maintain its vision of being Australia and New Zealand's most secure and trusted data centre operator, CDC understood it needed to develop its own training capability to develop the highest level of proficiency in its employees.

Approach

CDC established our CDC Academy in 2022 - a purpose built and designed, dedicated learning hub for educating and training staff. The curriculum covers four broad areas of development:

- Personal
- Professional
- Leadership
- Compliance training

This holistic program lays the foundation for the training of technical and professional skills while focusing on overall development and wellbeing.

The modules are structured to link back to CDC's

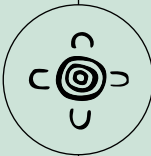
Outcome

The CDC Academy has had great participation, with 284 staff undertaking at least one of its programs in the reporting period. Encouraged by this uptake, CDC is creating developmental programs for job roles across CDC, so staff can actively manage and progress their own career development. This program highlights clear promotional paths and give employees the knowledge they need to make informed decisions regarding their career direction.

The enthusiasm shown by staff to learn from the Academy is helping CDC work towards its vision of having Australia's most skilled and competent data centre team. We are aiming to establish the Academy as the business' sole training hub from 2025 onwards.



Case study 4.



CDC Indigenous participation



CDC has been working in partnership with BY Group since 2018, with the First Nations founded organisation providing support on a range of CDC's major infrastructure projects.

BY Group was founded in 2014 by three Bundjalung men with a vision to provide sustainable employment and foster economic independence for Indigenous workers in the building sector.

The business has grown to more than 40 staff working across Australia and New Zealand and credits CDC's support in the company's expansion.

The partnership between both organisations has gone from strength to strength, with CDC investing significantly in this relationship.

One of BY Group's eight original fulltime employees, James Woods, has been seconded to CDC since September 2023²⁸. In addition to his work within the Development Pre-Construction team, James mentors other Indigenous professionals.

"Working at CDC allows me to represent Australia's shared Aboriginal History all the while being at the forefront of securing Australia's future - something I can take great pride in," he said.



Note: All references on this page are detailed in the [Notes section](#) at the end of the report.



Trusted company



Categories

- Trust
- Data security
- Resilience and innovation

Vision statements

1. Australia and New Zealand's most trusted data centres.
2. An industry leading integrated security posture.
3. Innovate for longevity in a changing climate and world.

CDC provides the critical digital data infrastructure that underpins national security, social and economic wellbeing.

Our focus on governance, data sovereignty, resilience and availability makes CDC a sensible choice for our customers who cannot – and will not – compromise on data security. Given the ever-evolving security threat environment, the organisation's unique ability to deliver this service ultimately comes down to one element - trust.

CDC's offering is grounded on being a trusted company by customers. Achieving and maintaining this trust relies on a robust approach across stakeholder engagement, governance, ethics and conduct, human rights, risk management, security, compliance, disclosures and a range of other factors.

CDC's approach includes four areas of business:

- Governance
- Strategy
- Risk management
- Metrics and targets

CDC's Board of Directors oversees the ESG Strategy and the Audit and Risk Committee is accountable for assurance and disclosures. The Chief Strategy Officer provides leadership to the Head of ESG, who works closely with the ESG working group to ensure that sustainability is integrated throughout the business and programs and initiatives work towards meeting CDC's ESG targets.

CDC incorporates climate risk mitigation into site selection, design and operation of our data centres. Sites undergo detailed due diligence processes, intentionally selecting sites that seek to avoid flood and bushfire risk.

Data centres are designed to handle extremes in weather, including high precipitation, drought and high temperatures. Resilience design features include double skinned roof, large gutters, outflows and rainwater tanks, impermeable facades and closed-loop chilled water system. The ability to withstand increased temperatures is designed into CDC's infrastructure and accommodated across equipment lifecycle periods.

CDC's operational risk management systems consider climate-related physical and transition risks.

In addition, CDC takes a holistic view of risk management that includes security risk considerations associated with physical and climate risks. CDC's data centres are meticulously designed for physical security and have achieved international standards and government security accreditations.

Our certifications across Australia and New Zealand

CDC maintains compliance with several governance and risk management certifications in addition to its security certifications. These include ISO 9001 Quality Management Systems, ISO 14001 Environmental Management, ISO45001

Occupational Health and Safety Management.

CDC demonstrates we are prepared for the future by continuing to invest and build for what lies ahead. Whether it is enabling AI, quantum, high-performance or supercomputing infrastructure, CDC's repeated investments represent the 'futureproofing' of the business and enables us to face the security challenges of tomorrow.



ISO 9001 is a globally recognised standard for quality management, demonstrating excellence in performance improvement, meeting customer expectations and quality management.



ISO 14001 is a globally recognised standard for environmental management systems. Certification demonstrates proactive measures to minimise environmental footprint, complying with legal requirements and achieve environmental objectives.



ISO/IEC 27001 is the world's best known standard for information security management systems (ISMS). Certification demonstrates effective systems and best practice processes are in place to manage information security risks to the business and its customers.



ISO 45001 is an international standard demonstrates our commitment to safety including leadership commitment, worker participation, hazard identification and risk assessment, legal and regulatory compliance, emergency planning, incident investigations and continual improvement.



Certification Pending 2025



Certification Pending 2025



Certification Pending 2025



CDC is subject to annual:

- SOC 1 Type 2
- SOC 2 Type 2 reports.

When commissioning of new data centres falls outside of the SOC reporting cadence, the new data centres are subject to initial:

- SOC 1 Type 1
- SOC 2 Type 1 reports.



CDC does not directly manage or access customer information, nor payment information. Notwithstanding this, CDC are PCI-DSS certified, demonstrating our risk management and security manage compliance with the standard.



CDC is certified at commissioning under the ANSI TIA-942 certification program at 'Rated-4: Fault Tolerant Site Infrastructure' demonstrating the highest standards in site selection, infrastructure, architectural, electrical, mechanical, safety and security.



CDC New Zealand data centres have achieved the Toitū net carbonzero and enviromark diamond. Demonstrating excellence in carbon footprint and emissions management.



CDC maintains 'Certified Strategic Facilities' status under the Australian Department of Home Affairs Hosting Certification Framework.



CDC is a member of the Australian Defence Industry Security Program (DISP) with data centres accredited by the Defence Security and Vetting Service (DSandVS) to Zone 4.



CDC Australian data centres are constructed and certified under the Security Construction Equipment Committee's (SCEC) consultant scheme to the physical and technical requirements for Zone 4 in accordance with the ASIO Technical Design Note 1-15.



CDC is a New Zealand Defence Industry Security Programme member and is accredited to contract to the New Zealand Defence Force.



CDC New Zealand data centres are constructed and certified to Zone 4 physical and technical security requirements in accordance with the NZSIS Technical Note.



Certification Pending 2025

FY24 performance

Trusted company

Trust

1. Australia and New Zealand's most trusted data centres.

Data security

2. An industry leading integrated security posture.

Resilience and innovation

3. Innovate for longevity in a changing climate and world.

Targets

- Be recommended as a sustainable leader in data centres as demonstrated by NPS survey results.
- Maintain completion of governance and ethical framework training by employees.
- Maintain governance and risk management certifications.
- Meet and exceed legislated security requirements for both cyber and protective security.
- Develop a framework for climate-related financial disclosures. Drive industry innovation to embrace new technology.

How we seek to achieve our targets

- CDC can maintain its position as a highly trusted data centre through its capabilities in providing reliable and secure service to clients. It regularly seeks to improve its service.
- Systems and infrastructure design in CDC exceed the legislated security requirements for critical infrastructure entities.
- CDC remains ambitious in its goals to solve problems, develop leaders and ability innovate.

Progress

CDC's achievements for the financial year ending in 2024 include maintaining the governance, risk management and security certifications previously listed in this section, improving systems and procedures for trust, governance, security and resilience.

It increased sustainability engagement with stakeholders, strengthened its supply chain security program and expanded its approach to support new technologies.

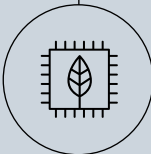
CDC's customers gave feedback via a Qualitrics Net Promoter Score (NPS) survey in September and October 2023, resulting in a NPS score of >82, with 93% of the respondents saying that sustainability is a priority. Employees completed governance and ethical training and preparation for the climate related financial disclosures framework commenced.

CDC supported CSIRO to install their high-performance supercomputer, Virga in its data centre, considered by CSIRO as the first deployment of its kind in Australia.

Related UN SDGs to Vision statements



Case study 5.



Trusted to shape the future of technology sustainably

Context

The current AI revolution will test the environmental practices of data centre providers. AI is power hungry - the IT equipment powering it requires more energy to run and more energy to cool down, as the complex algorithms inherent to AI equations requires substantially more computing power than standard search engine queries.

CSIRO has reported that 68% of businesses in Australia implemented AI-related technology in some capacity during the last 12 months. As more and more organisations start to incorporate future technologies across their processes and products, their computing power needs will increase and so too will their energy usage.

Approach

CDC's facilities are designed to meet the cooling and architecture demands of AI technology whilst still aligning to our sustainability targets. Our core design principles established in 2007 can handle the cooling requirements of AI without large-scale changes. This is a key distinction from some other data centre operators, who will generate additional embodied carbon emissions by retrofitting their facilities to be AI capable.

This is in large part due to CDC's closed-loop system that easily allows for liquid cooling of IT equipment, something that is required on a significant scale when powering large AI deployments.

This AI-forward approach to design and water use efficiency means our customers can trust that scaling up their use of AI with CDC can occur in alignment with sustainability goals on water efficiency.

Outcome

CSIRO has chosen CDC as the home for their high-performance supercomputer, Virga. This system is built on state-of-the-art Dell PowerEdge XE9640 servers and is the first deployment of its kind in Australia, designed to optimise AI workflows while maintaining power efficiency through direct liquid cooling.

CDC's AI-ready position is indicative of our preparedness for handling new and emerging technologies, solidifying ourselves as a company that is trusted to be well-equipped for the tech challenges of tomorrow.

"CSIRO introduced the first general purpose GPU cluster back in 2009. Since then we have worked with CDC to plan for where we saw this technology heading for the coming decade, and the sort of data hall we'd need to run it. Virga is our fourth generation GPU cluster, and it is already delivering benefits to our science, and will continue to for many years."

- Angus Macoustra, Chief Technology Officer, CSIRO

Case study 6.



Keeping our customers secure

Context

Data centres store valuable information at their facilities, hosting workloads relating to national defence, banking activity, health records and other sensitive areas. This can attract the attention of cyber criminals and other malicious operators.

The escalating global threat environment, marked by a rise in sophisticated cyber-attacks targeting governments and critical infrastructure, underscores the urgent need for reliable and secure data centres to protect the confidentiality, integrity and availability of customer information.

Whilst acknowledging the reality that it is not possible to guarantee against a cyber incident, one of CDC's most valuable strengths is developing and implementing security measures to provide customers with confidence that their sensitive information is safe.

Approach

CDC's data centres are meticulously engineered with multiple levels of redundancy to offer reliable service for our customers.

This confidence in our services is supported by a range of security measures, including:

- Layered security controls, creating defence in depth in our physical, technical and network security controls
- Principle of least privilege (PoLP) where personnel are afforded access to both premises and systems based on the exact requirements for their role, no more and no less.

- Promoting effective security culture and leveraging the capabilities of all personnel to contribute towards high-security outcomes.
- Enhanced resilience, allowing CDC to effectively respond to incidents and changes in the operating environment.

Outcome

CDC's facilities have achieved the highest security accreditations under the Australian and New Zealand governments' hosting frameworks and security requirements²⁹.

We have achieved SOC2 Type 2 certification, PCI DSS certification and ISO27001 certification. Additionally, we have been granted membership of the Defence Industry Security Program in both Australia and New Zealand, reflecting our trust within these government networks.

CDC's security controls are subject to a rigorous assurance program, leveraging a network of external experts in physical, cyber and technical security ensuring CDC's security controls remain appropriate to deter, delay, detect and respond to contemporary security threats.

All CDC's Australian facilities have been assessed and certified as a Certified Strategic Facility under the Australian Department of Home Affairs' Hosting Certification Framework. Similar certifications are currently under assessment at our New Zealand sites under the newly created Public Cloud Data Centre Certification Program.

Our robust security arrangements underscore our commitment to meeting our customers' mission-critical needs.

Note: All references on this page are detailed in the [Notes section](#) at the end of the report.

Metrics and performance

For further details on metrics, definitions, scope boundaries and calculation methodologies, see Appendix 1.

Category	Unit	FY24
Water		
Reportable Water Usage Effectiveness (WUE)	WUE	0.01
Energy		
Reportable Power Usage Effectiveness (PUE)	PUE	1.38
Carbon		
Total Scope 1 emissions	tCO2e	929
Total carbon offsets acquired under Toitū net carbonzero	tCO2e	217
Total Scope 2 emissions (location-based)	tCO2e	78601
Total Scope 2 emissions (market-based)	tCO2e	28919
Waste		
Operational waste to landfill	tonnes	25
Diversion from landfill for NSW Campus	%	91
Employee information		
Headcount permanent	FTE	280
Headcount fixed term contract	FTE	4
Employees by gender		
Female	FTE	74
Male	FTE	210
Return rate for employees after parental leave		
Females	FTE	100%
Males	FTE	100%
New jobs created	#	80
Training		
Employees who received professional training or development	%	100
Health, safety and wellbeing		
Total number of fatalities	#	0
Community Impact		
Number of causes or organisations supported	#	14
Cyber security and Data protection		
Completion of Security Awareness Training	%	100
Security breaches	#	0
Security certifications		
ISO/IEC 27001		
SOC 1 Type 1 and 2 reports, and SOC 2 Type 1 and 2 reports.		
PCI-DSS		
ANSI TIA-942 certification 'Rated-4': Fault Tolerant Site Infrastructure.		
'Certified Strategic Facilities' status under the Australian Department of Home Affairs Hosting Certification Framework.		
Australian Defence Industry Security Program (DISP) accredited by the Defence Security and Vetting Service (DSandVS) to Zone 4.		
Security Construction Equipment Committee's (SCEC) consultant scheme to the physical and technical requirements for Zone 4 in accordance with the ASIO Technical Design Note 1-15.		
CDC is a New Zealand Defence Industry Security Programme member and is accredited to contract to the New Zealand Defence Force.		
Certified to Zone 4 physical and technical security requirements in accordance with the New Zealand Security Intelligence Service (NZSIS) Technical Note.		
Customers		
Customer sustainability priority	%	93
Customer Net Promoter Score	NPS	>82
Ethics and integrity		
Confirmed incidents of corruption	#	0
Infrastructure ESG certifications		
Toitū enviromark diamond		
Toitū net carbonzero		

Appendices

Appendix 1 - Metrics and performance details

PUE and WUE

Power Usage Effectiveness (PUE) and Water Usage Effectiveness (WUE) are calculated as per the defined standards outlined in ISO/IEC 30134-2:2016 and ISO/IEC 30134-9:2022 across all Australian and New Zealand operational sites with 50%+ utilisation, representing the ratio of total data centre facility energy consumption (kWh) and total water consumption (L), to the IT equipment energy consumption (kWh). As third-party comparable data centres may use or evaporate water for the purpose of infrastructure cooling, PUE and WUE should always be considered together to determine the overall operational efficiency of the facility.

Carbon

For NGER reporting of greenhouse gas emissions, CDC reports Scope 1 and 2 greenhouse gas emissions in accordance with the National Greenhouse and Energy Reporting (NGER) scheme for its Australian data centres.

According to the facility and operational control definitions within the National Greenhouse and Energy Reporting Act (legislation.gov.au), CDC reports its customer ICT equipment electricity consumption in NGER Scope 2. For investor reporting of greenhouse gas emissions (this report), CDC reports Scope 1 and 2 emissions in accordance with the Greenhouse Gas Protocol Corporate Standard.

Chapter 3 of Greenhouse Gas Protocol Corporate Standard allows equity, financial and operational control and describes a nuanced (consolidation) approach to data centres, differentiating between customer IT electricity and overhead electricity to run the data centre infrastructure.

Whilst CDC maintains operational and financial control over its data centre facilities, it does not have operational or financial control of customer ICT equipment. Specifically, CDC has determined it does not have the authority to introduce and implement operating policies relevant to the customer ICT equipment.

Therefore, in alignment with Greenhouse Gas Protocol customer ICT equipment electricity consumption is classified as Scope 3 category 13 - downstream leased assets.

Methodologies used in this reporting period may be amended in future to continually improve accuracy, transparency and avoid double counting.

Total Scope 1 emissions

Scope 1 liquid fuel emissions are calculated in accordance with the NGER Measurement Determination in Australia and in accordance with the New Zealand Ministry for the Environment “Measuring Emissions: a guide for organisations (2023)” in New Zealand. Scope 1 refrigerant emissions are calculated in accordance with Greenhouse Gas Protocol Corporate Standard for Australia and New Zealand. For completeness, Scope 1 emission sources include:

- Diesel fleet cars
- Petrol fleet cars
- Forklifts
- On site Diesel Generators
- Refrigerants used in cooling equipment

CDC does not have medium voltage equipment containing SF6 at any of its data centres.

Total carbon offsets acquired for Toitū net carbonzero

Carbon credit offsets (217 tCO2e) purchased and administered through “Toitū net carbonzero” certification for New Zealand operations.

Total Scope 2 emissions (location-based)

Location-based emissions from grid electricity consumption, have been calculated with no consideration for LGCs or RECs. Calculation methodologies and carbon emission factors (CEF's) have been used in accordance with Australian and New Zealand government requirements (Australia's National Greenhouse and Energy Reporting Scheme and New Zealand Ministry for the Environment "Measuring Emissions: A guide for organisations (2023)").

Total scope 2 emissions (market-based)

Market-based emissions from grid electricity consumption, have been calculated by considering mandatory and voluntary LGCs and RECs, including RECs reported by customers or jurisdictions (for example New Zealand and Australia's Capital Territory), with the residual multiplied by the Residual Mix Factor (RMF). Surrender of LGCs occurs once per year in February (not aligning to CDC's financial year), so a component of FY2024 LGCs may be surrendered in 2025.

Diversion from landfill for NSW campus

Confirmed by True Waste certification for 12-month period ending April 24.

New jobs created

The creation of new roles that did not exist before, representing growth of employment opportunities within CDC. This figure specifically excludes recruitment for back-filling of existing roles.

Completion of security awareness training

Employees as of 31 March of the reporting year who have received and acknowledged annual security awareness training within the required deadlines.

Security breaches

Breaches that affected the confidentiality, integrity and availability of customers data.

Security certifications

HCF 'Certified Strategic Facility' certification status achieved at all Australian Data Centres.

CDC has achieved SOC1 Type 1 and 2 and SOC2 Type 1 and 2 re-certification and aim to achieve PCI DSS re-certification and ISO27001:2022 re-certification by the end of 2024.

Customer Net Promoter Score

Net Promoter Score (NPS) is a common metric used in customer experience programs. An NPS score measures customer loyalty by assessing their likelihood of recommending a given business.

NPS score is measured with a single-question survey and reported with a number ranging from -100 to +100, where a higher score is desirable. The NPS score is automatically calculated by Qualtrics based on customers responses to the single-question survey ("How likely are you to recommend CDC to a friend or colleague?").

Appendix 2 Statement details

2A – 100% renewable electricity offering

The term "renewable electricity" when used in this report means that CDC offers customers in Australia to match 100% of the volume of electricity associated with customer equipment and data centre usage by purchasing and retiring an equivalent volume of LGCs sourced from renewable energy projects to bring the carbon factor of the consumed electricity to zero. The LGCs are generated by 100% renewable electricity sources. CDC's purchasing of 100% renewable electricity is the key action aimed at meeting our (defined) net zero carbon by 2030 target by addressing the most material component of Scope 1 and 2 emissions. CDC wrote to its Australian customers offering them the option from 1 January 2024, of using 100% renewable electricity across its Australian campuses by surrendering an equivalent amount of Large Scale Generation Certificates (LGCs).

Where CDC is responsible for the purchase and surrender of voluntary LGCs on behalf of customers in Australia, it does so as a pass-through cost to the customer, without charging fees for this service. Customers may advise CDC if they surrender their own LGCs or Renewable Energy Certificates (RECs).

2B – CDC purchases sustainable, certified low-carbon content products

"CDC specifies the use of sustainable, certified, low-carbon content products in its data centres."

These certifications and low-carbon attributes are backed up by Environmental Product Declarations or product data sheets and include features such as:

- Carbon neutral products
- Reduced carbon products
- Recycled content used in manufacture
- GreenTag certification Forest Stewardship Council (FSC) certification
- Declare certification
- Red List Free certification

2C – Zero waste to landfill by 2030 target

The zero waste to landfill by 2030 target applies to operational waste and is defined by the achievement of zero waste certification, such as True Waste at CDC's campuses. Certification requires a minimum of 90% recycling rate to be achieved, along with processes to encourage a circular economy.

2D – Case study in water efficiency

"CDC's closed-loop cooling systems are designed to save up to 5 billion litres of water per annum. This is equivalent to about 2,000 Olympic sized swimming pools of water savings, per year."

This statement is based on 2021 study of data centre water consumption and average Olympic swimming pool volume of 2.5 million litres, noting that data centre water consumption may differ depending on efficiencies of scale and operating temperatures.

2E – Diversity and inclusion initiatives

The following initiatives contribute to create a more inclusive and equitable workplace, supporting the achievement of our gender diversity goals.

Recruitment Practices

- Using neutral language and prominently featuring our commitment to diversity in employee benefit statements and job advertisements. This approach seeks to attract a diverse pool of candidates.
- Seeking to engage with underrepresented groups by partnering with organisations and networks, for example women's professional networks.
- Providing Bias/Unconscious Bias Training for hiring managers and training on inclusive interviewing techniques, such as focusing on objective skills and behaviours rather than subjective judgments.
- Regularly revisiting and refining recruitment practices, checking for inclusivity and effectiveness to facilitate continuous improvement.

Apprenticeship and Graduate Programs

- CDC is developing an apprenticeship/graduate/internship program with a vision to cultivate talent from diverse backgrounds and provide ongoing opportunities for career advancement.

Collect and Analyse Data

- Regularly monitoring recruitment metrics to analyse the gender diversity of the applicant pool and recent hires to identify trends, gaps and areas for improvement.
- Seeking feedback from candidates, (hired – formally via the onboarding process and not hired – informally via conversations with recruiters) on their experience throughout the recruitment process to identify perceived barriers or biases.
- Conducting regular exit interviews to gain valuable insights to refine our practices.



Independent Limited Assurance Report to the Directors of CDC Data Centres Pty Ltd

Conclusion

Based on the evidence we obtained from the procedures performed, we are not aware of any material misstatements in the Selected Sustainability Metrics, which has been prepared by CDC Data Centres Pty Ltd in accordance with the criteria for the year ended 31 March 2024.

Information Subject to Assurance

The Selected Sustainability Metrics subject to this limited assurance engagement for year ended 31 March 2024, for CDC Data Centres Pty Ltd (ABN 59 125 710 394) (“CDC Data Centres”) are shown in the table below and represent the Information Subject to Assurance. The Selected Sustainability Metrics are presented in CDC Data Centres’ 2024 Sustainability Report (2024 SR).

The Selected Sustainability Metrics comprises the following:

Selected Sustainability Metrics	Units	FY24
Scope 1 GHG emissions	tonnes CO ₂ e	929
Scope 2 GHG emissions (location based)	tonnes CO ₂ e	78,601
Scope 2 GHG emissions (market based)	tonnes CO ₂ e	28,919

Criteria Used as the Basis of Reporting

The criteria used to calculate the Selected Sustainability Metrics includes the World Resources Institute / World Business Council for Sustainable Development Greenhouse Gas Protocol (GHG Protocol) as outlined in Appendix A: Methodology of the 2024 SR (together, the Criteria).

Basis for Conclusion

We conducted our work in accordance with Australian Standard on Assurance Engagements ASAE 3000 (Standard). In accordance with the Standard we have:

- used our professional judgement to plan and perform the engagement to obtain limited assurance that we are not aware of any material misstatements in the Selected Sustainability Metrics, whether due to fraud or error;
- considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on their effectiveness; and

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- ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

Summary of Procedures Performed

Our limited assurance conclusion is based on the evidence obtained from performing the following procedures:

- Enquiries with relevant CDC Data Centres personnel to understand the internal controls, governance structure and reporting process of the Selected Sustainability Metrics;
- Reviews of relevant documentation including basis of preparation and supporting process documents;
- Sample testing the Selected Sustainability Metrics to underlying evidence and recalculating mathematical accuracy of the calculations on a sample basis;
- Undertake analytical procedures over the Selected Sustainability Metrics;
- Site visits to selected CDC Data Centres locations
- Perform walkthroughs of the Selected Sustainability Metrics to source documentation;
- Evaluate the appropriateness of the criteria with respect to the Selected Sustainability Metrics; and
- Reviewed the 2024 Sustainability Report (2024 SR) in its entirety to ensure it is consistent with our overall knowledge of assurance engagement.

How the Standard Defines Limited Assurance and Material Misstatement

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Misstatements, including omissions, are considered material if, individually or in the aggregate, they could reasonably be expected to influence relevant decisions of the Directors of CDC Data Centres.

Use of this Assurance Report

This report has been prepared for the Directors of CDC Data Centres for the purpose of providing an assurance conclusion on the Selected Sustainability Metrics and may not be suitable for another purpose. We disclaim any assumption of responsibility for any reliance on this report, to any person other than the Directors of CDC Data Centres, or for any other purpose than that for which it was prepared.



Management’s responsibility

Management are responsible for:

- determining that the criteria is appropriate to meet their needs;
- preparing and presenting the Selected Sustainability Metrics to assurance in accordance with the criteria; and
- establishing internal controls that enable the preparation and presentation of the Selected Sustainability Metrics that is free from material misstatement, whether due to fraud or error.

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Our Responsibility

Our responsibility is to perform a limited assurance engagement in relation to the Selected Sustainability Metrics for the year ended 31 March 2024, and to issue an assurance report that includes our conclusion.

Our Independence and Quality Management

We have complied with our independence and other relevant ethical requirements of the *Code of Ethics for Professional Accountants (including Independence Standards)* issued by the Australian Professional and Ethical Standards Board, and complied with the applicable requirements of Australian Standard on Quality Management 1 to design, implement and operate a system of quality management

Julia Bilyanska

Julia Bilyanska

Partner

Melbourne

5 December 2024

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Notes

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1. CDC offers customers in Australia to match 100% of the volume of electricity associated with customer equipment and data centre usage by purchasing and retiring an equivalent volume of LGCs sourced from renewable energy projects. For further information, see [Appendix 2A](#).

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2. Net zero carbon by 2030 for Scope 1, 2 and defined 3 (customer electricity, waste and business travel) is a market-based target which includes all Greenhouse Gases and is intended as the measured performance state at 2030. This market-based target accounts for Renewable Energy Certificates. From 1 Jan 2024 CDC is providing electricity that is 100% backed by renewable sources, which accounts for Scope 2 and customer electricity Scope 3. By 2030, CDC intends to achieve net zero carbon for the remaining Scope 1 and defined Scope 3 emissions by purchasing carbon credits.
3. The Indigenous Participation Plan is an internal framework to facilitate employment opportunities for Aboriginal and Torres Strait Islander Peoples.
4. [Toitū enviromark diamond certification](#) | [Toitū Envirocare](#). Toitū enviromark diamond certified means that the organisation has a robust Environmental Management System in place to prevent and reduce environmental impacts, which has been assessed and verified by the Toitū enviromark programme against a standard higher than the requirements of ISO 14001.

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5. CDC offers customers in Australia to match 100% of the volume of electricity associated with customer equipment and data centre usage by purchasing and retiring an equivalent volume of LGCs sourced from renewable energy projects. For further information, see [Appendix 2A](#).
6. [Carbon Management](#) | [Toitū Envirocare](#). Toitū net carbonzero certified means that emissions have been measured to ISO 14064-1 and Toitū requirements, managed and reduced against Toitū requirements and independent auditing and any unavoidable emissions offset following Toitū requirements.
7. [Toitū enviromark diamond certification](#) | [Toitū Envirocare](#). Toitū enviromark diamond certified means that the organisation has a robust Environmental Management System in place to prevent and reduce environmental impacts, which has been assessed and verified by the Toitū enviromark programme against a standard higher than the requirements of ISO 14001.
8. For further information, see [Appendix 1 – Metrics and performance details: PUE and WUE](#).
9. CDC’s Eastern Creek Campus in New South Wales is a TRUE (Total Resource Use and Efficiency) zero waste certified facility, which achieved at least a 90% waste diversion from landfill for the 12 month period ending April 2024.
10. For further information, see [Appendix 1 – Metrics and performance details: Customer Net Promoter Score](#).

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11. For further information on the security certifications, see [Metrics and performance table](#) and [Appendix 1](#).

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12. For further information, see [Appendix 1 – Metrics and performance details: Carbon](#).

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13. For the KPMG limited Assurance Report, see [Appendix 2F](#).

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14. CDC offers customers in Australia to match 100% of the volume of electricity associated with customer equipment and data centre usage by purchasing and retiring an equivalent volume of LGCs sourced from renewable energy projects. For further information, see [Appendix 2A](#).
15. We compare CDCs WUE measurement to published WUEs for comparable data centres to establish CDC as one of the most water efficient data centre operators in Australia and New Zealand.
16. Net zero carbon by 2030 for Scope 1, 2 and defined 3 (customer electricity, waste and business travel) is a market-based target which includes all Greenhouse Gases and is intended as the measured performance state at 2030. This market-based target accounts for Renewable Energy Certificates. From 1 Jan 2024 CDC is providing electricity that is 100% backed by renewable sources, which accounts for Scope 2 and customer electricity Scope 3. By 2030, CDC intends to achieve net zero carbon emissions for the remaining Scope 1 and defined Scope 3 emissions by purchasing carbon credits.
17. For further information, see [Appendix 2A](#).
18. For further information, see [Appendix 2C](#).
19. For further information, see [Appendix 2A](#).
20. For further information, see [Appendix 2D](#).

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21. For further information, see [Appendix 2A](#).
22. For further information, see [Appendix 2A](#).
23. For further information, see [Appendix 2A](#).

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24. For further information, see [Appendix 2D](#).

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25. As identified by the New Zealand Infrastructure Commission and the New Zealand Government, as part of the [New Zealand Infrastructure Strategy](#).

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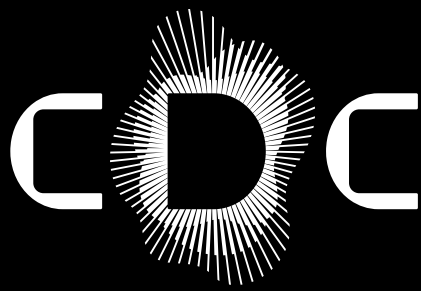
26. SO 45001:2018 Occupational health and safety management systems.
27. For further information, see [Appendix 2E](#).

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28. The secondment occurred during the reporting period.

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29. See [Metrics and performance table](#) for the complete list of security accreditations achieved by CDC.



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