

Australian Government
Carbon Neutral Program
Public Disclosure Summary



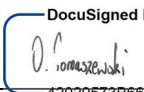
THIS DOCUMENT WILL BE MADE PUBLICLY AVAILABLE

NAME OF CERTIFIED ENTITY: NEXTDC Limited

REPORTING PERIOD: 1 July 2017 to 30 June 2018 (as baseline year)

Declaration

To the best of my knowledge, the information provided in this Public Disclosure Summary is true and correct and meets the requirements of the National Carbon Offset Standard Carbon Neutral Program.

Signature	DocuSigned by:  42029573B66344C...	Date	6/6/2019
Name of Signatory Oskar Tomaszewski			
Position of Signatory Chief Financial Officer			

Carbon neutral certification category	Products & Services
Date of most recent external verification/audit	21 May 2019
Auditor	Robert Edwards
Auditor assurance statement link	<i>Assurance Audit Report (NEXTDC).pdf</i>



Australian Government
Department of the Environment and Energy

1. Carbon neutral information

1A. Introduction

NEXTDC Limited (ASX: NXT) is pleased to be offering a Carbon Neutral colocation product to allow our customers to voluntarily offset their data centre infrastructure carbon footprint.

NEXTDC is Australia's leading independent data centre operator with nine facilities across five capital cities including Brisbane, Canberra, Melbourne, Perth and Sydney with its headquarters in Brisbane. We deliver Data Centre-as-a-Service solutions to our customers, including colocation and connectivity solutions along with professional services such as Remote Hands technical assistance, business continuity and intelligent infrastructure management software.

NEXTDC is Australia's most trusted data centre solutions provider, recognised globally for the design, construction and operation of a network of Uptime Institute certified Tier III and Tier IV facilities coupled with Gold certification for Operational Sustainability. Providing high-density compute requirements and managing the power demand on behalf of our customers provides us with a considerable opportunity to make a difference for the greater good of our environment.

NEXTDC has a strong focus on energy efficiency and sustainability through renewable energy sources and delivering world-class operational efficiency. Our data centres have been engineered to deliver exceptional energy efficiency, lowering the carbon footprint for our business as well as our customers. NEXTDC owns and operates its own solar array on the roof of our M1 data centre and was a Principal Partner to the Melbourne Renewable Energy Project since its inception in 2014. In FY18, financial close on this project was achieved, enabling the construction of the 80MW Crowlands Wind Farm in Victoria.

As an organisation, we are charting a course to become 100 percent renewable energy driven in the pursuit of an aggressive sustainability target that will deliver unparalleled levels of energy efficiency. Many of our customers share the same values that we are passionate about, therefore we have launched a **carbon neutral certified colocation product** to not only help our customers run their data centre equipment more efficiently and minimise their carbon emissions, but also enable them to offset their residual data centre carbon footprint.

NEXTDC as a company has been a certified carbon neutral organisation under the Australian Government's Carbon Neutral Initiative since 1 July 2018 in line with *National Carbon Offset Standard for Organisations*. NEXTDC's organisational carbon neutral certification includes material and relevant emissions sources from our Australian business operations, including emissions stemming from electricity and fuel usage, waste generation, business travel, and staff commuting. We have ensured that the emission boundary for service emissions to our customers does not overlap with emission sources associated with NEXTDC's organisational operations. More information about our corporate carbon neutrality can be found in [NEXTDC's Public Disclosure Statement](#).

Service

NEXTDC offers connectivity and colocation solutions to our customers via an as-a-Service model, with power, security and connectivity provided to clients. Standard rack rental includes a power allocation provided in kW. Racks are installed in the data halls and connected to redundant power sources ready for the clients to install and operate their equipment with 100% uptime guaranteed. The data centres and the environment around the servers are under the operational control of NEXTDC, yet the demand for data services is driven by the customers usage. Activity data for electricity can be readily attributed to either corporate operations or specific customers, as racks of servers are allocated to specific customers.

Life Cycle Analysis

To accurately calculate the emissions attributable to customer data centre storage, NEXTDC has undertaken a life cycle assessment (LCA) of energy and resource usage associated with procuring, using, and disposing of a customer server within its operational environment. The emissions boundary for the carbon neutral service is cradle to grave, and includes an estimation of material and relevant emission sources from the following stages of the service lifecycle:

- Production and manufacture of the service equipment including all embodied emissions, emissions associated with material extraction and transport emissions involved in the production process
- Transport from server production facility to a warehouse or storage
- Transport from warehouse or storage to NEXTDC data centre facility
- Packaging waste removed from the newly purchased server equipment
- Emissions associated with the use of the server including electricity, water, diesel used in generators, and refrigerants used in cooling the server within the NEXTDC data centre
- Transport from NEXTDC data centre to a waste disposal facility at the end of its life
- Emissions from the disposal of the server in a landfill (assumed to all go to landfill despite the possibility of the components being recycled to follow a conservative approach).

Functional unit

All scope 1, 2 and 3 emissions with the lifecycle of a server within the NEXTDC operational environment have been estimated and unified to the functional unit of **t CO₂-e/kW of server/month**.

NEXTDC customers can choose to opt into the carbon neutral service program and thereby offset average emissions associated with every kilowatt of capacity are allocated in a NEXTDC data centre facility on a monthly basis.

NEXTDC customers purchase a set power allocation for their rack space (e.g. 3kW, 4kW, 5kW etc.) For transparency, NEXTDC bases the carbon offset on the allocated power consumption ensuring a constant cost base with no variations occurring between months

For example, a customer that has a 3kW rack, offsets 3kW of carbon output irrespective of how much power they are consuming. The emission factor per kW will be recalculated on actual consumption data and divided by the total electricity load at the end of each reporting period on an annual basis. The new factor will inform the offset calculations for the next reporting period.

Certification

This certification is for NEXTDC's data centre services to Australian customers under the *National Carbon Offset Standard for Products & Services* ("the Standard").

Based on an operational consolidation approach, the boundary includes services provided at all operational data centres, referred to as facilities B1, P1, M1, C1, and S1. Data centres that came online throughout the reporting period were considered for the timeframe they were in operation (Facility B2 and M2).

The reporting period for this inventory is 1 July 2018 to 30 June 2019 (FY19) which will serve as the baseline year to establish the emission factor per functional unit. Customers will be granted access to opt-in to the program from 1 July 2019.

This is the first inventory under the Standard and it has been independently assured to support the validity and transparency of the carbon neutral claim in line with provisions 2.2 and 2.7 of the Standard.

All potential sources of the six greenhouse gases referenced in the Kyoto Protocol were considered as required under the Standard. These are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O),

hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃) emissions. This inventory presents them as carbon dioxide equivalents (CO_{2-eq}) and classifies Scope 1, 2, and 3 emissions where applicable.

This GHG inventory has been prepared in accordance with the *Australian National Carbon Offsetting Standard (NCOS)* and the *WRI/WBCSD Greenhouse Gas Protocol Corporate Accounting and Reporting Standard* which it is based upon. It is furthermore aligned with the Carbon Neutral Initiative guidelines, as well as the Australian National Greenhouse and Energy Reporting Act 2007 and supporting legislation and documentation.

1B. Emission sources within certification boundary**Quantified sources**

The following emission sources have been included:

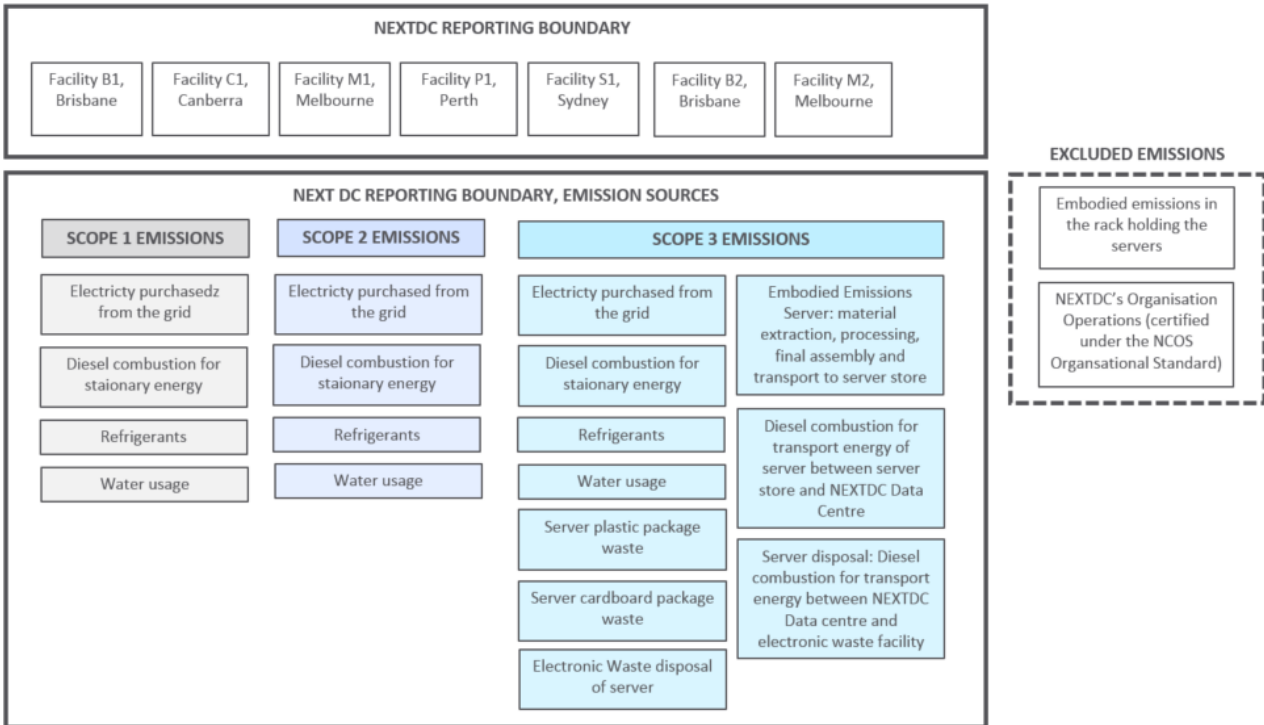
Scope	Source
Scope 1	Emissions from server usage (electricity, diesel, refrigerants, water)
Scope 2	Emissions from server usage (electricity, diesel, refrigerants, water)
Scope 3	Emissions from server usage (electricity, diesel, refrigerants, water)
Scope 2	Embodied emissions of a 15.5 kg rack server (including transport to store)
Scope 2	Transport 15.5 kg server from store to NEXTDC site in an 'average' diesel van
Scope 3	Cardboard package waste
Scope 3	Plastic package waste (Plastics: average plastics to landfill)
Scope 3	Transport 15.5 kg server from NEXTDC sites to electronic waste facility in an 'average' diesel van
Scope 3	Electronic waste (Electrical items, WEEE - small to landfill)

Excluded sources

The following items have been excluded from this inventory, as they are outside the defined boundary:

- Embodied emissions in the rack holding the servers as they are operational control of NEXTDC
- All emission sources associated with NEXTDC's organisational operations, as they are covered and offset within NEXTDC's organisation carbon neutral certification. For more information, visit NEXTDC's NCOS Organisational [Public Disclosure Statement](#)

1C. Diagram of the certification boundary



2. Emissions reduction measures

2A. Emissions reduction strategy

NEXTDC is dedicated to the continuous monitoring and improvement of the management of our data centres, we are committed to:

- Improving energy efficiency
- Minimising our impact on the environment and natural resources, and
- Meeting and exceeding the minimum environmental legislative requirements

NEXTDC have identified the following actions to reduce emissions:

- Doubling of free water-side cooling
- Upgrades to lighting with LEDs
- Technology upgrades including new chillers to increase capacity and energy efficiency.

NEXTDC customers and data centres will have increasing IT power requirements year-on-year. NEXTDC controls the non-IT power usage portion of the data centre environment. The performance of this is measured through the Power Usage Effectiveness (PUE) rating metric for each data centre.

NEXTDC operates in a highly efficient manner, as evidenced in our Uptime Institute certifications and NABERS rated facilities, S1 Sydney and M1 Melbourne which is rated as Australia's first and only NABERS 5-star data centre facility.

In FY18 NEXTDC's average PUE across all data centres was 1.34. This represents a decrease of 1.5% from the previous period and aligns with our corporate environmental objective, which is to achieve a target PUE rating of below 1.40 in every data centre.

2B. Emissions reduction actions

The following environmental objectives have been established for FY18:

1. Tune our mechanical and electrical plant (MEP) to maximise energy efficiency
2. Minimise CO2 emissions
3. Reduce NEXTDC's contribution to landfill.

1. Tune MEP to maximise energy efficiency (minimise PUE)

- Implementing the latest data centre recommendations from The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). For the newest data centres, the data hall supply air temperature will increase from 22 to 25 degrees Celsius and relative humidity across a much broader band, which allows NEXTDC to improve energy efficiency without reducing infrastructure reliability
- Optimum placement of the floor grills, increasing the temperature of the return air from the data halls thus improving the mechanical plant efficiency
- Air-side free cooling. Using external air sources coupled with the optimum placement of floor grills further improves energy efficiency
- Water-side free cooling. Depending on the ambient conditions, external water-cooling assistance is automatically activated at S1, M1 and P1 to improve mechanical plant efficiency
- Rack blanking panels. Racks are checked regularly, and blanking panels are placed in the empty spaces, significantly reducing the energy required to cool the data halls
- Energy monitoring systems. Through the collection of comprehensive performance data, targeted

adjustments in the MEP's operation are made which helps to improve our operational efficiency and enables us to achieve higher energy efficiency ratings.

2. Minimise emissions

- NEXTDC's generators run at maximum efficiency, helping to reduce their overall emissions
- NEXTDC monitors our carbon emissions for reporting and participates in the National Greenhouse and Energy Reporting Act ("NGER") initiative by the Clean Energy Regulator annually.

3. Reduce landfill contribution

- All cardboard from customers' installations are recycled
- Broken fluorescent light tubes are recycled
- All e-waste (end of life batteries, computers, phones, etc.) is recycled
- NEXTDC does not permit the disposal of e-waste in our bins
- NEXTDC utilise rotary UPS systems, significantly reducing the lead acid batteries found in conventional UPS systems.

NEXTDC will attempt to quantify emission reductions from our initiatives in future reporting periods.

3. Emissions summary

Table 2. Emissions summary – Functional unit for carbon neutral product			
Scope	Emission source	Emissions per functional unit	Functional unit
Scope 1	Emissions from server usage (electricity, diesel, refrigerants, water)	5.45	kg CO ₂ -e/Server kW/month
Scope 2	Emissions from server usage (electricity, diesel, refrigerants, water)	376.08	kg CO ₂ -e/Server kW/month
Scope 3	Emissions from server usage (electricity, diesel, refrigerants, water)	46.39	kg CO ₂ -e/Server kW/month
Scope 3	Embodied emissions of a 15.5 kg server (including transport to store)	25.53	kg CO ₂ -e/Server kW/month
Scope 3	Transport 15.5 kg server from store to NEXTDC site in an 'average' diesel van	16.88	kg CO ₂ -e/Server kW/month
Scope 3	Cardboard package waste	0.19	kg CO ₂ -e/Server kW/month
Scope 3	Plastic package waste (Plastics: average plastics to landfill)	0.00	kg CO ₂ -e/Server kW/month
Scope 3	Transport 15.5 kg server from NEXTDC sites to electronic waste facility in an 'average' diesel van	22.50	kg CO ₂ -e/Server kW/month
Scope 3	Electronic waste (Electrical items, WEEE - small to landfill)	0.02	kg CO ₂ -e/Server kW/month
Total emissions per functional unit		0.493	t CO₂-e/Server kW/month
Emissions from CN server product		NA	t CO ₂ -e

4. Carbon offsets

4A. Offsets summary

Table 3. Offsets Summary				
Date of cancellation	Offset project, unit type and registry	Serial numbers	Vintage	Quantity
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>NEXTDC is not certifying the audited baseline year and will purchase carbon offsets to achieve carbon neutrality for the first year of certification (FY19) after the end of the reporting period in line with the NCOS guidelines.</p> </div>				
Total offsets cancelled				
Net emissions after offsetting				
Total offsets banked for use future years: (if any)				

4B. Offsets purchasing and retirement strategy

NEXTDC will offset our emissions in arrears, on a quarterly or annual basis throughout the reporting period via the Qantas Future Planet Program. More information on projects can be found on the Qantas Future Planet website: <https://www.qantasfutureplanet.com.au/>.

This will be followed by an annual true-up process to ensure that the number of cancelled eligible offset units is at least equal to actual emissions.

NEXTDC has chosen to partner with the industry leading Qantas Future Planet. Qantas shares many values with NEXTDC, thus forming a natural fit between our organisations. The Qantas Future Planet program enables companies to purchase “credits” in carbon offset projects to offset their carbon output. Some of the examples include:

Reforestation – re-introducing carbon absorbing plant life to areas stripped by development.

Renewable energy – replacing polluting energy sources with more efficient or carbon neutral ones.

Habitat conservation – supporting communities and farmers to keep natural habitats intact instead of allowing deforestation to occur.

Fire abatement – using controlled burning techniques to reduce the chances of wildfires.

4C. Offset projects (co-benefits)

Please see section 4A. NEXTDC is not certifying the audited baseline year and will purchase carbon offsets to achieve carbon neutrality for the first year of certification (FY19) after the end of the reporting period in line with the NCOS guidelines.

5. Use of trade mark

Table 4. Trade mark register	
Where used	Logo type
Sustainability report	Certified Product and Service
Website	Certified Product and Service
Business cards and stationery	Certified Product and Service
Marketing materials (online and print)	Certified Product and Service
Email signature	Certified Product and Service
LinkedIn	Certified Product and Service
Newsletters	Certified Product and Service
Online Portal	Certified Product and Service
Financial Documents (e.g. invoices)	Certified Product and Service
ASX and related public market Documentation	Certified Product and Service

6. Have you done more?

Over the past year, NEXTDC achieved a National Australian Built Environment Rating System (NABERS) 5-star rating for energy efficiency at M1 Melbourne and a 4.5 star rating for S1, with ISO 14001 certification for Environmental Management at M1, S1 and C1. NEXTDC's second generation data centres including B2 Brisbane, M2 Melbourne and S2 Sydney are designed to target a level of energy efficiency not previously attained in the industry, as well as ISO 14001 certification.

NEXTDC owns and operates its own privately funded solar array on the roof of M1 Melbourne and has also been a principal partner involved in the Melbourne Renewable Energy Project since inception in 2014. In FY18, financial close on this project was achieved, enabling the construction of the 80MW Crowlands Wind Farm in Victoria. This momentous achievement is a first for a data centre operator in the Asia Pacific region.