DSTA
Defence Science & Technology Agency

DSTA ENVIRONMENTAL SUSTAINABILITY PUBLIC DISCLOSURE

FY2024

CONTENTS

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ABOUT DSTA

The Defence Science and Technology Agency (DSTA) is a technology organisation that drives innovation and delivers state-of-the-art capabilities to make the Singapore Armed Forces a formidable fighting force.

Harnessing and exploiting science and technology, our engineers and IT professionals leverage multidisciplinary expertise to equip our soldiers with advanced systems to defend Singapore. We also contribute our technological expertise, where relevant and in line with DSTA's mandate to support the needs of public service agencies.

Our work is integral to the defence and security of our nation. Our mission, vision and values guide what we do and drive us to deliver our best.

INTRODUCTION

The Singapore Green Plan 2030, launched in February 2021, is a whole-of-nation movement aimed at combating climate change and driving sustainable development. It prioritises areas such as improving energy efficiency, increasing renewable energy use, minimising waste and creating green urban spaces. Key goals adopted include achieving net-zero emissions by 2050 and strengthening our climate resilience.

To position the public sector at the forefront of Singapore's sustainable development efforts, the GreenGov.SG initiative was introduced in July 2021. Ambitious goals were set, including achieving net-zero emissions by around 2045. All statutory boards are also required to publish annual environmental sustainability disclosures starting from FY2023.

This report presents DSTA's environmental sustainability performance for FY2024. It underscores our continued commitment to environmental sustainability and details the initiatives and practices implemented to reduce our environmental footprint.

DSTA'S COMMITMENT TO ENVIRONMENTAL SUSTAINABILITY

BOARD AND SENIOR MANAGEMENT STATEMENT

The DSTA Board and Senior Management recognise that environmental sustainability is an essential component of responsible governance. Entrusted with advancing Singapore's defence and national security capabilities, we align with the principles of environmental stewardship and social responsibility in delivering our mission.

DSTA endeavours to adopt green practices in our business, and foster a corporate culture of environmental sustainability. We regularly review our business processes to align with GreenGov.SG and other applicable guidelines. We harness technology and innovation to reduce carbon footprint, resource consumption and waste generation, as part of our commitment to GreenGov.SG targets. We also actively engage staff to promote environmental sustainability practices, and empower passionate individuals as Green Ambassadors to champion ground-up initiatives.

DSTA strives to deliver environmentally sustainable outcomes for our partners. We leverage our engineering expertise to operationalise green technologies and environmentally sustainable features for the infrastructure and platforms that we deliver, without compromising defence capabilities.

GOVERNANCE STRUCTURE

DSTA's governance structure, as shown in **Diagram 1**, operates at three levels:

Board Level

Provides strategic directions by setting long-term sustainability goals and ensuring alignment with national and public sector goals. DSTA's Board comprises members with diverse and extensive experience from both the private and public sectors.

Management Level

Translates strategic directions into actionable policies and practices within DSTA and oversees the implementation of sustainability initiatives to ensure performance targets are achieved.

Workstream Level

Manages the execution of environmental sustainability policies and practices across DSTA's operations, from implementation and progress tracking to driving innovation to meet DSTA's and MINDEF's environmental objectives.

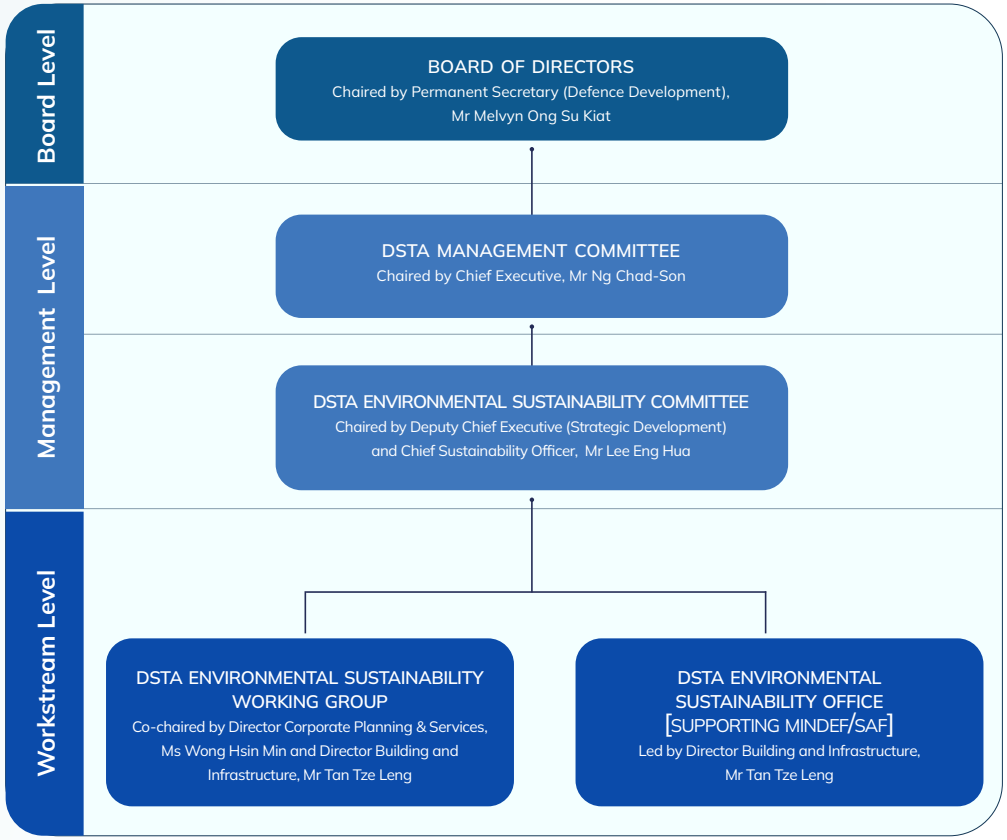

Diagram 1: DSTA's governance structure for environmental sustainability

Each level works to embed sustainability across the organisation, from strategy development to operational execution. The roles and responsibilities of the respective committees and entities are detailed in Table 1.

Committee / Entity	Terms of Reference
Board of Directors	• Provides strategic direction and considers environmental sustainability issues in the formulation of DSTA's strategies • Provides guidance to DSTA Management in identifying environmental sustainability risks and opportunities through DSTA Enterprise Risk Management (ERM) framework
DSTA Management Committee	• Provides leadership and direction on environmental sustainability initiatives concerning DSTA
DSTA Environmental Sustainability Committee	• Oversees the alignment of DSTA's business processes and practices with GreenGov.SG measures • Oversees the development of environmental sustainability initiatives and culture within DSTA • Oversees DSTA's contribution to MINDEF's environmental sustainability outcomes • Oversees DSTA's environmental sustainability performance and reporting, as well as environmental sustainability risks under DSTA's ERM framework
DSTA Environmental Sustainability Working Group	• Initiates and implements new environmental sustainability initiatives in DSTA • Drives DSTA environmental sustainability culture • Liaises with MINDEF on GreenGov.SG reporting matters and requirements • Works hand-in-hand with DSTA Green Ambassadors to drive ground-up initiatives and encourage staff adoption of environmental sustainability practices
DSTA Environmental Sustainability Office (Supporting MINDEF/SAF)	• Supports MINDEF/SAF in the planning and governance of environmental sustainability efforts • Oversees implementation of environmental sustainability efforts for building and infrastructure projects • Coordinates environmental sustainability efforts across other domains (e.g. Air, Land, Naval, InfoComm Infrastructure)

Table 1: Terms of reference for DSTA environmental sustainability governance bodies

DSTA'S KEY THRUSTS FOR ENVIRONMENTAL SUSTAINABILITY

At DSTA, our commitment to environmental sustainability is underpinned by three key thrusts that shape our approach and guide our initiatives.

Green Policies and Practices

We adopt and embed environmental sustainability policies and practices into our core business areas, to promote sustainable operations and responsible resource management.

Technology and Innovation

We harness technology to enhance efficiency and drive innovative solutions to minimise resource consumption.

Corporate Culture

We foster a culture of environmental sustainability by engaging our employees and stakeholders in our environmental initiatives and encouraging responsible practices across the organisation.

This section highlights the initiatives under each thrust that had been implemented or enhanced in FY2024.

Green Policies and Practices

DSTA recognises the need to incorporate sustainability into our policies and operations to ensure responsible stewardship of resources and long-term resilience. We continually refine our processes in line with GreenGov.SG and national guidelines. This enables us to meet evolving environmental sustainability standards and contribute to Singapore's broader sustainability goals.

Below are some key policies and practices that we have implemented to drive positive environmental sustainability outcomes.

PROCUREMENT

Under the GreenGov.SG initiative, Singapore's public sector has committed to incorporate environmental sustainability considerations in all government procurement by 2028. DSTA has integrated the measures outlined in the GreenGov.SG initiative into our procurement processes, including purchase of white printing paper certified under the enhanced Singapore Green Labelling Scheme, office Information and Communications Technology (ICT) equipment that meet the latest ENERGY STAR standards, and electrical appliances with high ratings under the Mandatory Energy Labelling Scheme.

In FY2024, in alignment with the public sector's green procurement guidelines, we set aside up to 5% of evaluation weightage for environmental sustainability considerations in large construction and ICT hardware tenders.

WASTE MANAGEMENT

Alongside change management practices, DSTA has implemented waste reduction initiatives centred on the principles of "Reduce" and "Recycle", as detailed in Table 2.

DSTA also conducted a waste audit in April 2025 to assess the composition and volume of waste generated within our office premises. We will be using the insights gained from the waste audit to develop targeted initiatives for waste reduction.

Principle	Initiatives
Reduce	**No provision of bottled water for meetings** Staff are encouraged to bring their own water bottles when attending meetings in DSTA. At selected meeting venues, guests are offered washable cups and glasses. **No disposables for dine-in** Single-use plastics, such as disposable containers and utensils, are no longer offered for dine-in services at our cafeteria. To encourage a 'Bring-Your-Own' culture, we have distributed lunchboxes, reusable cutlery and water bottles to staff. Reusable cups and cutlery have also been made available since January 2025 at the pantry space at DSTA Integrated Complex (DIC)[1] Level 2 for staff to consume their takeaway meals. **Go digital towards a 'paperless' office** We have utilised a meeting application to distribute meeting materials electronically. We have also implemented digital signing to reduce hardcopies, and introduced digital watermark on printouts to track excessive printing. With these measures, our printing paper demand has steadily declined since FY2019, further dropping by 18% in FY2024 compared to FY2023. **Reduction in food waste** An on-site food digestor has been deployed to manage and reduce our cafeteria food waste. In FY2024, there was a significant reduction in food waste through operational improvements. Our cafeteria operator implemented a centralised kitchen for food preparation and utilised consumption trend data to optimise portioning, hence reducing food wastage.
Recycle	**Recycling bins** Recycling bins have been placed at high-footfall walkways and office pantries, making it convenient for staff to recycle. Bins are clearly labelled to guide employees in segregating recyclable waste.

Table 2: DSTA's waste reduction initiatives

[1] The DIC is the main office building of DSTA, and comprises both Defence Technology Tower A (DTTA) and Annex Building.

Technology and Innovation

As a technology agency, DSTA takes pride in investing in and leveraging technology to achieve environmental sustainability outcomes in a cost-optimal manner.

Since its official opening in 2016, our main office building, DIC, has incorporated environmentally friendly features that reduce our environmental footprint while optimising operational costs (Diagram 2). Some of these measures have been progressively expanded over the years, enabling us to improve our performance continually. These measures have also positioned us within the top 25th percentile of the BCA building energy benchmark for office buildings in terms of Energy Utilisation Index (EUI).

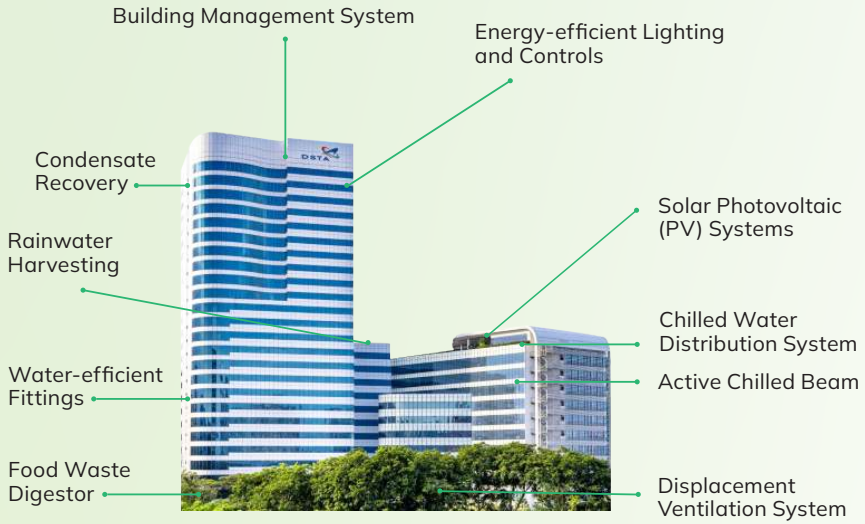

Diagram 2: Green features incorporated in DIC since 2016

In FY2024, the following new environmental sustainability features and infrastructural upgrades were implemented.

ENERGY CONSUMPTION

Upgrade of Building Management System

The Building Management System (BMS) at DIC enables centralised control and scheduling of lighting and air conditioning to ensure energy is used efficiently. To further enhance this capability, we commenced a two-phase BMS upgrade in FY2024 to better leverage data for demand-based optimisation.

In the first phase completed in FY2024, we upgraded the legacy BMS software and hardware to improve reliability and strengthen the management of critical systems such as chiller plants and lighting. This has enhanced our ability to respond to faults promptly, optimise electricity and water use, and make more informed operational decisions.

The second phase, which is targeted for delivery in FY2026, will introduce more digital capabilities in the BMS to collate, analyse and interpret near real-time systems data. This will enable dynamic optimisation of chiller plant operations based on load conditions, reduce downtime through prioritised fault rectification, and provide deeper insights into electricity and water consumption through occupancy sensors and equipment health monitoring.

Expansion of Solar Capacity

Since 2016, 30kWp of solar photovoltaic (PV) systems have been installed on the rooftop of our carpark building to harness clean energy. The electricity generated has helped to offset overall energy consumption and contributed to cost savings.

In FY2024, we identified additional roof space on the Annex building for the expansion of our onsite solar PV capacity by approximately 168kWp. Installation works are currently in progress and scheduled for completion by January 2026. Once operational, the expanded system is expected to generate around 210MWh of clean energy annually, equivalent to the yearly electricity consumption of about 46 four-room HDB flats.

Enhancement Measures to Balance Energy Efficiency and Occupancy Comfort

Since FY2023, DSTA has adjusted our air conditioning controls to maintain the temperature of our office premises at an average of 25˚C, in line with GreenGov.SG requirements. To ensure thermal comfort at this setting, airflow re-balancing and re-commissioning tests were conducted.

Further enhancements were implemented in FY2024, including the installation of blackout blinds and solar films capable of filtering up to 80% of external radiation. Together, these measures reduced heat gain, improved thermal comfort for workstations near windows, and minimised glare. Since their introduction, staff feedback related to thermal discomfort has declined by almost 50%. With the reduction in solar heat gain, we also expect a corresponding reduction in air conditioning electricity consumption.

WATER CONSERVATION

Expansion of Air Conditioning Condensate Recovery System

Building on the air conditioning condensate water recovery system previously installed in the Annex Building, DSTA expanded the system to the rest of DIC in June 2024 as part of our water recycling efforts. This expansion allows for the recovery of up to an additional 3,750m³ of air conditioning condensate water annually, which is reused in our air conditioning cooling towers.

The expanded air conditioning condensate water recovery system further enhances the efficient use of water resources and reduces the overall water consumption at DIC by approximately 6%.

Expansion of Rainwater Harvesting Capacity

DSTA also expanded our rainwater harvesting system in DIC in FY2024. The system's catchment area was expanded in June 2024 to include the carpark building roof. Previously used primarily for plant irrigation, this expansion allows the harvested rainwater to supplement air conditioning cooling tower water usage by approximately 5,800m³ annually, and reduces the overall water consumption at DIC by approximately 9%.

Corporate Culture

DSTA strives to foster a corporate culture of environmental sustainability through a combination of ground-up initiatives, organisation-led practices, and community-focused activities. These efforts encourage staff participation, build awareness, and embed sustainable habits into the workplace and beyond.

Organisation-led Corporate Initiatives

At the corporate level, DSTA introduced new initiatives in FY2024 to reduce energy consumption and encourage sustainable workplace practices. Office lights were switched off during lunch hours (12pm to 2pm) to conserve electricity during non-peak periods and drive sustainability awareness. Sustainability-themed screensavers were also used for work laptops to reinforce staff's awareness of green practices and to encourage energy-conscious behaviour. Together, these measures promote daily sustainable habits while contributing to energy savings across the organisation.

Ground-up Initiatives by Green Ambassadors

Launched in January 2023, the Green Ambassador Network brings together like-minded volunteers from across DSTA to champion sustainable practices and raise awareness of environmental issues. By FY2024, the network had grown to 27 members. The Green Ambassadors work closely with the Environmental Sustainability Working Group to share updates on new policies, promote sustainability culture and develop initiatives to enhance sustainability in the workplace.

In January 2025, the Green Ambassadors organised a series of bite-sized campaigns during a week-long staff appreciation event. Activities included a red packet recycling and repurposing drive to encourage reuse, a food waste recycling exercise to promote waste reduction habits, and an exhibition with a game booth to reinforce proper recycling practices. The event concluded with a tree-planting activity to symbolise DSTA's collective appreciation for the environment.

In March 2025, the Green Ambassadors also conceptualised a Sustainability Corner at DIC to serve as a visible and interactive landmark for raising awareness and driving staff participation in green practices. The Sustainability Corner was successfully set up in November 2025.

Corporate Social Responsibility

Beyond the workplace, DSTA supports collective action through green volunteering. In FY2024, individual DSTA entities organised five clean-ups at beaches, coastal areas, and parks across Singapore. To further reinforce a sustainability-focused culture, an organisation-wide beach clean-up was held in October 2025. These initiatives strengthen environmental awareness, foster teamwork, and reflect DSTA's commitment to protecting the natural environment.

DSTA'S ENVIRONMENTAL SUSTAINABILITY PERFORMANCE FOR FY2024

GREENHOUSE GAS EMISSIONS

Our Commitment
Peak emissions around FY2027

DSTA aims to peak Greenhouse Gas (GHG) emissions around FY2027. Our emissions are expected to grow and peak by FY2027 due to increasing IT requirements and our classified nature of work which requires our data centres to be on-premise. We will aim to taper down our emissions after FY2027 to contribute towards the public sector's net zero emissions target around FY2045.

Progress in FY2024
Diagram 3 below shows that our total GHG emissions have remained steady over the past three financial years. DSTA emitted 5,480 tonnes CO_2 equivalent in FY2024, 3% lower than in FY2023.

Our GHG emissions comprise mainly Scope 2 emissions from electricity consumed in our office building and data centres. In FY2024, despite an occupancy growth of 15% compared to FY2023, we reduced our Scope 2 emissions by 3% compared to FY2023. This was largely due to initiatives to improve building efficiency such as our BMS upgrade and installation of solar film and blackout blinds to reduce solar heat gain.

Our Scope 1 emissions contributed to less than 1% of our total emissions in FY2024. These arose from the internal combustion engine cars leased by DSTA, and the town gas used in our cafeteria.

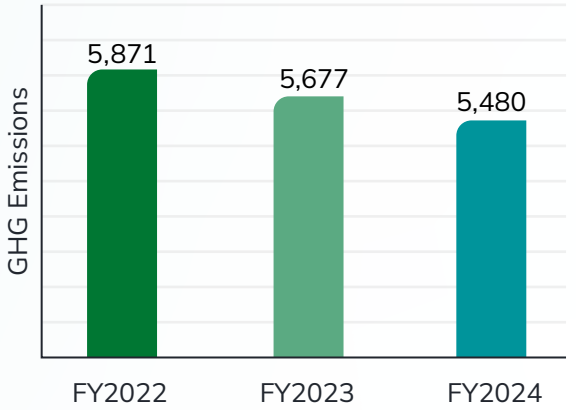

Diagram 3: DSTA's GHG emissions (tonnes CO_2 equivalent) over the financial years

ELECTRICITY CONSUMPTION

Our Commitment
10% reduction in EUI by FY2030

DSTA aims to reduce our EUI by 10% relative to our average EUI from FY2018 to FY2020 (baseline) by FY2030. This is consistent with the GreenGov.SG target.

Progress in FY2024
Diagram 4 below shows a stable EUI trend over the past three financial years.

DSTA's EUI in FY2024 was 97 kWh/m²/year, which is slightly higher than our baseline. While there was a 73% occupancy growth in FY2024 compared to the baseline, the increase in overall consumption was offset by improvements in our building energy efficiency.

Notwithstanding, more efforts will be required to bring down our EUI to meet the 10% reduction target by FY2030. These include upcoming infrastructure improvements, such as installation of solar panels on the Annex roof, and progressive refresh of our air conditioning systems. We are also fine-tuning our building controls through our upgraded BMS to optimise energy use.

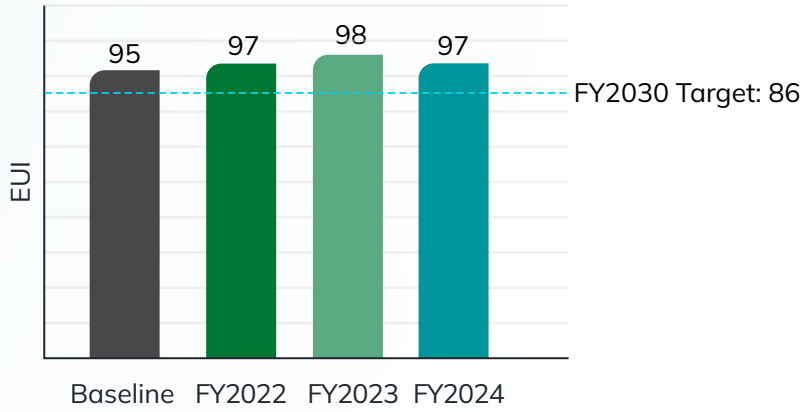

Diagram 4: DSTA's EUI (kWh/m²/year) over the financial years

WATER CONSUMPTION

Our Commitment
10% reduction in Water Efficiency Index (WEI) by FY2030

DSTA aims to reduce our WEI by 10% relative to our average WEI from FY2018 to FY2020 (baseline) by FY2030. This is consistent with the GreenGov.SG target.

Progress in FY2024
Diagram 5 below shows an improving WEI performance over the past three financial years. DSTA's WEI in FY2024 was 81 litres/person/day, which is 43% lower than our baseline. Our FY2024 performance was also an improvement from previous years, which was attributed to infrastructure upgrades such as the expansion of rainwater harvesting capacity and condensate recovery system. We will continue to sustain our efforts to ensure that we achieve our target reduction in water use by FY2030.

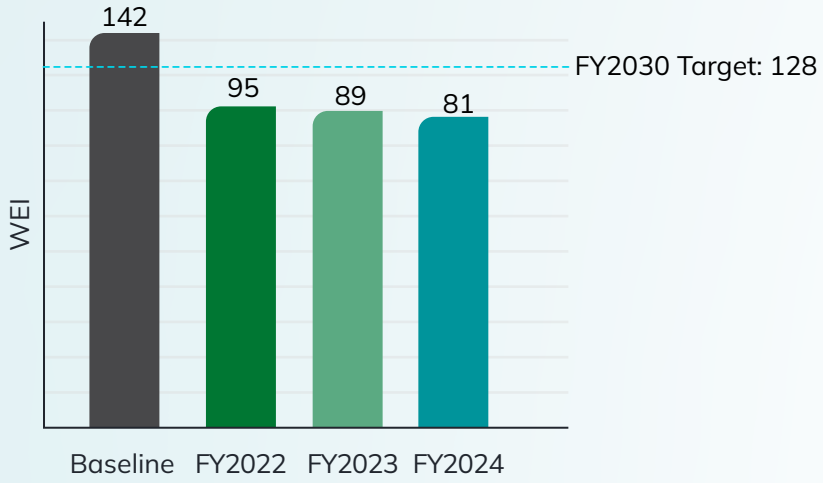

Diagram 5: DSTA's WEI (litres/person/day) over the financial years

WASTE GENERATION

Our Commitment
30% reduction in Waste Disposal Index (WDI) by FY2030

DSTA aims to reduce our WDI by 30% relative to FY2022 (baseline) by FY2030. This is consistent with the GreenGov.SG target.

Progress in FY2024
Diagram 6 below shows an improving WDI performance over the past three financial years.

DSTA's WDI in FY2024 was 0.074 kg/pax/day, which is 39% lower than our baseline. The improvement of our FY2024 performance compared to previous years was attributed to increased reuse and recycling efforts by staff through our waste reduction initiatives and campaigns. We will continue to sustain our efforts to ensure that we achieve our target reduction in waste disposal by FY2030.

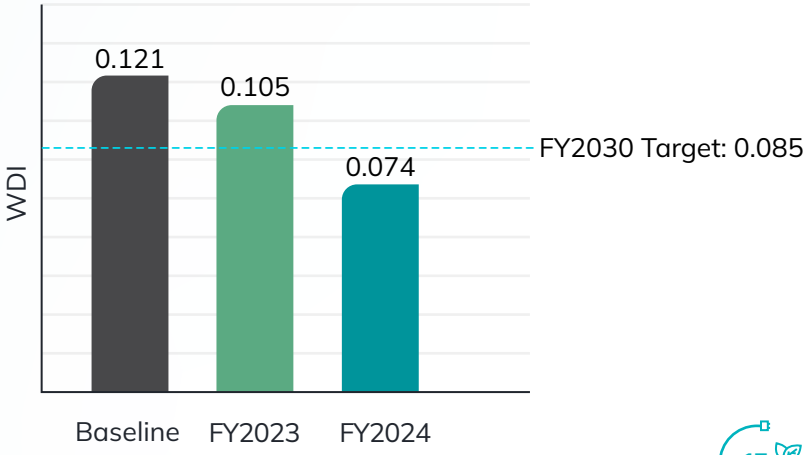

Diagram 6: DSTA's WDI (kg/person/day) over the financial years

APPENDIX A – PERFORMANCE DATA AND METHODOLOGY

1. Reporting Boundary

We have set our reporting boundary aligned with the GreenGov.SG scope, which is consistent with the reporting entity used in our financial statements. Premises with negligible utilities consumption are excluded.

2. Greenhouse Gas Emissions Calculations

	Scope 1 Emissions (tCO_2e)	Scope 2 Emissions[2] (tCO_2e)	Total Emissions (tCO_2e)	Change from Previous Year
FY2022	36	5,835	5,871	+1%
FY2023	37	5,641	5,677	-3%
FY2024	39	5,441	5,480	-3%

Table A1: Greenhouse gas emissions over the past three financial years

Assumptions and Methodology Used

1. Scope 2 emissions was reported net of solar energy, which was consumed onsite.

2. The following emission factors were used:
   a. Petrol: 0.00236 tCO_2e/L (Source: GreenGov.SG Emissions Calculator, 26 Oct 2023)
   b. Town gas: 0.000201 tCO_2e/kWh (Source: GreenGov.SG Emissions Calculator, 26 Oct 2023)
   c. Grid (Source: Energy Market Authority's website, accurate as of Sep 2024, accessed in Sep 2025)
      i. 2021: 0.409 $kgCO_2e/kWh$
      ii. 2022: 0.417 $kgCO_2e/kWh$
      iii. 2023 onwards: 0.412 $kgCO_2e/kWh$

[2] Scope 2 emissions were restated based on the Energy Market Authority's updated grid emission factor.

3. Electricity Consumption and EUI Calculations

	Electricity Consumption (kWh)	EUI[3] ($kWh/m^2/year$)	Change from Baseline
Baseline (Avg FY2018-FY2020)	14,648,621	95	-
FY2022	14,033,320	97	+2%
FY2023	13,691,236	98	+3%
FY2024	13,205,671	97	+2%

Table A2: Electricity consumption and EUI over the past three financial years

Assumptions and Methodology Used

1. EUI is defined as the total electricity consumed in one year divided by the total gross floor area (GFA). The formula used was:

   Agency EUI in Year N = (Total amount of electricity consumed for all Agency premises in Year N) / (Total GFA for all Agency premises in Year N)

2. Non-standard infrastructure was excluded from EUI calculation. Such infrastructure includes carparks and data centres, which do not have meaningful GFA or occupancy data. The consumption of our data centres and the associated supporting infrastructure is based on best estimates. We have since updated our figures from the FY2023 disclosure based on latest estimates. For a small portion where primary data is not available, estimates are derived using the best available information and calculated proxies.

3. Solar electricity is consumed on site. Electricity consumption data refers to net electricity usage, which consists only of grid electricity usage.

[3] EUI was restated after estimating the consumption of our data centres more accurately.

4. Water Consumption and WEI Calculations

	Water Consumption (litres)	WEI[4] (litres/ person/day)	Change from Baseline
Baseline (Avg FY2018-FY2020)	66,151,967	142	-
FY2022	55,512,300	95	-33%
FY2023	61,745,900	89	-37%
FY2024	64,345,300	81	-43%

Table A3: Water consumption and WEI over the past three financial years

Assumptions and Methodology Used

1. WEI is defined as the water consumption per day divided by the total number of staff headcount including visitors to the premises. The formula used was:

   Agency WEI in Year N = [Total amount of water consumed for all Agency premises in Year N × 1000] / [Average number of operational days in Year N for all Agency premises × (Average number of staff per day for all Agency premises + (0.25 × Average number of visitors per day for all Agency premises))]

2. Non-standard infrastructure was excluded from WEI calculation. Such infrastructure includes carparks and data centres, which do not have meaningful GFA or occupancy data. The consumption of our data centres and the associated supporting infrastructure is based on best estimates. We have since updated our figures from the FY23 disclosure based on latest estimates. For a small portion where primary data is not available, estimates are derived using the best available information and calculated proxies.

[4] WEI was restated after correcting our staff numbers.

5. Waste Disposal and WDI Calculations

	Waste Disposal (kg)	WDI (kg/person/day)	Change from Baseline
Baseline (FY2022)	63,989	0.121	-
FY2023	67,267	0.105	-13%
FY2024	54,134	0.074	-39%

Table A4: Waste disposal and WDI over the past two financial years

Assumptions and Methodology Used

1. WDI is defined as the waste disposed per day divided by the total number of staff headcount including visitors to the premises. The formula used was:

   Agency WDI in Year N = [Total amount of waste disposed for all Agency premises in Year N × 1000] / [Average number of operational days in Year N for all Agency premises × (Average number of staff per day for all Agency premises + (0.25 × Average number of visitors per day for all Agency premises))]

2. DSTA's office shares the same Depot Road Camp (DRC) compound with the Ministry of Defence of Singapore (MINDEF). The Public Waste Collector (PWC) weighs the waste for the entire compound, which can be apportioned between DSTA and MINDEF for disclosure purposes. The waste apportionment factor between DSTA and MINDEF in the DRC compound was determined using PWC waste data for the whole DRC and DSTA waste which were manually weighed over a period of time. This factor was applied to the PWC waste data for DRC to determine DSTA's share of the waste.

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