



DUO Tower Green Guide

This guide contains a set of recommendations to encourage more sustainability decisions during fit-outs and operation of the building. This guide shall be read in conjunction with the existing Tenant Guides for office and retail spaces. Requirements as set out in the Tenant Guides take priority over the Green Guide recommendations.

- DUO (Office) Tenant's Guide - version 7 - March 2023
- DUO (Retail) Tenant's Guide_V7_Dec 2022

Background

At DUO Tower, we recognize the important role office buildings play in supporting the net zero transition. In February 2021, Singapore Government launched the Singapore Green Plan 2030 to accelerate a national movement and advance Singapore’s national agenda on sustainable development. To support this national plan and to ensure we continue to play our part as a building and as a community, we have developed this guide to encourage our occupiers to implement environmentally friendly features and sustainable usage patterns when operating the office space.

We strive to deliver a healthy, comfortable, and sustainable workplace that fosters productivity and collaboration between building occupiers. This Guide focuses on seven fundamental aspects which help to improve well-being for building users and achieve savings from utility consumption.

- Energy Efficiency
- Water Conservation
- Waste Management
- Indoor Environment Quality
- Sustainable Procurement & Circularity
- Fit-out Rating & Certifications
- Giving Back to the Community

The intended outcome for this Guide is to help DUO tenants to enhance the performance of the office premises and reduce its environmental impact.

By designing and managing your workplace sustainably, it can help to achieve benefits as summarized in the section that follows.

A. Energy Efficiency

The single largest source of Carbon Emissions in an office building is the energy used to serve the building. By improving energy efficiency, not only can we reduce our energy bills but it would also make a significant reduction in the building’s environmental footprint.

A.1. Lighting:

Passive Design	Consider daylight infiltration when designing office layout, placing desks and meeting rooms.
Luminaires	Use high efficiency lights and fittings e.g. LED lamps. LEDs are about 40% more efficient than T8 & T5 fluorescent tubes. As they are mercury-free, they cause less environmental pollution. LED lamps that are dimmable can be more beneficial by providing a better user experience and reducing consumption further for example during lunch hours. BCA recommends a lighting power budget (LPB) of 5 W/m ² for the most energy efficient buildings in Singapore for office areas. By designing to 5 W/m ² instead of the typical practice of 8-9 W/m ² up to 40% additional savings can be achieved.



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Controls	<p>Install motion sensors particularly in areas with intermittent occupancies i.e. meeting rooms, pantry etc. to sense space use and respond to space demand.</p> <p>Singapore has long hours of daylight throughout the year. Install daylight dimming in the perimeter of the building near windows to minimize usage of artificial lighting when not needed.</p>
Zoning & Timer	<p>Design smaller lighting zones so that you can better and more efficiently respond to lighting needs. For example, by switching off certain zones on days with low occupancy.</p> <p>Install a central kill-switch near the exit so that the last person leaving the office can easily switch off all lights.</p> <p>This can be combined with a programmable timer that can automatically switch off lights after a time of your choosing.</p>

A.2. Air-conditioning:

Temperature Adjustment	Set air-conditioning temperature at 24°C or higher to prevent overcooling as recommended by BCA Green Mark for Healthier buildings
Server/Comms Rooms	Cool server rooms according to manufacturer's recommended room temperature to minimise unnecessary energy wastage. Empirical evidence suggests that most server rooms are set to much lower cooling set points than manufacturers requirements.
Demand response	Install smart sensors that can adjust supply of fresh air or cooling depending on real time needs. For example, when a room is empty, reduce or cut off cooling by considering occupancy levels.
Zoning	Zoning of air-conditioning system to serve areas with different usage/occupancy needs.

A.3. Office Equipment:

Equipment selection	<p>Purchase energy-efficient office equipment such as laptops, printers and monitors with ratings administered by the National Environment Agency or Energy Star. Refer to Appendix A for the list of green product directories.</p> <p>Use multi-purpose "all-in-one" machines instead of standalone equipment to reduce electricity bills and consumables used.</p>
Equipment reduction	Remove desk phones or other equipment where they are no longer needed. For example, only provide them for staffs who need desk phones.
Timers	Programme your TV screens, printers, laptops and other devices to automatically switch off after long periods of inactivity.

A.4. Data & Metering:

Sub-meter	Install sub-meters to monitor key areas that consume electricity usage of each floor/zone, and where possible, by usage type, e.g. electricity consumption of server room.
Automatic monitoring & targeting (AM&T)	AM&T has additional advantages over sub-metering such as automatic identification of energy wastage. In addition to sub-metering, data capture and analytics software is required to maximize benefits.



B. Water Conservation

Singapore depends on four sources for its water supply – local catchment water, imported water, NEWater and desalinated water. As our population and economy grows our need for fresh water sources puts the limited water resources under pressure. As a community at DUO, we can collectively play an important part in conserving water and reducing pressure on our limited water resources.

Taps	Water aerators mix air into the water stream as it leaves the tap and can dramatically reduce the amount of water for taps. Install flow restrictors at existing taps to reduce water flow.
Dishwashers	Pay attention to selection of a dishwasher that is the right size for your needs. Studies show that dishwashers are more water-efficient than washing by hand.
Leak detection	Different types of leak detectors are available for different uses. For example, water sensors can be useful under kitchen taps and can make a sound when water leaks are identified, Wi-Fi enabled solutions can also send alerts to your phone. More sophisticated system monitors the flow of water through a main supply pipe to your space and if abnormal behavior is detected, the system cuts off the water flow entirely and prevents water wastage and water damage.
General	Choose water-efficient products. According to Singapore's Water Efficiency Labelling Scheme (WELS), higher ticks mean higher efficiency. For a list of efficient products and fittings refer to Appendix A.

C. Waste Management

Waste represents the loss of raw materials and energy resources due to unsustainable consumption patterns. Reducing waste helps us to operate our business more efficiently, which would result in cost saving and reduction of carbon footprint.

Recycling Bins	Remove desk bins and provide designated recycling bins with clear signage e.g. cans, paper, food, plastic, etc. at a central location, to encourage recycling.
Single-use plastics	Avoid use of disposable products such as Styrofoam cups and single-use plastic plates. Provide reusable utensils and cutlery in the pantry. Where possible reduce the use of disposable lunchbox and cutlery by encouraging staff to use reusable ones.
Procurement	Where possible ask vendors to choose low waste or reduced packaging options. Seek out vendors who provide packaging waste take back that they re-use for future shipments.
Data & Reporting	If you have engaged your own waste contractors, ask for waste data to be provided to you. This data can be beneficial in monitoring and improving waste performance.

D. Indoor Environmental Quality

Good indoor environmental quality can enhance the wellbeing and productivity of building users and improve the overall work experience.

Materials	Use materials with lower levels of harmful substances (e.g. low VOC content for paint, adhesive, carpet, etc.). Refer to Appendix A for the list of local green products directories.
Noise control	Provide acoustic wall for rooms (e.g. meeting room) to manage noise intrusion level exchanges between noisy space and quiet areas (general office space).
Plants	In addition to aesthetic benefits studies show that many plants have air purifying benefits and can help reduce work related stress.

E. Sustainable Procurement & Circularity

Sustainable Procurement refers to the procurement of products and services that have a reduced impact on human health and the environment when compared with typical products or services that provide the same purpose.

Materials	<p>Buy environmentally friendly materials with recognised green certification such as the Singapore Green Building Product (SGBP) labeling or other schemes. E.g. ceiling board, drywall/ partition wall, adhesives, water proofing membrane, autoclaved concrete etc.</p> <p>Where possible source rapidly renewable natural materials such as timber or bamboo. Products with high recycled content or re-used elements have lower environmental impact (e.g. carpet, wallpaper).</p> <p>When using timber-based material you may ask your suppliers if they source their timber from sustainable sources for example by having The Forest Stewardship Council (FSC) accreditation. https://info.fsc.org/certificate.php</p> <p>FSC accredited timber products use trees harvested responsibly reducing the risk of illegal logging. FSC have other schemes where they certify 100% recycled content used in materials.</p> <p>Compare environmental footprint of products through the Environmental Product Declaration system. https://www.environdec.com/library</p> <p>Avoid waste associated with over ordering products and/or materials i.e. Order quantities accurately and where possible use suppliers who can take back any unused, excess products or materials.</p> <p>Choose paper products from sustainable sources, e.g. FSC certified, or with recycled content and non-chlorine bleaching</p>
Circularity	<p>Embracing circularity principles during your fit-out can reduce cost as well as carbon and waste. Discuss the following with your fit-out contractor:</p> <ul style="list-style-type: none"> • Can standard sizes and elements be used? • Can any parts be modular to facilitate disassembly during re-instatement? This can help items be re-used in future fit-outs. • Design for adaptability & flexibility in the future. This can help make your space easier to adapt for your future needs and increase the chance of a future tenant taking over your fit-out at the end of your tenancy with minimal alterations
Furniture	<p>Where possible choose furniture from manufacturers with a take-back scheme or those who have circular business models for example by upcycling old product parts to create new products.</p> <p>Modular and/or mobile units can facilitate subsequent removal and reuse. Easily disassembled units often facilitate more efficient and effective to recycle.</p>
Harmful substances	<p>Avoid using materials with Ozone Depleting Substances (ODS) and high Global Warming Potential (GWP), e.g., Chlorofluorocarbon (CFC) or Halon refrigerants in fire extinguishers.</p>
Local sourcing	<p>Encourage use of materials and products that are extracted and manufactured within the region, thereby supporting local employment, and reducing environmental impact resulting from transportation.</p>

F. Fit-out Rating & Certification

By following a rating tool, occupiers can benefit from a clear set of directions to achieve their sustainability, comfort and productivity goals in relation to fit outs. In addition, by achieving a fit-out certification, you can easily communicate your values and achievements to different stakeholders such as staff and clients. Applicable certifications relating to real estate spaces includes:

- Green Mark for Healthier Workplaces



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- Green Mark for Office Interior
- BREEAM Fit-out & Refurbishment
- LEED Interior Design & Construction
- SKA
- Fitwel
- WELL Building Standard

G. Giving Back to the Community

At DUO we believe in a creating a community that embraces our common values. By collaborating with our tenants, neighboring buildings, and other stakeholders, we encourage everyone to take an active role in giving back to the society and support a just transition. A just transition supports at risk or underprivileged groups to make sure no one is left behind as we transition to a low- carbon and environmentally sustainable economy and societies.

Community events	<p>Over the years, we have organized events for our tenants and community on topics important to the DUO community. Past events included but are not limited to blood donation drives, mental health campaigns and earth day programs. Many of these events are organized in collaboration with our tenants. A summary of most recent events can be found below:</p> <hr/> <p>In celebration of Singapore World Water Day, DUO collaborated with PUB to include the community through a social media contest, physical activities at DUO Galleria and Tower and showcasing PUB educational material on the building’s digital screens to provide awareness of this campaign.</p> <hr/> <p>To celebrate the Chinese New Year, a Tenant Event has been organized on 1 February 2024 in collaboration with Treatsure, an innovative startup addressing food wastage through technology. Treatsure partnered with caterers to utilize surplus food and vegetables to craft dishes, forecast portions using data, minimize single-use plastics with Muuse cutlery and bowls, separates food waste and recycling waste with Chop value.</p>
Charity Partnerships	<p>At the Green Corner you can donate or recycle more than 11 different types of hard to recycle items through partnerships created with specialist recycling companies. The Green Corner can be found on level B3 on the way to the MRT entrance.</p> <hr/> <p>Through partnering with KGS, we promote donations of used electronic products such as laptops in working condition to underprivileged families in Singapore. In 2023, more than 1.2 tonnes of e-waste were collected by KGS at DUO alone.</p> <hr/> <p>We have worked with Soles4souls to collect unwanted shoes and clothing and donate them to underprivileged people with a passion to start their own businesses in the developing world. By giving shoes and clothing a second life, they help reduce waste and our environmental impact. In 2023, 8 boxes of shoes containing approximately 250 pairs of shoes were donated by the DUO community.</p> <hr/> <p>The DUO community donated 1,642 books through the Dignity Mama Book donation campaign in 2023. The donated books will support employment opportunities for young adults with special needs who then sell on books at affordable prices across 5 hospitals in Singapore.</p> <hr/> <p>Cloop are an ISO-accredited recycling partner. They sort donations into >500 categories for reuse, upcycle, and recycle.</p> <hr/> <p>Visio Optical collect your pre-loved eyewear. After making good, donated eye-wear will be glazed and passed on to the elderly in nursing homes, daycare centres, or families or individuals in need. Since the start of the partnership in September 2023, 67 pairs of eye wear have been collected in a period of 3 months.</p> <hr/> <p>Capitol Optical collect contact lens blisters and foils and work with their supply chain to recycle such donations. In 2023, 27 bags have been donated for recycling each containing approximately 30 contact lens blisters.</p>

Appendix A

The list below comprises of green product certification directories/green building guides of various countries.

Singapore	<p>BCA Green Mark</p> <p>Green Mark for Healthier Workplaces</p> <p>National Environment Agency (NEA) Energy Labelling Scheme</p> <p>Singapore Green Building Product (SGBP) labelling scheme</p> <p>Singapore Green Labelling Scheme (SGLS)</p> <p>Water Efficiency Labelling Scheme (WELS) rated products</p>
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Appendix B

List of contractors for green initiatives and fit out improvements.

Singapore	Lighting Upgrade	<p>Sourcing and installation of LED, motion sensors and daylight sensors compliant with base building fit out. Replacement of office troffer lights and PLC downlights with LED lights provide attractive payback and will result in direct savings to tenants.</p> <p>Company: Export House Singapore Pte. Ltd.</p> <p>Contact person: Terence Lim terencelim@exporthouse.net sales@exporthouse.net Mobile: 9005 5028 Office: 6748 5700</p>
	E-Waste recycling and re-use	<p>Can collect bulky e-waste items. KGS can collect unwanted laptops, tablets that are in working condition and donate to charitable organizations such as Engineering Good. Hard drives can be removed and crushed for a small fee at tenant request.</p> <p>https://www.kgs.com.sg/</p>