

Annex A – Factsheets for BCA Awards 2024

- I. [BCA's Company of the Year Award](#)
- II. [BCA's Project of the Year Award](#)
- III. Link to video showcase of this year's Company of the Year and Project of the Year award winners: <https://go.gov.sg/bcaawards2024-videos>

FACTSHEET ON BCA'S COMPANY OF THE YEAR AWARD

1. The Company of the Year Award recognises companies which have demonstrated the greatest commitment to transformation. This award seeks to spur companies to go beyond project-level initiatives and achieve business and workforce transformation at the enterprise level.

Winners are selected based on the following criteria:

- Business Transformation
- Workforce Transformation

More details can be found on our BCA website: <https://go.gov.sg/bca-coy>

2. This year's winners are:

City Developments Limited (CDL)

CDL is a homegrown real estate developer with over 60 years of heritage. It has developed over 50,000 homes and owns around 23 million square feet of assets by gross floor area globally across the residential, commercial and hospitality sectors.

They remain at the forefront of transformation and innovation by proactively developing their workforce. Besides regular workshops, fireside chats and cross-departmental discussions, CDL also crowdsources for ideas and feedback to improve staff development opportunities. These people-centric initiatives have earned CDL accolades on the Straits Times Singapore's Best Employer list since 2021.

Building on its progressive staff culture, CDL has been able to successfully adopt many pioneering technologies to improve their processes and operations. They were one of the first to pilot BCA's virtual TOP inspection using OpenSpace's 360-degree image capture technology. Furthermore, they are integrating the photo capture technology with machine learning to develop automated in-house quality checks for their residential units.

Their commitment to transformation extends beyond construction to building operations. CDL, partnering their FM subsidiary CBM, will be implementing Integrated and Aggregated Facilities Management (IFM/AFM) smart

technologies, alongside improved workflow and contract management processes for their buildings. This initiative was one of the first to receive BCA's IFM/AFM grant in 2023.

Another example of how CDL stands out from its peers, is its commitment to bring along its value chain partners along CDL's transformation journey. For example, they introduced green leases for their tenants, and helped their SME suppliers to develop the SMEs' carbon reports and sustainability road maps. This was supported by Enterprise Singapore's Supplier Queen Bee Programme.

Through a Green Buildings Innovation Cluster (GBIC) demonstration project, CDL and its joint venture partner IOI Properties will partner local startups to pilot AI and machine learning solutions to optimise the South Beach Tower Office's cooling systems. This pilot seeks to achieve 75% energy efficiency improvement over 2005 levels.

Obayashi Singapore Private Limited

Obayashi first established operations in Singapore in 1965 and has since developed its Singapore office into one of its largest offices in its global network. Besides participating in major civil engineering projects like the East Coast Reclamation, Obayashi has also contributed to Singapore's landmark skyline through iconic projects like One Raffles Quay, the Treasury Building and Ocean Financial Centre.

Obayashi believes that investing in technology and innovations is one of the key factors to success. When best-in-class technology is adopted in Japan, Obayashi would seek to bring them to Singapore.

Obayashi sets itself apart by continuously deploying technologies to improve productivity, reduce inefficiencies and enhance worker safety. It has deployed various technologies, including BIM modelling and real-time rendering for virtual mock-ups, automated site progress tracking and as-built verification using precise 3D cloud data.

Obayashi's successful technology adoption can also be attributed to its commitment to continuously upskill their staff. Each staff's career progression is supported with personalised training plans, mentorship programmes and sponsorship opportunities. Selected staff are also sent to the Japan headquarters to acquire new capabilities to be transferred when they return to Singapore.

Obayashi recognises the need to bring along their value chain partners to truly develop and adopt innovative technologies successfully. Besides organising study trips for their subcontractors to learn about more productive methods and technology, Obayashi has set up a Construction-Tech Lab in BCA's Braddell Campus as part of the Built Environment Innovation Hub. This lab is a branch

of their Technology Research Institute in Japan and underscores their commitment to driving innovation in the region.

FACTSHEET ON BCA'S PROJECT OF THE YEAR AWARD

1. The Project of the Year Award (formerly known as BCA Built Environment Transformation Award) recognises building projects and civil / infrastructure projects that have demonstrated commitment towards transformation. The award seeks to encourage project parties to work collaboratively, drive changes, and attain impactful outcomes at both project- and enterprise-levels. There are six award categories, namely Residential Buildings, Commercial / Mixed Development Buildings, Industrial Buildings, Institutional Buildings, Civil / Infrastructure Projects, and Others.

More details can be found on our BCA website: <https://go.gov.sg/bca-poy>

2. This year's winners are:

- i. Residential Buildings
 - [The Woodleigh Residences & The Woodleigh Mall](#)
- ii. Commercial / Mixed Development Buildings
 - [7 Science Park Drive \(Geneo\)](#)
- iii. Industrial Buildings
 - [JTC Logistics Hub @ Gul](#)
- iv. Institutional Buildings
 - [The Greenhouse at Dulwich Singapore](#)
- v. Others
 - [Sentosa Sensoryscape](#)

More details on each winner can be found in the subsequent pages.

i. Residential Buildings

Project Name

The Woodleigh Residences & The Woodleigh Mall



Project Team

Developer	Kajima Development and SPH Holding
Builder	Kajima/Tiong Seng Contractor JV
Architect	DP Architects
Civil & Structural	Meinhardt (Singapore) Pte Ltd
Mechanical & Electrical	Beca Carter Hollings & Ferner (S.E Asia) Pte Ltd
Quantity Surveyor	Asia Infrastructure Solutions Singapore Pte Ltd

Project Description

Challenge faced:

Need to carry out three layers of work concurrently (basement excavation works, L2 & L3 Podium works, higher floors PPVC works)

Solution:

Strong coordination from the design process, to determining the construction methodology, as well as the sequencing of works and site logistics.

Supported by digital tools such as:

- BIM 360 for document and knowledge management
- Pan-Tilt-Zoom cameras, fixed/drone cameras, HoloBuilder 360 photo reality capture for site progress monitoring
- Leica BLK2GO handheld imaging laser scanner + Cyclone 3DR software for mapping accurate as-built measurements
- Novade for quality and defect tracking

Supported by changes in methodology such as reviewing the design to achieve higher level of standardisation (from 100 types to 64 types of steel moulds).

The project team was able to deploy these innovative tools as Kajima proactively upskills their staff, especially in emerging areas, such as computational BIM or construction productivity.

Additional notes:

Project obtained Green Mark (GM) Platinum certification.

ii. Commercial

Project Name

7 Science Park Drive (Geneo)



Project Team

Developer	CapitaLand
Builder	Woh Hup Pte Ltd
Architect	Surbana Jurong Consultants Pte Ltd
Civil & Structural	Mott Macdonald Singapore Pte Ltd
Mechanical & Electrical	Squire Mech Pte Ltd
Quantity Surveyor	WT Partnership (S) Pte Ltd

Project Description

Challenge faced:

The project kick-started in 2021 amidst COVID-19 measures. Project team faced a lot of manpower and resource issues.

Solution:

The team decided to work more collaboratively and deploy digital tools and innovative technologies to improve productivity.

- Improved coordination through digital tools for BIM coordination and a worker management system
- Drew more value out of BIM models through automating the calculation of concrete required. Supply chain partners were also able to access this model and link delivery orders directly to each building elements and groups in the model

- Despite the challenges, the project still managed to adopt several novel features, such as distributed district cooling systems, the use of 1,400 PV solar panels, adopting CarbonCure concrete and incorporating considerations as part of the Geneo cluster's landscape and biodiversity plans
- This project used 44% of CarbonCure concrete in its development. Carboncure is a type of concrete enabled by cutting-edge technology that mixes carbon dioxide during the manufacturing process. The extensive usage of CarbonCure concrete amounted to an estimated 3,400,000kgCO₂e of emissions reduction or roughly equivalent to the amount of emissions that can be captured by 3,864 trees¹.

Additional notes:

Project obtained GM Platinum Super Low Energy (SLE) certification.

¹ Calculated based on the assumption that a tree can absorb approx. 0.88 metric tons (880kg) of CO₂ over its lifetime of 40 years. $3,400,000\text{kg} / 880\text{kg} = 3,864$ trees

iii. Industrial Buildings

Project Name

JTC Logistics Hub @ Gul

**Project Team**

Developer	JTC Corporation
Builder	Kimly Construction Pte Ltd
Architect	AWP Architects Singapore
Civil & Structural	Meinhardt (Singapore) Pte Ltd
Mechanical & Electrical	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	WT Partnership (S) Pte Ltd

Project Description

Challenge faced:

Unique DfMA features. The complex design would have required much highly skilled manpower to set up temporary scaffolding and carry out welding works.

Solution:

The project team proposed an alternative SEN Innovative Steel system which combines lightweight columns connected by modular bolted splice joints and steel-plate composite beams

- Benefits: Productivity improvement of up to 36%, less material wastage, lower safety risks for workers and higher headroom for internal spaces

- The project team proposed such an innovative system from overseas learning trips that Kimly regularly organises ever since it set up the Kimly Academy in 2021. It was on one of these learning trips that they were introduced to this system and they subsequently found an opportunity to implement this technology in a project

Additional notes:

Project obtained GM Platinum certification

iv. Institutional Buildings

Project Name

The Greenhouse at Dulwich College (Singapore)

**Project Team**

Developer	Dulwich College (Singapore) Pte Ltd
Builder	Debenho
Architect	DP Architects
Civil & Structural	KTP Consultants Pte Ltd
Mechanical & Electrical	Bescon Consulting Engineers Pte
Quantity Surveyor	Turner & Townsend

Project Description

First international school building in Singapore to achieve the GM Platinum Zero Energy Building certification

- It was able to integrate sustainability into everyday life, through building features that students can interact with. For example, it uses kinetic floor tiles generate energy when students step on them
- Other key sustainability features include:
 - o Building-integrated photovoltaics that generates 40% of the building's energy consumption and offsets 85 tonnes of CO2 (equivalent to planting 3,400 trees)
 - o Efficient systems for chiller plant, air handling, lighting and lift control to keep energy consumption low. These systems are linked with a smart platform to monitor zonal changes in energy demands

- Data from the building is displayed real-time on screens within the building to educate students on sustainability

v. Others

Project Name

Sentosa Sensoryscape



Project Team

Developer	Sentosa Development Corporation
Builder	Gammon Pte Ltd
Architect	Axis Architects Planners Pte Ltd
Civil & Structural	AECOM Singapore Pte Ltd
Mechanical & Electrical	AECOM Singapore Pte Ltd
Quantity Surveyor	Surbana Jurong Consultants Pte Ltd

Project Description

Challenge faced:

Site topography was quite uneven and there was a need to ensure that the rest of Sentosa remained operational while construction was underway

Solution:

Utilised Design for Manufacturing and Assembly (DfMA) strategies to bring complex architectural design to life

- Benefits of using DfMA:
 - Greater quality control over each precast element
 - Could use mechanical joints instead of welding to reduce installation time and manpower required on-site
 - Made it easier to design using modelling software that would feed into the fabrication process
- Several other digital tools were used to ensure precise quality control:
 - 3D laser scanning to compare scans of precast moulds
 - Fabrication BIM model to validate the geometry
 - Drone capture and 3D mesh mapping to laydown areas for DfMA components

Annex B – Factsheets on sustainability announcements in Minister Indranee’s speech

- I. [Progress of the Singapore Green Building Masterplan \(SGBMP\)](#)
- II. [Factsheet on Tender for Consultancy Study for Design Prototyping for Decarbonisation \(DPfD\) Challenge](#)
- III. [Factsheet on Energy Efficiency Grant for the Construction Industry](#)

PROGRESS OF THE SINGAPORE GREEN BUILDING MASTERPLAN (SGBMP)

1. Buildings account for over 20% of Singapore’s emissions. Greening our buildings is hence key in supporting our national target to achieve net zero emissions by 2050. In 2021, we launched the latest edition of the Singapore Green Building Masterplan (SGBMP)^[1] to accelerate our transition to a low-carbon built environment. The SGBMP is part of the Singapore Green Plan 2030.
2. There are three key targets set out under the SGBMP, or “**80-80-80 in 2030**”:
 - a. **To green 80% of our buildings (by GFA) by 2030.**Efforts to support this target include:
 - Raising baseline energy performance standards for new and existing buildings undergoing major retrofitting works or major energy use change in 2021 and 2022. This ensures that new buildings are designed with the optimal energy efficiency standard right from the start and existing buildings are upgraded to meet current energy efficiency standards when retrofitted.
 - Launching the Green Mark Incentive Scheme for Existing Buildings 2.0 (GMIS-EB 2.0) in 2022 to provide funding support to building owners to undertake energy efficiency retrofits.

- Implementing the new Mandatory Energy Improvement (MEI) regime in 2025, which will require existing buildings that are consistently energy-intensive to undergo energy audits and undertake energy efficiency improvement measures to improve their building energy use intensity (EUI)^[2].

b. For 80% of new developments (by GFA) to be Super Low Energy (SLE) buildings^[3] from 2030. Efforts to support this target include:

- The Government is taking the lead under the GreenGov.SG initiative by requiring all new and existing public sector buildings (upon next major retrofit) to achieve GM Platinum SLE standards or equivalent, where feasible.
- Launching the Built Environment Transformation GFA Incentive Scheme in 2021 to encourage developers to take the lead in achieving GM Platinum SLE certification, among other requirements for their new private developments. This scheme offers up to 3% additional GFA as an incentive.
- Enhancing requirements for sites sold under the Government Land Sales (GLS) programme in 2022 to require developments on these GLS sites to meet the GM Platinum SLE certification, among other requirements.

c. To achieve 80% improvement in energy efficiency (compared to 2005 levels) for best-in-class green buildings^[4] by 2030. Efforts to support this target include:

- Supporting these buildings under the Green Buildings Innovation Cluster (GBIC) demonstration scheme. Under GBIC 2.0, we have shifted our efforts towards targeting buildings with the highest energy consumption and building owners/developers with the capacity to replicate the solutions across their building portfolio. In Feb 2023, we launched the

- 1st thematic challenge call, focusing on high rise commercial and hotel developments, with demonstration projects seeking at least 75% energy efficiency improvement from 2005 levels.
- Other efforts that will be rolled out to further support the push towards the 80% EE target by 2030 are as follows:
 - i. GBIC Research and Innovation (R&I) Challenge Call: To supplement the 1st thematic challenge call, the R&I challenge call was recently **launched on 15 July 2024** for solution providers and building owners/developers to co-create and test-bed the following.
 - Innovation Cooling Technologies
 - Data-driven Smart Building Solutions
 - Advanced Building Ventilation Solutions
 - ii. Tender for Consultancy Study for Design Prototyping for Decarbonisation (DPfD) Challenge: Launched on 6 Sep 2024, this tender focuses on high-rise commercial office, hotel and mixed development buildings. Its objective is to identify strategies and solutions to achieve 80% energy efficiency improvements from 2005 levels. The consultancy study will assess the technical feasibility and commercial viability of technologies and solutions with the aim of enabling building owners and developers to implement and scale up these solutions in their building portfolio. More details can be found in ***part II***.

FACTSHEET ON TENDER FOR CONSULTANCY STUDY FOR DESIGN PROTOTYPING FOR DECARBONISATION (DPFD) CHALLENGE

Background of Green Buildings Innovation Cluster (GBIC) 2.0

1. To support the SGBMP's target of 80% energy efficiency improvement target (from 2005 levels) for best-in-class green buildings, GBIC serves as a one-stop innovation hub to accelerate the research, development, and demonstration of innovative energy-efficient building technologies.
2. Under GBIC 2.0 Programme, the Government has committed \$45 million to support three key initiatives:
 - a. GBIC Research & Development (GBIC-R&D): GBIC R&D scheme aims to build deep R&I capabilities for the industry and academia. It supports research projects that are nascent but lead to significant improvements in energy efficiency with high potential for adoption.
 - b. GBIC Prototyping: GBIC's Product Prototyping scheme supports the development of market-ready prototypes that are applicable to our local context. GBIC also has a Design Prototyping Scheme that helps developers and building owners conduct design studies and simulations to test-bed new technologies.
 - c. GBIC Demonstration (GBIC-Demo). GBIC Demo scheme facilitates the demonstration of innovative technologies in operational buildings. This allows the technologies to be validated prior to wider deployment and commercialisation.

Overview of Tender for Consultancy Study for Design Prototyping for Decarbonisation (DPfD) Challenge

3. Currently, the best-in-class green buildings can achieve 72% energy efficiency (EE) improvement from 2005 levels. To accelerate our efforts to achieve SGBMP's target of 80% energy efficiency improvement by 2030, BCA has launched a tender for consultancy study for Design Prototyping for Decarbonisation (DPfD) challenge to identify pathways to attain 80% EE for high-rise commercial office, hotel, and mixed developments (mixed developments refer to a mix of commercial office or hotel, excluding residential).
4. The DPfD Challenge is a 6-month consultancy study that requires the appointed consultant to work with different stakeholders comprising building owners, developers and other built environment experts in various disciplines, for example Architects, Mechanical & Electrical Consultants, and Environmental Sustainability Design Consultants, to explore workable strategies and technologies to achieve 80% EE improvement for the selected building project.
5. The scope of the study will (a) explore passive and active strategies, (b) conduct technology scan and identify innovative solutions that are technically feasible and commercially viable, (c) conduct energy modelling and simulation to determine the energy efficiency improvement, (d) conduct cost-benefit analysis and thermal comfort analysis and (e) identify any potential barriers (e.g. regulations) and key considerations to implementing these strategies and technologies for high-rise commercial office, hotel and mixed development buildings.
6. The outcome of the study aims to provide a suite of latest and emerging green building technologies and solutions for building owners and developers to achieve 80% EE improvement including its related trade-offs. The insights gained from these consultancy studies will be disseminated to our industry stakeholders for broader application.

Who is eligible to participate in the consultancy tender

7. We are seeking consultancy firms with proven experience and expertise in energy modelling and simulation to collaborate with building owners/developers

who can offer their buildings as case studies. The building should be a high-rise commercial office, hotel or mixed development (excluding residential components)^[5].

8. More details on the tender specifications and criteria can be found in GeBIZ.

FACTSHEET ON ENERGY EFFICIENCY GRANT FOR THE CONSTRUCTION INDUSTRY

Overview of EEG

1. During Budget 2024, the Government announced that the Energy Efficiency Grant (EEG) will be expanded to the construction industry. EEG aims to support construction firms in their sustainability journey by co-funding investments in energy-efficient (EE) equipment.
2. The EEG for the construction industry represents an extension of the ongoing initiatives outlined in the Singapore Green Building Masterplan (SGBMP)^[6]. Through the EEG, we hope to drive the adoption of energy-efficient construction equipment among construction firms.

Funding Support

3. The EEG will provide two tiers of support: (i) a Base Tier where eligible local construction firms will be able to receive up to 70% of funding support for pre-approved energy-efficient construction equipment, up to \$30,000; and (ii) an Advanced Tier to support firms that wish to make larger investments to drive greater energy efficiency, up to \$350,000. If a firm applies for both the Base and Advanced Tier, the combined grant cap across both tiers is \$350,000. For instance, if a firm has already utilised \$30,000 under the Base Tier, the grant cap for their subsequent Advanced Tier applications will be \$320,000. More details can be found in the table below.

Tier	Support Cap Per Company	Qualifying Equipment	Government Support Rate (until 31 Mar 2026)
Base Tier	Up to S\$30,000	Pre-approved EE equipment	Up to 70% for SMEs and up to 30% for non-SMEs respectively
Advanced Tier	Up to S\$350,000 across Base and Advanced Tiers	EE equipment need not be pre-approved, but must demonstrate energy savings above 350 tonnes lifetime carbon abatement (tCO ₂ e)	Lower of: - Support levels under the Base Tier; or - Grant quantum computed based on EE equipment's expected lifetime energy savings

4. For the construction industry, the grant will co-fund energy-efficient construction equipment, including electric and other energy-efficient machinery such as eligible Battery Energy Storage Systems (BESS), electric excavators, wheel loaders and crawler cranes.

Who can apply

5. Only construction firms registered and operating in Singapore under SSIC [7](#) 41 – 43 and are using energy-efficient construction equipment for their site works may apply for the EEG for the construction industry. Applicants must also meet all the following eligibility criteria at the point of application for the respective tiers of support:
 - Has a minimum of 30% local shareholding, with at least 1 local employee at the firm-level
 - Has a group annual sales turnover of no more than S\$500mil

- The equipment purchased must be used in Singapore
6. More details on the qualifying criteria, the pre-approved list of supportable equipment, along with the detailed application guidelines and other FAQs can be found on Business Grants Portal (<https://www.businessgrants.gov.sg/>) and BCA's website (<https://www1.bca.gov.sg/>) when EEG is open for applications at the end of this year. Interested applicants are to submit their applications through Business Grants Portal. We encourage equipment suppliers and builders to continue to propose latest energy-efficient construction equipment technologies that are commercially available for potential inclusion in the EEG.

^[1] More information on SGBMP can be found at

<https://www1.bca.gov.sg/buildsg/sustainability/green-building-masterplans>.

^[2] EUI measures the annual energy consumption of a building over GFA (in kWh/m²).

^[3] SLE buildings refer to buildings that have achieved at least 60% improvement in energy efficiency compared to 2005 levels.

^[4] Best-in-class buildings refer to buildings that achieve the highest possible energy efficiency standards with the technology available at the time.

^[5] For the purpose of the consultancy study, high-rise buildings are defined as buildings more than 12-storeys.

^[6] The Singapore Green Building Masterplan (SGBMP) captures our collective commitment to pursue more ambitious sustainability standards in our Built Environment. Launched in Mar 2021, the SGBMP is part of the Singapore Green Plan 2030. The SGBMP aims to deliver the three key targets of "80-80-80 in 2030". More information on SGBMP can be found at <https://www1.bca.gov.sg/buildsg/sustainability/green-building-masterplans>.

^[7] The Singapore Standard Industrial Classification (SSIC) is the national standard for classifying economic activities undertaken by economic units and is used in censuses of population, household and establishment surveys and in administrative databases. For details on the SSIC classification structure and the business activities under SSIC 41 - 43, please refer to <https://www.singstat.gov.sg/standards/standards-and-classifications/ssic>.