

GREEN FINANCE REPORT AS AT 31 MARCH 2023



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1 Introduction

The Housing & Development Board (HDB), a statutory board of the Ministry of National Development (MND), was established on 1 February 1960. HDB's mission is to provide quality and affordable public housing for Singaporeans, create vibrant and sustainable towns, and promote the building of active and cohesive communities.

HDB, the leading property developer and owner in Singapore, is committed to be a leader in [environmental management](#).

2 Green Finance Framework

As part of HDB's commitment towards the development of green and sustainable homes, HDB has developed a Green Finance Framework (the "Framework") to enter into multiple Green Finance Transactions ("GFTs"), including but not exclusively green bonds and green loans.

On 18 February 2022, HDB obtained a limited assurance report from Ernst & Young LLP to confirm the alignment of HDB's Framework with the following Green Principles and Standards:

- i. Green Bond Principles (2021) by the International Capital Market Association (ICMA);
- ii. Green Bond Standards (2018) by the ASEAN Capital Markets Forum; and
- iii. Green Loan Principles (2021) by the Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications & Trading Association.

More information on the Framework and the limited assurance report are available on the HDB website (<https://www.hdb.gov.sg/about-us/news-and-publications/green-finance-framework-and-reports>).

3 Eligible Green Projects

The proceeds from HDB's GFTs shall be used exclusively to finance or re-finance eligible green projects under the project category of Green Buildings which comprises the development of new residential and non-residential HDB projects that are planned to achieve the Building and Construction Authority's (BCA) certification of Green Mark Gold^{Plus} or above, and which commences:

- a) During the 24 months prior to the relevant issue date of a GFT; or
- b) After the issue date of a GFT.

The BCA Green Mark Gold^{Plus} certification recognises projects as being among the top green building performers in Singapore, with robust levels of energy and water efficiency, greenery provision and active mobility considerations, among others.

In accordance with our Framework, the Design Development Group¹ identified 30 eligible green projects and obtained the Deputy Chief Executive Officer (Building)'s endorsement to include these projects in its Green Project Register. The Chief Executive Officer had reviewed and approved the Green Projects Register that could be financed with HDB's GFT proceeds. Launched between August 2020 to November 2022, these new residential projects are planned to achieve the BCA Green Mark certification of Gold^{Plus} or above. The descriptions of these projects are in **Annexes A and B**.

In line with our shared value to care for the environment, HDB complies with all applicable environmental laws, regulations and other relevant requirements. This includes but is not limited to environmental laws and regulations in Singapore such as the [Workplace Safety and Health Act 2006](#), [Code of Practice for Environmental Control Officers for Specified Construction Sites](#) and [Environmental Protection and Management Act 1999](#). We also conduct in-depth [environmental studies](#), where required², to assess the expected impact of development on the natural and built environment. They guide our development plans for the areas and inform mitigating measures to minimise the impact of development works on the environment. With this, HDB manages the environmental and social impacts that may arise during the development of the flats, for instance, construction noise, water pollution, safety, health and welfare of workers.

HDB's '[Designing for Life](#)' roadmap encapsulates our vision and ideas in designing a better living environment, building homes and towns with smart and sustainable features, and the forging of closer communities for our residents. It addresses key trends that will impact the future of HDB living, such as an ageing population, climate change, evolving social aspirations, and Singaporeans' desire to be more involved in shaping their living environment. As for our older estates and towns, these are given new leases of life, by revving up their vibrancy and continued relevance through our [renewal and upgrading programmes](#).

With our comprehensive approach, HDB manages material environmental, social and governance (ESG) risks and opportunities in the pursuit of our vision to create endearing homes all are proud of.

¹ Part of the former Development & Procurement Group

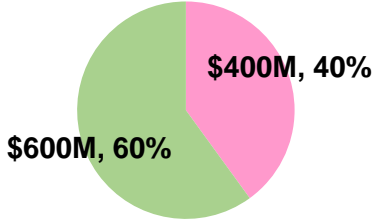
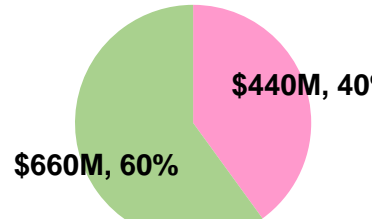
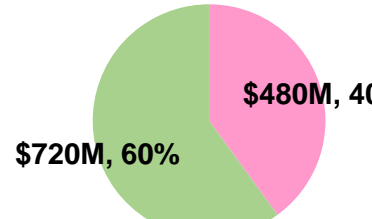
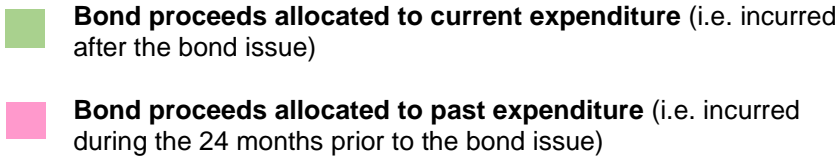
² Under the Planning Act 1998, development proposals require planning permission from the Urban Redevelopment Authority (URA) before they are allowed to proceed. As part of this process, every development proposal goes through a thorough screening process, which reviews not only its potential environmental impact, but also other aspects such as its impact on traffic, public health, and heritage. Developments projects near sensitive areas such as Nature Reserves, Nature Areas, and other areas with significant biodiversity, or which are in marine, and coastal areas, or which have potential trans-boundary impact, are subject to greater scrutiny.

4 Allocation of Green Bond Proceeds

Following the development of its Green Finance Framework, HDB marked its first step into green finance transactions, by raising S\$1 billion through its inaugural green bond issued on 15 March 2022. As at 31 March 2023, HDB has issued 3 green bonds totalling S\$3.3 billion; S\$1 billion from its inaugural green bond on 15 March 2022 and two other green bonds amounting to S\$2.3 billion in July and October 2022.

As stated in our Framework, HDB will ensure, to the best of its ability, the allocation of proceeds to the eligible green projects on a portfolio basis no later than 2 years from the date of issuance and allocate at least 50% of the proceeds to current and future expenditures. Each green bond will be reported until full allocation of proceeds. HDB also intends to provide annual reporting of the allocation of proceeds and expected impact throughout the tenure of the green bonds.

As at 31 Mar 2023, the proceeds from the 3 green bonds issued in 2022 have been fully allocated to the eligible green projects on a portfolio basis, with 60% of the green bond proceeds allocated to current expenditures.

Issue Date	Maturity Date	Issue Size (Billion)	Coupon per annum	Allocation of bond proceeds
15 March 2022	15 March 2027	S\$1.0B	1.845%	 <p>\$600M, 60%</p> <p>\$400M, 40%</p>
13 July 2022	13 July 2027	S\$1.1B	2.940%	 <p>\$660M, 60%</p> <p>\$440M, 40%</p>
26 October 2022	26 October 2027	S\$1.2B	4.090%	 <p>\$720M, 60%</p> <p>\$480M, 40%</p>
Total		S\$3.3B		 <p>Bond proceeds allocated to current expenditure (i.e. incurred after the bond issue)</p> <p>Bond proceeds allocated to past expenditure (i.e. incurred during the 24 months prior to the bond issue)</p>

5 Impact Report

As at 31 March 2023, HDB has identified 30 eligible green projects (i.e. new residential projects which are planned to achieve the Green Mark certification of Gold^{Plus} or above) for our Green Projects Register. Based on the completed sustainability data submissions of 14 projects, the total estimated expected environmental benefits from 14 projects³ are tabulated as follows:

Sustainability Indicators	Estimated Expected Environmental Benefits ⁴
Estimated energy generated from Solar Panels ⁵	1,614,000 kWh per year
Estimated energy saved at common areas from Smart Lighting ⁶ and Elevator Energy Regeneration System ⁷	15,625,000 kWh per year
Estimated avoided carbon emissions ⁸	6,994,000 kg CO ₂ saved per year

The computation of the estimated expected environmental benefits for the remaining projects are in progress as the consultants for the projects are in the process of generating the information. HDB will report on the estimated expected environmental benefits for these remaining projects in subsequent reports.

³ Out of these 14 projects, 11 have obtained the BCA Green Mark certification of Gold^{Plus} (see Annex A).

⁴ The estimated expected environmental benefits are based on the best current information available to HDB.

⁵ The estimated energy generated from Solar Panels is calculated based on the projected solar capacity (in kWp) and PV yield of 1,200 kWh/kWp/yr .

⁶ The estimated energy savings from Smart LED Lighting is calculated using energy savings from LED lighting with reference to the lighting power budget in SS 530 and average 40% energy savings obtained from Smart Lighting as compared to LED.

⁷ The estimated energy savings from the Elevator Energy Regeneration System is calculated using average 20% energy saved with reference to energy consumption of lifts without the regenerative function.

⁸ The estimated avoided carbon emissions (refers to Operational Carbon Emission) is calculated based on the total sum of the energy generated from solar panels and energy saved at common areas, using EMA's electricity grid emission factor of 0.4057kg CO₂/kWh in 2021.

6 External Review

HDB has engaged S&P Global Ratings (“S&P”) to provide a second party opinion that the green bonds reported in HDB’s Green Finance Report are in alignment with the:

- i. Green Bond Principles (2021) (with June 2022 Appendix 1) by the International Capital Market Association (ICMA); and
- ii. Green Bond Standards (2018) by the ASEAN Capital Markets Forum.

HDB’s Green Finance Report and S&P’s Report will be made available on the HDB website (<https://www.hdb.gov.sg>).

Annex A: List of Eligible Green Projects in HDB's Green Projects Register

S/N	Projects that have completed their sustainability data submissions ⁷	Brief Project Description ¹⁰
1	Bartley Beacon ⁸	Launched in November 2020, Bartley Beacon is located at the junction of Bartley Road and Mount Vernon Road, comprising 880 units of 3-, 4-, and 5-room flats.
2	Bartley GreenRise ⁸	Launched in February 2021, Bartley GreenRise is bounded by Bartley Road, Bidadari Park Drive, and Bartley Walk, comprising 387 units of 3- and 4-room flats.
3	Garden Bloom @ Tengah ⁸	Launched in May 2021, Garden Bloom @ Tengah is bounded by Tengah Central and Tengah Garden Walk, comprising 782 units of 2-room Flexi, 4-, and 5-room flats.
4	Parc Clover @ Tengah ⁸	Launched in November 2021, Parc Clover @ Tengah is bounded by Tengah Park Avenue, Tengah Boulevard, and Tengah Drive, comprising 1,124 units of 2-room Flexi, 3-, 4-, and 5-room flats.
5	Parc Glen @ Tengah ⁸	Launched in November 2021, Parc Glen @ Tengah is bounded by Tengah Road, Tengah Boulevard, and Tengah Park Avenue, comprising 1,008 units of 2-room Flexi, 3-, 4-, and 5-room flats.
6	Parc Woods @ Tengah ⁸	Launched in February 2021, Parc Woods @ Tengah is bounded by Tengah Drive and Tengah Boulevard, comprising 767 units of 2-room Flexi, 3-, and 4-room flats.

S/N	Projects that have completed their sustainability data submissions ⁷	Brief Project Description ¹⁰
7	ParkEdge @ Bidadari ⁸	Launched in February 2021, ParkEdge @ Bidadari is bounded by Bartley Walk, Mount Vernon Road, Sang Nila Utama Road, and the future Bidadari Park, comprising 476 units of 4- and 5-room flats.
8	ParkView @ Bidadari ⁸	Launched in November 2020, ParkView @ Bidadari is bounded by Upper Aljunied Road, Sang Nila Utama Road, and the future Bidadari Park, comprising 358 units of 3- and 4-room flats.
9	Tampines GreenEmerald ⁸	Launched in November 2020, Tampines GreenEmerald is bounded by Bedok Reservoir Road and Tampines Street 96, comprising 750 units of 2-room Flexi, 4-, and 5-room flats.
10	Tampines GreenJade ⁸	Launched in August 2021, Tampines GreenJade is bounded by Tampines Street 96 and Bedok Reservoir Road, comprising 546 units of 4- and 5-room flats.
11	Tampines GreenQuartz ⁸	Launched in August 2021, Tampines GreenQuartz is bounded by Bedok Reservoir Road and Tampines Street 95 and 96, comprising 1,613 units of 2-room Flexi, 3-, 4-, and 5-room flats.
12	Alkaff Breeze ⁹	Launched in February 2021, Alkaff Breeze is bounded by Upper Aljunied Road and Alkaff Crescent, comprising 353 units of 4- and 5-room flats.
13	Parc Residences @ Tengah ⁹	Launched in August 2020, Parc Residences @ Tengah is bounded by Tengah Park Avenue and Tengah Drive, comprising 1,044 units of 2-room Flexi, 3-, 4-, and 5-room flats.
14	Tampines GreenOpal ⁸	Launched in August 2020, Tampines GreenOpal is bounded by Tampines Street 92 and 96, comprising 1,070 units of 3-, 4-, and 5-room flats.

S/N	Projects planned to obtain Green Mark GoldPlus or higher 9	Brief Project Description 10
15	Alexandra Vale	Launched in August 2022, Alexandra Vale is located along Alexandra View, comprising comprises 782 units of 3- and 4-room flats.
16	Bukit Merah Ridge	Launched in May 2022, Bukit Merah Ridge is bounded by Bukit Merah View, Henderson Road, Tiong Bahru Road, and Lower Delta Road, comprising 1,669 units of 3- and 4-room flats.
17	Dakota Crest	Launched in February 2022, Dakota Crest is located along Geylang River and the Geylang Park Connector, bounded by Old Airport Road, Jalan Enam and Dakota Crescent and comprises 443 units of 2-room Flexi, 3-, and 4-room flats.
18	Garden Waterfront I & II @ Tengah	Launched in November 2022, Garden Waterfront I & II @ Tengah are located along Tengah Garden Avenue, comprising 2,077 units of 2-room Flexi, 3-, 4-, and 5-room flats.
19	Ghim Moh Ascent	Launched in May 2022, Ghim Moh Ascent is bounded by Ghim Moh Road, Ghim Moh Close, and the Rail Corridor, comprising 867 units of 3- and 4-room flats.
20	Havelock Hillside	Launched in August 2022, Havelock Hillside is located along Havelock Road, comprising 869 units of 3- and 4- room flats.

S/N	Projects planned to obtain Green Mark Gold ^{Plus} or higher ⁹	Brief Project Description ¹⁰
21	Heart of Yew Tee	Launched in November 2021, Heart of Yew Tee is bounded by Yew Tee Close, Choa Chu Kang Street 62, and Choa Chu Kang North 6, comprising 68 units of 2-room Flexi flats.
22	Keat Hong Grange	Launched in August 2022, Keat Hong Grange is bounded by Choa Chua Kang Avenue 7, Choa Chu Kang Grove, and Keat Hong Link, comprising 987 units of 2-room Flexi, 3-, 4-, and 5-room flats.
23	Kim Keat Heights	Launched in May 2022, Kim Keat Heights is bounded by Lorong 7 and Lorong 6 Toa Payoh, comprising 385 units of 2-, 3-, and 4-room flats.
24	Parc Flora @ Tengah	Launched in February 2022, Parc Flora @ Tengah is bounded by Tengah Drive and Tengah Garden Walk, comprising 560 units of 2-Room Flexi, 3-, 4-, and 5-room flats.
25	Plantation Creek	Launched in February 2022, Plantation Creek is bounded by Tengah Garden Avenue and Tengah Boulevard, comprising 713 units of 4- and 5-room flats.
26	River Peaks I	Launched in November 2021, River Peaks I & II are located along Kelantan Road and Weld Road, comprising 960 units of 3-, and 4-room flats.
27	River Peaks II	

S/N	Projects planned to obtain Green Mark Gold ^{Plus} or higher ⁹	Brief Project Description ¹⁰
28	Sun Plaza Spring	Launched in August 2022, Sun Plaza Spring is bounded by Tampines Street 41 and Tampines Street 42, comprising 267 units of 4- and 5-room flats.
29	Woodlands South Plains	Launched in August 2022, Woodlands South Plains is bounded by Woodlands Avenue 1 and Woodlands Drive 17, comprising 630 units of 2-room Flexi, 3- and 4-room flats.
30	Yishun Beacon	Launched in May 2022, Yishun Beacon is bounded by Yishun Central 1 and Yishun Avenue 2, comprising 646 units of 2-room Flexi, 4-, and 5-room flats.

⁷ Projects s/n 1-11 have obtained BCA Green Mark certification of Gold^{Plus}. Projects s/n 12-14 are planned to achieve BCA Green Mark certification of Gold^{Plus} or higher.

⁸ Assessed under BCA Green Mark Certification GM RB: 2016.

⁹ Assessed under BCA Green Mark Certification GM: 2021 (which takes effect from 1 November 2021).

¹⁰ The brief project description, including the number of units, are extracted from each project's sales brochure.

Annex B: Details of some Eligible Green Projects ¹¹

HEART OF YEW TEE

Launched in November 2021, the Heart of Yew Tee comprises a 10-storey residential block that will be integrated with a 6-storey commercial block.



The project will be set amidst lush greenery, with interlacing green decks weaved throughout the development. These decks, which will feature playgrounds and adult and elderly fitness stations, also serve to connect the development's residential and commercial blocks. The residential block features a series of garden terraces connected by open stairways that cascade down towards an expansive community plaza. The commercial block will add vibrancy to the area, housing a polyclinic, a hawker centre, a kidney dialysis centre, retail shops, and a community club.

¹¹ In implementing “eco-friendly”, “green” or “sustainable” features and solutions in these projects, HDB has referred to industry best practices and available technologies at the time of the projects, and in consideration of solutions best suited to them.

PARC RESIDENCES@TENGAH

Launched in August 2020, Parc Residences@Tengah will be the first public housing development located in the new Park district. It comprises 12 residential blocks designed with unique curved rooflines, ranging in height from 7 to 14 storeys. The development is nestled between the lush Forest Fringe and Plantation Farmway.

Dramatic sky terraces bridging across some of the residential blocks offer panoramic views of the surrounding greenery and central green. There are also roof gardens above the Multi-Storey Car Park and the neighbourhood centre.



Parc Residences @ Tengah will have eco-friendly features and smart solutions to reduce energy usage, and contribute to a safer and more sustainable living environment.

The development incorporates a centralised cooling system. This system for public housing is the first of its kind in Singapore.

Cooling to each household unit will come from highly energy efficient chillers. Home owners also do not need to install and maintain outdoor condensing units on their air-conditioner ledge. They will therefore enjoy cost savings while contributing to a sustainable lifestyle in this eco-friendly district. while contributing to a sustainable lifestyle in this eco-friendly district.



TAMPINES GREENJADE

Launched in August 2021, Tampines GreenJade sits in the vicinity of several park connectors and Bedok Reservoir, offering residents a green haven to return home to. The development's name references the surrounding greenery and the area's history as a former quarry.

Comprising 6 residential blocks that range from 15 to 17 storeys in height, this development was awarded the BCA Green Mark Gold^{Plus} award on 30 December 2022.



The development is designed with a wide range of green and sustainable features.

ECO-FRIENDLY FEATURES

- Separate chutes for recyclable waste
- Regenerative lifts to reduce energy consumption
- Bicycle stands to encourage cycling as an environmentally-friendly form of transport
- Parking spaces to facilitate future provision of electrical vehicle charging stations
- Use of sustainable products in the development
- Active, Beautiful, Clean waters design features to clean rainwater and beautify the landscape

SMART SOLUTIONS

- Smart lighting in common areas to reduce energy usage
- Smart pneumatic waste conveyance system to optimise the deployment of resources for cleaner and fuss-free waste disposal

Disclaimer

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Fulfilling Dreams, Building Homes, Creating Communities

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