

# Joint Press Release

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## **Downtown Line Achieves BCA Green Mark Gold<sup>PLUS</sup> Certification**

The Building and Construction Authority (BCA) has awarded the Downtown Line (DTL) the BCA Green Mark Gold<sup>PLUS</sup> certification, the highest tier achieved for a rail line to date, for its environmentally-friendly features.

2 The DTL is the second rail line to achieve the BCA Green Mark certification, after the Circle Line (CCL) was presented with the BCA Green Mark Gold award in 2010. The assessment and grading were based on the Green Mark for Rapid Transit System (RTS) framework, jointly developed by the Land Transport Authority (LTA) and BCA. Please refer to **Annex A** for more information on the framework.

3 Mr Ngien Hoon Ping, Chief Executive of LTA said, “As a key agency involved in a vast number of infrastructure projects throughout Singapore, LTA recognises that it has an important role in being committed to practices that promote environment sustainability. Therefore, throughout the planning, design and construction of the Downtown Line, we carefully considered the environmental impact of our works, and put in various measures to ensure that the line can operate sustainably while minimising impact to our environment.”

4 Mr Hugh Lim, Chief Executive of the Building and Construction Authority added, “Singapore’s green journey is not limited to the energy efficiency of buildings. The infrastructure at our MRT lines is another area where we are working to extend the reach of environmental sustainability beyond buildings. It requires upfront planning and consideration to incorporate green features into new rail lines. BCA will continue to work with LTA and other public agencies to green their buildings and infrastructure, and deliver a more sustainable built environment for Singaporeans.”

### **Adoption of energy saving technologies**

5 The DTL is the longest underground rail line in Singapore, spanning 42km, with 34 stations, of which 11 are interchange stations. Similar to the CCL, the DTL adopts a regenerative braking system, which channels the energy produced by the train during braking to power a nearby train or train station. The upgraded system on the DTL shaves off close to 2 per cent of its energy consumption a year, which is equivalent to more than three times the energy saving achieved by CCL, and is enough to provide power to about 370 HDB 5-room flats for an entire year.

6 The DTL stations are also fitted with air-conditioning systems with energy savings features to minimise energy usage. These features will help save 6300 MWh of energy consumption per year, enough to provide power to about 1080 HDB 5-room flats for a year.

7 Another key green feature for DTL is the solar panels at Gali Batu Depot. These panels are able to generate about 1,150 MWh of energy per year, which is used to offset the power consumption of the Depot.

### **Innovative means of recycling**

8 Besides energy savings, the DTL adopts water-saving features such as the recycling of the condensate water collected from the air-conditioning system located at the DTL stations to offset cooling tower water demand. With the high humidity in Singapore, significant amount of condensate water is generated, and the recycling of such water will help the DTL save about 72,000m<sup>3</sup> of water each year, enough to fill 30 Olympic size swimming pools.

9 The DTL trains also feature a modular design which benefits the environment, as individual components such as train car body and bogie can be easily exchanged and upgraded. Once taken out of service, they are also easily recyclable since they are generally produced from materials that are well suited to recycling, such as metals and plastics. The design of Train Control and Management System (TCMS), which provides data communications interfaces to other train-borne systems such as the Drive Control Unit and Train-Borne Announcement System, is also highly adaptable as it can be upgraded or exchanged, minimising the need for spares.

### **Encouraging an active, healthy and green lifestyle**

10 Users of the DTL can also adopt an active, healthy and environmentally-friendly lifestyle with the ample bicycle parking facilities and sheltered walkways. Commuters can easily cycle and park their bikes at the more than 4,800 bicycle parking lots conveniently located at the stations. The DTL stations are also connected to the nearby schools, offices and residences via a network of sheltered walkways, making it easy for commuters to access the stations.

11 With the framework in place, LTA will continue to work with its contractors and operators to identify areas where environmental-friendly and efficient use of resources can be implemented, as we continue to operate and construct more lines.

12 The entire Downtown Line will be operational with the opening of 16 stations along the Downtown Line 3, from Fort Canning to Expo on 21 October 2017.

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## BCA-LTA GREEN MARK FOR RTS

Launched in 2010, the BCA-LTA Green Mark for RTS was developed to provide a holistic approach in assessing and grading the RTS for existing and future Lines. Setting a sustainable way forward in the development of rapid transit systems and network, the framework comprises various sustainability strategies in the planning, design, construction and operational aspects of the RTS.

The BCA-LTA Green Mark for RTS is based on three key pillars namely: the effective use of energy, environmental protection and sustainable development and water conservation.

### **Pillar 1: Effective Use of Energy**

This pillar promotes the effective use of energy through detailed design and provisions to enhance the operational performance of the RTS. LTA aims to improve the energy efficiency of the rail supporting systems such as the electrical and mechanical systems as well as maximise energy recovery.

An example is the use of regenerative braking in RTS where energy can be harvested from the braking of the trains and channelled back to the electrical network for other uses.

Another means to achieving energy efficiency is to reduce the weight of the train to an optimal level, by using lighter materials such as aluminium alloy which will reduce the overall energy consumption.

### **Pillar 2: Environmental Protection and Sustainable Development**

The second pillar promotes the use of environmentally-friendly architectural designs, innovative construction methodology and recyclable materials.

For example, the use of environmentally friendly materials such as eco-concrete (which comprises green cement, slag, fly ash or recycled aggregates) are encouraged in the construction of stations.

Also, trains that are designed and constructed with recyclable materials to minimise the adverse impact to the environment.

### **Pillar 3: Water Conservation**

This pillar promotes the use of innovative water saving technologies and devices to reduce water usage and recycle waste water for non-potable use.

For example, the recovery of condensate water from air-conditioning systems can be constructively used to offset the use of potable water for cooling tower operation.

**Solar Panels at Gali Batu Depot**



**Bicycle Parking Lots at Bendemeer Station**

