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2022 Merit

HKGO 2023 - 2025

Highways Department

The Government of the Hong Kong Special Administrative Region

Environmental Report 2022/23

CONTENTS

I am delighted to present to you our Environmental Report 2022/23 which summarises our continuing efforts in environmental management in the past year and introduces our environmental targets and initiatives for 2023/24.

As a dedicated member of the society and a responsible custodian of infrastructure projects, we are committed to giving due regard to the environment when discharging our duties throughout the project life cycle. In planning and design of new road projects, we have assessed various options of tunnel alignments and road widening works to achieve the least environmental impacts. Railway is one of the most sustainable forms of mass transport system. We have facilitated the planning and design of railway projects promulgated under the Railway Development Strategy 2014. These new railway schemes will improve the railway accessibility and relieve road traffic congestion. Following the Government's policy on developing Hong Kong as a "Walkable City", we have been actively delivering projects on providing covers for walkways connecting to major transport facilities and hospitals with a view to fostering a pedestrian-friendly environment and promoting walking as a form of sustainable urban mobility. We also have been collaborating closely with various stakeholders in preserving an old and valuable stonewall tree at Bonham Road, achieving harmonious coexistence of people and trees. With our commitment to sustainability and promoting innovation, we continued to conduct researches and trials on innovative technologies and environmentally friendly materials, including studies on the application of artificial intelligence technology in road construction and maintenance works, and the site trials of bituminous road pavement using used rubber tyres as binder and precast concrete paving units with recycled plastics.

I am pleased to conclude that our environmental targets for 2022/23 have been fully accomplished. Our efforts in green management have received due recognition in a number of environmental awards. We also continued to bolster support for various green and charity activities to promote environmental awareness and social responsibility among our staff.

I would like to convey my sincere appreciation to our colleagues for their professional and valuable contributions in the past year. Looking ahead, we will remain unwavering in our commitment to provide the public with high quality services in a sustainable manner, and make our community a greener and more pleasant place.

Jimmy P M CHAN
Director of Highways

Introduction

This report shows the work and initiatives of the Highways Department in fulfilling our environmental responsibilities through contributions towards carbon reduction, environmental management, research and development and stakeholder engagement in the year 2022/23. Our environmental performance was well recognised with the winning of several prestigious environmental awards. The report also records our achievement of environmental objectives and targets for 2022/23, and environmental targets set for 2023/24. To reduce paper consumption, this report is published in English and Chinese on our website.

Department Profile

Who we are

We have about 640 professional staff spanning across various disciplines including engineering, surveying, landscaping and architecture. Another 1,630 staff in other grades are also supporting the Department's activites.

We have

640 professional staff

1,630 staff in other grades

Expenditure

Total operating expenditure in the financial year 2022/23

HK$ 4,187 million

What we do

- To expand and improve the road network of Hong Kong in order to meet the growth in traffic demand, serve new development areas and facilitate the movement of people and goods both within the territory and across the boundary and at the same time contribute towards sustainable development.
- To maintain the integrity of the road network with particular emphasis on safety and serviceability, and implement local road infrastructure works to facilitate and cope with the public and private sector developments.
- To provide infrastructure for pedestrians such as footbridges, lifts, covered walkways and escalators to enhance accessibility and connectivity of local destinations with a view to fostering a pedestrian friendly environment.
- To formulate plans for further development of the railway network in Hong Kong.
- To provide technical support and set standards for the construction and maintenance of the road network.
- To research into new materials, techniques and standards including environmentally friendly technology, and evaluate their applicability in Hong Kong.

We maintain

2,238 km of roads

1,462 road bridges

21 road tunnels

1,059 footbridges

546 subways

13,470 roadside slopes

585,000 trees

240,000 lighting points

Where we are

The Headquarters of the Highways Department are located in Ho Man Tin Government Offices with sub-offices in:

- North Point Government Offices
- Cheung Sha Wan Government Offices
- Trade and Industry Tower
- Grand City Plaza
- One Sky Parc (Previously known as Spectrum Tower)
- Cheung Sha Wan Plaza
- Nan Fung Commercial Centre
- Harbourfront Towers

Total office floor area:

28,100 m²

Vision and Mission

OUR VISION

To develop and upkeep the road network as well as to plan and implement railway development to world-class standards.

OUR MISSION

In order to enhance the long term prosperity and improve the living standards of the community, we are committed to:

- expanding and improving the road network to meet the growth and change in transport needs, and development requirements;
- maintaining the integrity of the road network;
- providing high quality technical support for the planning, design, construction and maintenance of the road network; and
- implementing and updating the Railway Development Strategy.

Environmental Goal

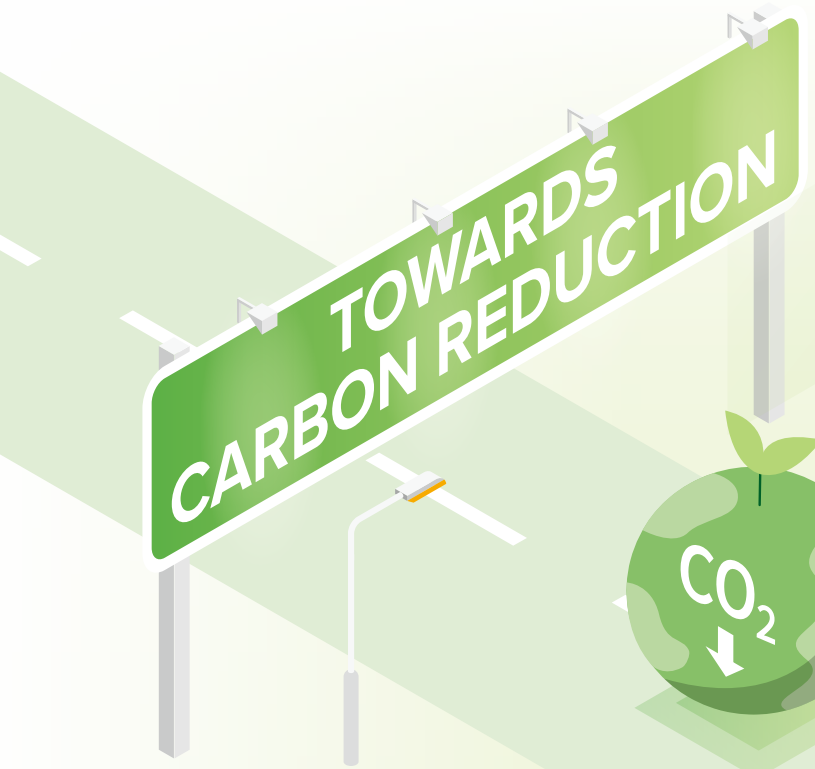
Our environmental goal is to accomplish public works efficiently and with due regard to the environment.

Management Policy

We maintain an Integrated Management System to meet the requirements of the International Standards ISO 9001 and ISO 14001. We incorporate quality and environmental considerations at all stages of our work in developing and up-keeping the road network as well as planning and implementing the railway system. In so doing, we are committed to:

- delivering high quality services to our community;
- identifying and controlling the environmental aspects at all stages of our work, using resources efficiently, minimising waste and preventing pollution as far as practicable;
- monitoring the performance of our service providers to ensure good quality of works and to prevent or mitigate potential environmental impacts arising from our projects;
- complying with relevant legal and other requirements;
- sustainable construction with due consideration to balancing environmental, social and economic needs; and
- wider adoption of innovative technologies and practices.

We improve our services through regular review of our Integrated Management System, its Management Objectives and Targets, and through identification of opportunities for continual improvement.



7 Energy Saving in Public Lighting

9 Energy Saving in Office

10 Contribution to Reducing Emission

The "Hong Kong's Climate Action Plan 2030+" outlined the medium and long term work against climate change and carbon reduction objectives, with an aim to reduce Hong Kong's carbon emission by 65% to 70% by 2030 using 2005 as the base. We have introduced measures to reduce energy consumption and use of fossil fuel to help achieving these targets.

Energy Saving in Public Lighting

To align with the objectives of reducing carbon intensity with the vision to further enhance the energy efficiency of public lighting in Hong Kong, we launched the Light Emitting Diode (LED) public lighting replacement programme in 2017/18 to replace the conventional road lights, gantry sign and roadside floodlights, and fluorescent tubes at footbridges and subways with LED luminaires. We aim to provide safe, high quality, reliable and sustainable public lighting services to the public.

Advantages of LED Luminaries

As compared with conventional High Pressure Sodium lights, LED lights are of more energy-saving, durable, environmentally friendly and higher colour rendering. In addition to savings in operating and maintenance costs, LED lights can improve the performance and reliability of public lighting, and provide road users with a safe and high quality lighting environment.

Public lighting for highways

A footbridge with LED lights

Target and Achievement

We target to replace 6,500 road lights and 1,500 fluorescent tubes at footbridges and subways with LED lights each year, and replace a total of 4,900 gantry sign and roadside floodlights with LED lights.

From 1 April 2022 to 31 March 2023, we replaced about 27,000 lighting points which were well above our annual target. We also accomplished the replacement target of a total of 4,900 gantry sign and roadside floodlights. Since the commencement of the programme in 2017/18, we have replaced about 120,000 various kinds of lighting points, covering about 73% of total road lights, 27% of total fluorescent tubes at footbridges and subways, and all the gantry sign and roadside floodlights in Hong Kong.

We will continue to monitor the development of LED luminaires and other lighting technologies with a view to developing a more environmentally friendly and energy-saving public lighting system.

From 1 April 2022 to 31 March 2023

27,000
lighting points replaced

Since the commencement of the programme in 2017/18

120,000
lighting points replaced

Replacement progress:

- Road lights — 73%
- Fluorescent tubes at footbridges and subways — 27%
- Gantry sign and roadside floodlights — 100%

Replacement of LED Lights

Kiu Hing Road, Yuen Long

Footbridge at Hoi Fai Road near Nam Cheong Park

Subway at On Po Road near Tai Po Centre

Energy Saving in Office

Energy Saving Measures

We endeavour to reduce energy consumption in office and have promulgated the following measures:

Appoint Energy Wardens to monitor the usage of lighting equipment and to keep the illumination level to the minimum but acceptable level

Maintain air-conditioning temperature not lower than 25.5°C in hot seasons

Switch off lights during lunch or when staff are away for long periods

Switch off computer equipment and electric appliances when not in use

Encourage the use of staircase for inter-floor traffic

Monitor the electricity consumption of offices of the Highways Department with individual electricity meters installed

Since 2021, we have been exploring the feasibility of replacing lighting fittings with LED tubes at our offices to achieve a further reduction of energy consumption. The replacement of lighting fittings to LED tubes for our offices on 5/F of Ho Man Tin Government Offices and 12/F of Nan Fung Commercial Centre have been completed in 2022/23. We are seeking the Electrical and Mechanical Services Department's advice for extending the lighting fitting replacement works to our Department's other offices by phases.

Electricity consumption in 2022/23 with corresponding indirect gas emission figures:

Offices	Electricity Consumption (kWh) [Comparison with 2021/22]	Indirect Gas Emissions (kg) SO_2	NO_X	RSP
Ho Man Tin Government Offices	890,821 [-3.56%]	1,701.47	1,033.35	53.45
North Point Government Offices	169,795 [-2.30%]	324.31	196.96	10.19
Trade and Industry Tower	643,062 [4.10%]	1,228.25	745.95	38.58
Nan Fung Commercial Centre	446,554 [4.10%]	852.92	518.00	26.79
Grand City Plaza	22,934 [-1.88%]	43.80	26.60	1.38
Cheung Sha Wan Plaza	10,861 [3.36%]	20.74	12.60	0.65
The Harbourfront Tower 1	68,836 [4.97%]	131.48	79.85	4.13
The Harbourfront Tower 2	13,230 [-6.86%]	25.27	15.35	0.79
One Sky Parc[1]	315,643 [N/A]	602.88	366.15	18.94

Note [1]: Offices were progressively moving into One Sky Parc from 2020 to 2023 and so no comparison was made.

Contribution to Reducing Emission

Promoting the Use of Renewable Energy on Highway Structures

To signify the Government's commitment to carbon reduction, the 2019 Policy Address has set a Green Energy Target which aimed to achieve a reduction of 6% in the Government's total energy consumption from 2020 to 2025. The 2022 Policy Address has also announced that the Government would continue to improve the overall energy performance of government buildings and infrastructure by more than 6% by 2025 through energy saving and the use of renewable energy (RE).

Photovoltaic (PV) system, comprising solar panels and inverters to convert solar energy into electricity, is one of the common RE technologies. We have identified highway structures suitable for installation of PV systems to promote the use of RE on one hand, and to raise the public awareness of the benefits of RE on the other. We are planning to install PV panels on the roof of selected new and existing highway structures such as noise barriers/ enclosures, ventilation buildings of tunnels, footbridges and subways, in order to make the best use of the open spaces to maximize the efficiency of radiation absorption for generating electricity.

PV system on the roof of the existing subway at Kwai Fuk Road

Projects Completed To-date:

Subway at Pok Fu Lam Road near Pokfield Road
(completed in 2020)

Subway at Kwai Fuk Road near Kwai Fong Station
(completed in 2021)

Subway at Cherry Street near Oak Street
(completed in 2022)

As of to-date, we have completed the installation of PV systems on the roof of three existing subways at Pok Fu Lam Road, Kwai Fuk Road and Cherry Street. The PV systems installed at these subways are connected to the power grid to enhance supply reliability. The generated electricity would be primarily used by the subway lighting facilities. On the other hand, if the generated electricity is more than the need of the concerned subway, the surplus would be exported into the power grid for utilization by other users.

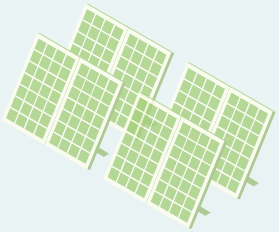
In order to achieve the Green Energy Target announced in the Policy Addresses and strive towards carbon neutrality, we will continue to seek opportunities to promote the use of RE on highway structures.

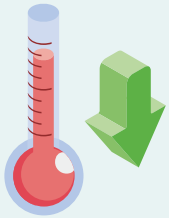
Environmentally Friendly Vehicles

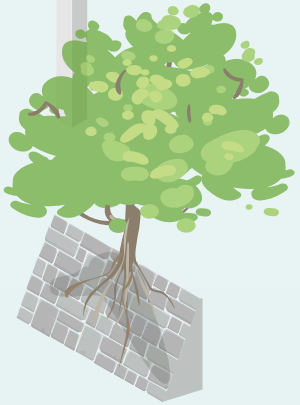
Five medium vans have been replaced in 2022/23 by environmentally friendly vehicle models approved by the Environmental Protection Department, which have exhaust emission standards more stringent than the prevailing statutory requirements. With less air pollutant release, the new vehicles could help contribute to better air quality which in turn protected the health and well being of the community. In view of the latest government-wide policy of setting electric vehicles as standard for small and medium private cars in the government fleet, we will progressively replace the saloon cars in our fleet by electric vehicles.

Environmentally friendly van in use

ENVIRONMENTAL MANAGEMENT







Environmental Considerations in

Improvement of Lion Rock Tunnel Project

Introduction

The Improvement of Lion Rock Tunnel (LRT) project is to rehabilitate the existing aged LRT with a view to extending its service life. The capacity of the tunnel and its connecting roads will also be enhanced to alleviate traffic congestion at the tunnel during peak hours and the traffic impact during maintenance, as well as to meet forecast escalated traffic demand.

Implementation Approach

As LRT is one of the most important routes linking Kowloon and the New Territories, a new tunnel tube would first be constructed between the two operating tunnel tubes for traffic diversion in order to maintain the existing busy traffic of LRT during the improvement works period. Upon its completion, the Kowloon-bound traffic will be temporarily diverted from the existing southbound tunnel tube to the new tunnel tube. The existing southbound tunnel tube will then be closed for expansion works to provide three-lane traffic while the northbound tunnel tube will remain in operation. After completion of the expansion of the existing southbound tunnel tube, it will be re-opened to accommodate Kowloon-bound traffic while the new tunnel tube will be reconfigured into a northbound tunnel for the Sha Tin-bound traffic. By then, both the northbound and southbound tunnel tubes of LRT will be capable to accommodate three-lane traffic. In addition to the staged construction works of the tunnel, widening of adjacent connecting roads will also be carried out in phases.

In order to minimize the environmental impacts and achieve sustainability during the construction and operation stages of the project, different schemes for tunnel alignment and road widening were developed and carefully assessed by taking into account various environmental considerations.

Typical tunnel section under the project

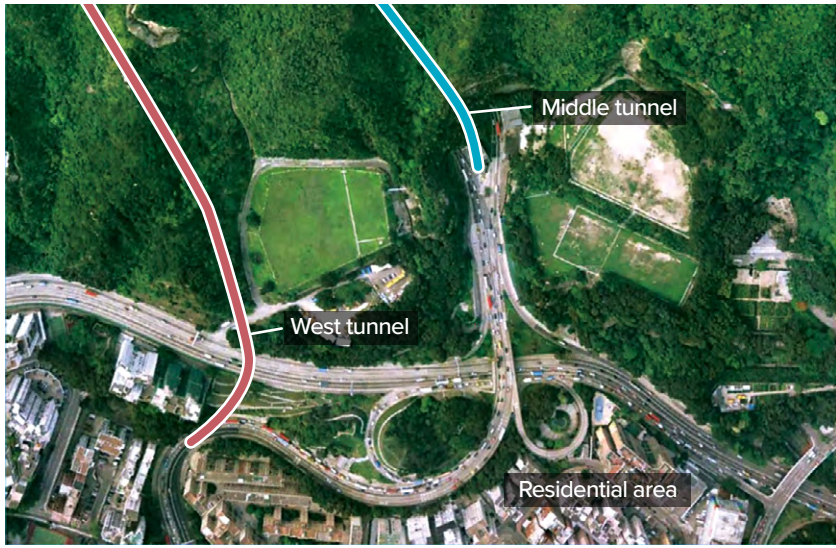
Environmental Considerations

Options of Tunnel Alignment

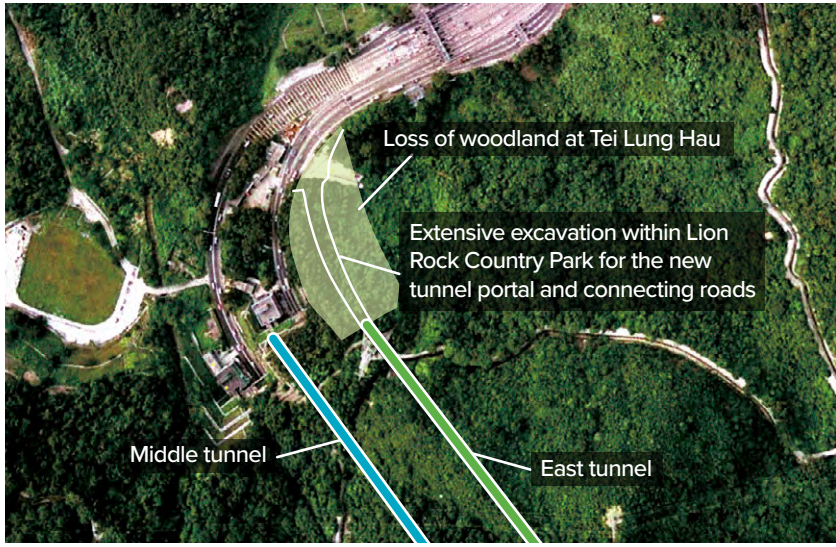
For the new tunnel tube to be constructed, three different options, namely the West Option (i.e. to the west of the existing LRT), East Option (i.e. to the east of the existing LRT) and Middle Option (i.e. in between the two existing tunnel tubes) had been explored. The Middle Option was eventually selected owing to the following environmental advantages.

Compared with the Middle Option, the West Option would comprise a much longer tunnel length due to the topographic condition, hence increasing the amount of construction and demolition (C&D) materials to be generated. Under the West Option, the portal of the new tunnel tube at the Kowloon side would also be very close to the nearby residential buildings, which would cause significant noise, air quality and visual impacts to the residents living in the vicinity.

As for the East Option, it would require extensive surface excavation within the Lion Rock Country Park (LRCP) at the Sha Tin side for the construction of the new tunnel portal and connecting roads. This would lead to much more tree felling and loss of woodland, making the East Option less favorable due to its high ecological impact.



The West Option



The East Option

Computer composed image of the Middle Option

The Middle Option has the shortest tunnel length and therefore with the least amount of C&D materials to be generated. The construction time of the Middle Option would be the shortest among the three alignment options, leading to the least noise and air quality impacts to the nearby residents during the construction stage. It also has the slightest visual and ecological impacts as it does not involve surface excavation within the LRCP.

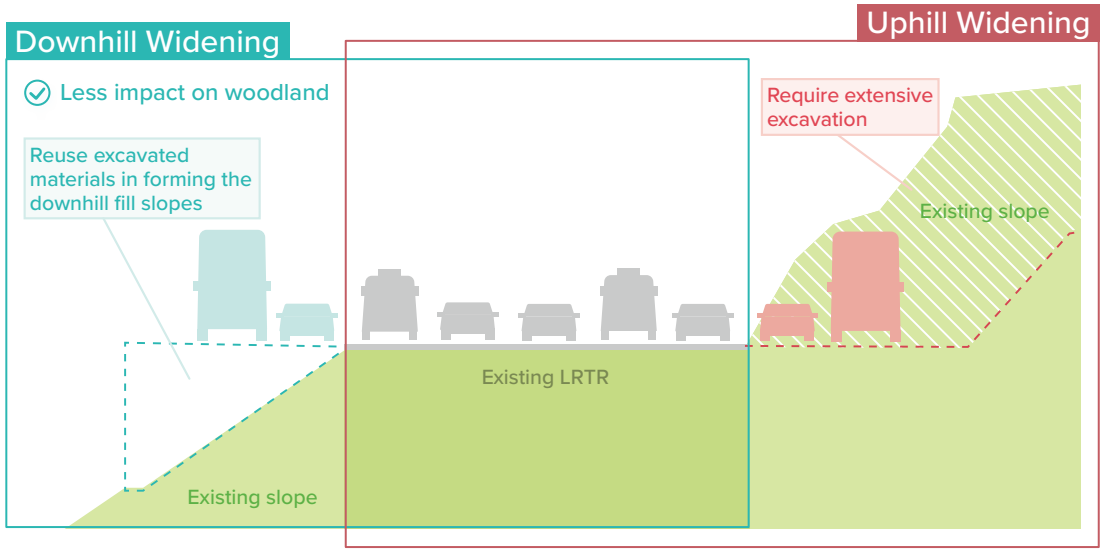
Options of Road Widening Works

As part and parcel of the project, the connecting roads will be widened to increase traffic capacity. The road widening works along Lion Rock Tunnel Road (LRTR) at Sha Tin side are proposed to be carried out at the downhill side (i.e. downhill widening). Comparing to the road widening works at the uphill side (i.e. uphill widening), downhill widening could minimize the extent of encroachment upon LRCP and avoid extensive excavation of the roadside slopes along LRTR.

Under the downhill widening approach, we have identified that the amount of woodland loss and number of trees to be felled would be much less than uphill widening. Downhill widening could also facilitate the reuse of the excavated materials in forming the downhill fill slopes with retaining walls. In contrast, excavation uphill would require partial closure of the nearside traffic lane of the southbound carriageway of LRTR, which would lead to serious traffic congestion, and in turn worsen the noise and air quality along LRTR. In view of the significant environmental benefits, downhill widening would be adopted for the road widening works at LRTR.

Preservation of Woodland and Country Park

By adopting a downhill widening scheme for LRTR, direct encroachment of the woodland of LRCP and natural habitats had largely been avoided. The footprint into LRCP is mainly located in developed areas and roadside woodlands of limited ecological value. Only 0.16 hectares of woodland in LRCP would be affected, mainly for the road widening works near World-wide Gardens which would have to be extended uphill to maintain suitable clearance of the residential blocks from the highway. A planting area of 0.25 hectares near LRTR would be provided for compensating the woodland loss.



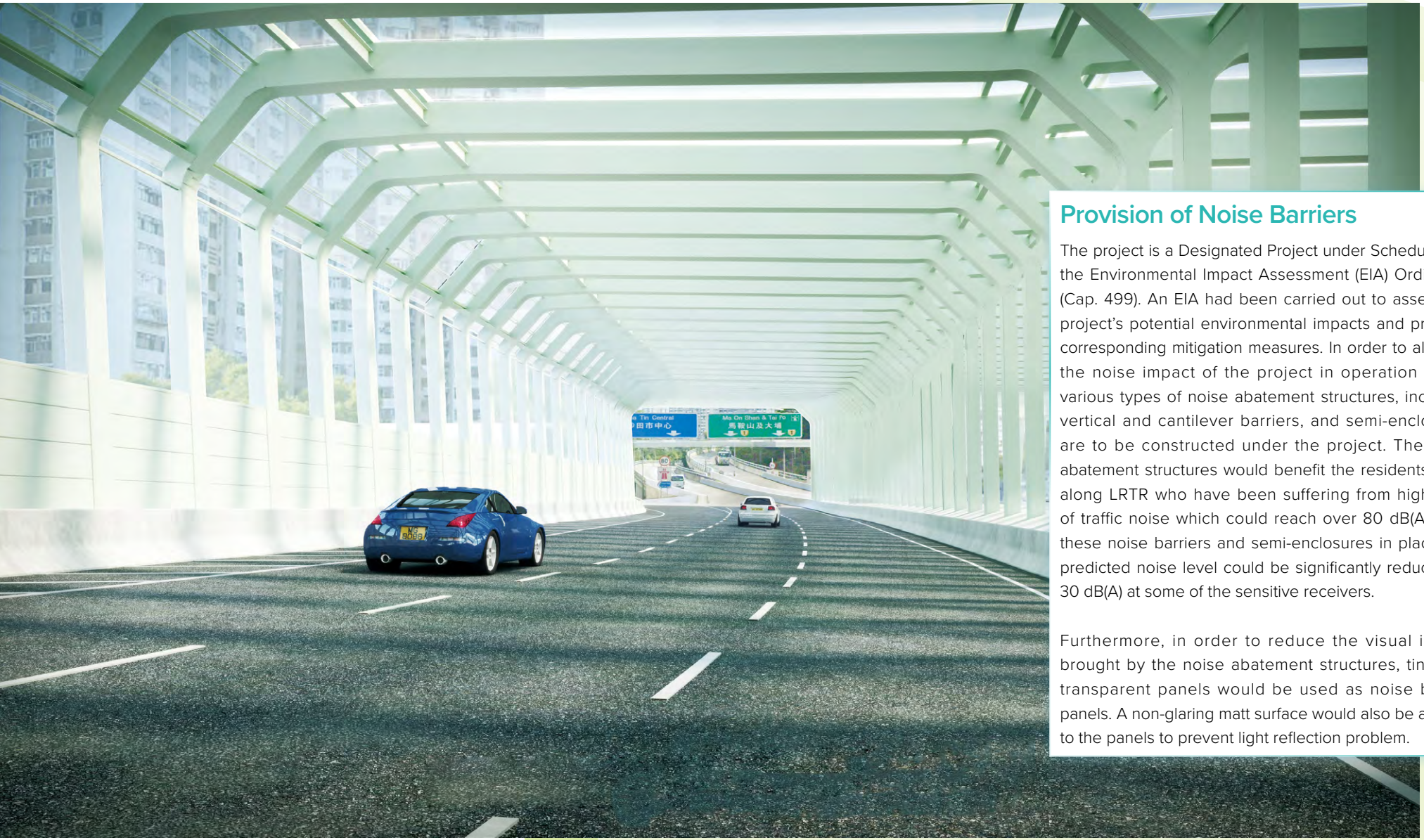
Downhill widening vs. Uphill widening

Woodland affected near World-wide Garden

Ancillary facilities such as the tunnel administration building (ADB), ventilation buildings and parking facilities will be re-located and re-built under the project. To avoid encroaching upon existing woodland and the LRCP, we would make full use of the paved area freed up after the implementation of free flow tolling system at LRT to accommodate the new ADB, bus lay-bys and the associated parking facilities for tunnel operation.

During public consultation, members of the public have raised concerns on the road widening works which would affect some of the facilities at the entrance to the Hung Mui Kuk (HMK) Barbecue Area. In order to address the concerns, we would take this opportunity to carry out improvement works for the access roads, staircases and vehicular entrance leading to the HMK Barbecue Area. Decorative screen hoardings would also be erected surrounding the future works sites to reduce associated visual impact.

Computer composed image of the proposed ancillary facilities



Provision of Noise Barriers

The project is a Designated Project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). An EIA had been carried out to assess the project's potential environmental impacts and propose corresponding mitigation measures. In order to alleviate the noise impact of the project in operation stage, various types of noise abatement structures, including vertical and cantilever barriers, and semi-enclosures are to be constructed under the project. The noise abatement structures would benefit the residents living along LRTR who have been suffering from high level of traffic noise which could reach over 80 dB(A). With these noise barriers and semi-enclosures in place, the predicted noise level could be significantly reduced by 30 dB(A) at some of the sensitive receivers.

Furthermore, in order to reduce the visual impact brought by the noise abatement structures, tinted or transparent panels would be used as noise barrier panels. A non-glaring matt surface would also be applied to the panels to prevent light reflection problem.

Computer composed image of the proposed noise abatement structures

Sustainable Construction in

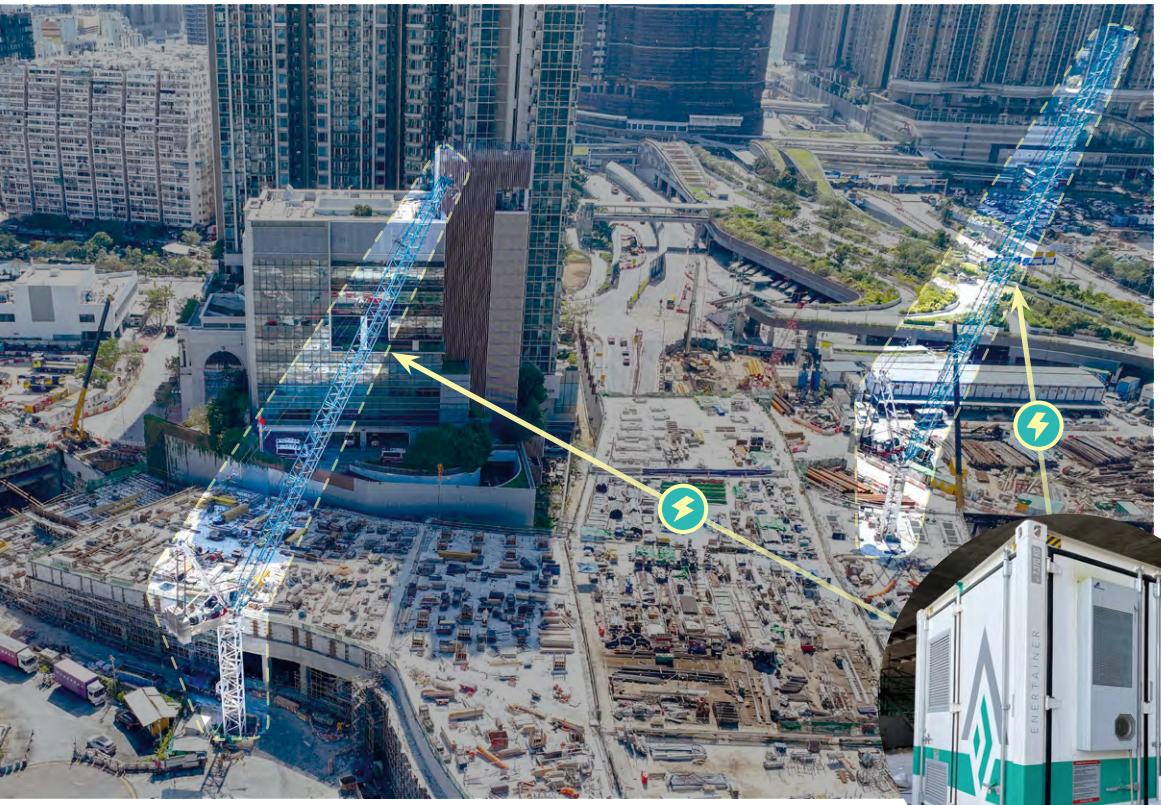
Central Kowloon Route Project

Alignment of the Central Kowloon Route

Introduction

The Central Kowloon Route (CKR) is a 4.7 km-long dual 3-lane trunk road connecting Yau Ma Tei and Kowloon Bay, with a 3.9 km tunnel underneath central Kowloon. It provides an alternative route bypassing the congested at-grade road network in central Kowloon area. Upon the anticipated commissioning in 2025, the journey time between Yau Ma Tei and Kowloon Bay during peak hour is expected to shorten from 30 minutes to about 5 minutes.

With an aim to promote sustainable development, environmentally friendly design, construction methods and equipment are adopted during the construction stage of the project.



Tower cranes on CKR work site

ESS unit on site

Energy Storage System (ESS) for Tower Cranes

Tower crane is a crucial machinery for large-scale construction works. Due to the intermittent high power demand, tower cranes are conventionally equipped with high-power diesel generators as power supply. Since the generators run continuously throughout the day, it would cause considerable air and noise pollutions. To improve the environmental performance, the CKR project team adopts the ESS solution which is a battery system specially designed for equipment with transient high power demand to replace the generators on site. The ESS installed for tower cranes is connected with the electricity supply of the works site which would charge the ESS during the periods of low power demand. The stored electricity would be discharged when there is high power demand. By eliminating on-site diesel combustion, the annual fossil fuel consumption is reduced by 35,000 litres, which is equivalent to 55 tonnes of carbon dioxide emission. With the use of ESS, the noise level on site is also reduced by 12 dB(A). Moreover, as the ESS does not consume energy when it is fully charged or during stand-by mode, the energy efficiency of ESS could be higher than 80% while traditional generators only have an energy efficiency of around 40%. In view of the environmental benefits above, the ESS is considered more environmentally friendly than the traditional diesel-powered generators for providing power to tower cranes.

ESS

Energy efficiency of ESS

>80%

Reduced

35,000 L

on-site fossil fuel combustion

≈ **55 tonnes** of CO_2 emission

Reduced

12 dB(A)

on-site noise level

Innovative Design and Construction for Underwater Tunnel Cofferdam

Traditionally, for underwater tunnel built by cut-and-cover method, temporary seawall are constructed to form a cofferdam which is an enclosed structure in water. To provide a firm foundation for the seawall, the soft marine mud in the seabed will be replaced by sand fill. This process requires extensive dredging operation and disposal of a large amount of soft marine mud. In addition, substantial backfilling of the entire cofferdam is necessary to create a dry working environment for subsequent diaphragm wall construction and excavation.

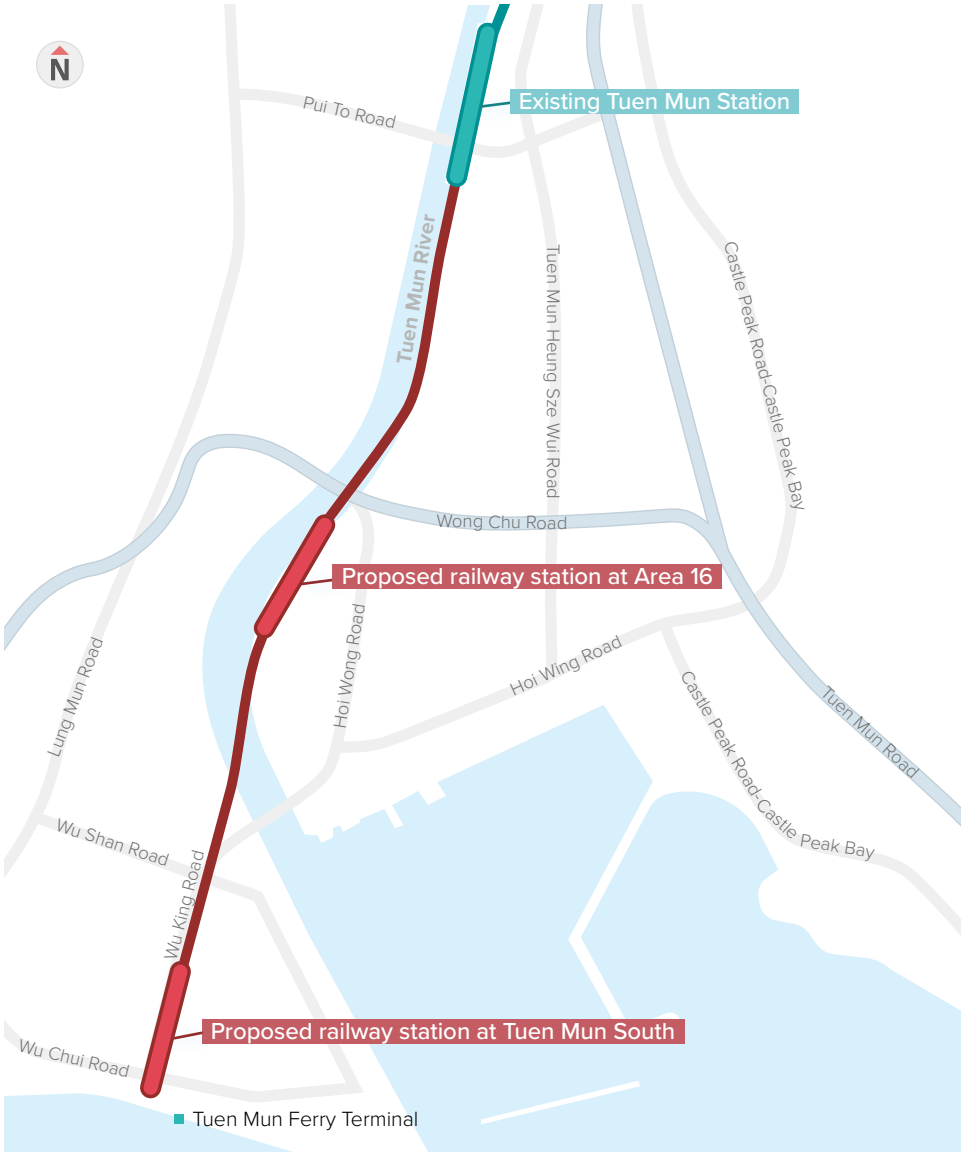
For the CKR cut-and-cover underwater tunnel section at Kowloon Bay, the project team adopts innovative ideas to optimize the traditional cofferdam construction. The revised cofferdam design features a double-wall system comprising the inner clutched pipe pile wall and the outer sheet pile wall. Instead of backfilling the entire cofferdam space to create dry working area as in the traditional way, backfilling is now only required within the space between the two layers of wall. A marine platform is then erected on top of the two layers of walls. This scheme significantly reduces the extent of temporary reclamation area and the need for fill materials, thus minimizing the disturbance to the seabed and the environmental impact to the marine ecosystem. The adoption of the pipe pile wall approach significantly reduces about 50% of the amount of marine sediment to be dredged or excavated. To further enhance the project's sustainability, modular strutting has been deployed in erecting the excavation lateral support to facilitate the reuse of steel materials in different phases of excavation, and even other projects after completion of the works. The reuse of steel materials significantly reduces carbon footprint generated from the material production and transportation processes.

The underwater tunnel at Kowloon Bay under construction

The construction process of the underwater tunnel is simulated in the following 360° VR video:

Sustainable Design for

Tuen Mun South Station



Alignment of Tuen Mun South Extension project

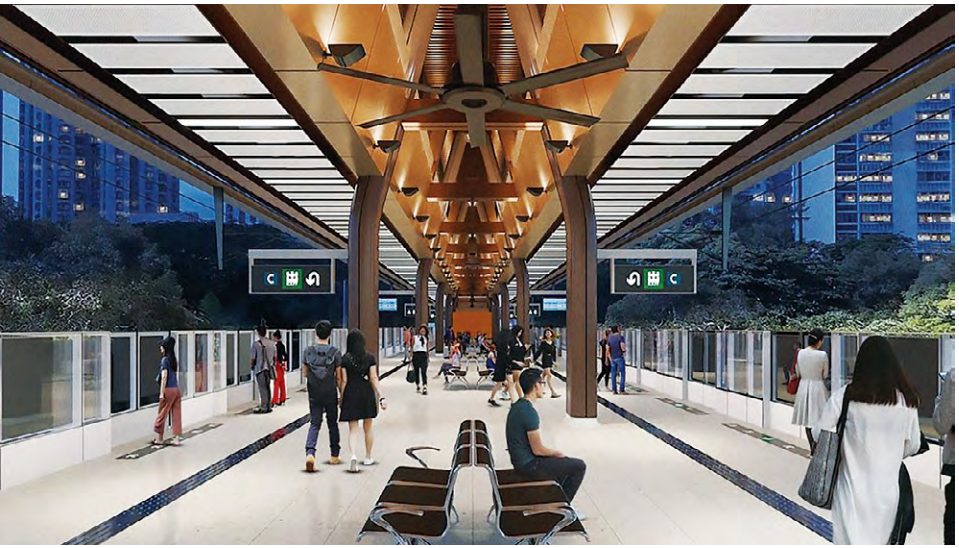
Introduction

The Government has been developing a comprehensive public transport system comprising different means of transport of which railway, a type of clean transport, forms the backbone of the system. With a view to contributing towards energy saving and emission reduction in railway operations, initiatives on sustainable design have been adopted under the Tuen Mun South Extension (TME) project, in particular, at the Tuen Mun South (TMS) Station, to promote sustainability and carbon reduction.

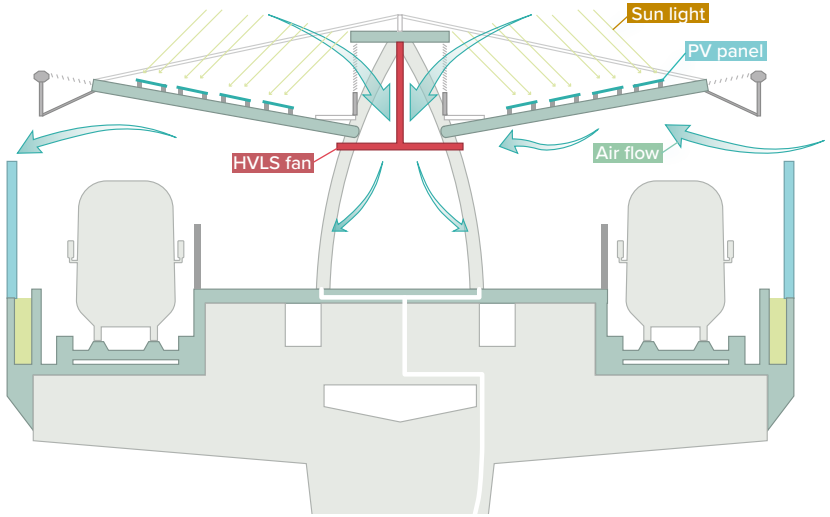
The Tuen Mun South Station

The proposed TME project is one of the seven recommended railway schemes in the Railway Development Strategy 2014. It extends the existing Tuen Ma Line from Tuen Mun Station southwards by about 2.4 km to improve railway access to the community to the south of the Tuen Mun town centre. The Government invited the MTR Corporation Limited (MTRCL) to carry out detailed planning and design of the TME Project in May 2020. Construction of the TME project by the MTRCL commenced in September 2023 and targeted for completion in 2030.

The project involves the construction of two new stations including the TMS Station, which is an elevated terminus near Tuen Mun Ferry Terminal. With Light Rail and bus stops nearby, this new station allows interchange between Tuen Ma Line and other public transport facilities to promote the use of railway as the main mode of public transport, which helps relieve traffic congestion in the area.



Computer composed image of TMS Station platform area with high-volume low-speed fans



Cross-ventilation at the platform area of TMS Station

Sustainable Design of Tuen Mun South Station

The environmentally friendly features adopted by the TMS Station, such as making good use of natural lighting and ventilation, not only provide the local community with a sustainable railway station, but also enhance the functionality and aesthetic appearance of the station.

Natural Ventilation

The TMS Station adopts cross-ventilation design with sustainable features that promote effective air circulation between the station and the surrounding environment to reduce energy consumption and space required for accommodating ventilation plants. The station will be equipped with high-volume low-speed (HVLS) mechanical fans that could effectively ventilate the platform area to enhance passenger's comfort level.

Natural Daylight and Lighting Control

The platform roof canopy of the TMS Station is designed to allow natural daylight penetration into the platform area which would reduce the need of artificial lighting, and hence the associated energy consumption. In addition, there will be an automatic daylight responsive lighting control to ensure the design illuminance levels are provided at all situations.

Renewable Energy

Photovoltaic (PV) panels will be installed at the rooftop of the TMS Station to generate electricity. With the adoption of renewable energy, the energy consumption required for the operation of the TMS Station could be further reduced.

Walkable City

Walkway Covers for Enhancing Walkway Environment

Background

The Government strives to create a pedestrian-friendly environment, thereby encouraging citizens to walk more and rely less on motorised transport so as to develop Hong Kong into a "Walkable City". The objectives are to encourage citizens to adopt a healthy lifestyle, enhance community interaction and build an age-friendly environment, etc. which are instrumental to the sustainable development of Hong Kong.

The Highways Department has been playing an active role in taking forward projects related to the concept of "Walkable City", particularly walkway cover projects. In view of the increasing ageing population, we hope to build an age-friendly community as soon as possible, so as to facilitate access by the elderly and people in need, and to prevent them from being exposed to adverse weather while walking along the frequently-used walkways.

Walkway cover at Chui Kwan Drive, Tung Chung

Development of Walkway Cover Projects in the Territory

The Government announced in the 2016 Policy Address (PA) to provide covers for walkways connecting to major public transport facilities and invited the 18 District Councils to submit proposals on the alignment of the walkway covers. Currently, the construction of walkway covers in Islands, Kowloon City, Kwai Tsing, North, Sai Kung, Sham Shui Po, Southern, Tuen Mun, Yau Tsim Mong and Yuen Long Districts with a total length of about 1.5 km has been completed. Those in Sha Tin, Tai Po and Tsuen Wan are under construction, with the rest in planning or design stages.

It was also announced in the 2019 PA that the Government would gradually provide covers for walkways connecting to public hospitals. The construction of walkway covers for three public hospitals has commenced for completion in phases starting from end-2024.

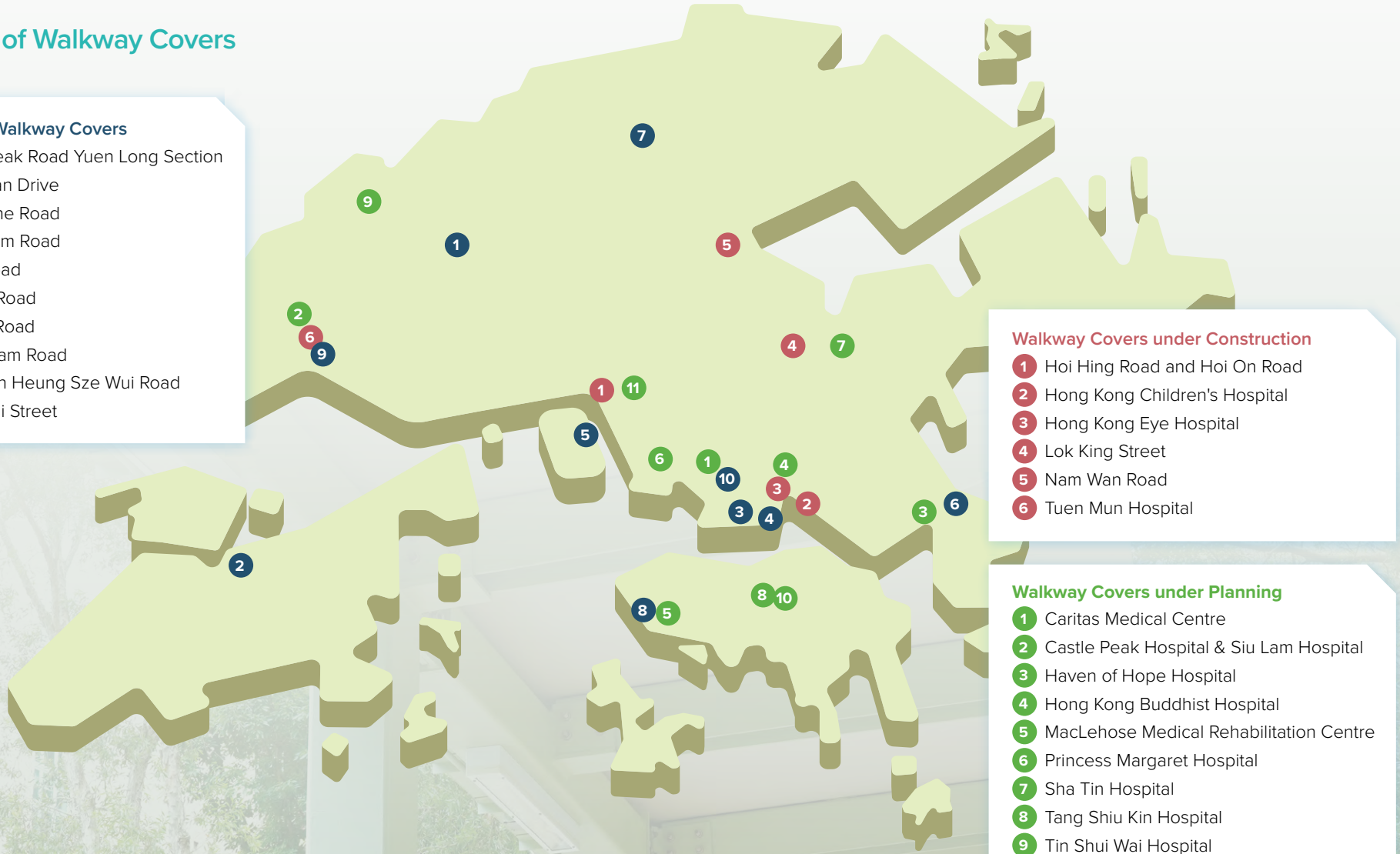
Walkway cover at Tuen Mun Heung Sze Wui Road

Woh Chai Street

Po Ping Road

Hung Hom Road

Locations of Walkway Covers



Completed Walkway Covers

1. Castle Peak Road Yuen Long Section
2. Chui Kwan Drive
3. Gascoigne Road
4. Hung Hom Road
5. Liu To Road
6. Ngan O Road
7. Po Ping Road
8. Pok Fu Lam Road
9. Tuen Mun Heung Sze Wui Road
10. Woh Chai Street

Walkway Covers under Construction

1. Hoi Hing Road and Hoi On Road
2. Hong Kong Children's Hospital
3. Hong Kong Eye Hospital
4. Lok King Street
5. Nam Wan Road
6. Tuen Mun Hospital

Walkway Covers under Planning

1. Caritas Medical Centre
2. Castle Peak Hospital & Siu Lam Hospital
3. Haven of Hope Hospital
4. Hong Kong Buddhist Hospital
5. MacLehose Medical Rehabilitation Centre
6. Princess Margaret Hospital
7. Sha Tin Hospital
8. Tang Shiu Kin Hospital
9. Tin Shui Wai Hospital
10. Tung Wah Eastern Hospital
11. Yan Chai Hospital

Benefits

Making Walkway Enjoyable and Promoting Healthy Lifestyle

Walking is a form of physical exercise that can yield health benefits. However, given the sub-tropical climate in Hong Kong with hot and humid summers as well as frequent rainstorms and occasional typhoons, navigating along walkways under these unfavourable weather conditions can hardly be a pleasant experience. Commuters and residents may therefore prefer more comfortable means of travel by using motorised transport.

The provision of covered walkways connecting to major public transport facilities and hospitals not only fosters a pedestrian-friendly environment, but also promotes walking as a form of sustainable urban mobility. With pedestrian environment significantly improved with better weather protection by reducing the chance of getting wet or excessively exposed to direct sunlight, people would be more motivated to cover their first or last mile by walking along sheltered walkways.

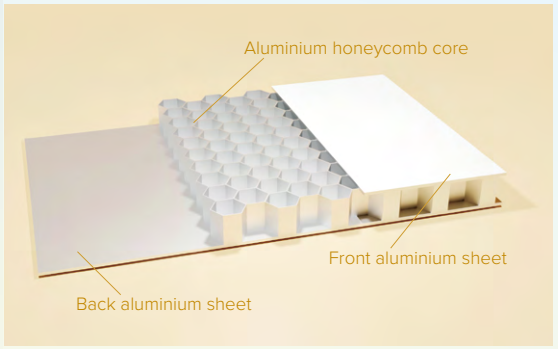
Reducing Reliance on Motorised Transport

With the enhancement of pedestrians' experience by provision of walkway covers, people would be more willing to walk to their destinations instead of taking motorised transport. The need for motorised transport for short commuting would be reduced. This helps relieve traffic congestion and reduce air pollution, which in turn achieve energy saving, carbon reduction and sustainable and livable environment.

Reducing Heat Island Effect

Given the high development and population density at built-up urban areas such as Mong Kok and Kwun Tong, these urban areas suffer most from the heat island effect in the summer. Worse still, extreme hot weather is expected to be more frequent in Hong Kong due to global climate change. It would be uncomfortable or even harsh for elderly people to move around.

Apart from sheltering pedestrians, walkway covers also help mitigate the heat island effect by the shading provided, and hence reduce the ambient temperature in the surrounding area creating a more comfortable pedestrian environment. In selecting the type of cover materials, we take into account of site specific factors such as sunlight, surrounding environment and landscaping arrangement, and shielding already provided by existing buildings. Normally, opaque materials such as aluminum honeycomb panels are selected, given its hexagonal cellular core structure which makes the panel a good heat insulator, thereby lessen the amount of heat absorbed by the road pavements and nearby structures. In areas which require ambient sunlight to bring out a sense of openness underneath the cover, transparent cover panels such as laminated tempered glass panels would be selected. Low-emissivity coating will also be applied on glass panels for reducing the ultraviolet light transmitted to the walkways.

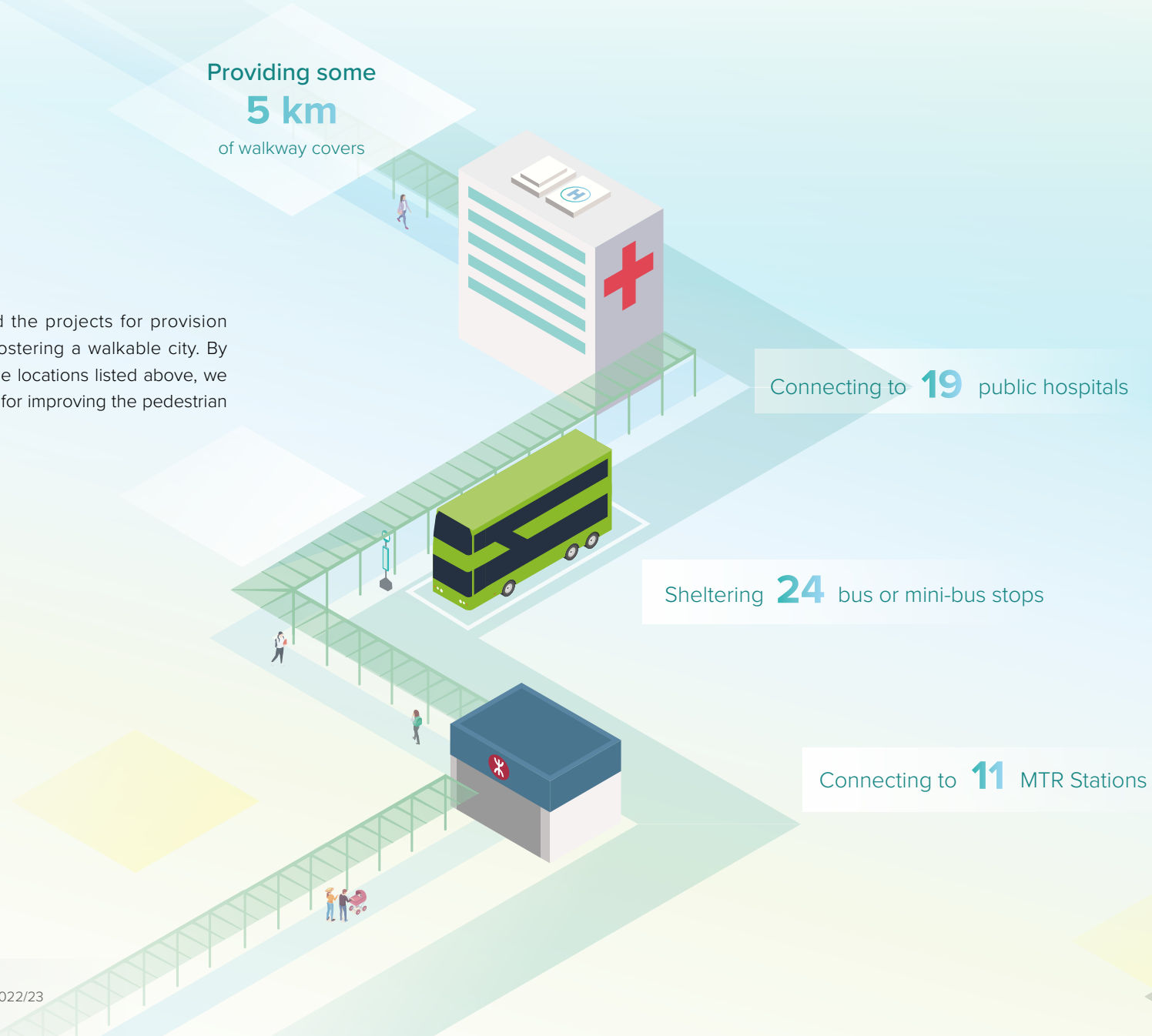


Aluminium honeycomb panel

Walkway cover with laminated tempered glass panels

Our Goals

We spare no effort to take forward the projects for provision of walkway covers with a view to fostering a walkable city. By completing the walkway covers at the locations listed above, we target to achieve the following goals for improving the pedestrian environment in Hong Kong.



Saving a Stonewall Tree - HYD CW/1

Stonewall tree HYD CW/1

The Highways Department is currently responsible for the maintenance of around 130 stonewall trees (SWTs). Inspection, monitoring survey, risk assessment and pruning operation are carried out regularly to ensure public safety. A multi-disciplinary working group for SWTs management is set up to pursue the long term healthy growth of SWTs, in which landscape architects provide arboricultural expertise, surveyors provide surveying support for monitoring displacement of SWTs, structural engineers advise on the support system while geotechnical and civil engineers advise on geotechnical and stonewall maintenance issues.

The SWT (HYD CW/1), located on a slope between Bonham Road and Hospital Road, is a *Ficus microcarpa* (榕樹). It is listed in the Register of Old and Valuable Trees and under the maintenance of our Department. The tree was infected by Brown Root Rot Disease (BRRD) which could lead to swift deterioration in tree health. Although the crown of this tree remained in good form, partial decay at its roots had been observed. If such condition was not properly addressed, the decay at its roots would worsen and eventually cause collapse of the whole tree.

Root tissue severely affected by Brown Root Rot Disease

In order to tackle the declining structural condition and health of the tree, we had adopted a multi-disciplinary approach with the use of technology to bolster the maintenance plan for this valuable tree.

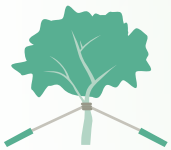
The actions under the maintenance plan include:

Applying fungicide to prevent the spread of BRRD to surrounding vegetation;

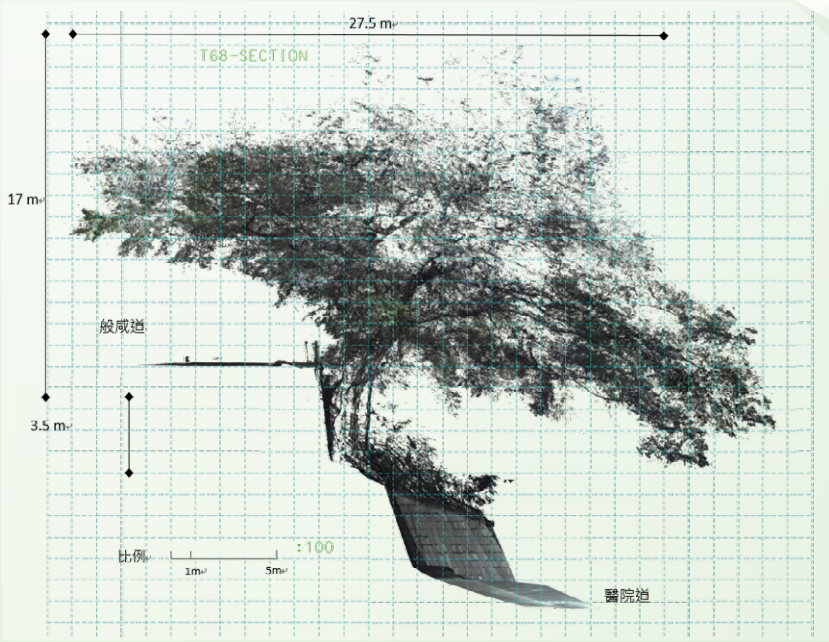
Engaging external tree expert to provide advice on the use of soil amendment (Biochar) and biological amendment (Trichoderma) to improve the health and structural condition of the tree;

Building point cloud models and conducting regular surveys to monitor the tree crown size and possible displacement;

Conducting tree pruning operations to reduce the weight of the tree canopy; and



Installing tree support system to provide physical support for stabilising the tree.



Point cloud model to monitor the size of tree canopy

Monitoring survey to track tree displacement

Tree support system with tree ties connecting to concrete blocks

With the collaborative support from District Councils, green groups, local residents and various government departments, the strengthened tree maintenance plan was successfully implemented to maintain the tree in an acceptable condition and at the same time safeguard public safety. This has successfully demonstrated an example of harmonious coexistence of people and the stonewall tree.

Signage made of upcycled wood to tell the story on saving the tree

This project has received the Meritorious Award under the “Excellence in Partnership Category” of the “Civil Service Outstanding Service Award Scheme 2022” organized by the Civil Service Bureau. The award not only recognised our Department's outstanding achievements on environmental management and sustainable development, but also boosted our morale and confidence in tackling any difficult tasks ahead to strive for continual enhancement of our service.

Photo of representatives of the Highways Department

Photo of team members among different government departments taken in front of the stonewall tree

Hong Kong Flower Show 2023

Prize presentation ceremony of the Hong Kong Flower Show 2023

After the longing three years, the Hong Kong Flower Show had returned to the Victoria Park on 10 – 19 March 2023. Same as the years before the pandemic, the Highways Department was invited to join this festive event and put up a display. Our theme for this year was "The Highways Wonderland", and with that we had won the Grand Award for Design Excellence (Landscape Display) under the category of Displays Section (Local).

The Highways Wonderland

The Highways Wonderland

To attract smiling kids and families to the venue, we brought a mini theme park to the Flower Show. We turned those commonly seen but easily forgotten roadside elements, such as traffic cones, tyres, traffic signs and road markings into the main attractions of our display.

The 4 m-tall traffic cone balloon and 2.6 m-tall tyre arch were the focus of the display which offered a photogenic spot for the audience. If you were one of the guests of our wonderland, you must have seen kids running under the giant traffic cone balloon with laughter as if it was a gateway of a miniature magical castle.

To echo with the giant balloon features, we also selected flowering plants that are in puffy feel with ball-shaped and joyful colours, such as *Handroanthus chrysotrichus* (黃花風鈴木), *Dendranthema morifolium* (乒乓菊), *Brassica oleracea* (羽衣甘藍) and *Helianthus annuus* (向日葵), and complemented with the theme flower – *Hydrangea macrophylla* (繡球花). Our visitors enjoyed this mini theme park and filled their cameras with gorgeous photos.

Our aim for the display was not only to be attractive to visitors, but also to be environmentally friendly. Therefore we deployed 3Rs (Reduce, Recycle and Reuse) thoroughly in our design.

向日葵
Helianthus annuus

繡球花
Hydrangea macrophylla

羽衣甘藍
Brassica oleracea var acephala

Lightweight balloon arch used in the display

Reduction of Carbon Footprint

Unlike the former displays in previous flower shows, we did not build any structure nor massive metal framework this time. Instead, we chose to use lightweight items such as the giant balloons. As a result, our design did not involve extensive industrial production and erection of metal framework, but at the same time still be able to create the spatial quality that visitors could enjoy.

Recycling of Materials

Apart from the giant balloons which were chosen to match with the ball-shaped theme flower – *Hydrangea macrophylla* (繡球花), another photogenic and playful item in our wonderland was the car displays that were made up of recycled tyres and steering wheels. These abandoned materials were dressed up by colourful paints and blossom flowers, and transformed into photogenic and playful features of our mini theme park.

Car display made up of recycled materials

黃花風鈴木
Handroanthus chrysotrichus

圓葉刺軸櫚
Licuala orbicularis

鍾花櫻花
Cerasus campanulata

Reuse of Display Plants

Before the setting-up of display, we had already planned for the reuse of plants after the 10-day display period. Trees and shrubs including *Handroanthus chrysotrichus* (黃花風鈴木), *Cerasus campanulata* (鍾花櫻花) and *Licuala orbicularis* (圓葉刺軸櫚) were transplanted to the slopes maintained by our Department in Tin Shui Wai and became part of our cityscape. Other shrubs such as *Brassica oleracea* (羽衣甘藍) were given to non-government organisations for their replanting campaign so that plants could be treasured again. By beneficially reusing these plants elsewhere, we aspired to provide them with a "happily ever after" ending just like the stories of fairy-tale characters in actual theme parks.

Green Office Management

Resources Saving: Water, Paper & Waste Recycling

In support of the Government's drive to save natural resources, we are committed to making every endeavour to pursue the "green office" concept in different aspects of our day-to-day operation. In addition to energy saving as mentioned in the previous chapter titled Towards Carbon Reduction, we have been making our best efforts to put in place a series of green policies and measures to promote the environmental awareness of our staff.

Water Saving

100% of toilets in HMTGO were installed with **water saving devices**

To maximise water conservation, we have adopted the use of dual-flush toilets, automatic low flow water taps and sensor type urinals. These components can effectively control the duration of water flow and keep the water flow at low level.

Paper Saving

In 2022/23, we consumed **21,805 reams of paper** and **100%** of which were recycled paper

To align with the green office initiatives, we would continue with the following measures on paper saving:

Photocopying/Printing
Photocopy/print documents only when it is unavoidable and both sides of paper should be used

Use of Paper
Encourage the use of recycled paper and reuse of paper office items

Use of Electronic Means
Use e-mails for communication as far as practicable and adopt electronic templates of letterheads, memoranda and forms to avoid pre-printing for adjustment

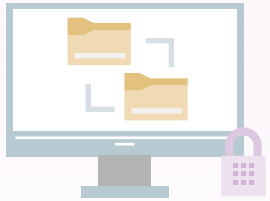
Handling of Fax Machines and Faxes
Exclude leader page for outgoing fax documents

Delivery/Circulation of Documents
Send unclassified documents without envelopes

Proper Recycling
Put up a single-sided paper collection box (yellow box) and a waste paper recycling box (green box) near photocopiers

New measure on paper saving:

To enhance efficiency in preserving and managing government records, the Government announced in the Policy Address Supplement published in October 2019 the full implementation of Electronic Recordkeeping System (ERKS) by end-2025. To this end, we have been promoting staff's awareness of paper saving during the focus group meetings and training sessions. Staff are encouraged to adopt a wider use of emails or other electronic means in business communication, in order to foster a digital workplace culture that maximises the value of ERKS and minimises manual efforts in records management.



Waste Recycling

16,604 kg waste paper were collected for recycling

In 2022/23, 16,604 kg of waste paper including ordinary paper and other paper (e.g. newspaper, carton paper or booklets) were collected and delivered to local recyclers by the government-appointed contractor.

We treasure waste with recycling value by taking the following measures over the years:

Place the separated recyclables into recycling bins for collection by cleansing contractors or local recyclers

Collect laser printer toners and ink cartridges for refilling and recycling

Put up recycling boxes to collect used paper, CDs, plastic bottles, aluminium cans and rechargeable batteries for recycling

Special Measures to Cope With Poor Air Quality

To increase staff awareness on air quality, we reminded our staff when the Air Quality Health Index has reached or is forecasted to reach the "very high" or "serious" health risk categories. A set of precautionary measures for reference by front-line staff and their supervisors were provided with the reminders. The measures included conducting risk assessment of outdoor work for workers performing heavy manual work and actions to reduce outdoor physical exertion and time of staying outdoor, especially in areas with heavy traffic.

Indoor Air Quality Certification

In 2003, EPD launched the Indoor Air Quality (IAQ) Certification Scheme to promote and commend good IAQ management practice.

Up to 2022/23, HMTGO has been awarded the Good Class IAQ Certificate consecutively for 19 years. In the past year, North Point Government Offices and Trade and Industry Tower attained Excellent Class IAQ, while Cheung Sha Wan Government Offices and our offices in Nan Fung Commercial Centre attained Good Class IAQ. We would continue our efforts in maintaining good indoor air quality in order to safeguard the health of building users and increase productivity of our staff.

IAQ Certificates of our offices

Green Advice

We have adopted various measures to enhance environmental awareness of staff through the provision of green advice:

Re-circulate environmentally related departmental guidelines regularly through e-mail and the intranet

Display posters to promote economic use of resources and green housekeeping measures

Review and assess compliance with the green housekeeping guidelines during the environmental audit

Invite staff to put forward suggestions on green management through the Staff Suggestions Scheme

Extend the green office concepts to daily life through activities such as recycling of used red packets and empty moon cakes/candy cans

Environmental Audit and Carbon Audit

Annual Environmental Audit

We conduct annual environmental audits in all 25 offices located in different premises with a view to maintaining the impetus of green measures in housekeeping. The objectives of conducting annual environmental audits are:

to assess compliance with the green housekeeping guidelines

to identify non-compliance and recommend remedial actions

to promote good environmental management

to increase staff awareness of green management and occupational safety and health initiatives

Audit results showed that our offices continued to comply with the green housekeeping guidelines. We have also taken the opportunity to share among the offices the green management best practices.

Carbon Audit

Carbon audit was conducted for Ho Man Tin Government Offices by the Building Management Office in 2022/23 to monitor the effectiveness of greenhouse gas emission reduction efforts. The relevant data are being studied by the Building Management Office.

As revealed from previous audit results, the total net greenhouse gas emission over the last few years was generally in a downward trend. We would continue to implement green management best practices with a view to further reducing our carbon footprint.

45 Automated Creation of Existing Conditions Modelling

46 Precast Concrete Paving Units with Recycled Plastics

47 Rubberized Bituminous Pavement Materials

Automated Creation of Existing Conditions Modelling

Using Artificial Intelligence (AI) for Creation of Existing Conditions Modelling (ECM)

Existing Conditions Modelling using AI technology

Emerging into a digital construction era, the Highways Department has been actively exploring the use of innovative technologies to enhance operational efficiency and achieve a greener and more sustainable construction environment. A case in point is our initiative to widely adopt Building Information Modelling (BIM) technology with the use of existing conditions models to represent ground features (such as kerb and lamppost) in a three-dimensional form in various road works projects. To further leverage the BIM technology in improving the quality and efficiency of road construction and maintenance works, we are recently conducting a pilot study to develop an AI-based approach for automating and streamlining the field data acquisition and computer modelling in the ECM creation process. With the aid of AI-trained models, the automated ECM creation process will identify, measure, and map road features from the point cloud data acquired in field for creating their respective ECM.

targeted to complete in **end-2024** tentatively

improves operational efficiency of modelling by about **70%**

Environmental Benefits

Adoption of the AI-based ECM creation technology not only improves operational efficiency of modelling by about 70% but also promotes the environmental performance by reducing the fuel consumption and carbon emission in field data acquisition and processing. Moreover, with more accurate and detailed ECM, engineers could reduce the number of design revisions which would help save the associated energy, paper and time consumption. In overall terms, this AI-based ECM creation process aligns with our commitment towards sustainable development and use of innovative technologies in supporting construction works. The pilot study is targeted to complete in end-2024 tentatively.

ECM Creation Workflow

1 Field data acquisition

Point cloud data captured by laser scanner

2 Computer modelling

Road features identified from point cloud data by AI technology

3 ECM creation

Road features automatically mapped to form the ECM

Precast Concrete Paving Units with Recycled Plastics

The Highways Department has been striving for developing environmentally friendly paving materials for footways. Since 2004, the use of recycled aggregates, which are crushed concrete or rocks generated from construction or demolition works, in concrete paving units (eco-pavers) has been mandated. We have taken further initiative on eco-pavers by mandating the use of recycled glass cullet contributing 20% to 25% by weight of the total aggregates of eco-pavers in road maintenance contracts since 2010. To facilitate the upcycling of various recyclables, we are conducting site trials of precast concrete paving units with recycled plastics.

According to the Monitoring of Solid Waste in Hong Kong 2021 published by the Environmental Protection Department in December 2022, the quantity of waste plastics disposed of in Hong Kong was 2,616 tonnes per day which was the second largest constituent of the quantity of municipal solid waste. Of the 2,616 tonnes of waste plastics, 2,331 tonnes were disposed of at the landfill (89%) while only 285 tonnes were recycled (11%).

All seven types of waste plastics (namely PET, HDPE, PVC, LDPE, PP, PS and other) can be upcycled as constituents in manufacturing the precast concrete paving units with recycled plastics. In terms of environmental benefits, producing a plan area of 100 square meters of precast concrete paving units with recycled plastics can consume 2,000 kg of upcycled plastics which is equivalent to the waste plastics amount of 200 washing machines.

Should the site trial results be satisfactory, we will consider establishing the criteria for general application of precast concrete paving units with recycled plastics as eco-pavers.

Recovered waste plastics

Shredded waste plastics

Precast concrete paving units with recycled plastics

100 m² of paving units with recycled plastics can consume **2,000 kg** of upcycled plastics ≈ the waste plastics amount of **200** washing machines

Rubberized Bituminous Pavement Materials

Waste tyres

Ground recycled crumb rubber

Crumb rubber modified bitumen in laboratory

Rubberized bituminous pavement

2 feasibility studies completed

All 42 trial road sections completed

In Hong Kong, disposal of waste vehicle tyres has been a very difficult problem for decades. With the vision to tackle this problem and bring in both environmental and engineering benefits, we collaborated with the Hong Kong Polytechnic University and completed two feasibility studies on the use of rubberized bituminous pavement materials in Hong Kong road network. The studies concluded and confirmed the technical feasibility of adding crumb rubber into conventional bituminous pavement materials, including wearing course, base course and road base, and the recyclability of the rubberized bituminous pavements at the end of their service lives. We commenced a site trial programme in 2021 to test its performance in public roads. All of the 42 trial road sections have been laid with rubberized bituminous pavement materials by end-2023. We will endeavor to complete our site trial programme and conclude the site trial results for wider application by 2024.

Rubberized bituminous pavement materials laid at Cheung Sha Wan Road

Our Staff

Green Training

We place emphasis on the adequacy of training provided to our staff for their effective discharge of duties. To keep abreast with the latest knowledge in environmental management, we continued to arrange various green training programme in 2022/23 to different users.

271 staff members attended

35 courses arranged

1,503 training hours

Covering staff in **11** offices

Anti-corruption Training

We attach great importance to staff members' conduct, integrity and ethics. Anti-corruption training such as Integrity Management Workshops and its refresher courses were regularly arranged to raise awareness among our staff. In 2022/23, we arranged 12 training sessions with 713 staff members attended.

12 training sessions

713 staff members attended

3 Certification Programmes

- Environmental Protection Course for Environmental Supervisors
- Training Programme and Recertification for ISA CA/CA Municipal Specialist Qualification
- Tree Risk Assessment and Management

6 Workshops

- Government Staff of Core Departments in Tree Management
- Occupational Health & Safety in Arboriculture
- Tree Management and Protection
- Tree Pruning and Use of Chainsaw
- Use of Chainsaw and Basic Tree Pruning
- Tree Care and Common Urban Tree Species

10 Seminar/Webinars

- 10th Anniversary Symposium HKILA Accredited Arborists Scheme - The Ecology of Roadside Trees
- Aerial Work and Site Management for Tree Works
- HKGBC - Greater Bay Area Sustainable Built Environment Conference 2022
- Identification and Control of Common Tree Pests and Diseases
- Latest Tree Risk Assessment & Management Guideline and Review of Assessment Skills
- Management of Old & Valuable Trees
- Occupational Safety and Health on Tree Works
- Street Tree Identification, Selection and Maintenance
- Tree Management and Protection in Construction Sites
- Tree Structure Pruning

16 Experience Sharing Sessions

- Case Study on Misconnections in Drainage System in Yuen Long
- Inter-reservoirs Transfer Scheme
- Kai Tak Development - Provision of Open Spaces near Kai Tak River
- Kai Tak Development (Stage 2 Infrastructure Works) - Kai Tak Sky Garden at the Southern Part of Former Runway
- "Q Leak" - Underground Water Mains Leak Detection Training Ground
- Reconnect our Community with "Rivers in the City" Concept
- Salt Water Conversion for Flushing at Chi Fu Fa Yuen - A Challenging Joint Operation among Customer Services Team and Distribution Team of Water Supplies Department
- Sharing Session of Duty Visit for Landscape Architects: Sustainable Sydney - A Green, Global and Connected City
- Site Formation and Infrastructure Works for Kwu Tung North and Fanling North New Development Area: Yard Waste Management
- Smart and Resilient Approach in Urban Forestry
- Smart Drainage in Drainage Services Department - Hydrometric Information System and Application of Internet-of-Things for Just-in-time Clearance
- Smart Energy Management in Water Supplies Department
- Smart Water Main Leak Detection Technologies
- Study of Coastal Hazards under Climate Change and Extreme Weather and Enhancement Measures
- Study on "Street Ecology Strategy for Hong Kong - Phase 2" - Underground Growing Space for Urban Trees
- Water Resources Management in Hong Kong

Green and Charity Activities

We continued to support green and charity activities organised by different non-governmental organisations in 2022/23. Our Recreation and Sports Committee actively arranged our colleagues and their family members to participate in various green and charity activities to enjoy the environment. These activities not only provide opportunities for our colleagues to connect with nature but also promote environmental awareness and social responsibility. By engaging in healthy and meaningful outdoor activities, our colleagues can recharge and refresh their minds, which in turn can boost their productivity and overall well-being.

Oxfam Trailwalker 2022

25th Standard Chartered Hong Kong Marathon

Lifewire Run 2022

Total donation amount in 2022/23

$109,040

We also helped disseminate event information and encouraged colleagues to take part in meaningful events, which aim at calling for switching to a greener lifestyle and giving help to the needy.

Earth Hour 2023

Skip Lunch Day 2023

Green Low Carbon Day 2022

Voluntary Services

Our colleagues and their family members have been keen on participating in voluntary services during their spare time to serve the community. During the year, our Volunteer Team engaged in a variety of voluntary services to the underprivileged, the elderly and the entire community.

Gift donation to children from low incomes families and elderly

Visit to elderly centre

Marathon event services

Flag selling event

In 2022/23, we had completed

9 voluntary projects

contributing a total of

321 voluntary work hours

with

86 volunteer attendances

The Industry

Construction Industry Caring Organisations Scheme

We offered our longstanding support to corporate social responsibility initiatives and promoting the positive image of the construction industry. In 2022/23, we continued to join the Construction Industry Caring Organisations Scheme under the Construction Industry Council.

The award of Construction Industry Caring Organisations logo recognises our commitment in “Serving the Industry” and "Serving the Community” in the past five years.

The Construction Industry Caring Organisations Scheme logo

Industry Activities

To promote the development of local engineering and construction industry as well as to facilitate exchange of knowledge, we maintained a close connection with the industry by supporting different industry activities, such as site visits by different professional bodies or academic institutes, and recreational activities organised by the industry.

Technical Site Visits

Construction Industry Council

Hong Kong Institution of Engineers

The Civil Engineering and Development Department

The Development Bureau and the Water Supplies Department

The Chartered Institution of Highways and Transportation (Hong Kong)

Hong Kong Institute of Construction

MTR Corporation Limited

Institution of Mechanical Engineers, Hong Kong Branch

Site visit under Construction Safety Week 2022

Institution of Civil Engineers Hong Kong Association with St. Antonius Girls' College

Recreational Activities

Construction Industry 5-a-side Football 2022

Construction Industry Happy Run 2023

Construction Industry Basketball League 2022

The General Public

Despite the continuous impact of COVID-19 in 2022, we kept on arranging various stakeholder engagement activities while strictly adhering to preventive measures. Our objectives were to actively engage with the community, fulfill our social responsibilities, foster collaborative exchanges between the project teams and stakeholders, effectively disseminate project information to the public and gather valuable feedback for future improvements. These efforts enabled us to maintain strong connections and further cultivate relationships with key stakeholders.

Public Consultation

Site visit and meeting with members of District Council

Site visit and meeting with members of Legislative Council

Lobbying with nearby stakeholders

Community Liaison Group meetings

Community Outreaching

ICT Expo 2022

Construction Innovation Expo 2022

Eco Expo 2022

Exhibition at Yau Tsim Mong Public Libraries

Stakeholders visit to Community Liaison Centre

Drawing competition for children

Career talk for secondary school students

Blood donation

Beach clean-up activity

Project website (Central Kowloon Route Website : https://ckr-hyd.hk)

STEAM workshop demonstration for primary school teachers

59 Awards

64 Environmental Objectives and Targets

Awards

Environmental Awards and Recognition

4 Considerate Contractors Site Award

Silver Award | Bronze Award x2 | Merit Award

3 Outstanding Environmental Management and Performance Award

Bronze Award | Merit Award x2

1 2021 Hong Kong Awards for Environmental Excellence

Bronze Award

7 The Hong Kong Green Organisation Certification Scheme

Wastewi$e Certificate

Excellent Level x2 | Good Level | Basic Level

Energywi$e Certificate

Excellent Level x2 | Good Level

3 Hong Kong Green Awards 2022

Gold Award | Silver Award | Merit Award

Considerate Contractors Site Award (CCSA) and Outstanding Environmental Management and Performance Award (OEMPA)

We have been taking an active role in promoting safety and environmental management practices by participating in various campaigns such as the CCSA Scheme, which was jointly organized by the Development Bureau and Construction Industry Council to recognise construction sites with good site safety and environmental performance, as well as considerate attitude towards the neighborhood and the public.

In 2022/23, all our 10 eligible maintenance contracts (100%) and 22 out of 30 eligible new works contracts (73%) participated in the CCSA Scheme. During the year, our construction contracts had received four CCSA and three OEMPA awards, including one Silver, two Bronze and one Merit Prizes from CCSA, and one Bronze and two Merit Prizes from OEMPA. Furthermore, two of our subcontractors received the Model Subcontractor Award, including one Bronze and one Merit Prizes.

Winner of CCSA (New Works) Silver Prize and OEMPA Merit Prize

Contract No. HY/2018/02

Central Kowloon Route – Kai Tak East

Winner of CCSA (New Works) Bronze Prize and OEMPA Bronze Prize

Contract No. HY/2020/07

Widening of Castle Peak Road between Kwun Tsing Road and Hoi Wing Road

Winner of CCSA (New Works) Bronze Prize and OEMPA Merit Prize

Contract No. HY/2014/20

Central Kowloon Route – Yau Ma Tei West

Winner of CCSA (Repair, Maintenance, Alteration and Addition) Merit Prize

Contract No. 05/HY/2018

Management and Maintenance of Expressways and High Speed Roads in New Territories, Kowloon East and Hong Kong Island 2019 – 2025

OEMPA Bronze Award

OEMPA Bronze Award was granted to Contract No. HY/2020/07 for the good environmental performance. It was the first construction site in Hong Kong using Modular Integrated Construction (MiC) method for the construction of lift tower, lift car and accessories. MiC can effectively minimize construction waste generated on site and reduce dust and noise nuisance to the surrounding environment when compared with the conventional construction method. In addition, a patented retractable noise barrier was adopted on site which could reduce the noise level by up to 27 dB(A). Moreover, low carbon construction machines and materials such as “Electrical Breaking Robot” and green concrete certified under "CIC Green Product Certification" scheme were used to reduce carbon emission.

MiC method

Retractable noise barrier

Electrical Breaking Robot

Bronze Award

Outstanding Environmental Management and Performance Award 2022

by the Development Bureau and Construction Industry Council

Contract No. HY/2020/07

Environmental Promotion Campaign on Construction Site

We have been working closely with our contractors to continuously improve our environmental performance on sites. We encourage our contractors to participate in various environmental promotion campaigns and activities, such as the Hong Kong Awards for Environmental Excellence, Hong Kong Green Organisation Certification and Hong Kong Green Awards.

The Hong Kong Awards for Environmental Excellence is one of the most credible environmental awards in Hong Kong, which encourages organisations to implement environmental managements, measures organisations' performance and their commitment to environment management within the industry, and recognises organisations with excellent performance in environmental management. Contract No. HY/2014/07 was granted the Bronze Award in the Sectoral Awards of 2021 Hong Kong Awards for Environmental Excellence to recognise the outstanding environmental performance in the construction industry sector.

Bronze Award
Sectoral Awards of 2021 Hong Kong Awards for Environmental Excellence
by the Environmental Campaign Committee alongside the Environment and Ecology Bureau
Contract No. HY/2014/07

The Hong Kong Green Organisation Certification Scheme

The Hong Kong Green Organisation Certification scheme encourages members to work towards self-improvement in specific environmental aspects. The scheme includes two types of Environmental Labels, namely, Wastewi$e and Energywi$e Labels, which are granted to well-performing contractors in recognition of their efforts to reduce waste and save energy. In 2022, Contract Nos. HY/2014/20 and HY/2020/07 attained the Excellent Level; 05/HY/2017 attained the Good Level and HY/2014/07 attained the Basic Level, respectively, in Wastewi$e Label. For Energywi$e Label, Contract Nos. HY/2014/20 and HY/2020/07 attained the Excellent Level and 05/HY/2017 attained the Good Level.

Wastewi$e Certificate
by the Hong Kong Green Organisation Certification scheme

Excellent Level
Contract No. HY/2020/07

Excellent Level
Contract No. HY/2014/20

Good Level
Contract No. 05/HY/2017

Basic Level
Contract No. HY/2014/07

Energywi$e Certificate
by the Hong Kong Green Organisation Certification scheme

Excellent Level
Contract No. HY/2020/07

Excellent Level
Contract No. HY/2014/20

Good Level
Contract No. 05/HY/2017

Hong Kong Green Awards 2022

The Hong Kong Green Awards, organized by the Green Council, is another highly regarded environmental award in the construction industry, which recognises companies with exceptional performance in green management and sustainable procurement. In 2022, our Contract Nos. HY/2014/20 and HY/2014/08 were granted the Gold Award and Silver Award, respectively, in the category of Green Management Award – Project Management (Large Corporation). Contract No. HY/2021/06 was granted Merit Award in the category of Environmental, Health and Safety Award (Large Corporation).

Gold Award
Green Management Award – Project Management (Large Corporation)
by the Green Council
Contract No. HY/2014/20

Silver Award
Green Management Award – Project Management (Large Corporation)
by the Green Council
Contract No. HY/2014/08

Merit Award
Environmental, Health and Safety Award (Large Corporation)
by the Green Council
Contract No. HY/2021/06

Environmental Objectives and Targets

Achievement in 2022/23

(1.1.2022 – 31.3.2023)

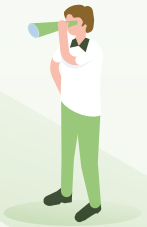
Objective	Target	Achievement (as at 31.3.2023)
Reducing the energy consumption in public lighting	To replace 14,000 lighting points with LED lights.	Replaced 32,227 lighting points with LED lights.
Saving electricity consumption in HyD Offices	To continue implementing housekeeping measures and best practices for energy saving.	Electricity consumption is being monitored closely with a view to achieving 6% saving target by 2024/25. Housekeeping measures and best practices for energy saving are being continuously implemented.
Adopting measures in water conservation	To continue implementing measures in water conservation and exploring the appropriate installation of latest water saving devices in HyD offices.	Measures in water conservation are being adopted continuously.
Improving indoor air quality	To continue up-keeping the indoor air quality at or above Good Class level in HyD offices.	HyD offices' air quality attained Excellent Class or Good Class.
Carrying out carbon audit and implementing measures to reduce greenhouse gas emission	To continue carrying out carbon audit annually. To explore energy conservation opportunities by identifying our major emission source from the carbon audit result.	Carbon audit was arranged by the Building Management Office of Ho Man Tin Government Offices in 2022/23.
Encouraging the use of recycled paper	To upkeep percentage usage of recycled paper at 98% or above of the total paper consumption.	21,805 reams of paper were consumed in the year, and all of them were recycled paper.
Setting target in reducing photocopying paper consumption	To maintain the consumption of photocopying paper per staff member at a level not exceeding the consumption level of 2021.	The consumption of photocopying paper per staff member in 2022/23 is lower than the consumption level of 2021.
Promoting the wider use of recycled materials	To use paving blocks containing recycled glass materials for at least 97% of the newly laid concrete paving block pavements.	100% of the newly laid concrete paving blocks contain recycled glass materials.
Planting trees and shrubs	To plant 36,000 additional trees/shrubs in capital works contracts of MWPMO.	90,446 additional trees/shrubs have been planted.
Adopting site office equipment with energy saving labels	To include particular specification clauses for using site office equipment with energy saving labels and water consuming appliances with WSD water efficiency labels in all the Engineer's site offices (excluding those using existing premises) of capital works contracts of MWPMO to be tendered during the year of 2022/23.	All 3 applicable capital works contracts tendered in 2022/23 have included the particular specification clauses for using site office equipment with energy saving labels and water consuming appliances with WSD water efficiency labels.

Objective	Target	Achievement (as at 31.3.2023)
Using environment-friendly vehicles in capital works projects	To procure at least two electric or hybrid electric vehicles of approved types under each capital works contract of MWPMO to be tendered during the year of 2022/23.	All 3 applicable capital works contracts tendered in 2022/23 have procured at least two electric or hybrid electric vehicles of approved types.
Reducing dust emission	To include a particular specification clause for dust emission reduction in all capital works contracts of MWPMO to be tendered during the year of 2022/23.	All 5 capital works contracts tendered in 2022/23 have included the dust emission reduction particular specification clause.
Adopting energy efficient features and renewable energy technologies	In all capital works consultancy agreements of MWPMO for which invitation to submit Technical and Fee Proposals during the year of 2022/23 to include requirements for the consultants: (i) to identify opportunities to utilize energy efficient features and renewable energy technologies; and (ii) to assess carbon footprint of the road works project during design stage and to provide recommendations on measures to reduce carbon footprint.	All 2 consultancy agreements tendered in 2022/23 have included the requirements (i) and (ii).
Green roof and/or green wall at the Engineer's site office	To include a particular specification clause for construction of green roof and/or green wall in all capital works contracts of MWPMO to be tendered during the year of 2022/23 with the Engineer's site office (excluding those using existing premises) exposed in sunlight.	All 2 applicable capital works contracts tendered in 2022/23 have included the particular specification clause for construction of green roof and/or green wall.
Promoting the use of renewable energy on highway structures	To install photovoltaic panels on existing and new highway structures.	PV panels have been installed on selected existing and new highway structures.
Encouraging the use of electric-powered plants/ equipment in construction sites in capital works contracts	To use electric-powered plants/equipment in construction sites in capital works contracts of MWPMO.	3 applicable capital works contracts have used electric-powered plants/equipment in construction sites.

Looking Ahead for 2023/24

(1.4.2023 - 31.3.2024)

Objective	Target
Reducing the energy consumption in public lighting	To replace 14,000 lighting points with LED lights.
Saving electricity consumption in HyD Offices	To continue implementing housekeeping measures and best practices for energy saving.
Adopting measures in water conservation	To continue implementing measures in water conservation and exploring the appropriate installation of latest water saving devices in HyD offices.
Improving indoor air quality	To continue up-keeping the indoor air quality at or above Good Class level in HyD offices.
Carrying out carbon audit and implementing measures to reduce greenhouse gas emission	To continue carrying out carbon audit annually. To explore energy conservation opportunities by identifying our major emission source from the carbon audit result.
Encouraging the use of recycled paper	To upkeep percentage usage of recycled paper at 98% or above of the total paper consumption.
Setting target in reducing photocopying paper consumption	To maintain the consumption of photocopying paper per staff member at a level not exceeding the consumption level of 2022/23.
Promoting the wider use of recycled materials	To use paving blocks containing recycled glass materials for at least 98% of the newly laid concrete paving block pavements.
Reducing dust emission	To include a particular specification clause for dust emission reduction in all capital works contracts of MWPMO to be tendered during the year of 2023/24.
Adopting site office equipment with energy saving labels and water efficiency labels	To include particular specification clauses for using site office equipment with energy saving labels and water consuming appliances with WSD water efficiency labels in all the Engineer's site offices (excluding those using existing premises) of capital works contracts of MWPMO to be tendered during the year of 2023/24.



Objective	Target
Using environment-friendly vehicles in capital works projects	To procure at least two electric or hybrid electric vehicles of approved types under each capital works contract of MWPMO to be tendered during the year of 2023/24.
Adopting energy efficient features and renewable energy technologies	In all capital works consultancy agreements of MWPMO for which invitation to submit Technical and Fee Proposals during the year of 2023/24 to include requirements for the consultants: (i) to identify opportunities to utilize energy efficient features and renewable energy technologies; and (ii) to assess carbon footprint of the road work project during design stage with carbon assessment tool, such as "CIC Carbon Assessment Tool", and to provide recommendations on measures to reducing carbon footprint.
Green roof and/or green wall at the Engineer's site office	To include a particular specification clause for construction of green roof and/or green wall in all capital works contracts of MWPMO to be tendered during the year of 2023/24 with the Engineer's site office (excluding those using existing premises) exposed in sunlight.
Promoting the use of renewable energy on highway structures	To install photovoltaic panels on existing and new highway structures.
Encouraging the use of electric-powered plants/ equipment in construction sites in capital works contracts	To use electric-powered plants/equipment in construction sites in capital works contracts of MWPMO and Works Division.

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