

**Report on Overseas Visit to Australia
15 – 19 January 2020**

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1 Introduction

To make our harbourfront more accessible, connected and enjoyable, the 2019-20 Budget has earmarked \$6 billion for harbourfront enhancement. The proposed Boardwalk of about 2 km in length connecting Causeway Bay and Quarry Bay is amongst the nine projects supported by the Harbourfront Commission for implementation with the earmarked funding.

The harbourfront from Causeway Bay to Quarry Bay is occupied by private residential and commercial developments, public facilities, operating piers and the Island Eastern Corridor, with some parts not being publicly accessible. By building a pedestrian walkway over the water area along the harbourfront, the proposed Boardwalk provides an innovative solution to overcome the existing physical constraint and to realise the vision of a joined up and easily accessible harbourfront. Its implementation is functionally important in the overall harbourfront planning for Hong Kong Island as the 2-km Boardwalk is a key piece of the jigsaw puzzle providing a continuous waterfront promenade of some 9 km from the Central to Sai Wan Ho.

The Civil Engineering and Development Department (CEDD) is responsible for the implementation of the proposed Boardwalk. The project, involving construction of movable bridges, is at its design stage under Consultancy Agreement No. CE 29/2019 (CE) commencing in end 2019.

For successful implementation of the project, with the support of the Development Bureau (DEVB), CEDD has proposed to conduct two overseas visits on various projects comprising boardwalks/promenades/movable bridges, where research and implementation of boardwalks/promenades/movable bridges are relatively advanced, and practitioners have accumulated extensive relevant experience in these works. The overseas visit could provide overseas practical examples for formulation of a feasible design for future construction, management, operation and maintenance.

It is noted that some practical examples from countries, such as the United Kingdom (UK), Europe and Australia are of higher reference value. With the support of DEVB, Australia has been chosen as the destination for the first overseas visit. The visit covered projects in both Brisbane and Sydney of Australia and took place between 15 to 19 January 2020. The delegation, comprising the representatives of CEDD, Harbourfront Commission (HC), DEVB/HC Secretariat and the Consultants, is listed in Table 1 of **Appendix A**.

During the visit, in addition to the design of boardwalk/promenade/movable bridges, the delegation has been looking for more innovative means to enhance the vibrancy of the waterfront areas for the enjoyment of the public, such as encouragement of water sports, use of water-land interface facilities, shared use by different users, as well as public private participation approach in delivery and management. The delegation has also met and discussed with the local authorities and relevant consultants with a view to understanding the planning, management, financial and technical aspects adopted by

overseas from inception to design, construction, management, operation and maintenance of the boardwalk. The authorities and consultants that we have met during the overseas visit are listed in Table 2 of **Appendix A**. Application of experience learnt in other recent harbourfront projects spearheaded by the Harbourfront Commission and the Harbour Office of DEVB is at **Appendix B**.

This report serves to summarise the detailed findings of the overseas visit.

2 Itinerary of the Overseas Visit

The itinerary of the overseas visit is summarized in Table 3 of **Appendix A**.

3 Highlights of the Overseas Visit

3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane



Kingsford Smith Drive is a major road that links the Brisbane Central Business District (CBD) to the Airport, Port of Brisbane, Northshore Hamilton and Australia Trade Coast area.

It is a busy road on the banks of the Brisbane River, allowing vehicles to enter and leave the city centre. In 2016, the municipal government began road widening works.

The upgrading work of Kingsford Smith Drive included widening of Kingsford Smith Drive from four to six lanes and a new Lores Bonney Riverwalk constructed along Kingsford Smith Drive and Brisbane River that was opened in December 2018 offering pedestrians and cyclists a dedicated two-metre-wide riverside path separated from a three metre wide and two way off-road cycle path.

The upgrade has:

- delivered significantly improved pedestrian and cycle facilities
- provided active transport options for existing residents and the Northshore precinct
- improved public transport with indented bus stops
- catered for future increases in bus services along the corridor and reduce delays
- created an entry statement to Brisbane
- boosted business and economic development
- expanded one of Brisbane's most important traffic corridors



A presentation was given by Mr Phillip Stedman of Brisbane City Council on the design, technical and management of the Riverwalk followed by a site visit.



The project is expected to become a new landmark in Brisbane and provide leisure space, allowing visitors to run or walk along the promenade and enjoy the views of the riverbank along the way.

In order to reduce the amount of soil filling and avoid excessive impact on the riverbed, promenades were built with concrete retaining walls and cantilever-style structures. The riverside promenade's footpaths

and cycle paths appear floating in the air above the river.

To the east of the promenade is the pier Brett Wharf, “CityCat” vessels ferry along the Brisbane River to and from the riverbanks. The square in front of the pier is covered with green grass, providing space for the public to relax and hold events.

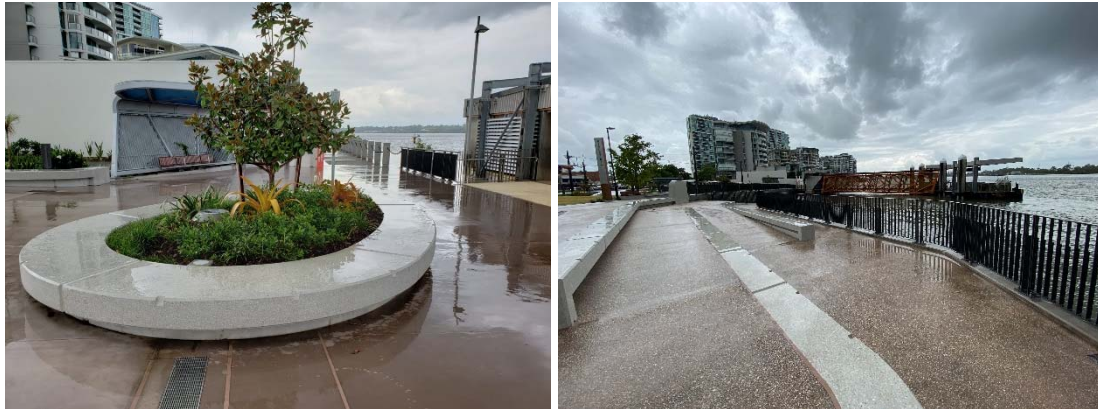
Several stops have been set up on the promenade for visitors to enjoy the scenery or stay in shelter from the rain, and there are observation deck seats and water dispensers in the area for visitors to enjoy.

Towards the west along the promenade to Cameron Rocks Reserve, a riverside park with a public barbecue venue is present in addition to the natural amenities of greenery and grass. In addition, a monument commemorating the First World War has been reset and became the park's focus. On holidays, members of the public can come to the park to remember history, sit on the lawn and enjoy views of the banks of the river in Brisbane.

If visitors want to get close to the river, they can not only sit on the pick-up level and the lower river bank platform, but also along the stone steps to the riverside stone beach, enjoying the contact with the Brisbane River at zero distance.

It is worth noting that the expansion project also brought in a group of light sculptures designed by Kenji Uranishi, a renowned Japanese artist. Sculptures are scattered in different passages of the promenade as embellishments, adding lively colors to the city's public spaces.

Open Square



An open square is provided at the inland area offering an event space for the public. Designed light poles are located on both sides of the square, special lighting effect with different colour variation can be applied to generate different atmosphere to suit the purpose of events. Oval-shaped planters with seating are situated at the promenade and provide certain greenery to soften the hardscape and allow the visitors to enjoy the waterfront. Concrete and stainless steel, which have a lower maintenance cost and higher durability, are the main materials used at the open space.

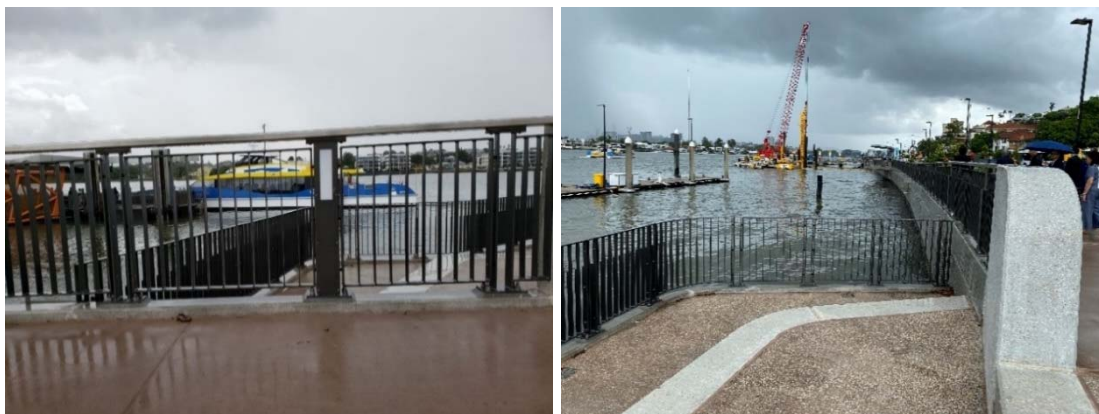
Lessons Learnt for our Boardwalk Design

The Boardwalk site is located on top of a harbour. Low maintenance and high durability materials would be highly recommended for this planned structure. By using different shapes, design combinations, and limited materials, we can assimilate and create different ambience and design languages of the site.



Wood benches are integrated with the concrete planter. The natural material can help to soften the hardness of the concrete and provide warmer effect in enhancing overall open space while same approach is also applied to the signage in order to generate a coherent and integrated design.

Balustrade and Lighting



A simple and standard design approach is used for balustrade and lighting is embedded in the pole to provide an integrated balustrade design. Stainless steel is used for the balustrade, which is durable even in the outdoor environment and extreme weather condition.

Lessons Learnt for our Boardwalk Design.

For the balustrade or railing, we must regard carefully the relationship between the boardwalk and the harbour to offer an astonishing view of Victoria Harbour. The transparency of the balustrade would be one of the main considerations of boardwalk design. For the challenged or differently abled, a user-friendly balustrade must be a factor to take into consideration while a high-transparency and special designed share-zone and communion environment should also be an important feature.

Stepping Seating and Metal Panels



Three layers of stepping seating is provided at the Riverwalk, each layer of seating is about 450 mm height connected by a 1:20 ramp. The dynamic movement of curved profile of the stepping seating creates an interesting and welcoming space that encourage the visitors to go down and provide a way to get closer to the waterfront.

Material and colour have been carefully selected to draw the users' attention on the level changes, two different colours are used to indicate the spaces and level changes.

Special design metal panels are installed along the waterfront and create a continuous "sliver ribbon" to dress up the overall elevations and effectively minimize the visual impact to sensitive receivers from other sides of the river.

Lessons Learnt for our Boardwalk Design.

The Boardwalk would create a linear space with level changes. This is an opportunity to create featured seating and defined footpath. The seating's edges create an open share-used spaces. The materials and colour could also accomplish a design element to indicate the spaces and level changes. The level changes and the featured seating can create a special visual effect from across the harbour.

Shelters with Seating and Planter



A number of shelters with seating and planter are distributed along the Riverwalk to provide a shaded space for cyclists and visitors to rest and enjoy the view of the waterfront. The entire structure consists of a metal structure trellis constructed on a concrete base, with blue colored transparent panel on top, colour concrete planter, wood benches, drinking fountain, and LED strip lighting.

The profile of the resting space is curved to maximize the view to the waterfront. Vertical metal grill is used to reduce the bulkiness of the structure and allow the climbers to soften the trellis. Hard wood is used for benches to provide a comfortable seating and “warmness” to the steel structure.

Lessons Learnt for our Boardwalk Design

Shelters could be a node point to let cyclists and visitors to take a rest. The location of shelters should be in an outstanding location which has a good view of the Victoria Harbour. The shelters with planters can help to soften the hard edges of the boardwalk. Facilities for parking cycles could be provided to allow multi-functional use of space.



Stainless steel wire is installed in between each vertical metal grill for climbers at the planter located at the back of the trellis. The climbers can serve as a green screen to provide certain privacy and also soften the hardness of the metal structure.

Drinking Fountain and Metal Balustrade



Drinking fountain is provided at each shelter, two ways of drinking are allowed for the users to either drink directly by pressing the button at the top of the fountain or fill water bottles from the other water outlet located at the back of the fountain. Stainless wire mesh is used for the metal balustrade to provide better transparency and lighter appearance.

Lessons Learnt for our Boardwalk Design

Considering that cycling would be permitted along the boardwalk, drinking fountains will be provided to allow for the cyclist to recover and stay hydrated. The proposed location of the drinking fountains will be linking with shelter areas or parking areas, thus, people can rest and recover in a cozy space.

Walkway and Cycle Track



The entire River Walk project's riverside promenade is 1.2 km long. The promenade is divided into pedestrian roads and cycle paths, which are 2m and 3m wide respectively.

There is a 0.5m buffer zone between them. It is equipped with road marking and sensor, with the footpath along the river and the cycle path along the landside.

There is also an intelligent system next to the channel to record pedestrian and bicycle traffic volume, display to public and add convenience to the overall traffic management. Display panels are installed at the Riverwalk for recording the number of usage of pedestrian and cyclists.

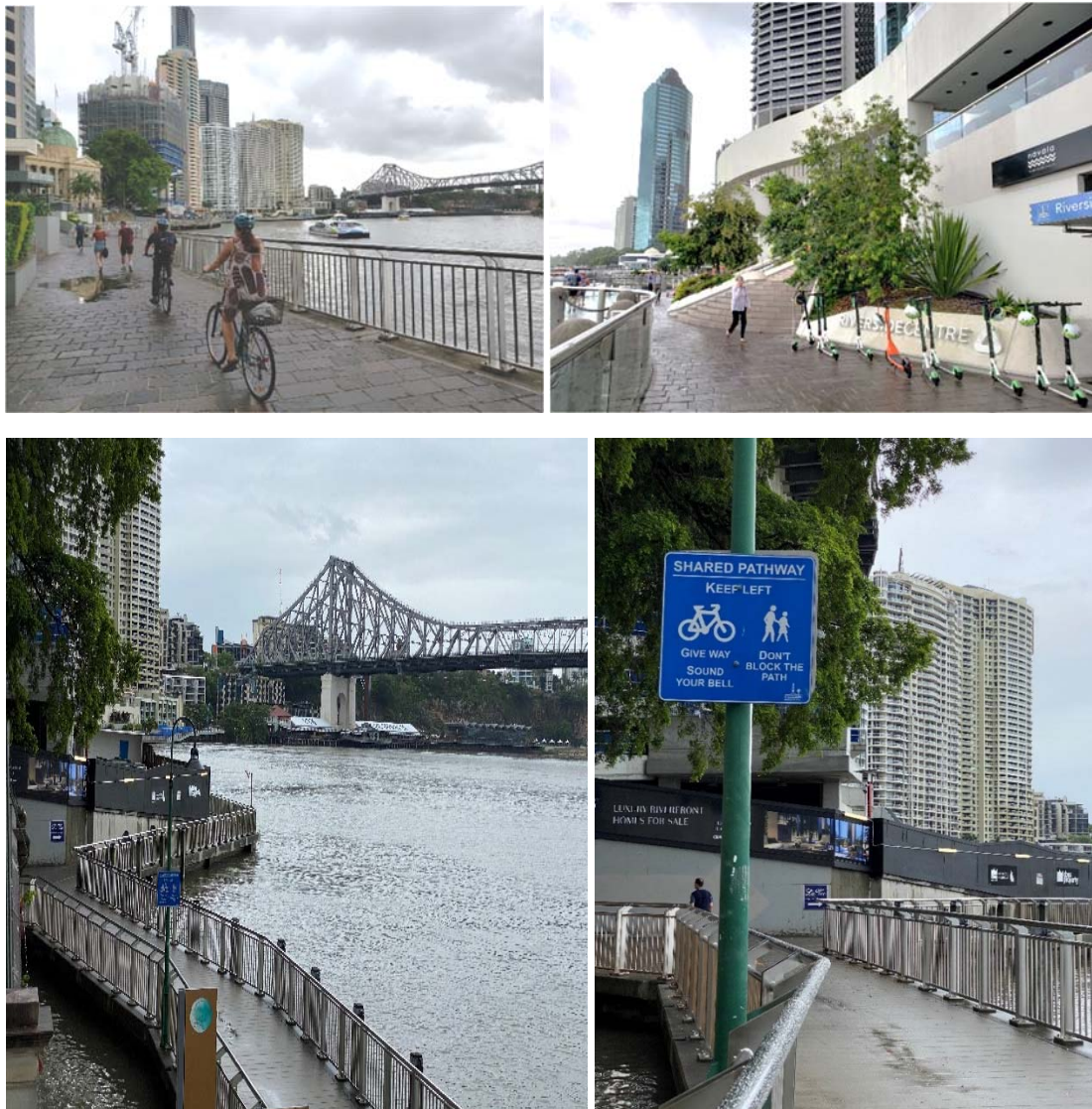
Emergency push buttons were placed along the Riverwalk. When activated, the nearest CCTV will automatically pan and zoom to locate the person at the push button. Utility poles (or cabinet) with power and water supply point for special events are also located at the open space area.

Lessons Learnt for our Boardwalk Design

The idea of adapting energy system to the pedestrian and cycling track would be an inspiring thought to the share-used zone of the boardwalk. This can be more communal and user-friendly as no structure is needed to separate the pedestrian and the cycling track.



3.2 City Reach Boardwalk, Brisbane



The City Reach Boardwalk plays an important role to connect several locations that includes low-rise buildings for food service or catering (Eagle Street Pier), commercial development (Riparian Plaza, Riverside Centre), heritage building (Customs House) and piers for river ferry (CityCat).

The boardwalk is a shared-use path with no road marking indicated on the paving. Natural stone slate is applied along the boardwalk. Heavy traffic was found during working hours while certain amount of users will get off from river ferry (CityCat). By observation, people are quite used to the shared-use boardwalk and cyclists slow down at the congestion point. Numerous scooters are found along the boardwalk, and the people can unlock them by using apps.

The Brisbane River is a major river in the heart of the city, and locals consider this winding river to be a natural asset of the city and a symbol of the city centre. Over the past two decades, as cities have developed and responded to major trends in major cities around the world, both sides of the river have been transformed from industrial facilities

to vibrant mixed-use neighborhoods, with the construction of homes, shops and recreation spaces. The government's vision is to make the Brisbane River a focal point for local business, tourism and leisure in the city, making it a place of accessibility and attraction for all, which is very similar to Victoria Harbour in Hong Kong.

The riverside land on the Brisbane River is a public open space, with the riverside promenade running through the districts with pathways allowing access by pedestrians and cyclists. Different activities such as sailing and canoeing can also be carried out in the water. There is also a free “CityCat” service on the river, which takes citizens and visitors to different riverside attractions.



Future widening plan

Back in Nov-Dec 2019, there was a public consultation on the draft City Reach Waterfront Master Plan process commenced and opportunities document released. The Brisbane City Council would incorporate the public feedback received into the final City Reach Waterfront Master Plan to be released in August 2020.

There were a lot of public submissions made to the council during its consultation phase, most requesting greater connectivity to the waterfront, including a more accessible promenade, more shade and greenery, and private-sector contribution to the waterfront's development.

Key public feedback included:

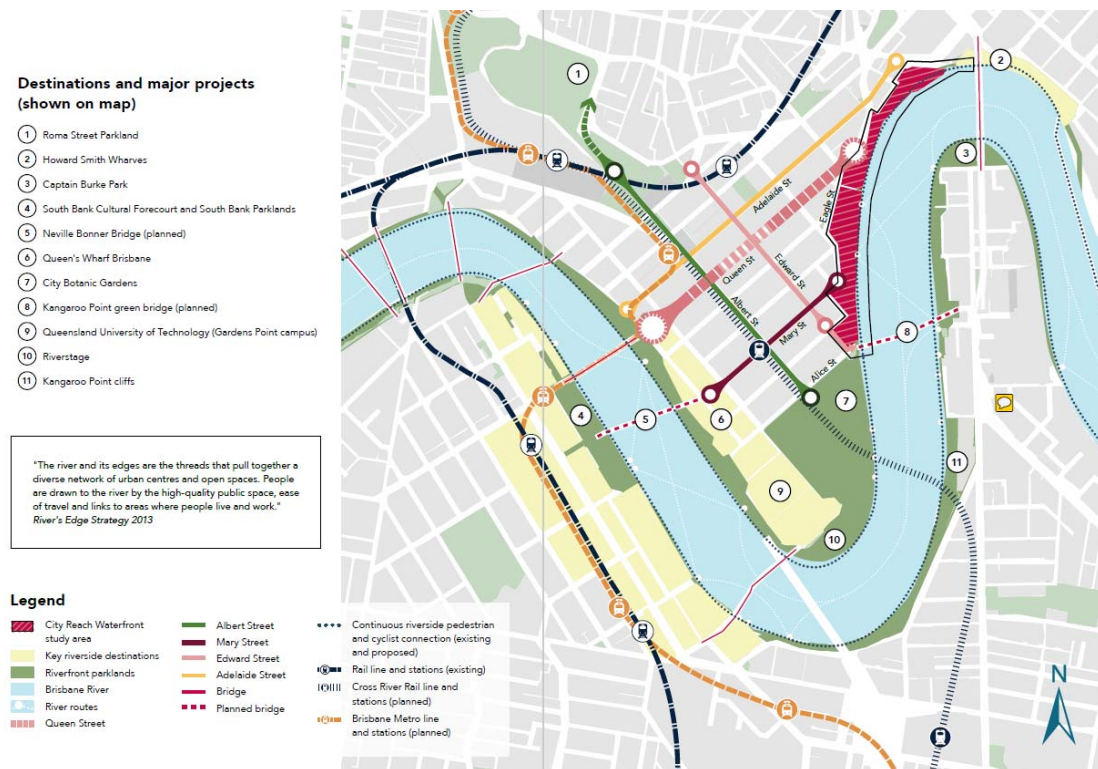
1. the promenade needs to allow pedestrians and cyclists to safely share the space
2. the opportunity to improve amenity in the area by providing shade, seating, lighting and high-quality design
3. the need for collaboration between government and development industry to achieve the master plan's vision
4. the need to manage noise impacts on residents within the Admiralty section.

The waterfront's main pedestrian and cycling promenade was described as "a narrow river promenade that struggles to manage its dual role as a movement corridor and extension of the waterfront public realm".

The promenade width varies along the pathway from 2m to 6m, with an average 4m width, a key question raised in submissions was the safe interaction of pedestrians and cyclists along the waterfront.

Although there was proposal from opposition councilors for inner-city dedicated bike lanes, the final decision by the Council was that there are no plans to make a fully

separated bikeway along the 1.2km stretch, which cycling groups have been calling for. Instead, the Council would widen the promenade to 6m wide place for people to meander through and enjoy the riverfront.



Evolving active transport network

While the design of the promenade is subject to ongoing consideration, the need for the promenade to act both as a movement corridor and as a great place and destination of its own remains a primary consideration. This is reinforced by the fact that City Reach, unlike other locations along the river, accommodates a high volume of parallel (following the river) and perpendicular (from the river to the city grid) movement. A promenade design that focuses on travel, at the expense of place making opportunities, would not be a desirable outcome for City Reach as it would result in an unwelcoming public space for visitors and people wanting to linger and enjoy the space.

Council is currently reviewing the pedestrian and cyclist networks across the inner-city with a view to supporting greater numbers of active transport users in the future. As part of these investigations, options are being explored for dedicated bicycle connections along streets within the city centre.

These new networks will provide cyclists with a greater choice of safe and convenient travel options when planning their journeys. The new networks will also reduce pressure on the City Reach Waterfront and other locations like Howard Smith Wharves as they will no longer be the only viable routes.

The lack of an overall vision for the waterfront in the past has led to several issues experienced at the waterfront today, including a narrow river promenade that struggles to manage its dual role as a movement corridor and extension of the waterfront public realm.

3.3 New Farm Riverwalk, Brisbane



A presentation was given by Roger Caswell, Principal Project Manager, Brisbane City Council, former Project Manager of New Farm Riverwalk and Eoin O'Donovan, Design Lead of Riverwalk, Arup. The presentation covered design, technical design, management, operation and maintenance of the Riverwalk.



The New Farm River Walk, built on the Brisbane River, not only connects the riverbank to a riverside promenade for pedestrians and cyclists between New Farm Riverwalk and Brisbane, but also preserves the natural landscape of the Riverbank of the Area.

This water walkway was built in 2014, unlike the coastal corridor normally built on the shore, it is built near the bank in the middle of the river, so that the riverbank can preserve its original natural appearance. The walkway is 870 metres long and 6 metres wide, with 3.5 metres of the road designed as a cycle path and the remaining 2.5 metres for pedestrians and joggers, with only painted lines to indicate and divide the two different areas.

The zigzag shape of the walkway resembles a Chinese-style nine-song bridge. The curved design helps to cope with the water flow, slows down the bicycles' speed to reduce the bicycle pedestrian contradictions, and to make each section of the landscape different, which can enrich the experience of visitors.

As seen today, the walkway is made of concrete, replacing the original pontoon-style board. In 2011, a flood destroyed the much-loved pontoon bridge, and it took the Government more than three years to rebuild it, including 16 months of public participation, eight months of detailed design and 16 months of construction. In order to prevent flooding and considering future rising water levels caused by climate change, the consultants recommend that the level of the walkway be raised to a level of one year of flooding.



The Riverwalk sits on piles about 3.4 meters above the mean sea level, below the 1 in 100 year flood levels according to Council while it is high enough to minimize corrosion caused by the salt water environment. An opening span was located at the downstream end of the Riverwalk and it is a 15m long low profile swing bridge.

Lessons Learnt for our Boardwalk Design

The low-profile swing bridge would provide insights on how to create a more hydrophilic area to the user of the boardwalk.

Concrete Slab and Balustrade



Concrete is used for the slab of the boardwalk together with the stainless steel balustrade that formed a light “floating” boardwalk. Slim-shaped light poles are also integrated with the balustrade that is closer to the inland area in order to minimize the blockage of view.

The walkway is surrounded by railings of different heights, with pedestrians side 1.25 metres high and cyclists 1.4 metres high. With a width of only 6 metres without seats nor plantings on the promenade, visitors are not encouraged to gather and stay.

Shelter



If visitors wanted to take shelter from the rain, they could stay in the observation pavilion. Seats and water dispensers are available in the observation pavilion for a break from the city of Brisbane and the Story Bridge.

Unlike the design in Lores Bonney Riverwalk, the roof of New Farm Riverwalk is solid and is covered by aluminium cladding. A “floating” effect is created by situating the shelter on an elevated concrete slab.

Seating and Drinking Fountain



The Seating covered with dark grey colour paint also served as footing of the roof structure that is constructed by concrete. Stainless steel dividers are installed in the concrete structure to prevent people from laying or sleeping on the bench. A drinking fountain is built in the concrete structure and provides a single water outlet.

Movable Swing Bridge



Another feature of the walkway is the movable bridge at one end of the riverbank that allows the vessel to pass through without raising the bridge surface, solving the problem caused by blocked river access for private vessels of riverside homes.

A rotating section at the Merthyr Road, New Farm, and end of the walkway will open up so that boats can come and go from private moorings enclosed by the structure. The control panel is located in stainless steel cabinet embedded in the concrete structure of the shelter.



Officers will come to the control panel to open the bridge upon request. Alarm will be switched on to alert people nearby and gates will be closed on both side to prevent people passing through.

When activated, locating pins at both ends of the bridge are released by mechanical hydraulic method to enable the free rotational movement.

All the mechanical components of the bridge are located within the housing at the deck level, which can be reached by removing panels at the lower mechanical, electrical and plumbing (MEP) areas.

Marine Signal Control and Power Supply

The marine traffic signal lights are mounted close to the soffit level of the bridge on either side, enabling boats to see clearly when waiting for the completion of bridge opening / closing.



The bridge deck is designed with two sides interconnected with steel members. This helps to accommodate the mechanical components and access to MEP, in addition, it facilitates ease of maintenance access over a wide deck area by segregating pedestrian and bike access zones.



The power supply system for the river walk is located on the shore-side of the movable bridge. The power supply for the bridge comes from one of the 7-banks of electrical

supply system; which can be easily maintained by personnel and come with an individual pad-lock in each panel.

Connection to the Banks of Brisbane River



There is also clear signage at the entrance of the river walk to show the rules of public access. New Farm River Walk, a uniquely designed water walkway that connects the banks of the Brisbane River into a sprawling riverside promenade, also features privately-run restaurants, hotels and event venues at the entrance to the walkway, as well as a beautiful surrounding landscape that makes the diverse and lively riverside area a must-visit.

Howard Smith Wharves Revitalisation Project

Howard Smith Wharves is a 3.43-hectare public open space area forming the northern entrance of the New Farm Riverwalk. The project is to identify a developer/consortium to fund, design, construct, operate and maintain the development in return for leasehold rights over the site. Prior to the revitalization project, the Council completed some of the infrastructure works, such as cliff stabilization and structural and aesthetic repairs to the five heritage buildings, at Howard Smith Wharves to ensure the financial viability of the project. The project has been awarded to the current operator of the Howard Smith Wharves to provide public open space, event space, and Riverside eating and drinking precincts. Profit sharing is part of the financial arrangement between the Council and the operator.

3.4 South Bank, Brisbane



Sub-tropical climate and its flourishing and vibrant landscape make South Bank unique. The space celebrates outdoor living at its best while one of the best ways to see the precinct's natural beauty is by taking a stroll or going cycling.



People can rent bike through CityCycle, Brisbane's bike hire program while three CityCycle stations are provided at South Bank, Maritime Museum, Grey Street and outside of QPAC respectively.

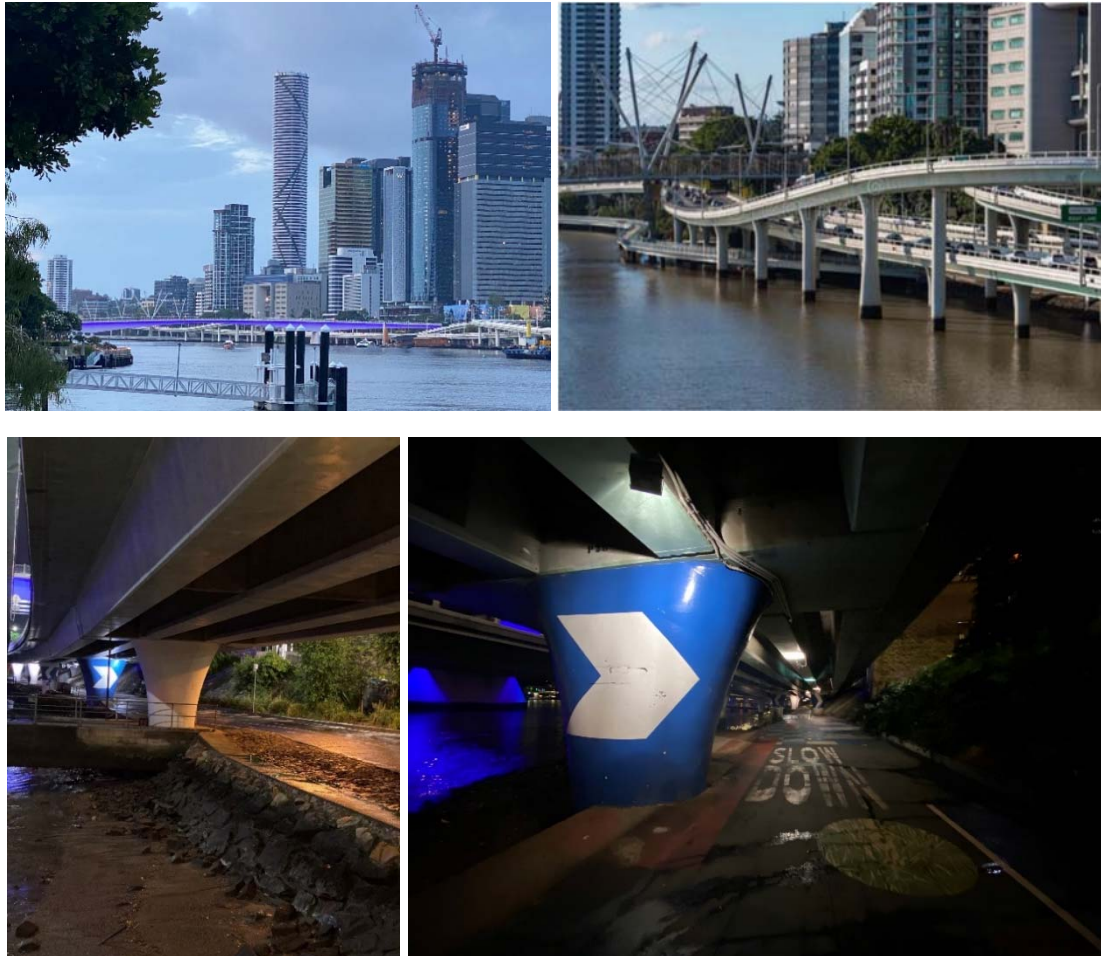
A big lawn area with stepped seating is provided at South Bank while people can enjoy the stunning views of the Brisbane River and city skyline.

Lessons Learnt for our Boardwalk Scheme

Bike hire program can be one of the ideas to be adopted in the boardwalk. The rental facilities can be located at the activity node or some public share spaces that enable the public to rent bikes for their leisure use easily.

3.5 Bicentennial Bikeway

Brisbane has an extensive network of cycle track with large number of City Cycle Stations for bike hire service.



Along Brisbane River, there is a section of pedestrian/cyclist-shared path which is underneath or along the existing Riverside Expressway.

3.6 Barangaroo, Sydney



A presentation was given by Daniel Noaen (Senior Development Manager, Infrastructure NSW) and Nicole Robinson (Senior Manager, Planning & Design, Infrastructure NSW), the discussion covered design tender stage, design development, management, operation, commercial and maintenance aspects.



Barangaroo Development



Barangaroo is a 22-hectare piece of land located at the north of the Sydney City suburbs and the southern end of the Sydney Harbour Bridge. The development consists of cultural, parkland, residential and entertainment usage.

With the development of the city, the waterfront area has been transformed from the industrial or infrastructure use of the past into a mixed development area for leisure business and housing. Barangaroo, north of Darling Harbour, is no exception. The Barangaroo waterfront area was formerly a container terminal, after the relocation of the pier in the 1980s, the Government decided to redevelop the area, building on the successful experience of Darling Harbour, extending the vitality of the waterfront to the north-east and linking it to the waterfront area under the Harbour Bridge to the north.

In 2005, the authorities also selected the works of the Hill Thalys Architects team through the architectural design competition to identify the winning works. The champion design has a large park and public space on the waterfront, while the building development is planned in medium density and blends with the waterfront environment. However, the design was later abandoned for various reasons. Later, the development density continued to increase, and eventually the total floor area has doubled that of the original design.

Barangaroo redevelopment commenced in 2012 and will be fully commissioned by 2023, the redevelopment provided large public open spaces encompassing a 2km continuous promenade, cycleway, lookouts, parklands and outdoor entertainment areas for art and cultural events. There will also be food and beverages sites at the southern end of Barangaroo. The redevelopment project is initially managed by the Barangaroo Delivery Authority under the Barangaroo Delivery Authority Regulation 2015. Within the same year, the Sydney Harbour Foreshore Authority is consolidated with Government Property NSW. In 2019, the Barangaroo Delivery Authority is abolished with its functions transferring to Infrastructure NSW. Infrastructure NSW is now the NSW Government agency responsible for the development of Barangaroo and management of its public spaces.

As seen today, three huge commercial buildings have been built in the area, while the offshore homes are low. In addition, a high-rise complex with luxury apartments, hotel and casino that will be the tallest skyscraper in Sydney is under construction.



Barangaroo is divided into three districts, from south to north: South, Central and Reserve. The Southern and Central Districts were leased to two property developers for development on a 99-year lease. The Southern District is a hybrid development that includes residential retail and recreational facilities, while the Central District includes parks, community and cultural facilities in addition to similar hybrid developments. As for the conservation area, it is a 6-hectare, nature-filled “Headland Park”.

Although the building density is high, the plan reserves 50% of the land for public open space, including a 2km long waterfront promenade, which connects other Sydney Harbour areas as a waterfront public space for walking and cycling.

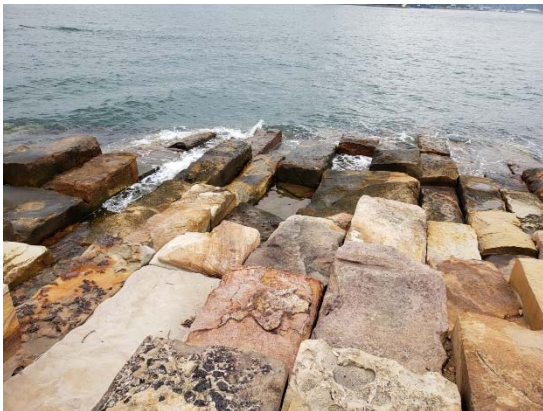
The delay of the development of Barangaroo Central because of the review of its scope and scale. The increase in development density has contributed to the success and vibrancy of the area.

Barangaroo Reserve Park



“Millers Point” headland is recreated at Barangaroo Reserve in its original location by transforming a concrete container port into a naturalistic park with over 75,000 plantings native to the Sydney region. The design of the headland includes a foreshore of 10,000 sandstone blocks excavated directly from the site and carefully placed at promenade based on the historical maps and paintings.

Coming to the north end of cape ark, an oasis in the city, is another surprise. The original straight container terminal seawall has turned into a curved coastline. The park is built into a small hill, large meadows and a variety of native plants, and the coastal section is built with sand and rocks to pick up the coast, allowing visitors direct access to the sea. These water-friendly coastal designs are popular with children and couples and make the waterfront experience more diverse.



The shoreline of Barangaroo Reserve is balustrade-free to provide a closer water experience. Aquatic planting is planted in between the sandstone block and soften the hardness of the hardscape while a natural and cozy promenade is formed.

Shoreline Walk



A shoreline walk provides major public access. The pedestrian and bicycle pathways are separated by a sandstone wall that follows the 1836 shore edge together with a level difference to divert different types of user. Asphalt is used for cycle track and pole light is provided on one side to minimize the blockage of the view of waterfront. Sand and gravel is used for the main pedestrian path and natural cobble stone for border. Concealed LED lighting is embedded at the sandstone wall.

Drinking Fountain for People and Pets



Drink fountains are found along the promenade, the fountain is specially designed for both human and pets with two water outlets installed at the upper and lower part respectively.

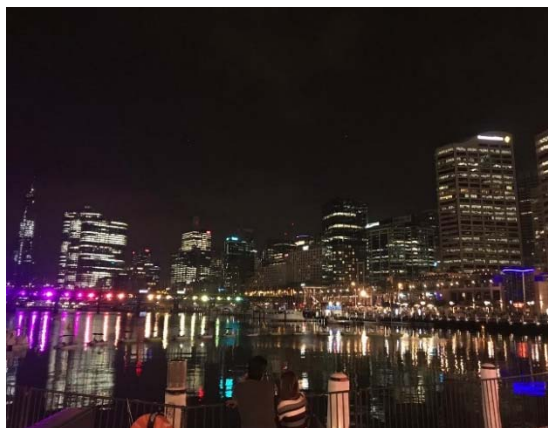
3.7 Darling Harbour, Sydney



A presentation was given by Mr Thomas Hale, Senior Associate of Hassell Studio who was involved in the design of the Darling Harbour Public Realm. Design challenges and public concern of the project were shared.

By reinvigorating parklands, integrating landscapes and open space and incorporating water features, public artworks, plazas and event spaces, the design team create a high-quality, open and flexible public realm that allows greatest variety of both casual uses and organized events. Each zone of the Darling Harbour has their own characteristic and function that echo our aspiration of “Each area is characterised by specific features” in the development of the boardwalk.

The precinct’s previously disconnected immediate neighbourhoods, the harbour and the Sydney city centre are reconnected by improving pedestrian, cycle and public transport connections that allow people for easier access.



Darling Harbour Live and ICC Sydney are the first fully integrated convention, exhibition and entertainment precinct in Australia which consist of five-star convention and exhibition centres, 3000 square metres of green space, a stunning new amphitheatre and a new city neighbourhood. The integrated design comprises the public landscape and customized artworks and the architecture that maximize the public open space, cultural features, connectivity, and views. All three ICC Sydney buildings are united through the continuous landscape base, terraces,

and materials, landscape blends seamlessly with the surrounds and encourages permeability of the wider area. The approach of transforming an existing successful waterfront is similar to our aspiration of development with an "incremental approach".

Open-air Restaurants and Bars



The top half of the promenade is lined with open-air restaurants and bars, where visitors can enjoy a meal while enjoying views of the harbour.

Shading Place for Walkers



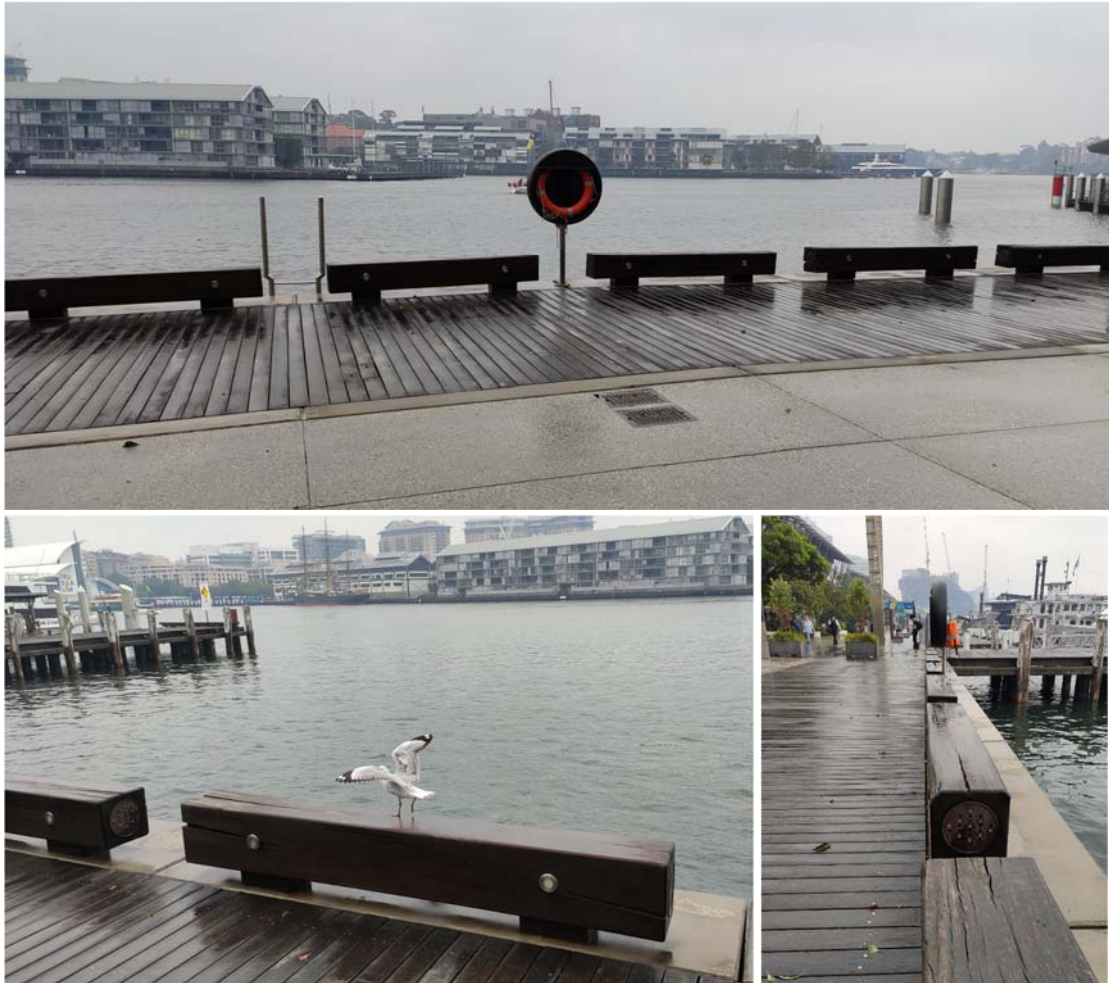
In the middle of the promenade there are two rows of trees, and chairs are placed below to provide a sheltered seating space. The seaside part is paved with reusable wooden floors to add a natural touch to the waterfront and to encourage environmental protection. The design approach can fully utilize the outdoor space and create an

intimate relationship with the indoor space which form a well-integrated space for people to enjoy and gather.

Railing



Most of the local waterfront promenade are without railings, and Barangaroo's waterfront is no exception. There are many wood-logs placed along the promenade as a barrier between the promenade and the water body, which is also used as seat. There is also provision of lifebuoy at regular interval along the sea front.



There are also several marinas to board and drop off boats such as taxis and yachts on the water, as well as a ferry terminal. Passengers can access Sydney Harbour waterfront areas by water, such as the Opera House, The Rock District and Darling Harbour.

For the study of the development of Sydney's waterfront, one can understand that to the seaside vitality, in addition to land accessibility, sea traffic is indispensable. Since the reopening of Barangaroo, the number of daily visitors has already reached 20,000.

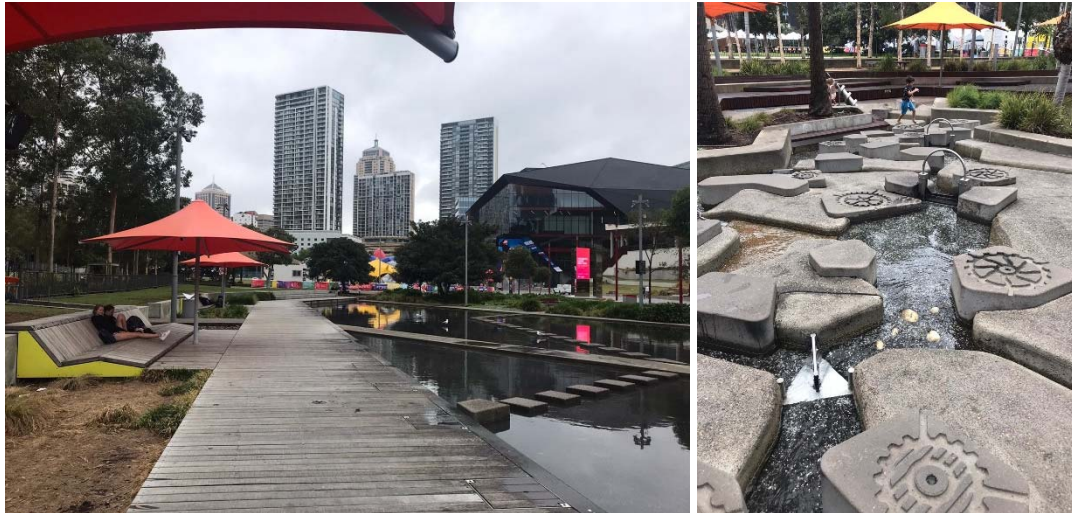
Lessons Learnt for our Boardwalk Scheme

The wood-logs could create a warmness atmosphere to the boardwalk, meanwhile stand as a barrier to protect people from the edges of the harbor and let users have a closer experience to the harbor.



Pedestrian Connection

A 680m Long Boulevard with Eucalypt, lined up the promenade and anchor the entire as well as extends the pedestrian connections between Central Station and Cockle Bay.



Sculptures, audio and visual installations as well as a 600m² mural of indigenous flora embedded in the walls of the terraced landscape, provide new points of fun and intrigue. Active water fountains, including the renovated Robert Woodward fountain ‘Tidal Cascades’, and other facilities create a good environment for family and gathering usage.



Blue painting of the structure and golden sculpture on the soffit of the bridge together with up light transforms the boring and dark underneath space to an interesting activity hub. Benches are also provided for resting and gathering.

The darling harbor provides a lot of as-built references for the activity hubs proposed in the IEC, the reference covered from the design, program and location, planting selections and material used that are very useful for developing the design concept.

3.8 Pyrmont Bridge, Sydney

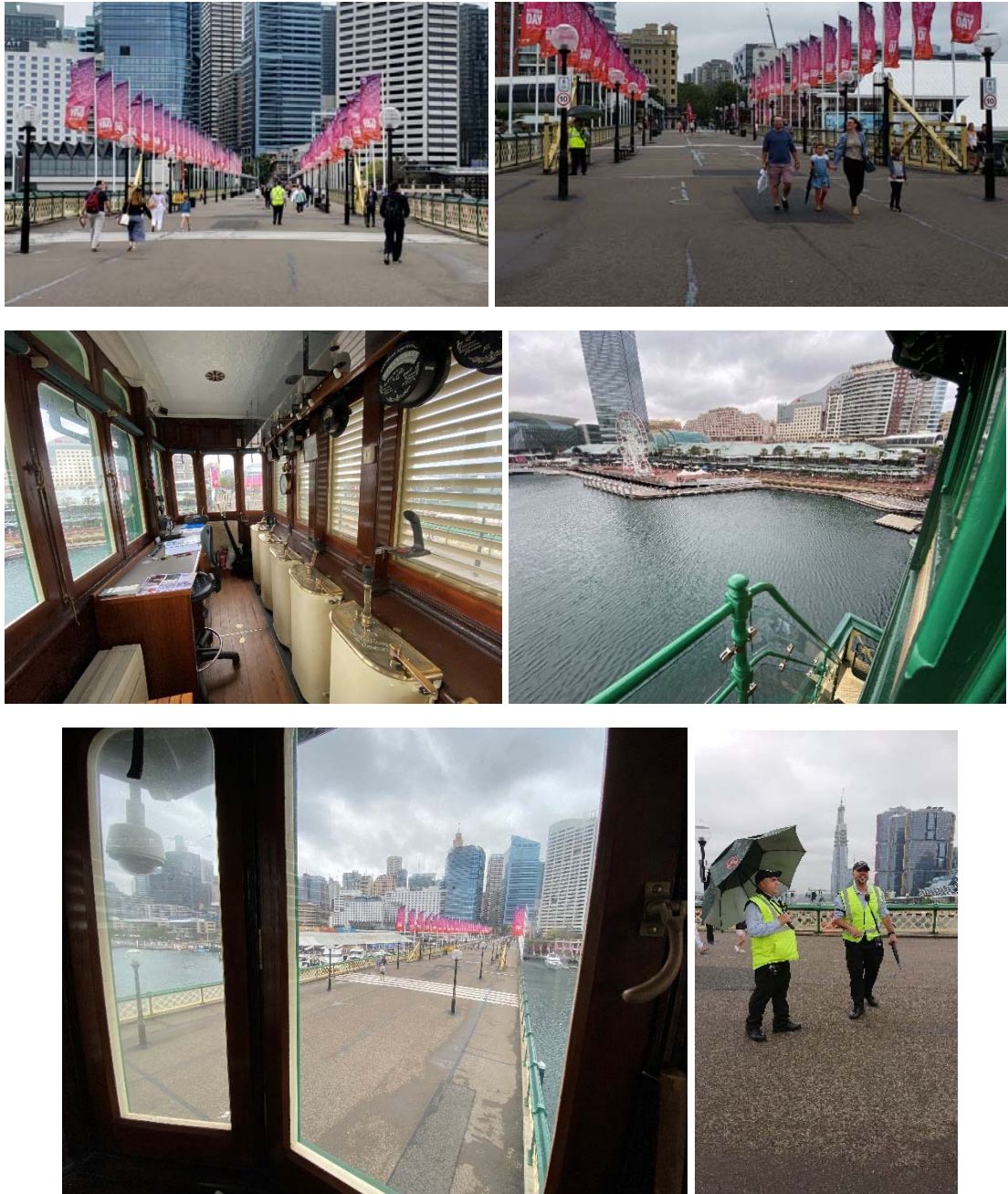


Pyrmont Bridge is a (shared use) footbridge located in Darling Harbour, Sydney. The swing span is supported on a 13m diameter base made from concrete and local sandstone. The bridge is generally opened for demonstration on weekends, public holidays and for vessels more than 7m high. The Pyrmont Bridge takes approximately 60 seconds to open. The then Sydney Harbour Foreshore Authority (SHFA) was developing an open standard BIM system to more efficiently and cost effectively manage the bridge's inspection, maintenance and conservation.

A brief presentation was given by Wayne Sahlman, (Senior Manager for Building & Place Services, Department of Planning, Industry and Environment, Sydney City Council) and the operators.



Movable Swing Bridge



Pyrmont Bridge is a relatively busy shared use footbridge with lots of pedestrian traffic. The whole operation of rotating the bridge is operated at the control tower located at middle part of the bridge. Public announcement is given 10 minutes prior to the rotation. Security officers stand on both sides of the bridge and ensure safety of the pedestrians as well as the closure of gates.



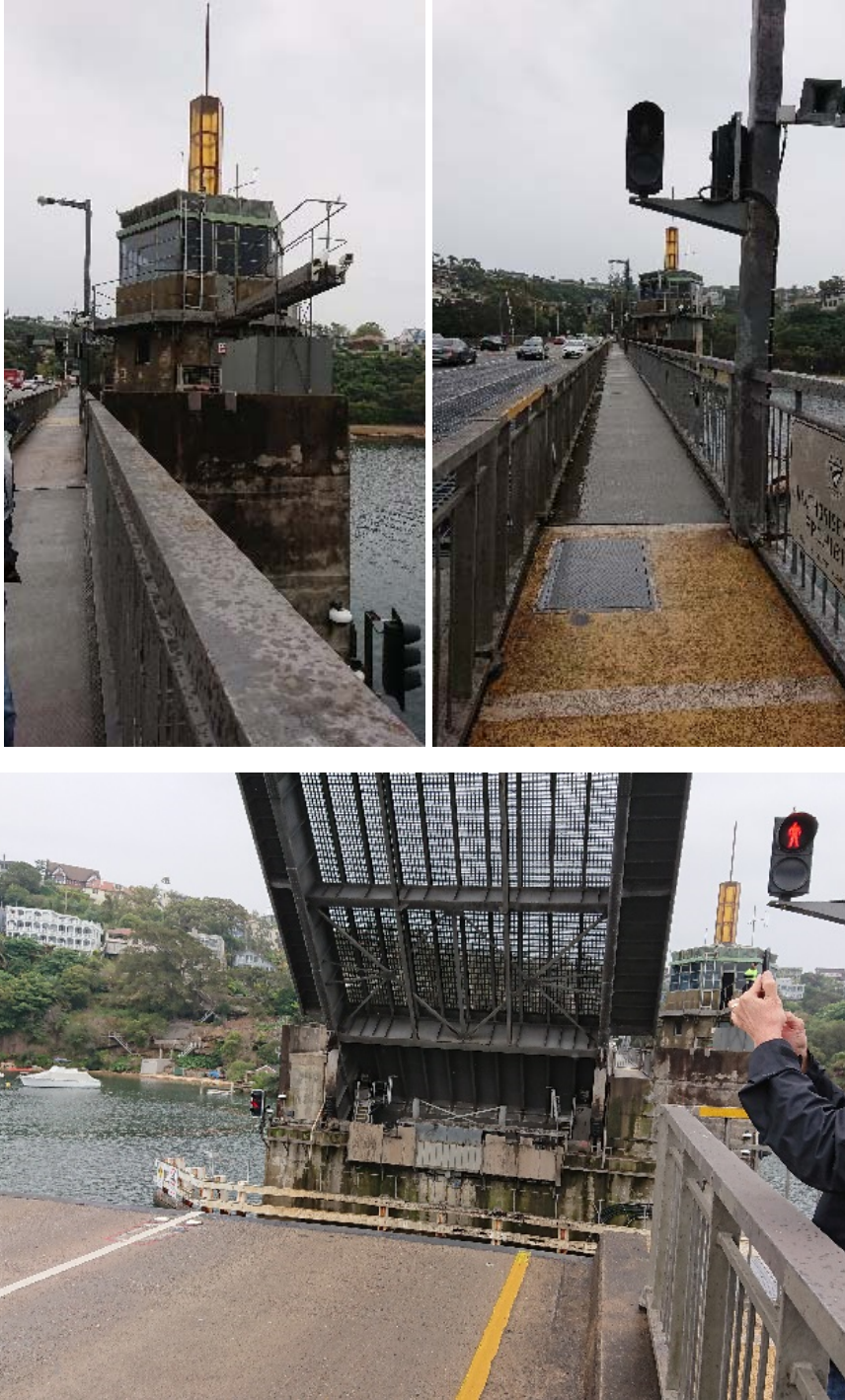
The open span was lifted up and the open span is rotated by 60 large steel wheel at the turn table.

3.9 Spit Bridge, Sydney



Spit Bridge is a vehicular bridge that span across the Middle Harbour. It is a steel and concrete girder bridge with a bascule lift span with a fixed schedule to open daily for vessels more than 6m high. A brief presentation was given by Mr Daniel Leung of MIEL, covering the background and technical data of the bridge.

A Control Tower is located beside the back span. Red traffic signal is given and the gates closed on both side of the bridge before the opening of the bridge to ensure no pedestrian and vehicle can pass through. The entire opening is about 45 seconds while there are about 3 minutes to allow boats to go in and out. The entire operation from open to close as well as resuming traffic is about 5 minutes which do not affect the overall traffic to a severe extent. No security officers were spotted at the gates; only one operator was present in the control tower.



A bascule bridge is considered more suitable for the Boardwalk project. Both lead time and bridge opening time are shorter than a swing bridge in general. The opening time of the swing bridge is generally longer than the bascule.

3.10 The Rocks, Sydney



The area adjacent of Campbells Cove and Hickson Road Reserve in the renowned suburb of The Rocks in Sydney consists of boardwalk, public open space, jetty, lookout to the Sydney Harbour. Weekend market selling fashion and accessories by emerging designers, locally-produced homewares, beauty products and original photography, art, crafts and jewellery can be found.



Different types of open spaces with different format of seating are provided in the pocket space or alley at The Rock., Some seating is permanently constructed together with the planters and mainly for al fresco dining while for café shop, some of them are movable and made of wood board with artificial lawn on top.

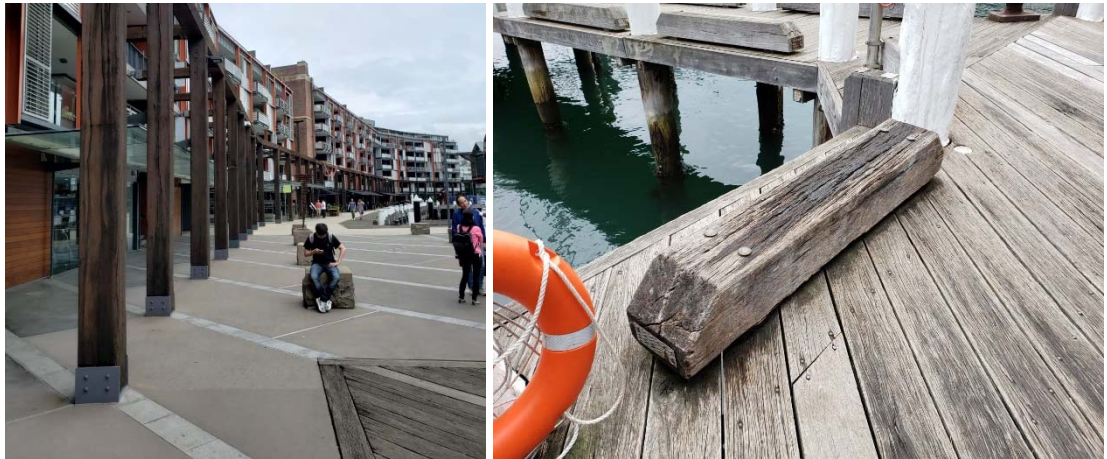
Lessons Learnt for our Boardwalk Scheme

Those different types of seating can also be applied for the activities hub along the project site. The idea of weekend market can also be adopted at the waterfront promenade at the inland part which can draw the public from inland to the promenade and promote local design and community bonding.

3.11 Walsh Bay, Sydney



Walsh Bay is a bay within Port Jackson, about 1,000 metres (3,300 ft) south of the suburb McMahon's Point. It is a historical wharf that was converted into apartments, theatres, restaurants, cafes and a hotel. In 2015, it was designated as a major arts precinct.



Concrete paving is used for majority of the area while natural hardwood is applied at the pier. Warm and cozy spaces can easily be formed by using some natural elements. The portion and location need to be carefully selected taking into consideration the characteristic and durability of the hard wood.

4 Conclusion

The 5-day overseas visit has provided the delegation many insights in the design of boardwalk, promenade and movable bridges as well as the approach for development of harbourfront. Through discussion and sharing session with the counterparts in Australia, the delegation appreciated the opportunities and challenges in the design, construction, management, operation and maintenance of harbourfront development projects. In addition, the delegation, with a mix of government officials from policy bureau and works department, members of the Harbourfront Commission of different professional disciplines, and engineers of consulting firm, stimulates and facilitates interaction and exchange of ideas from different perspectives among individual delegation members. All the above contributes to the success of the visit. The successful stories in Brisbane and Sydney will certainly serve as valuable references for the proposed Boardwalk project and future harbourfront development in Hong Kong. In particular, examples of shared-use cycle track, movable bridge, and harbourfront open space for public enjoyment are highly relevant for further consideration and application in the Project. The delegation have also exchanged contact with these counterparts for facilitate further exchange of information.

Appendix A

Table 1 – Delegation of the Overseas Visit

Name	Department / Consultants	Post
South Development Office, CEDD	Ms Alice PANG	Project Manager (South)
	Mr Wilson MA	Chief Engineer/South (3)
	Mr Godfrey HO	Senior Engineer/South (6)
Harbourfront Commission	Mr Vincent NG	Chair, Harbourfront Commission
	Mr Ivan HO	Chair, Task Force on Harbourfront Developments on Hong Kong Island
	Mr LEUNG Kong Yui	Chair, Task Force on Water-land Interface and Harbourfront Activation
	Mr Andrew LEWIS	Representing Business Environment Council
	Mr Anthony CHEUNG	Representing Hong Kong Institute of Architects
	Mr Edward LO	Representing Hong Kong Institute of Planners
	Mr Raymond CHAN	Individual Member
	Mr Mac CHAN	Individual Member
	Mr NGAN Man Yu	Individual Member
	Mr Raymond FUNG	Co-opted Member
	Ms. Lisa Lau	Co-opted Member
	Miss Rosalind CHEUNG	Secretary
	Mr Henry LAI	Secretary, Task Force on Harbourfront Developments on Hong Kong Island
	Ms Jenny WONG	Secretariat
	Mr Ray LEE	Secretariat
Meinhardt Infrastructure and Environment Limited	Mr Raymond CHAN	Project Manager, Director - Geotechnical
	Mr Daniel LEUNG	Deputy Project Manager, Director - Infrastructure
	Ms Tania CHING	Executive Engineer
	Ms Elvina TAM	Senior Engineer
LWK+Partners	Mr Paul WONG	Landscape Architect, Director
	Mr Terence CHOW	Associate

Table 2 – List of Authorities and Consultants




Location	Name	Post and Organization
Kingsford Smith Riverwalk	Mr Phillip Stedman	Brisbane City Council
New Farm Riverwalk	Mr. Roger Caswell	Principal Project Manager, Brisbane City Council
	Mr. Eoin O'Donovan	Design Lead of Riverwalk, Arup
Barangaroo	Mr. Daniel Noaen	Senior Development Manager, Infrastructure NSW
	Ms. Nicole Robinson	Senior Manager, Planning & Design, Infrastructure NSW
Darling Harbour	Mr. Thomas Hale	Senior Associate, Hassell Studio
	Mr. Andrew Ewington	Hassell Studio
Pymont Bridge	Mr. Wayne Sahlman	Senior Manager for Building & Place Services, Department of Planning, Industry and Environment, Sydney City Council




Table 3 – Itinerary of the Overseas Visit















Date	Location	Activity
15 Jan 2020 (Wed)	Overnight Flight from Hong Kong to Brisbane, Australia	/
16 Jan 2020 (Thu)	Kingsford Smith Riverwalk	Presentation and site walk
	City Reach Boardwalk	Site walk
	New Farm Riverwalk	Presentation and site walk
	Bicentennial Bikeway	Site walk
	South Bank	Site walk
17 Jan 2020 (Fri)	From Brisbane to Sydney, Australia	/
	Barangaroo South and Barangaroo Reserve	Presentation and site walk
	Darling Harbour Public Realm	Presentation and site walk
18 Jan 2020 (Sat)	Pymont Bridge	Presentation and site walk
	Spit Bridge	Site walk
	Water taxi and Circular Quay	Site walk
	Cockle Bay Wharf	Site walk
19 Jan 2020 (Sun)	The Rocks	Site walk
	Walsh Bay	Site walk
	From Sydney to Hong Kong	/

Appendix B


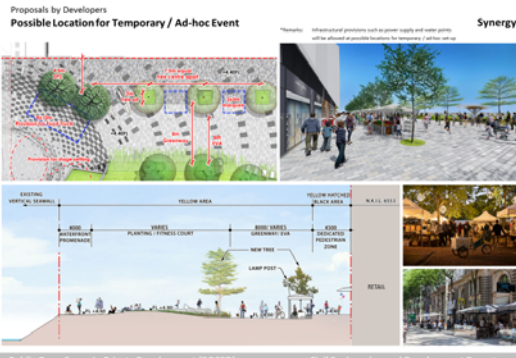

Application of Experience Learnt in Other Recent Harbourfront Projects Spearheaded by the Harbourfront Commission and the Harbour Office of DEVB

	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>
1.	Stepping seating without fencing (see 3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane)	<p>Proposed harbour steps at quick-win enhancement for Victoria Park Road Promenade (project launched before the visit and experience learnt during the visit has helped enhance the detailed design)</p>  <p>Proposed harbour steps at the quick-win promenade at Water Sports and Recreation Precinct</p> 
2.	Large shelters at node points (see 3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane)	<p>Large shelter underneath lookout with kiosk proposed at Open Space at Eastern Street North, Sai Ying Pun</p> 


	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>
3.	Drinking fountain for both people and pets with bottle-refilling function (see 3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane and 3.6 Barangaroo, Sydney)	Sample of drinking fountain to be installed in new promenade projects being pursued 
4.	6-metre-wide path for possible shared-use by strollers, runners and cyclists etc. (see 3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane, 3.2 City Reach Boardwalk, Brisbane and 3.3 New Farm Riverwalk, Brisbane)	6-metre wide main circulation path at Open Space at Eastern Street North, Sai Ying Pun 
5.	Terraced lawn area (see 3.4 South Bank, Brisbane)	Quick-win promenade at Water Sports and Recreation Precinct 

	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>																																										
6.	Eco-shoreline (see 3.6 Barangaroo, Sydney)	<p>Trial on Introduction of Eco-shoreline at Tsuen Wan Promenade (project launched before the visit and experience learnt during the visit has helped enhance the detailed design)</p> <div><p>Features proposed initially</p><table><thead><tr><th></th><th>Enhanced seawall panel</th><th>Eco tile</th><th>Total pool</th><th>Multi-function armoring unit</th><th>Oyster basket</th></tr></thead><tbody><tr><td>Dimension in cm (L x W x H)</td><td>180 x 80 x 15</td><td>20 x 20 x 5</td><td>~120 x 192 x 70</td><td>120 x 120 x 120</td><td>75 x 75 x 30</td></tr><tr><td>Weight (kg)</td><td>400</td><td>To be confirmed</td><td>1300</td><td>2000</td><td>To be confirmed</td></tr><tr><td>Material</td><td>Corrugate</td><td>Corrugate</td><td>Corrugate</td><td>Corrugate</td><td>1st Stainless steel</td></tr><tr><td>Surface habitat</td><td>Various seawall</td><td>Various seawall</td><td>Slippery seawall</td><td>Slippery seawall</td><td>Slippery seawall</td></tr><tr><td>Total range of deployment for the Study</td><td>1 row to mid-high shore Around 0.2 ~ 2.0 m above C.D.</td><td>1 row to mid-high shore Around 1.7 ~ 1.7 m above C.D.</td><td>1 row to mid-high shore Around 0.25 ~ 1.4 m above C.D.</td><td>1 row to mid-high shore Around 0.2 ~ 1.4 m above C.D.</td><td>1 row to mid-high shore Around 0.5 ~ 0.8 m above C.D.</td></tr><tr><td>Units per site</td><td>6</td><td>15</td><td>4</td><td>5</td><td>5</td></tr></tbody></table><div></div></div>		Enhanced seawall panel	Eco tile	Total pool	Multi-function armoring unit	Oyster basket	Dimension in cm (L x W x H)	180 x 80 x 15	20 x 20 x 5	~120 x 192 x 70	120 x 120 x 120	75 x 75 x 30	Weight (kg)	400	To be confirmed	1300	2000	To be confirmed	Material	Corrugate	Corrugate	Corrugate	Corrugate	1st Stainless steel	Surface habitat	Various seawall	Various seawall	Slippery seawall	Slippery seawall	Slippery seawall	Total range of deployment for the Study	1 row to mid-high shore Around 0.2 ~ 2.0 m above C.D.	1 row to mid-high shore Around 1.7 ~ 1.7 m above C.D.	1 row to mid-high shore Around 0.25 ~ 1.4 m above C.D.	1 row to mid-high shore Around 0.2 ~ 1.4 m above C.D.	1 row to mid-high shore Around 0.5 ~ 0.8 m above C.D.	Units per site	6	15	4	5	5
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7.	Fence-free design (e.g. wood-logs at the sea frontage as seatings and barrier between the promenade and the water body, and bollards with chain design) (see 3.7 Darling Harbour, Sydney and 3.11 Walsh Bay, Sydney)	<p>Bench seatings at Quick-win promenade at East Coast Park Precinct</p> <div></div> <p>Bollards with chain design at Water Sports and Recreation Precinct</p> <p>Landscaped Terrace with Playspace and Slides</p> <div></div>																																										

	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>
8.	Water play / water feature (see 3.7 Darling Harbour, Sydney)	<p>Open Space at Eastern Street North, Sai Ying Pun</p>  <p>Node of Retreat at Kai Tak Runway Precinct</p>  <p>Proposals by Developers Node of Retreat</p> <p>Public Open Space in Private Development (POSPD) Civil Engineering and Development Department</p>
9.	Dry fountain (see 3.7 Darling Harbour, Sydney)	<p>Open Space at Eastern Street North, Sai Ying Pun</p> 

	<p><u>Features</u></p>	<p><u>Application in Recent Harbourfront Projects</u></p>
<p>10.</p>	<p>Utilisation of space for pop-up street markets (see 3.10 The Rocks, Sydney)</p>	<p>Multi-purpose area at Open Space at Eastern Street North, Sai Ying Pun</p>  <p>Kai Tak Runway Precinct</p> 
<p>11.</p>	<p>Sculptures and Installations (see 3.1 Kingsford Smith Riverwalk / Lores Bonney Riverwalk, Brisbane and 3.7 Darling Harbour, Sydney)</p> <p>Seatings and tables through upcycling of materials (see 3.10 The Rocks, Sydney)</p>	<p>Promenade between Tamar and Hong Kong Convention and Exhibition Centre</p> 

	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>
		<p>Public Furniture Competition</p> <p>HARBOURFRONT PUBLIC FURNITURE COMPETITION</p>  <p>HARBOURFRONT COMMISSION PRESENTS:</p> <p>PUBLIC FURNITURE COMPETITION</p> <p>Open Call for Proposal: 24 Jul 2020 (Fri) Deadline of Submitting Reply Slip for Briefing Session: 7 Aug 2020 (Fri) (Updated) Briefing Session: 10 Aug 2020 (Mon) Deadline of Proposal Submission: 4 Sep 2020 (Fri) Announcement of Results: Mid Oct</p> <p>For details, visit www.dev.gov.hk/en/issues_in_focus</p> <p> VICTORIA HARBOUR 維多利亞港</p> <p>Victoria Harbour Word Art Competition</p>  <p>VICTORIA HARBOUR WORD ART COMPETITION</p> <p>Location: East Coast Park, north of Watson Road</p> <p>Important Dates:</p> <p>Open Call for Proposal: 24 Jul 2020 (Fri) Deadline of Submitting Reply Slip for Briefing Session: 7 Aug 2020 (Fri) (Updated) Briefing Session: 10 Aug 2020 (Mon) Deadline of Proposal Submission: 4 Sep 2020 (Fri) Announcement of Results: Mid Oct</p> <p> VICTORIA HARBOUR 維多利亞港</p>

	<u>Features</u>	<u>Application in Recent Harbourfront Projects</u>
		<p>Proposed upcycling of wooden pallets at harbourfront locations (under planning)</p> 

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