

# Task Force on Harbourfront Developments on Hong Kong Island

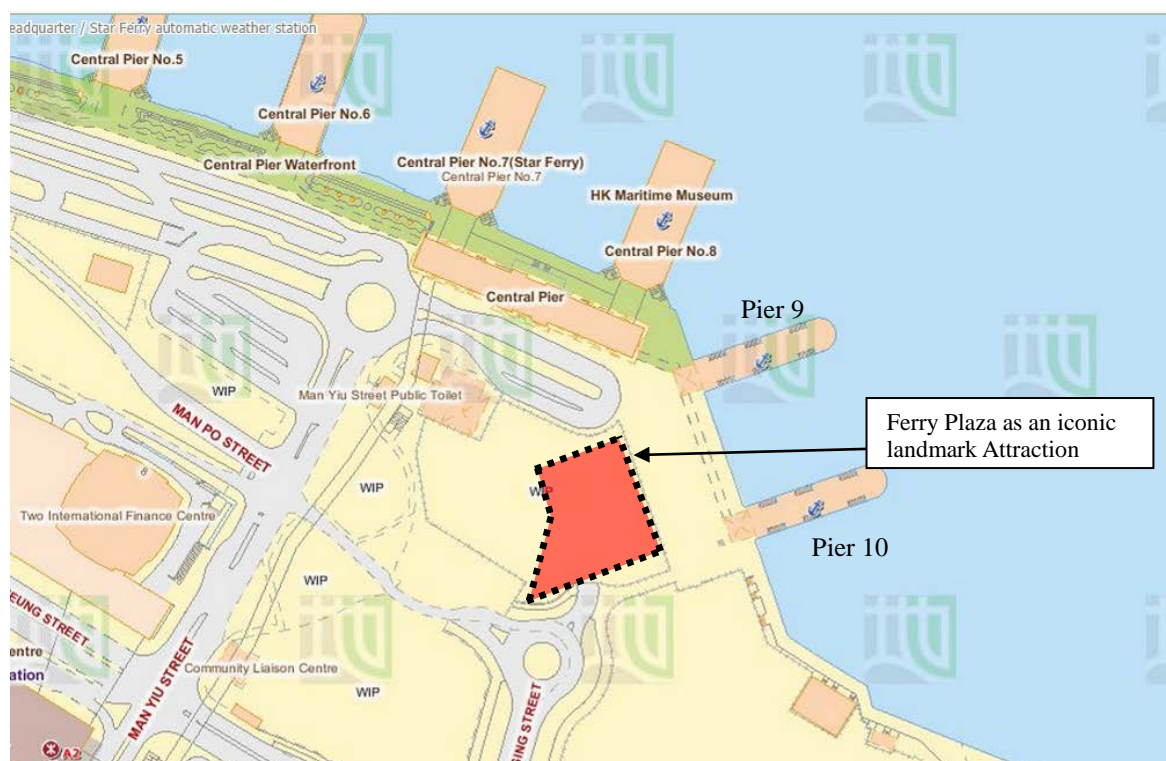
For discussion  
on 5 May 2015

TFHK/08/2015

## Proposed Design Concept for the Ferry Plaza at the Central Waterfront, with the Celestial Star Ferry Attraction and Public Amenity Space

### PURPOSE

The Proponent, namely The “Star” Ferry Company, Limited, would like to solicit support from the Task Force on their design concept proposal for the “Ferry Plaza” as an iconic waterfront landmark. The Ferry Plaza site would be located to the west of Central Public Piers 9 and 10, on the New Central Harbourfront. (**Figure 1**)



**Figure 1:** The Location of Ferry Plaza site

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## BACKGROUND

2. The Proponent has a long history in Hong Kong, serving the community and operating the public ferry fleet at Victoria Harbour. It is an avid leader and supporter of promoting and creating a vibrant, attractive and world-class waterfront in Hong Kong. Along these lines, the Proponent would like to donate one of its oldest ferries, Celestial Star, as an integral part of their design proposal. The charitable donation of this ferry is their intention to contribute to society and to boost the attractions on the waterfront. The internal space of Celestial Star would be refurbished with a restaurant, café & bar, and public spaces. It would then be placed at the Ferry Plaza as an iconic landmark attraction, surrounded by public amenity and landscaping spaces.

3. The Celestial Star (**Photo 1**) was built in the 1955 and was in service for more than 50 years. It is one of the oldest ferries in the Proponent's fleet. The ferry is about 36m long, with a breadth 8.5m and a weight of about 244 tonnes. It was retired in 2011, and laid up at Ting Kau.



**Photo 1:** Celestial Star when it was running

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4. The Ferry Plaza site is government property. Currently, it is occupied by the “Hong Kong Observation Wheel”, under a short term tenancy of 3 years. This *temporary* arrangement would expire within about 2 years and the site would be made available for other uses. **(Photo 2)**



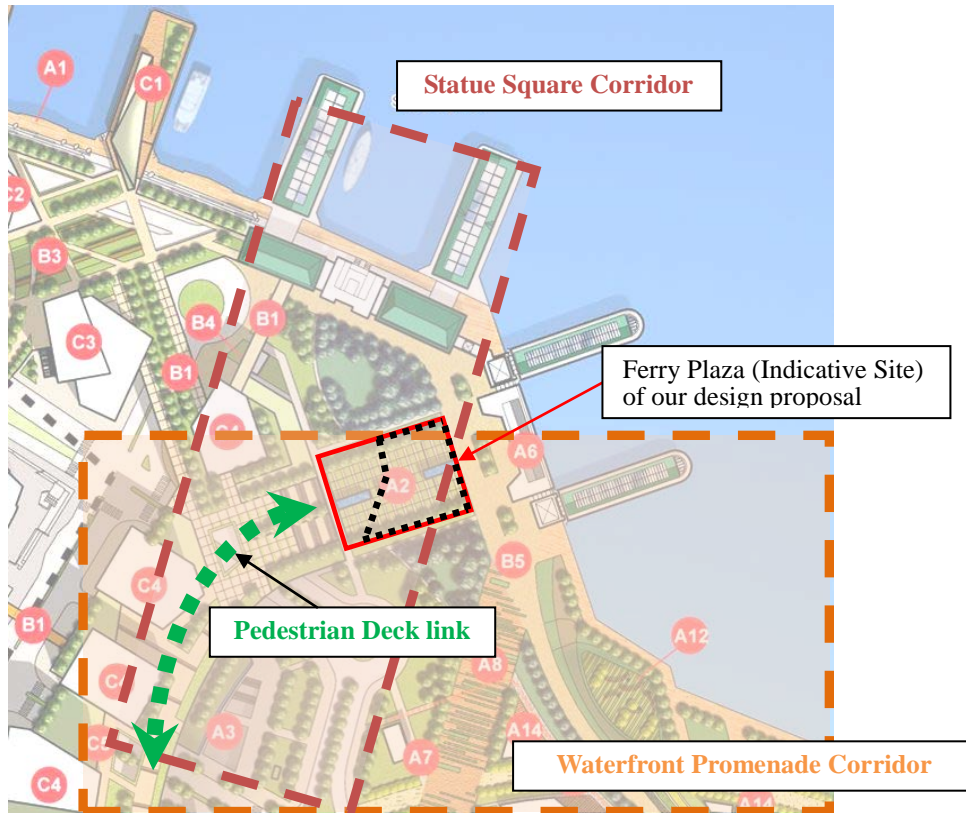
**Photo 2:** Existing arrangements at Ferry Plaza site (2015)

5. The Ferry Plaza site is covered by the Urban Design Study for the New Central Harbourfront (the “Study”) (completed in 2012) by the Planning Department and community groups, which guide the future urban design development and planning along the Central waterfront. In the Study, the subject site for the proposal was *suitably* labelled as “Ferry Plaza” **(Figure 2)** and recommended as part of the pedestrian deck linking with the inner urban area, right at the intersection of two major design corridors and character precincts: the Statue Square Corridor and Waterfront Promenade. It is anticipated that there would be a large volume of pedestrian flow there. An open-air waterfront plaza, with related commercial and leisure uses, is designed and encouraged

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there. (Figures 2 & 3)



**Figure 2:** Location of Ferry Plaza site (A2) and surrounding indicative urban design



**Figure 3:** Perspective view of Ferry Plaza site location, recommended in the Study

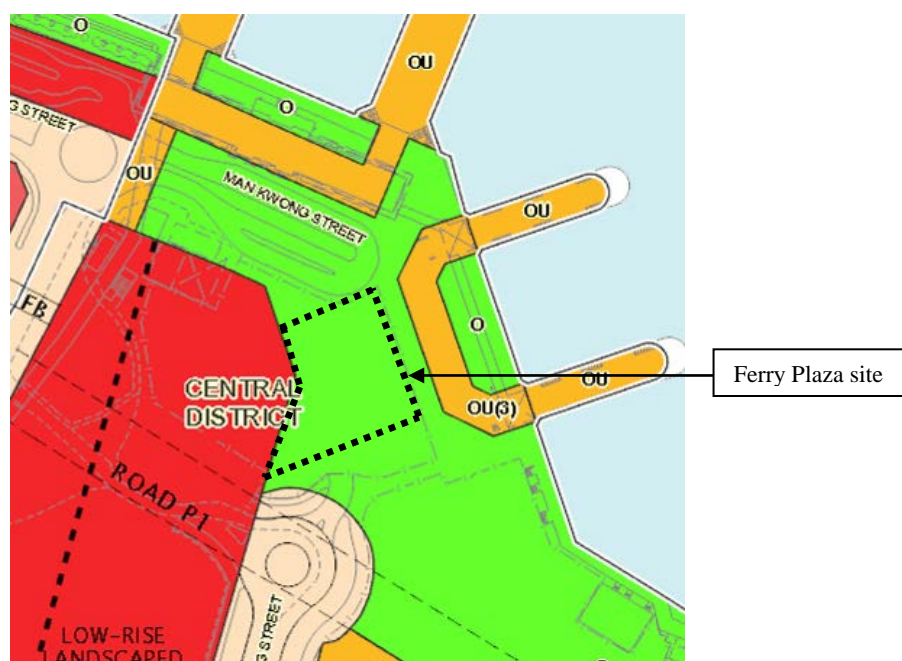
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## STATUTORY PLANNING CONTEXT

6. The Ferry Plaza site falls within an area zoned “Open space” (O) on the Draft Central District (Extension) Outline Zoning Plan No. S/H24/8 (the “OZP”). (**Figure 4**) In the Schedule of Uses of the OZP, it is stated that the planning intention of this zone is “primarily for provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of the general public and visitors.”

7. Within the Ferry Plaza site, the proposed attraction of Celestial Star will include a restaurant, a café & bar and public exhibition areas and public spaces. These uses are listed under Column 2 of the O zone in the Notes of the OZP; and require approval from the TPB under Section 16 of the Town Planning Ordinance. The public amenity space containing water features, seating and landscaping, are permitted uses and would not require any planning application.



**Figure 4:** The Ferry Plaza site in relation to the OZP

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8. In the Explanatory notes of the OZP, para. 7.1.2, at the location of the Ferry Plaza, it is stated that at this location: "...public gathering spaces for festivals and celebrations and new public facilities would be integrated.... the area is envisaged as a major attraction for tourists and the public to enjoy dramatic harbour views. An open-air waterfront plaza and some waterfront related commercial and leisure uses would be provided near the re-provisioned Central Star Ferry Pier 7 & 8 and the public piers 9 and 10. Integrated with the promenade would be leisure and entertainment-oriented developments."

### **PROPOSED LANDMARK ATTRACTION AT FERRY PLAZA**

9. The design concept for the Ferry Plaza is to turn it into an iconic landmark, with a cultural tourist destination, public amenity space and pedestrian thoroughfare. It is based on two components: the Celestial Star and the complementary public amenity spaces.

10. The 36m long Celestial Star would be completely refurbished internally, with the open spaces at the fore and aft of the ferry, and most of the ferry's structural characteristics retained for cultural heritage appreciation. Its internal structures like seats and engines would be removed and the spaces adaptively reused for commercial and leisure functions, dedicated for public enjoyment. The commercial uses include a restaurant and café & bar, where the generated revenue would be used to subsidize the maintenance of the ferry and the Plaza, as well as moving a program to generate non-fare box revenue to stabilize the fares of the Proponent's public ferry crossings.

11. The restaurant dining experience for visitors is placed at the upper deck level (**Figure 5**), at a prominent location on the waterfront, and overlooking views of the cityscape. It would be an amazing and unique attraction. One of the viewing decks at the upper deck would be open to the public and visitors. It would preserve the original characteristics of the ferry, with interpretive signs, diagrams and

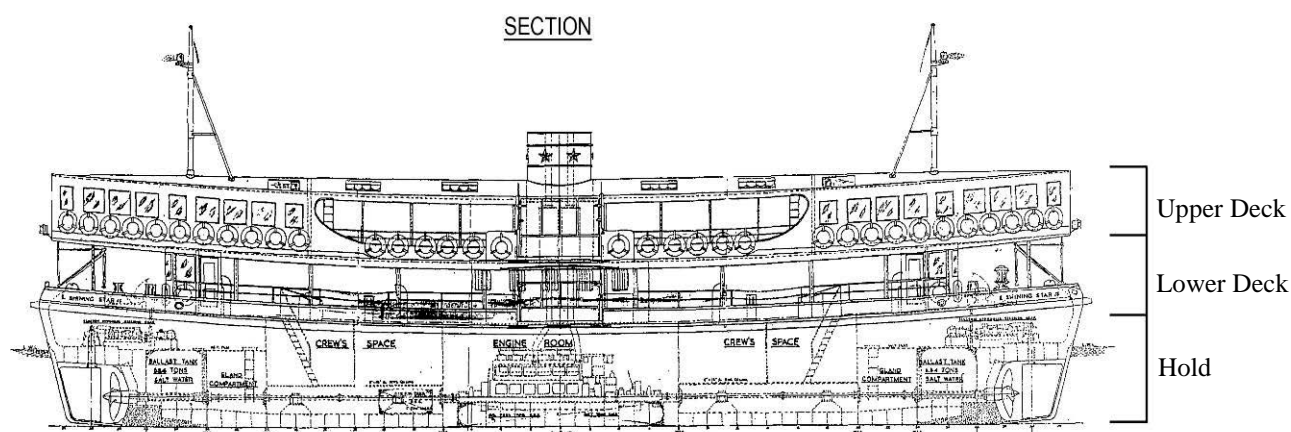
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guides. This would undoubtedly raise the profile and attraction of the maritime culture of the Star Ferry. It is anticipated that arrangements with the nearby Maritime Museum could be made in terms of program, exhibitions and promotion of this unique landmark space. **(Figure 5)**

12. The original and proposed use for the ferry levels is provided in the table below **(Figures 5 – 7)**:

| <b>Ferry Level</b> | <b>Original Use</b><br>(Figure 6) | <b>Proposed Use</b><br>(Figure 7) (with<br>approx. floor area)                                     |
|--------------------|-----------------------------------|--|
| Upper Deck         | Passenger seats                   | Restaurant and public<br>viewing space<br>(~180m <sup>2</sup> )                                    |
| Lower Deck         | Passenger seats,<br>wheel houses  | Exhibition (~60m <sup>2</sup> )<br>café & bar (~60m <sup>2</sup> )<br>kitchen (~60m <sup>2</sup> ) |
| Hold               | Engine room, crew<br>spaces       | E&M (~180m <sup>2</sup> )  |

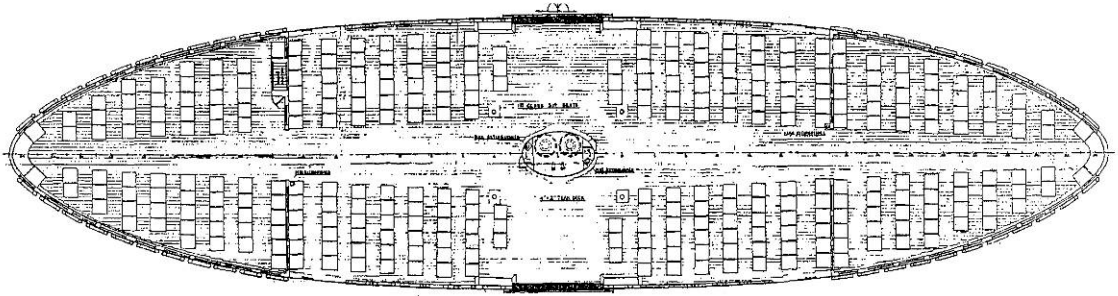


**Figure 5:** Original Use in Celestial Star Ferry section

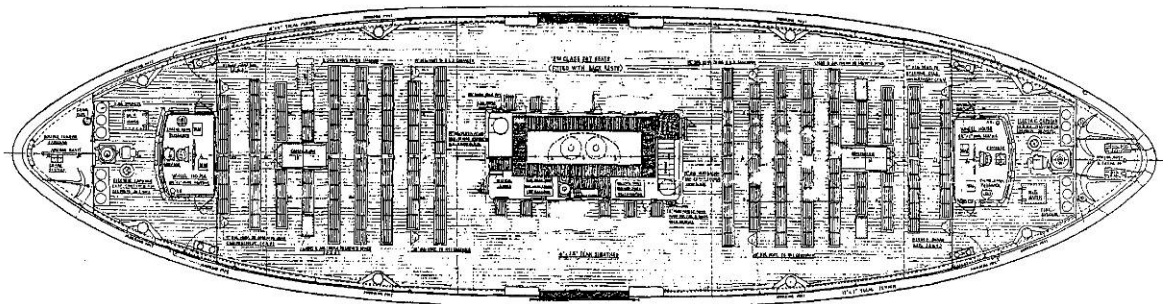
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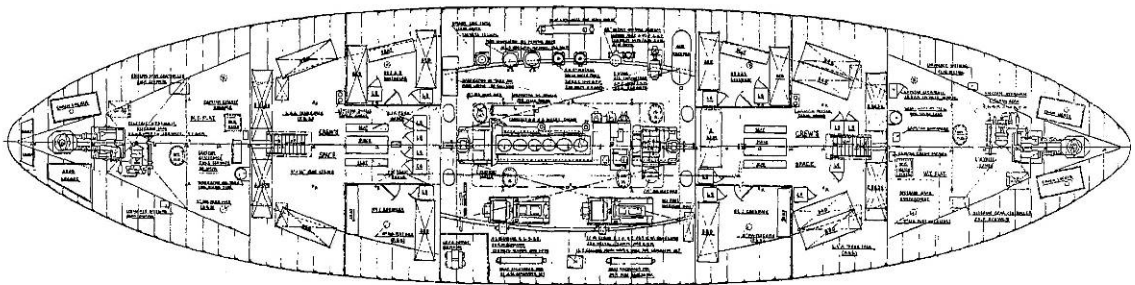
Upper Deck



Lower Deck



Hold

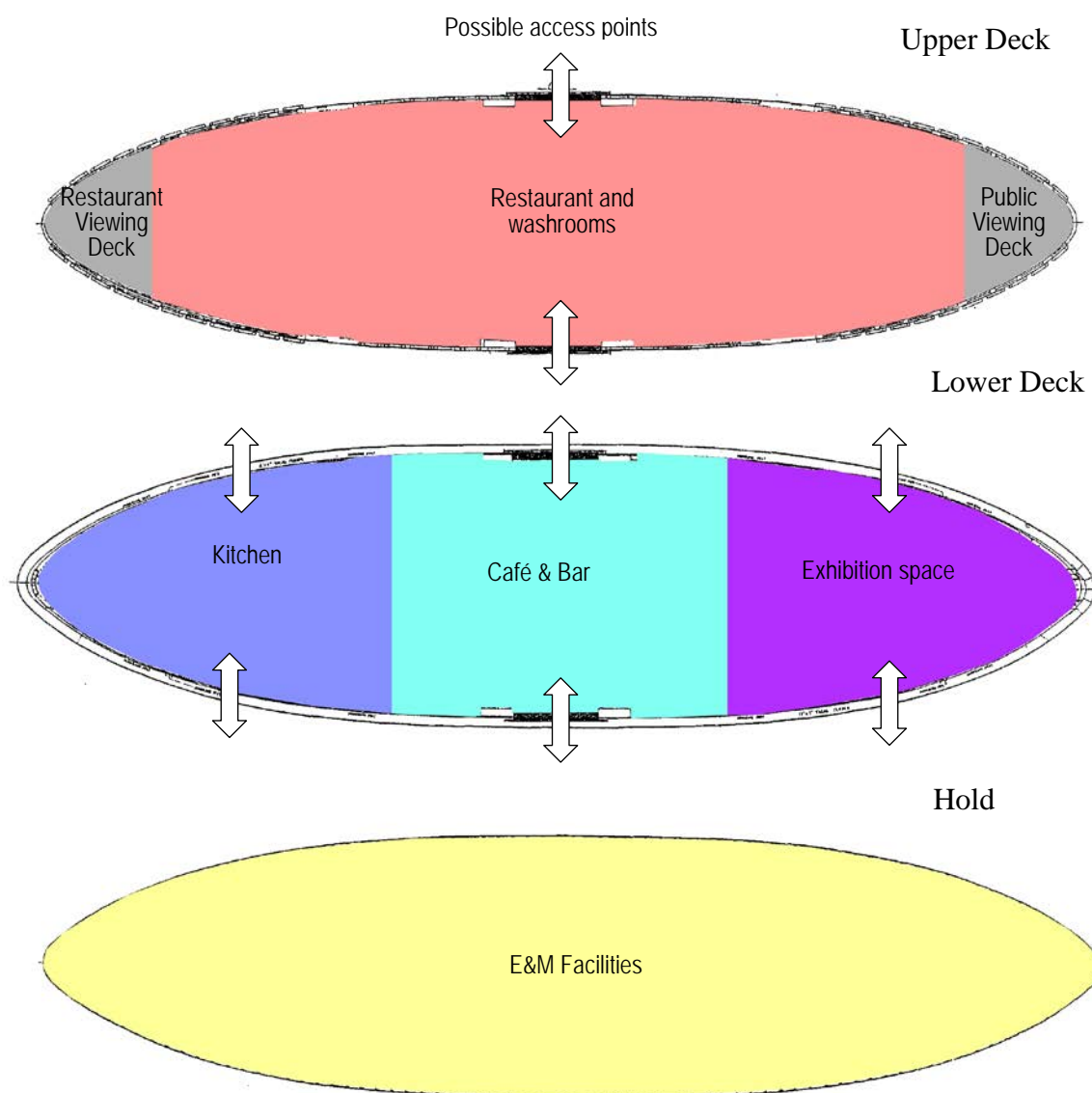


**Figure 6:** Original layout in Celestial Star Ferry



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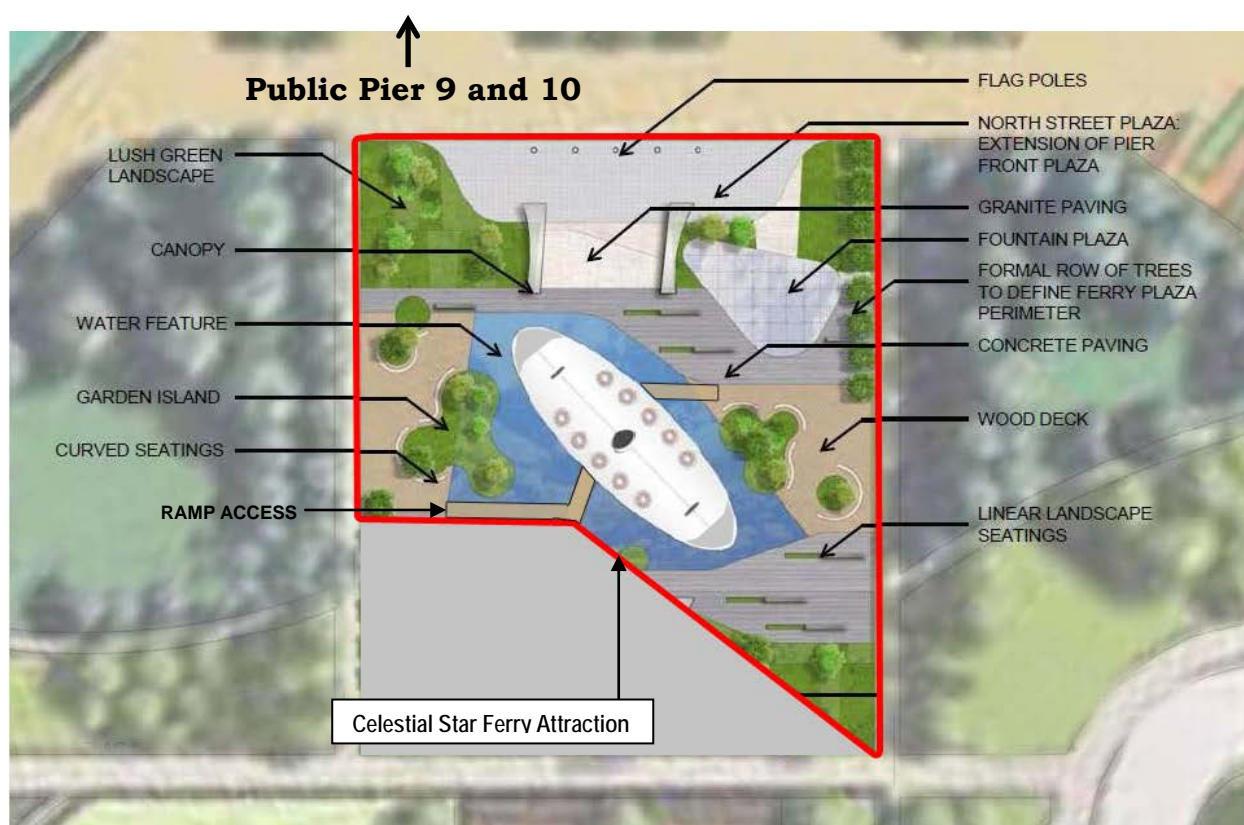
**Figure 7:** Proposed (indicative) distribution of spaces and layout in Celestial Star

13. The different levels would be linked through staircase design. The detailed design of the layouts and the disabled access would be fully considered in the subsequent planning application stage.

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14. The Celestial Star would be placed within an artificial water feature, resembling a small pond, and there would be foot bridges allowing access by visitors to cross the water feature from ground level to go into the ferry. Within the Ferry Plaza and around the Celestial Star would be landscaping, furniture and greenery for the convenience and enjoyment of visitors. There would also be a “north street plaza” extension of the public pier front plaza, lined with a row of flag poles, a complimentary design to mirror the flag poles on the other side of the Harbour at the Tsim Sha Tsui ferry pier. **(Figure 8)** The site would be made into an all-time, all-season space by providing lighting and opportunities for small scale exhibitions, festivals and multi-functional space, complementing the surrounding waterfront features. **(Figure 9)**



**Figure 8:** Conceptual Layout Plan for the proposed Ferry Plaza

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15. The layout is designed to facilitate pedestrian movement through the Ferry Plaza connecting conveniently to the surrounding areas, as well as for the logical mix of uses so that the layout is conducive to people stopping to enjoy them at the waterfront. Based on experience in property management along the waterfront, the Proponent believes the reasonably priced food with sheltered and unsheltered seating, plus a diversity of uses for all ages, would likely attract and lead to a lively and vibrant space with visitors.



**Figure 9:** Indicative perspective of the modified Celestial Star in Ferry Plaza

### PRELIMINARY ELECTRICAL & MECHANICAL STUDY

16. A preliminary feasibility study on Electrical & Mechanical (E&M) provisions supporting the operation of the commercial uses has been carried out. (**Annex 1**) The study highlighted the technical requirements with respect to: Air-Conditioning Mechanical Ventilation,

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Electrical Power Distribution, Fire Protection system, Plumbing and Drainage system, and Gas Supply System. In conclusion, subject to the availability of utility connections nearby and connection approved by related Government departments and utility companies, it is considered technically feasible to provide the E&M systems supporting the operation of the ferry at the Ferry Plaza.

### **PRELIMINARY MARINE ENGINEERING STUDY**

17. A preliminary feasibility study on the requirements of lifting the ferry ashore and placing it at the Ferry Plaza has been carried out. (**Annex 2**) The study has recommended the methods and equipment to efficiently carry out the operation, subject to the necessary tests and consent from Government departments. In conclusion, subject to the approval of related Government departments, it is considered technically feasible to move the ferry ashore to the Ferry Plaza.

### **MANAGEMENT COSTS**

18. The long-term management costs for the Celestial Star and Ferry Plaza amenity areas would be taken up by the operators, at no cost to the Government. If the Proponent is selected to be the operator, the revenue from the commercial operations in the ferry may go towards covering the management costs and non-fare box revenue for stabilizing the fares of its public ferry crossings.

### **IMPLEMENTATION COSTS**

19. The Proponents would like to stress that they are not capable of taking up the whole cost of implementation, considering the immense scale of operation, risks and finances required; however, the Proponent is prepared to consider the following operating mode

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in partnership with Government, that would be fair and beneficial to all parties, including the general public, tourists, and Government.

20. The Proponent would donate the Celestial Star. The Government would take up the costs for implementation, including transporting the ferry ashore and into the Ferry Plaza, refurbishment of the ferry, and construction of the foundation and landscape public amenities. The Proponent is willing to help facilitate the implementation process and work with Government departments. The Government could consider including the Ferry Plaza to the pier boundary of the Ferry Franchise of the Proponent so that concession revenue gained from Celestial Star would be used to stabilize fares of the public ferry crossings. The Proponent would be willing to take up the concession operation, management of the Celestial Star and related furniture and structures within it.

### **JUSTIFICATIONS AND PLANNING BENEFITS**

#### **In line with the Harbour Planning Principles and Guidelines**

21. The proposal would fall in line with the Harbour Planning Principles in terms of:

- (a) **Principle 1 - Preserving Victoria Harbour:** The proposed scheme would only involve minor structural works and upgrades. It would have insignificant impact to the built environment of the Central waterfront or Victoria Harbour. In fact, by establishing the landmark ferry attraction at the Ferry Plaza, the proposal reinforces the urban design study intention, which ensures that this space be retained and preserved for future public enjoyment and respect for the cultural heritage of the star ferries.

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- (b) **Principle 2 - Stakeholder Engagement:** The Proponent has taken the necessary steps to present this scheme to the Central & Western District Council to solicit their views. Subsequently, under the planning application process, the scheme would be published for members of the community to provide their comments. These comments would be considered by the Town Planning Board in their deliberation of the application.
- (c) **Principle 3 - Sustainable Development:** The proposal would provide a prime viewing space, a unique dining experience, exhibition space and public open space for the public to enjoy. It makes better public use of the existing land with minor formation changes.
- (d) **Principle 4 - Integrated Planning:** The proposal contributes to the overall waterfront urban design and planning to provide commercial and leisure uses for the enjoyment of tourists and locals. It creates an important urban design landmark that links the statute square corridor and waterfront promenade corridor, and facilitates the movement of pedestrians between these two corridors and to the surrounding waterfront space.
- (e) **Principle 5 - Proactive Harbour Enhancement:** The proposal is a proactive initiative to enhance the Ferry Plaza as an iconic landmark, through the planning, development and management of vibrant commercial and leisure spaces to attract tourists and for the public to enjoy. It supports the urban design study recommendations and is compatible with the OZP planning intention in the O zone.
- (f) **Principle 6 - Vibrant Harbour:** The proposal would not affect the existing and planned maritime and land-side activities, but would contribute to a vibrant waterfront by attracting visitors to the unique landmark attraction, and public amenity spaces for them to relax and enjoy the waterfront.

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- (g) **Principle 7 - Accessible Harbour:** The proposal forms the waterfront-end of the pedestrian deck that was recommended in the urban design study, linking up the inner urban area with a convenient and safe pedestrian linkage to the waterfront. The proposal acts as a landmark feature to bring visitors to the waterfront and improve the public access to a better and higher quality public space at the Ferry Plaza.
- (h) **Principle 8 - Public Enjoyment:** The proposal would maximize the opportunities for the public to enjoy the facilities at the waterfront. It would not have any effects on the provision of land for infrastructure developments, utility installations and landuses that are incompatible.

22. The revised scheme would fall in line with the Harbour Planning Guidelines in terms of:

- (a) **Diversity of Uses** for public enjoyment by creating an iconic landmark attraction in Ferry Plaza, with commercial, leisure, exhibition and public viewing spaces by the waterfront.
- (b) **Leisure Uses** such as sheltered and unsheltered seating areas, flag pole plaza, fountain plaza, garden, landscaped greenery, pedestrian pathways and pavement, and place for visitors to view the Victoria Harbour would be provided for public enjoyment. **(Figures 8 & 9)**
- (c) **Prime Public Viewing Spaces** at the Ferry Plaza would be provided where tourists and locals can enjoy the magnificent panoramic view of the harbour and cityscape on the waterfront. The Ferry Plaza would build on the continuous network of public open spaces along the Central harbourfront.
- (d) **Cultural Heritage** of Celestial Star, symbolizing the dedication and important heritage of the Proponent's fleet in Hong Kong, would be established as an iconic landmark

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in Ferry Plaza, and would be appreciated at this ideal location, right next to the Central Ferry Piers.

- (e) The Ferry would **comply with Building Height Restrictions** in the OZP, if any, and would not cause any adverse visual impact to the surrounding visual corridors.
- (f) The scheme would help to anchor the Ferry Plaza as an **Iconic Landmark**, a tourist attraction on Central waterfront.
- (g) The Proponent may take up the management of the Celestial Star, the public spaces therein as part of the **private sector involvement in managing public waterfront promenade**.
- (h) The proposal would contribute to the **sustainable development** of the Central waterfront into a world-class tourist attraction, adding to the diversity of uses, viewing spaces and commercial uses for the public and visitors to enjoy.

### **Technically Feasible**

23. The proposal is considered technically feasible from two important perspectives of implementation, namely, the E&M provisions for operation of commercial uses, and the marine lifting work for the placement at the Ferry Plaza. Further detailed assessments and designs would be carried out in the subsequent planning application stage.

### **In-line with Planning Intention of OZP**

24. From a preliminary assessment, the proposed commercial and leisure uses are in line with the planning intention of open space zone in the OZP. It is compatible with the intended commercial, leisure, exhibition and entertainment uses on the Central waterfront as highlighted in the OZP.



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### **Making Use of a Retired Ferry at a Suitable Location**

25. The Celestial Star has been laid up for several years. Such an important symbol of the maritime cultural heritage of Hong Kong should be preserved and its story shared to the public for their appreciation and benefits.

26. There would be no more suitable location for this ferry to be located than at an open space that is ideally labeled (by community groups in the Urban Design Study) as “*Ferry Plaza*”, right next to similar cultural attractions such as the Central Star Ferry Pier 7 & 8, the Maritime museum and the waterfront environment at Victoria Harbour. This proposal is a rare opportunity that the Proponent is willing to support.

### **Improved Quality and Design of Ferry Plaza**

27. Compared with the Urban Design Study with the Ferry Plaza as just a pedestrian corridor and open space with fountains, the proposal would improve the quality and design. An iconic landmark would be created with the culturally significant Celestial Star, complemented by commercial, leisure and exhibition uses around it, turning it into a cultural destination, public gathering point and pedestrian thoroughfare.

### **ADVICE SOUGHT**

28. The proposal is a much needed landmark attraction and public amenity that would ensure the sustainable development of the Central waterfront, as well as raise the profile of Victoria Harbour as an important public asset and valuable treasure of Hong Kong.

29. The Proponents would like to seek the advice from the Task Force to endorse the project in-principle, to enable further detailed

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discussions with Government departments and to proceed with a section 16 planning application.

**Masterplan Limited on behalf of  
The Star Ferry Company Limited  
May 2015**



# **E&M Feasibility Study for Celestial Star Ferry Placement Project**





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**1.0 EXECUTIVE SUMMARY**

By and large, having reviewed the background and requirements of the entire project, it is considered technically feasible in terms of E&M provisions supporting the operation of the converted Celestial Star subject to the followings:

- 1) Area and application of the intended usage for the converted Celestial Star is more or less the same as that indicated in the client's brief (detailed in section 3.0 of this report)
- 2) Placement of E&M plants inside the Engine Room to be considered structurally feasible.
- 3) Availability of utility connections (highlighted in section 6.0 of this report) nearby and approval of those connections by related Government Department/ Utility Companies



**2.0 INTRODUCTION**

The oldest current Star Ferry, the Celestial Star, is proposed to be placed on the waterfront as an iconic feature and an attraction for public enjoyment. It is proposed to convert the Celestial Star into a restaurant with public accessible spaces.

WEC was commissioned to conduct a feasibility study on E&M provisions supporting the conversion work (which possibly includes kitchen, toilets, cafe bar, seating and dining area)



**3.0 CLIENT 'S BRIEF ON FERRY CONVERSION AND PLACEMENT PROJECT**

A kick off meeting was arranged with the client (The 'Star' Ferry Company, Limited) on 13 March 2015.

Preliminary Operation requirements for the Celestial Star were briefed and have been identified as follows:

- a) Upper Deck (Shade Deck): Restaurant
- b) Lower Deck (Main Deck): 1/3 Sitting & Exhibition; 1/3 Cafe & Bar;  
1/3 Kitchen
- c) Engine Room: E&M Facilities



**4.0 E&M PROVISIONS**

**4.1 E&M Systems involved**

By nature, operating the public facilities inside The 'Celestial' Star sitting on the newly reclaimed water front in Central would be fairly similar to having it operated inside a 'Small' Building, in terms of operation demand and fire risk.

To support the operation of the 'Celestial' Star Ferry fulfilling the client's requirements and noting the converted ferry is to be opened to public, the following major E&M systems have been identified:

- a) Air-Conditioning, Mechanical Ventilation (ACMV) System
- b) Electrical Power Distribution (Including Lightning Protection and Earthing System)
- c) Fire Protection System (Fire Sprinklers, Hosereels,...etc)
- d) Plumbing & Drainage System
- e) Gas Supply System (supporting the Restaurant Kitchen)





**4.2 Brief on Systems' Description**

**4.2.1 ACMV Systems**

**(A) Air Conditioning**

- i) Full Air Conditioning with adequate Fresh Air Supply will be provided to the following areas:
  - Dining Area of Restaurant at Upper Deck
  - Sitting and Exhibition Area at Main Deck
  - Cafe & Bar Area at Main Deck
  
- ii) VRV system (kind of multi split A/C system with single Condensing Unit supports a series of Indoor units of various types, detail can be referred to attachment in Appendix C) is preliminarily proposed with consideration of energy saving and flexibility of future area allocating the location of Outdoor Units.
  
- iii) The VRV outdoor units can either be located at Engine Room (enclosed inside Louvered Condenser Rooms) or at Roof of the 'Celestial' Star.
  
- iv) Noting the relatively low headroom incurred, there is a chance space above Roof Deck of the Celestial Star can be utilized running part of services involved.



**(B) Mechanical Ventilation**

- i) Fresh Air will be provided for all Air Conditioned Area
  
- ii) Mechanical Ventilation will be provided for Kitchen in fulfillment of Restaurant Licensing requirements of Food, Environment & Hygiene Department (FEHD). Original 'Chimney' location may be utilized to run the exhaust air duct thereby minimizing the impact of Kitchen exhaust to the surroundings.
  
- iii) Mechanical ventilation will be provided for Toilets and the various E&M Plant rooms located at Engine Room.



**4.2.2 Electrical Power Distribution System**

Normal Power Distribution System will be designed and provided to fulfill the operation requirements in associated with various areas inside the converted 'Celestial' Star.

It is estimated the overall Power Consumption for the converted 'Celestial' Star is in the order 400 A, TPN (subject to availability of having Gas Supply supporting the Restaurant Kitchen).

The main switchboard is proposed to be located inside the switch room at Lower Deck of the converted 'Celestial' Star.

An Emergency Generator will be installed in fulfillment of contingent operation needs of Fire Services Systems and the related Fire equipment (eg. Sprinkler Pumps, Hosereel Pumps, AFA,...etc). The Emergency Generator together with the associated Diesel Oil Tank will be located likewise inside the Genset room at Engine Room of the converted 'Celestial' Star.

On a similar consideration with Kitchen Exhaust, the Exhaust Flue of Diesel Fired Emergency Generator will be routed along the location of 'Chimney' to reduce impact to surroundings. It must be noted this Generator will normally be used only when there is a fire .incident.

Artificial lights will be provided for all areas to ensure adequate illumination. LED lighting system with a proper lighting control panel is recommended with consideration of energy saving mode.

Essential lights will be provided at all areas in fulfillment of Hong Kong Fire Service Department ( HKFSD)'s requirements.



**4.2.3 Fire Protection System**

**(A) Fire Sprinkler System**

Fire Hazard for the proposed Restaurant shall be classified as Ordinary High Hazard, Group I (OH-1).

For this application, the minimum water tank size has been worked out to be 40 m<sup>3</sup> to support the operation of Sprinkler System.

The Fire Sprinkler System and the associated Tank and Pumps will be located at the Engine Room of the converted Celestial Star.

**(B) Fire Hose Reel System**

Capacity of Fire Hose Reel System has been preliminarily worked out to be 9 m<sup>3</sup>.

Pump and tank can be located next to that of the Fire Sprinkler System at the Engine Room of the converted Celestial Star.

**(C) Automatic Fire Alarm (AFA) System**

AFA System will be provided generally for the Electrical E&M Plant Rooms at the Engine Room of the Celestial Star.



**4.2.4 Plumbing and Drainage System (P&D)**

**(A) Plumbing**

Plumbing provisions will be provided generally for the following applications:

- Kitchen
- Toilets

**(B) Storm Water Drainage**

Storm Water Drainage System will be provided for the entire Celestial Star and be connected to the Underground Public Storm Water Drainage Network.

**(C) Waste Water Drainage**

Waste Water Drainage provisions will be provided generally for the following applications:

- Kitchen
- Toilets

It should be remarked that Grease Interceptor shall be provided for Kitchen Drain in accordance with Restaurant Licensing requirements of Food, Environment & Hygiene Department

**4.2.5 Gas Supply Installation**

Gas Supply Installation is mainly provided serving for the kitchen located at the Main Deck of Star Ferry.

With this, it eases up significantly the Electrical Power Loading demand for the future operation of The 'Celestial' Star Ferry, thereby minimizing the chance of construction of new Transformer Room



### 3.3 E&M Standards, Guides and Codes of Practice

Design of E&M system is NOT covered at this stage. However, in associated with the development of detail E&M design, it is recommended Publications and standards of the following institutions shall apply to the standards of E&M Design and Installation

#### UK Institutions

- (a) Air Conditioning Advisory Bureau
- (b) Association of Short Circuit Testing Authority
- (c) The British Electrical and Allied Manufacturers Association Ltd.
- (d) British Approvals Service for Electric Cables
- (e) British Standards Institution
- (f) Building Research Advisory Service
- (g) BRE Fire Research Station
- (h) Building Services Research and Information Association
- (i) Chartered Institution of Building Services
- (j) National Inspection council for Electrical Installation Contracting
- (k) Electricity Council
- (l) British Electrotechnical Approval Board
- (m) Fire Protection Association
- (n) Health and Safety Executive
- (o) Department of Health and Social Security
- (p) Institution of Electrical Engineers
- (q) Heating and Ventilating Contractors, Association
- (r) Loss Prevention Council
- (s) Fire Offices Committee

#### USA Institutions

- (a) American Society of Heating, Refrigerating and Air Conditioning Engineers
- (b) American Society of Mechanical Engineers
- (c) Illuminating Engineering Society
- (d) Institute of Electrical and Electronic Engineers
- (e) National Electrical Code
- (f) National Electrical Manufacturers Association
- (g) National Fire Protection Association
- (h) Sheet Metal and Air Conditioning Contractors National Association
- (i) Underwriters Laboratory of America

#### Hong Kong Codes of Practice

- (a) Building Ordinance Office
- (b) Fire Services Department of Hong Kong
- (c) China Light & Power Supply Rules
- (d) Ventilation of Scheduled Premises By-Laws
- (e) Environmental Protection Dept.
- (f) Code of Practice for Electricity Wiring Regulation (Latest Edition)
- (g) Building Energy Efficiency Ordinance (CAP610)
- (h) Food & Environment Hygiene Department (FEHD)



**4.4 Preliminary Loading Estimation**

Based on the layout/ sections provided by client, a preliminary power loading estimations have been performed.

Please refer to Appendix A for details on estimated Power loading estimations

It should be noted that this is only a very preliminary estimate without the detail requirements developed on the actual operation (like kitchen equipment, lighting and other E&M systems design,...etc). The future loading demand must be fine tuned in associated with the actual detail design development in the subsequent design stage.



**5.0 Preliminary Spatial Planning**

A very preliminary concept on spatial planning has been developed based on loadings.

Please refer to Appendix B for details

Kindly note that without much details on exact operation of future premise and constrains due to ferry construction, this is only a very preliminary concept for discussion and planning this stage.





**6.0 Summary of E&M Utilities Demand**

It was noted that there is no record available to the public on Underground Utilities/ E&M services for the newly reclaimed area nearby as yet.

As such, we have on the contrary worked out accordingly the key utilities required in support to the converted Celestial Star 's future operation, namely

- a) Dia. 80 mm Water Supply Pipe (for potable water)
- b) Dia. 80 mm Water Supply Pipe (for Fire Protection)
- c) Dia. 50 mm Flushing Water Supply Pipe (for toilet)
- d) Dia. 150 mm Sewerage Pipe Connection (for Kitchen and Toilets)
- e) Dia. 225 mm Storm Water Pipe Connection (for storm water collection)
- f) Dia. 100 mm Gas Pipe (for support of kitchen)
- g) 400 A, 3 Phase Power Supply
- h) Telephone Point Connection



**7.0 Recommendations and Conclusion**

It should be noted that without much details available on exact operation of the future premise and constrains due to ferry construction, the study and technical review is only a very preliminary concept for discussion and planning this stage.

All in all, having reviewed the background of the entire project, it is considered technically feasible in terms of E&M provisions supporting the operation of the converted Celestial Star subject to the followings:

:

- 1) Area and application of the intended usage for the converted Celestial Star is more or less the same as that indicated in the client's brief (detailed in section 3.0 of this report)
- 2) Placement of E&M plants inside the Engine Room to be considered structurally feasible.

However, in the worst scenario if not all plants can be put into the ferry (maybe due to structural or other constrains), some or part of plants/ plant rooms may be located outside just next to the ferry. By doing this, the capital investment of project will be increased.

- 3) Availability of utility connections (highlighted in section 6.0 of this report) nearby and approval of those connections by related Government Department/ Utility Companies

## **Appendix A**

### **Electrical Load Calculation**

Electrical Load Calculation

Proposal to The Harbourfront Commission on Feasibility of Celestial Star attraction with restaurant and public area

Rev: 0

| (A) Power Load                                    |                      |                        |                     |
|---|----------------------|------------------------|---------------------|
| Type  | Loading Factor (kVA) | Area (m <sup>2</sup> ) | Total Loading (kVA) |
| Kitchen   | 0.56                 | 60                     | 33.6                |
| Restaurant  | 0.3                  | 180                    | 54                  |
| Café & Bar  | 0.56                 | 60                     | 33.6                |
| Exhibition  | 0.2                  | 60                     | 12                  |
| E&M Plant Room                                    | 0.01                 | 180                    | 1.8                 |
| Total Loading (kVA)                               |                      |                        | 135                 |
| Diversity Factor                                  |                      |                        | 0.80                |
| Total Loading after taking Diversity Factor (kVA) |                      |                        | 108                 |
| 3 Phase Current Required (A)                      |                      |                        | 139.48              |

| (B) MVAC Load                                    |     |                     |              |
|--|-----|---------------------|--------------|
| Equipment  | Qty | Loading Factor (kW) | Loading (kW) |
| VRV Outdoor -01                                  | 1   | 16.5                | 16.5         |
| VRV Outdoor -02                                  | 1   | 40                  | 40           |
| PAU  | 1   | 1.2                 | 1.2          |
| Exhaust Fan                                      | 1   | 1.5                 | 1.5          |
| Total Loading (kW)                               |     |                     | 59.20        |
| Diversity Factor                                 |     |                     | 0.80         |
| Total Loading after taking Diversity Factor (kW) |     |                     | 47.36        |
| 3 Phase Current Required (A)                     |     |                     | 84.66        |

| (C) Fire Services Load                           |     |                     |              |
|--|-----|---------------------|--------------|
| Equipment  | Qty | Loading Factor (kW) | Loading (kW) |
| Sprinkler Pump                                   | 2   | 55                  | 110          |
| F.S. Pump  | 2   | 15                  | 30           |
| Total Loading (kW)                               |     |                     | 140.00       |
| Diversity Factor                                 |     |                     | 0.50         |
| Total Loading after taking Diversity Factor (kW) |     |                     | 70.00        |
| 3 Phase Current Required (A)                     |     |                     | 125.13       |

Summary

(1) Normal Power Load

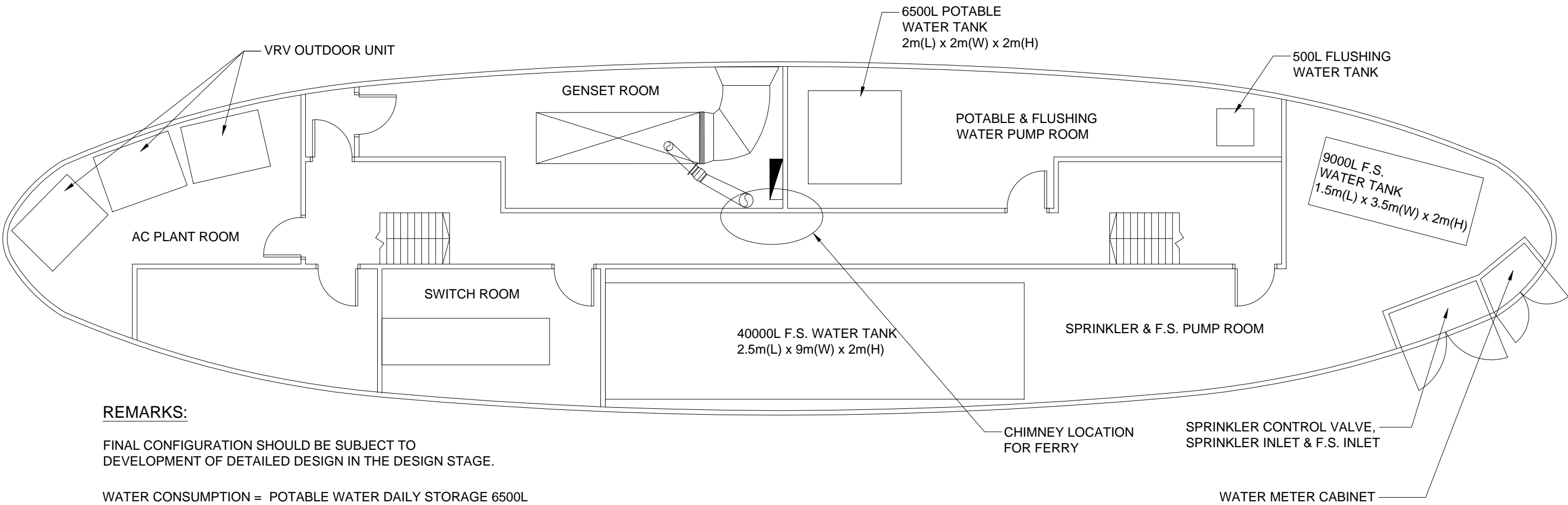
| Description            | 3 Phase Current Required (A) |
|------------------------|------------------------------|
| (A) Power Load         | 139.48                       |
| (B) MVAC Load          | 84.66                        |
| (C) Fire Services Load | 125.13                       |
| Spare                  | 0.10                         |
| Total with spare       | 384.19                       |

## **Appendix B**

### **Preliminary Concept on E&M Plant**

#### **Space Allocation at Lower Deck**

# APPENDIX B



**REMARKS:**

FINAL CONFIGURATION SHOULD BE SUBJECT TO DEVELOPMENT OF DETAILED DESIGN IN THE DESIGN STAGE.

WATER CONSUMPTION = POTABLE WATER DAILY STORAGE 6500L  
FLUSHING WATER DAILY STORAGE 500L

POWER CONSUMPTION = 400A TPN

TOWN GAS = 1140MJ/hr

## PRELIMINARY CONCEPT ON E&M PLANT SPACE ALLOCATION AT LOWER DECK

## **Appendix C**

### **VRV System**

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Ref. Starferry.001.2015

Date: 18 Mar 2015

The “Star” Ferry Company, Limited  
Star Ferry Pier,  
Kowloon Point  
Tsim Sah Tsui  
Kowloon  
Hong Kong

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## **FEASIBILITY STUDY OF BRINGING A STAR FERRY**

### **ASHORE AT FERRY SQUARE**

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## **General**

In accordance with the “Star” Ferry Company, Limited instructions, our company KEE Marine Service & Consultant Ltd. have conducted a feasibility study of bringing the Celestial Star ferry ashore at Ferry Plaza. The “Star” Ferry Company, Limited intends to donate one of their ferries to Hong Kong Government and lay it ashore at Ferry Plaza, the open space behind Central Piers No.9 and No.10, for display.

The Star ferry have always been our icon in Hong Kong harbour. It has been crossing the Victoria Harbour between Hong Kong Island and Kowloon more than a century. For tourists visiting Hong Kong is almost a must to take a riding experience to explore the beautiful Victoria Harbour, looking up to the Peak from water level and other sky scrapers.

## **The Ferries**

There are eight “Star” ferries running the cross harbour service. Most of them were built in the late sixties of fifty years old. All of them are built with two propellers one at either end i.e. both ends can be bow or stern. They are all using diesel engine together with diesel gen-sets. Its main engine is able to drive both propellers on either end. All of them are built with steel material structurally and holding valid licence.

The dimensions of these ferries are :-

|                               |   |                                |
|-------------------------------|---|--------------------------------|
| Length overall                | : | 119 feet (36.3m)               |
| Length between Perpendiculars | : | 105 feet 4 inches              |
| Mould Breadth                 | : | 28 feet (8.54m)                |
| Mould Depth                   | : | 10 feet 7½ inches (3.23m)      |
| Lightship weight              | : | 244.3 tons (248.2 metric tons) |

In future lifting exercise the ferry boat would be stripped off with all the chairs, stores and perhaps some of its gen-sets, fire-fighting equipment, Life Saving equipment, propellers driving shafts. Probably will reduce its weight to around 230 metric tons.

Having this 230 metric tons weight only there are many lifting gear choices in Hong Kong and near-by regions like Guangzhou or Pearl River Delta. This can be done directly from sea to shore by heavy lift barge or by shore crane with attendance of tug boats to hold its position before putting on hook.

### **The on hook lifting spot**

The final display area of this ferry is at Ferry Plaza which is 100 metres from the present Central Pier No.9 and No.10 shore side. The exact position is where the Sky-wheel is (see picture below). There is a canopy covered walkway ashore about 10m from waterside. It is a steel structure with many steel tube uprights of about every 5m apart.



The distance between Central Pier No.9 and No.10 is about 60m apart. The water depth within this area is about 8m at the vertical seawall. This is an absolute area to lift the ferry on hook and take ashore.

Water depth of 8m is good enough for most barges with lifting capacity of 500 tons and so is the available width between No.9 & 10 piers. The water surface in this area is quiet but the east-west current through central harbour can be strong in spring tide. The tidal range of spring tide in Hong Kong may come up to 2.3 metres. One can imagine the strength of tidal flow in the middle part of spring tide.

The maritime traffic using these piers is quiet except Sunday and public holiday where private launches will embark / disembark its guests. Since these two are Public piers and in Central therefore our Project Manager needs to discuss with concerned Government Departments to allow lifting process to conduct.

The only hurdle we can see is the shore side canopy covered walkway. However it is only a steel tube supporting structure. We suggest to discuss with concerned Government Departments to propose to cut this structure off temporarily. After bringing the ferry ashore then to rebuild the uprights by welding it back to original state.

**Lifting barge / crane**

There are many lifting equipment able to do this job in Hong Kong or from neighbour areas. The lightship weight is about 230 tons. In Hong Kong we have barge able to lift 400 tons. Guangzhou Salvage in Mainland has loads of equipment available from 5000 tons range downward. Indeed they have one 500 tons single point lifting barge working in Hong Kong at this moment (see picture below). The draft of this barge is only 4.1m and its breadth is 23m. There is plenty space for this barge to maneuver between Pier No.9 & 10.



However, there is a distance between vertical sea wall to the display area of about 100m. After the ferry is landed still it needs a heavy lift tires roller to shift or being lifted and moved another 100m inshore. Therefore we recommend the project manager to consider using shore crane to lift the ferry from sea. This process would save up hiring two sets of lifting gears by sea and by land.

The shore mobile heavy lift cranes in Hong Kong range from 750 tons downward. Most of them are on tires heavy mobile crane or running steel conveyor belts. There are several companies holding these equipment (see picture below).



### **The lifting points on ferry hull**

One important thing is the lifting points under the ferry hull. We should refer to its Docking Plan but it seems there is not any available. Frankly, the ship is more than fifty years old and running since built. Even though the ship is holding valid license still is fifty years old already. Regarding to metal fatigue in service it is difficult to tell unless a sample material from hull to be taken to test.

When it is serving inside the harbour its weight is evenly distributed over its hull surface under water. When lifting away from water then its weight will concentrated within the area of slings. Therefore we have to accurately rig the lifting slings round under the bulkhead before putting it on hook. Should we use wire slings directly act on the hull then it have to be heavy and wide enough to spread the pressure over the whole hull.

On the other hand we suggest to prepare a cradle fit under the ferry then lifting the cradle rather directly onto its hull. Lifting the ferry by cradle is far safer but the drawback is additional weight of this cradle. We might need to hire a heavier mobile crane.

The advantage of using a cradle is it may be used to stand the ferry at future display position. The cradle can also be an initial home to hold the ferry while she is doing its converting process into a display unit. We believe this refurbishment process might take some months. Sitting in a cradle is far cheaper to locate a slipway to do this modification. And the weight of ship will be largely spread through its hull within its cradle which avoids concentration of weight at areas where slings are.

While moving the ferry with cradle from refurbishing site to Ferry Square can use a flat top barge to do this. The advantage by this is the bottom paint will not contact and damage by sea water while moving at float. It would be far easier and stable for the riggers to put the ferry on hook. On the other hand the Marine Department might not consider this is a ship any more after refurbishment to become a display unit therefore it might need another survey in order to get a temporary licence to tow it to Ferry Plaza.

Sitting in a cradle to move 100 metres inshore is also far safer than using slings or hiring another heavy lift dollies to move this 100 metres since this ferry in cradle can be left aside anywhere within the display site until the seating site is ready if timing is not co-ordinated as plan.



Saving up all the above we recommend to build a cradle for the ferry right from the beginning to refurbishment. Necessary tests and surveys would be carried out to ensure the most suitable way that would maintain integrity of the ferry hull and structure.

## **Weather**

The weather is a very crucial point to look at since there are many liftings before the ferry finally rest in its permanent site.

We recommend this exercise should be done in calm weather and sea. In this lifting position in Central the summer season is better than winter where it is open to predominate North-easterly monsoon in winter season. Summer time mostly there is no strong wind because of the Hong Kong Island has blocked the South-westerly monsoon. And of course we should not do any lifting in the time of typhoon passing.

Further, this should be done at high water slack in daylight. In this hour there would not have strong east-westerly current runs through the Victoria Harbour. The speed of east-westerly tide may come up to 2 knots in Victoria Harbour. By high water slack the lifting height may save up to 2.3 metres too.

## **Recommendations**

- Using shore mobile crane lifting processes.
- The lifting process to be done in calm season and weather.
- Temporarily remove the covered walkway behind Central Pier No.9 & 10 for lifting the ferry process. Then afterward re-construct back to original state.
- Preferred option is to design and build a cradle to hold the ferry before refurbishment. This cradle will use as initial home for refurbishment then shifting from refurbishing site to Ferry Plaza.
- Using a flat top barge to shift the ferry from refurbishing site to Ferry Plaza unless the company wants to do refurbishment at Ferry Plaza.

Kee Marine Service & Consultant Ltd.



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T.K. Cheung

## **Remark**

This consultancy had been conducted with utmost professional knowledge in marine practice. Neither the Kee Marine Service & Consultant nor the undersigned surveyor shall in any circumstances be responsible or liable to any person for any act, omission, default or negligence whatsoever.