

14 CONSIDERATION OF DIFFERENT PROJECT SITING, ALIGNMENT OPTIONS AND DIFFERENT TYPES OF TRANSPORT MODES

14.1 INTRODUCTION

14.1.1 This Section provides a consideration of different Project siting, alignment options and also broad consideration of different transport modes to the Theme Park and its associated developments, to satisfy the Study Brief, Clause 3.5.

14.2 DIFFERENT PROJECT SITING OPTIONS

PROJECT SITE HISTORY

14.2.1 The Penny's Bay site was originally earmarked for container terminals (CT10 and CT11) and port related uses, including container back-up areas, business park and industrial uses under the Lantau Port and Western Harbour Development Studies conducted in 1993. The 1997/98 Port Cargo Forecast (PCF) indicated that there is a general slowdown of the growth rate of cargo throughput in Hong Kong. On the basis of such findings, the planned development programme for port facilities was reviewed.

14.2.2 The 1998 Territorial Development Strategy Review (TDSR) identified North-East Lantau as having potential for a range of other land uses, such as tourism/recreation, housing, business estate and major transport interchange. As a follow up to the TDSR, an integrated planning and engineering feasibility study was initiated by the CED on 25 June 1998 (NLDFS).

14.2.3 The Committee on Planning and Land Development (CPLD), after considering initial findings of the NLDFS, agreed that the land use proposals for North-East Lantau should be drawn up on the basis of the tourism/ recreation development theme, with an intention to translate North-East Lantau into a "Tourist Paradise" comprising a world-class theme park and a range of other compatible tourist attractions. The findings of NLDFS and a preliminary outline development plan (PODP) were presented to the Town Planning Board in July 1999 and it was agreed that the PODP was a suitable basis for the revision of the previous North-East Lantau Port OZP. The land use of the proposed Project site was thus revised to theme park and related resort development in accordance with the draft North-East Lantau OZP which was gazetted in August 1999. The other main land uses proposed under the draft OZP is container terminals. Sites for two container terminals to cater for long term port expansion in Hong Kong have been reserved to the south-southeast of the Theme Park, pending further studies on the alternative location for port development.

DIFFERENT THEME PARK SITING OPTIONS

14.2.4 In parallel with these developments, in 1998 Disney was looking for a suitable site for the potential development of a Disney project in Hong Kong. A number of potential sites were identified including Penny's Bay and Yam O on North Lantau and the former Whitehead Detention Centre near Ma on Shan. In 1999, the Government and Disney agreed that Penny's Bay was the most

promising option and following this site decision the two sides started serious negotiation. The detailed justifications are set out below.

14.2.5 In order to be a successful operation, a Disney Theme Park and Resort needs a location that meets the following major criteria:

- has adequate multi-modal access so that guests and cast members can get to the site quickly, easily and safely;
- is located away from urban areas that could intrude into the visual character of the theme park;
- away from noisy activities that would adversely impact the guest experience; and
- has approximately 200 hectares of flat land.

14.2.6 Due to the popularity of Disney theme parks and the potential to occasionally have over 40,000 guests in each theme park per day, a diverse transit network is required to provide access to the Theme Park for both guests and cast members. Rail, bus, coach, taxi, private car, and ferry are all transit modes that when working together can accommodate large numbers of people to the site quickly, safely and efficiently.

14.2.7 Part of the magic of Disney theme parks is the ability for guests to be immersed in a world of wonder, fantasy and adventure. If guests can see the “outside” world of office towers and roads while in the theme park, the theme park experience is diminished. To maintain the guest experience, such “outside” forces cannot be allowed “in” the theme park. Therefore, a secluded area without any visual intrusion is required.

14.2.8 Another requirement is the potential avoidance of noise either from aircraft over head or from other operations outside the theme park. Again, a relatively secluded site away from urban/developed areas solves that potential concern.

14.2.9 In view of Hong Kong’s topography, there are few large, flat sites available for a theme park and related hotel and commercial uses. For a theme park / resort to be viable, it requires at least 200 hectares of flat land. Taking into consideration all the above criteria, three locations were identified. Penny’s Bay, Yam O and the former Whitehead Detention Centre sites all have the potential to support theme parks and future expansion space.

14.2.10 The Yam O site has good access as it is adjacent to the North Lantau Highway and MTR rail line and has the potential for a ferry service. Yam O is also located away from urban areas, but is compromised by the aircraft flight paths emanating from the Hong Kong International Airport (HKIA), at Chek Lap Kok. Such proximal outdoor aircraft noise would undermine the guest experience at this site. Moreover, due to the proximity of Yam O to the HKIA, frequent aircraft fly-over would be easily visible overhead.

14.2.11 The former Whitehead Detention Centre, near Ma On Shan, is relatively separated from urban areas and is away from noise generating activities such as the HKIA. However, the site does not have adequate multi-modal access and due to its location, specific rail and ferry services would be both expensive and inefficient when compared to the Yam O and Penny’s Bay sites. The

Whitehead site is additionally compromised by visual intrusions from existing and proposed developments.

14.2.12 The Penny's Bay site, however, meets all three main criteria, in addition to the space requirements. The site has excellent access to road (North Lantau Highway), rail (MTR), and potential ferry services. Recent access improvements like the Tsing Ma Bridge provide immediate access to the site from Kowloon, Hong Kong Island and the New Territories. The Penny's Bay site is also far enough away from urban/developed areas so that incompatible uses in terms of visual intrusion or noise impacts could be minimised. Additionally, the Penny's Bay site has the possibility of future expansion in adjoining areas, a mountain backdrop, commanding sea views and also has the scope for replanning of adjacent areas for compatible tourism related uses to achieve a synergistic effect.

14.2.13 After substantial review of multiple locations, only the Penny's Bay site met the specified criteria.

TRANSPORT INFRASTRUCTURE OPTIONS

CKWLR

14.2.14 A report, entitled CKWLR Alignment and Interchange, was issued under the NLDFS November 1999. The report evaluated possible variations (eight schemes) to the alignment of CKWLR assuming the presence of the Theme Park at Penny's Bay. *Table 14.2a* presents the eight options for the West Section included within the Theme park and associated developments Project.

Table 14.2a - Options of CKWLR West Section Alignment Evaluated in NLDFS

Scheme	West Section
A	Low level alignment with Penny's Bay roundabout above
B	High level alignment with Penny's Bay roundabout below
C	Low level alignment with Penny's Bay roundabout above
D	High level alignment with Penny's Bay roundabout below
E	High level alignment with Penny's Bay roundabout below
F	Low level alignment with Penny's Bay roundabout above
G	High level alignment with Penny's Bay roundabout below
H	Low level alignment with Penny's Bay roundabout above

14.2.15 Of the eight alignment schemes, Alignment B has been recommended as the preferred alignment based on evaluations on key disciplines which include traffic, planning, engineering, environmental, land and implementation considerations. The CKWLR horizontal alignment was determined by the location of Penny's Bay roundabout and the space required for Road P2 to connect to the roundabout. The proposed horizontal alignment minimises both visual intrusion of the roadway into the Theme Park as well as cut slopes on the north side at the entrance to the cutting. West of the roundabout the alignment is located to maximise the space available for the Water Recreation Centre.

PBRL

14.2.16 The major constraints to any proposed PBRL alignment from Yam O to Penny's Bay are within the Yam O site. Limitations are provided by the existing and proposed highways, the existing

Lantau Airport Railway (LAR), an existing MTR traction substation and the close proximity of the sea wall. Together with the need for the PBRL platform to be parallel with the existing LAR lines, the alignment is essentially predetermined. Other options have been examined but these involve only minor deviation in the vicinity of Yam O Station according to platform and connection details.

14.2.17 The proposed alignment remains as a line curving from Yam O station to the east and then south, in tunnel through the hill to Penny's Bay, continuing towards the Theme Park on land to be reclaimed by CED. The layout within the Penny's Bay reclamation is determined by the planning layout of the intended landuses for the platform including the Theme Park development.

14.2.18 The existing LAR tracks at Yam O are at approximately +6.2 mPD and the PBRL will be at the same level with a horizontal profile extending from the LAR tracks to the tunnel portal. Throughout the tunnel section, the vertical alignment follows a slight down gradient towards the Penny's Bay reclamation and is designed to match with the Government's highway proposals and the layout plan for the theme park. The remainder of the alignment to Penny's Bay Rail Station is at a level of approximately +3.0mPD and obscured by earth bunds.

14.2.19 With the above horizontal and vertical alignment constraints, no alternative option exists other minor deviation within the Yam O Station site. These minor differences are not considered to demonstrably affect the environmental performance of the PBRL.

Road P2

14.2.20 Technical and environmental limitations also constrained options available for Road P2 and the PBRL; these included the need to minimise slope cutting in areas of slope instability, provision of adequate weaving section lengths, adequate headroom for roundabouts and to minimise the interface with surrounding land uses. As the western section of CKWLR is constrained by the existing Penny's Bay GTP and the existing Yam O Interchange, the proposed location of Penny's Bay roundabout has been designed as close as possible to the GTP in order to provide maximum space to connect to the alignment of Road P2. In addition to the location of the Penny's Bay roundabout, the alignment of the existing roads at Yam O have also dictated absolute minimum turning radius of 125 m which can only be provided when Road P2 is approaching the roundabout which determines the Road P2 alignment.

14.2.21 Within the Yam O site, the P2 alignment is constrained by the existing and proposed highways, the existing Airport Railway (AR), and an existing MTRC traction substation and the close proximity of the seawall.

RECLAMATIONS

14.2.22 The Theme Park and associated developments are planned within the NSLDF Study Area based on Government's decision as detailed in *Sections 14.1* and *14.2*. The Phase I and II of the Theme Park requires a total of 280 ha which has to be located on newly reclaimed land to avoid substantial cutting which could destroy natural terrestrial habitats. Possible options of the reclamations within the NLDFS Study Area include the Siu Ho Wan, East of Tsing Chau Tsai (TCT) headland from Sam Chuen to Pa Tau Kwu, North shore of Lantau reclamation from Yam O to To Kwu Wan, and the Penny's Bay. The Penny's Bay option was selected by the following elimination process.

- 14.2.23 The Siu Ho Wan reclamation option was first ruled out as part of the reclaimed land will be within the 1 km consultation zone of the existing Siu Ho Wan Water Treatment Works (WTW) and is considered undesirable to increase the societal risk level due to chlorine handling and storage within the WTW. The area is also subject to height restriction from the flight path to the HKIA at Chek Lap Kok and the operation of the Theme Park, in particular the fireworks display, could also affect the flight path. Further, the Tai Ho area has been planned as a major residential development area which could cause environmental interface problems with the Theme Park operation.
- 14.2.24 The TCT East option was also ruled out as there will not be sufficient land within the previous North-East Lantau Port OZP reclamation boundary. Further protrusion into the Kap Shui Mun Channel is considered undesirable as it may affect the hydrodynamic regime of the channel and surrounding waters including the Ma Wan Channel, the Victoria Harbour, and the Discovery Bay which could affect the water quality of the areas and would also impinge on the navigational channel.
- 14.2.25 The Northwest shore of Lantau option was also ruled out due to airport height restriction and the potential impact to flight path from the Theme Park operation. Further, the reclamation programme of the Theme Park may also have greater impact to this site due to a closer relative proximity to the Ma Wan Fish Culture Zone, the Chinese White Dolphin habitat, and the gazetted beaches at Tsing Lung Tau and Ma Wan.
- 14.2.26 The 10 ha reclamation at Yam O is necessary to provide land for the construction of a temporary public transport interchange and for part of the Road P2 which are essential components for the operation of the PBRL and the Theme Park and associated developments.

14.3 ACCESS BY DIFFERENT TRANSPORT MODES

- 14.3.1 This section sets out the planned rail-based public transport provision to the Theme Park and the complementary roles of other transport modes. The plan makes reference to the assessment of travel demand by mode share provided by the HKITP.

TRANSPORT MODE AVAILABILITY

- 14.3.2 In planning for the transport modes available for access to the Theme Park, consideration will be given to striking a balance between providing efficient and environmentally friendly transport services such as railway and at the same time offering a choice of modes to passengers. It is currently contemplated that the Penny's Bay Rail Link will be the backbone of the public transport system and it will be complemented by a mixture of other modes such as franchised buses, tour coaches, private cars, taxis and ferries.

Rail

- 14.3.3 The 3.6 km Penny's Bay Rail Link (PBRL) will provide a shuttle service with a passing loop between the Tung Chung Line at a new Yam O station to the Theme Park at Penny's Bay. The capacity is estimated to be 12,000 passengers per hour per direction. This rail service can be upgraded to serve an increased capacity of over 30,000 passengers per hour per direction with addition of a second track. It is estimated that the PBRL, an environmentally friendly public

transportation mode, will dominate (approximately 40%) the modal split throughout Theme Park operation.

Franchised Buses

- 14.3.4 In order not to unnecessarily overload the Lantau Link and to give priority to rail mode, extensive introduction of new bus routes to serve the Theme Park will not be recommended. Certain existing bus routes serving other parts of Lantau Island, however, could be diverted to provide stopping at Penny's Bay. Additionally, opportunities would be examined to optimise utilisation of existing bus routes to connect other parts of Lantau with the Yam O station/PTI to facilitate direct access to the Theme Park by PBRL.

Tour Coaches

- 14.3.5 These refer to the on-demand, pre-booked services for tour groups and packages day tours.

Taxis

- 14.3.6 Standard taxis will have direct access to the Theme Park.

Private Cars

- 14.3.7 These should be allowed for all travellers including employees. Their access, however, will be governed by the limited number of parking spaces available.

Ferries

- 14.3.8 Subject to demand, licensed ferry services, considered as an alternative environmentally friendly transport mode with enhanced visitor experience, will be provided through commercial tender. Other than licensed ferry services, pleasure boats and organised group ferry tours can also have access to the Theme Park using the planned public pier facilities.

MODAL SPLIT

- 14.3.9 Based on the above mode availability and the key operational assumptions described in Table 2.7b, the following comprises a potential assessment of travel demand by mode share to the Theme Park and associated developments:

Public Modes

- 14.3.10 Public modes are expected to dominate the travel market with about 95% of all travel. Of the public modes, rail, franchised and regularly scheduled buses, and tour coaches are expected to provide the majority of all services. The split between franchised bus and tour coach is shown but primarily relies on tourism statistics. It should be noted that this break-down is cursory and is better interpreted as a combined category. Rail is forecast to gain market share in the future as increasing road congestion deters visitors from road-based modes. On the other hand, road-based Cross-Boundary travel is forecast to increase, reflecting population growth in the east bank of the Pearl River Delta, which has little or no ferry access to Hong Kong.

14.3.11 The large market share of overseas visitors using tour coach services assumes many overseas visitors will travel on package tours with all-inclusive attractively priced excursions arranged prior to arriving in Hong Kong. Independent travelers from overseas, however, are expected to travel to Penny's Bay Development Area via other public and private modes. Additionally, there is the long term possibility of having a cross border ferry terminal at Yam O gateway to cater for cross boundary visitors by ferry from the Pearl River Delta region.

Private Modes

14.3.12 About 5% of the travel for work, local visitors and tourists may wish to use private modes such as car, taxi and hotel transport services. Hotel guests arriving at the airport and traveling to HK sites, however, have slightly higher private vehicle use. The breakdown between these car and taxi has been estimated based a combination of existing travel to the HKIA and a comparison of generalized costs for each of the two modes. Accordingly, excluding hotel guests and resident workers, private vehicle and taxi use is assumed to be approximately 3% and 2%, respectively .

14.3.13 The proportion of private mode use overall will in practice depend on the supply and price of parking and the encouragement given to supply of public transport modes.

Modal Share By Market Segment

14.3.14 The modal shares by market segment are shown in Table 14.3a.

Table 14.3a - Modal Shares by Segment

Market Segment	Private Vehicle	Taxi	Rail (PBRL)	Ferry	All Scheduled (Franchised) Bus	Tour Coach	Total (%)
2005							
Resident Workforce	4%	1%	55%	5%	35%	0%	100%
HK Resident Visitors	3%	2%	55%	5%	35%	0%	100%
Tourists	3%	2%	35%	2%	18%	40%	100%
Day Visitors	0%	0%	0%	0%	83%	17%	100%
Hotel Guests	29%	22%	14%	13%	12%	10%	100%
Aggregate Sub-Mode Split	4%	3%	39.5%	3.5%	28%	22%	100%
2014							
Resident Workforce	4%	1%	62%	5%	28%	0%	100%
HK Resident Visitors	3%	2%	63%	5%	27%	0%	100%
Tourists	3%	2%	35%	2%	18%	40%	100%
Day Visitors	0%	0%	0%	0%	83%	17%	100%
Hotel Guests	29%	22%	14%	13%	12%	10%	100%
Aggregate Sub-Mode Split	5%	3.5%	41.5%	4%	25%	21%	100%
2024							
Resident Workforce	4%	1%	62%	5%	28%	0%	100%
HK Resident Visitors	3%	2%	63%	5%	27%	0%	100%
Tourists	3%	2%	35%	2%	18%	40%	100%
Day Visitors	0%	0%	0%	0%	80%	20%	100%
Hotel Guests	29%	22%	14%	13%	12%	10%	100%
Aggregate Sub-Mode Split	6%	4%	40%	4%	25%	21%	100%

Notes :

- (1) Tourist rail usage represents a mid-range rail forecast.
- (2) All modes listed represent final mode, i.e. access mode to entrance of Penny's Bay Development
- (3) Private Vehicle includes private car and hotel limousine services
- (4) Taxi includes all standard Hong Kong taxis

- (5) Rail refers to all guests arriving via the Penny's Bay Rail Link, including guests who use interchange services at Yam O
- (6) Ferry refers to domestic Hong Kong ferry services
- (7) Franchised bus refers to all regularly scheduled bus services, including franchised buses which terminate at Park entrance and point-to-point Park Coach Services
- (8) Tour Coach includes all on-demand, pre-booked coach services
- (9) Year 2005: comprises Phase I -Opening, Year 2014: comprises Phase I - Build Out, Year 2024: comprises Phase II - Build Out (described in Section 2)

14.3.15 To complement the modal split, provision of integrated transport facilities (PTIs at Yam O and the Theme Park) will also be provided to improve accessibility by rail and facilitate convenient inter-modal change to promote patronage of the public transportation modes.

INTERNAL THEME PARK TRANSPORTATION

14.3.16 In addition to pedestrian areas, which include the comprehensive walkways and a waterfront promenade to encourage walking as part of the visitor experience and as a means to minimise mechanised transport facilities, it is understood that a variety of transport modes will be used for transportation of goods and staff within the Theme Park Phase I and II back of house areas. These may include the following:

- conventional petrol driven vehicles;
- conventional diesel driven cars and goods vehicles;
- LPG driven cars and goods vehicles;
- electrically powered vehicles; and
- bicycles.

MODAL SPLIT CONCLUSIONS

14.3.17 From the *Table 14.3a* results it may be seen that the public modes of transport to the Theme Park are expected to dominate the travel market with about 95% of all travel.

14.3.18 In terms of access to the Theme Park, a balance has been achieved between providing efficient and environmentally friendly transport services whilst at the same time offering a choice of modes to passengers. However, it can be seen that the environmentally friendly modes such as railway and ferries predominate the modal split, as it is currently contemplated that the Penny's Bay Rail Link will comprise the backbone of the public transport system complemented by a mixture of other mass transit modes such as franchised buses, tour coaches, and ferries with only a limited minority of modal split from less environmentally friendly transport modes comprising private cars and taxis. Such considerations will contribute towards a better operational phase local air and noise environment.

14.3.19 Additionally, the dominant public modes, will be further complemented by the provision of integrated transport facilities (PTIs at Yam O and the Theme Park) to improve accessibility by rail and other public transportation modes. In this regard, there is the long term possibility of having a cross border ferry terminal at Yam O gateway to cater for cross boundary visitors by ferry from the Pearl River Delta region. Such integrated transport facilities aim to encouraging the use of environmentally friendly public transportation modes.