Purpose

The purpose of this Technical Report is to present the Preliminary Outline Development Plan (PODP) (Figure 1), the Preliminary Master Urban Design and Landscape Plan (PMUDLP) (Figure 2) and the corresponding Explanatory Statements, which set out the relevant planning concepts and principles to formulate a comprehensive plan for developing a sustainable, environmentally friendly, energy efficient and people oriented community in the Lok Ma Chau Loop.

The PODP sets out the proposed land use framework to guide the future development of the Loop in terms of spatial land use arrangements, development intensities, building height profile, major infrastructure networks and open space distribution. A broad land use budget is also provided to give an overview of the development mix and intensity of the Loop development. With supporting drawings, the PMUDLP presents the overall urban design concept and landscape elements.

PODP for Area A

Overall Planning Concept

Based on the vision and guiding principles stipulated in Technical Report No. 2A, the development theme is to develop the Loop as a sustainable knowledge and technology exchange zone. The Loop can be divided into five zones, with higher education as the leading land use, complemented with high-tech research and development (R&D) as well as cultural and creative industries as shown in Figure 3:

(i) ‘Education Zone’ for higher education development;

(ii) ‘Innovation Zone’ as a hub for R&D and cultural and creative industries. The location of the ‘Education Zone’ and the ‘Innovation Zone’ in close proximity to each other would facilitate cooperation between higher education and R&D sectors;

(iii) ‘Interaction Zone’, in the centre of the Loop, serves as a public realm for passive recreation and social activities. It will be a focal point where interaction among different sectors could take place;

(iv) ‘Ecological Zone’, lying in the southern edge, is mainly to preserve the existing bird’s flight path and to compensate for the loss of existing reedbed in the Loop; and

(v) ‘Riverside Promenade Zone’ provides a pleasant and attractive waterfront environment surrounding the Loop.
**Major Land Uses and Development Parameters**

Based on the above broad land use zonings, a PODP for the Loop is formulated and shown in Figure 1. The land use breakdown and major development parameters are as follows:

**Table 1: Schedule of Uses and Areas**

<table>
<thead>
<tr>
<th>Zoning</th>
<th>Land Uses</th>
<th>Approximate Area and %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hectares</td>
</tr>
<tr>
<td>E</td>
<td>Higher Education</td>
<td>22.4</td>
</tr>
<tr>
<td>C</td>
<td>Commercial</td>
<td>1.2</td>
</tr>
<tr>
<td>G</td>
<td>Government</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sewage Treatment Works (STW)</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>• Possible Associated Boundary Crossing Facilities</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>• Fire Station and Ambulance Depot</td>
<td>0.6</td>
</tr>
<tr>
<td>O</td>
<td>Open Space</td>
<td>10.5</td>
</tr>
<tr>
<td>A</td>
<td>Amenity / Activity Corridor</td>
<td>15.9</td>
</tr>
<tr>
<td>OU</td>
<td>Other Specified Uses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ecological Area</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>• High-Tech R&amp;D</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>• High-Tech R&amp;D cum Transport Interchange</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>• High-Tech R&amp;D / Cultural &amp; Creative Industries cum Transport Interchange</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>• High-Tech R&amp;D / Cultural &amp; Creative Industries</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>• Cultural &amp; Creative Industries</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>• District Cooling System (DCS)</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>• Electricity Sub-Stations (ESS)</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Roads(^\text{a})</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td><strong>Total Development Area</strong></td>
<td><strong>87.7</strong></td>
</tr>
</tbody>
</table>

\(^\text{a}\) Area includes the Boundary Patrol Road which is about 0.7 ha.

**Table 2: Major Development Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum no. of Students (approx.)</td>
<td>24,000</td>
</tr>
<tr>
<td>Employment Opportunities (approx.)</td>
<td>29,000</td>
</tr>
<tr>
<td>Maximum Total GFA (m(^2))</td>
<td>1,200,000</td>
</tr>
<tr>
<td>Maximum GFA for Education (m(^2))</td>
<td>720,000</td>
</tr>
<tr>
<td>Maximum GFA for High-tech R&amp;D (m(^2))</td>
<td>330,000</td>
</tr>
<tr>
<td>Maximum GFA for Cultural and Creative Industries (m(^2))</td>
<td>81,000</td>
</tr>
<tr>
<td>Gross Plot Ratio</td>
<td>1.37</td>
</tr>
<tr>
<td>Building Height</td>
<td>Max. 15 storeys</td>
</tr>
</tbody>
</table>
Education Use

Education zone covers an area of about 22.4 ha. The area can provide a maximum of 600,000m² GFA for academic purpose and 120,000m² GFA for student hostel. It can accommodate a maximum of 24,000 students and 6,000 staff, with half of the students assumed to be resided in the Loop.

High-Tech R&D / Cultural & Creative Industries Uses

There are seven pieces of land covering about 8.5 ha reserved for the development of high-tech R&D and C&C industries. The sites are located in the eastern and western parts of the Loop with a maximum provision of 330,000m² GFA and 81,000m² GFA respectively. They are proposed to be located into two clusters so as to facilitate phased development.

Commercial Use

Two sites covering an area of about 1.2 ha in the eastern part of the Loop will provide supporting commercial facilities. These include general office accommodation, retail shops and hotel.

Government Use – Sewage Treatment Works (STW)

A site of 2.8ha is reserved at the northeastern part of the Loop to maintain flexibility for accommodating an on-site STW and the associated facilities.

Government Use – Possible Boundary Crossing Facilities

In order to encourage the interactions between the Loop and Area C in SZ, a long-term possible linkage across the SZ River is proposed at the northern end to link up the Loop with Area C. In order to allow greatest flexibility for future cross-boundary options, a site of about 0.9ha is reserved for the possible development of the associated boundary crossing facilities.

Government Use – Other G/IC Uses

a) Medical and health facilities – Students residing on site could use university clinics. As such, no additional health facilities would be required.

a) Police station – The existing LMC Police Station could serve the needs of the Loop. If additional police facilities are required, a sub-divisional police station or police post could be provided in conjunction with the possible long-term boundary crossing facilities.

b) Fire station and ambulance depot – A site of 0.6 ha adjacent to the eastern entrance of the Loop is reserved to provide such facilities.

c) Post office – This could be accommodated within the university or other developments if required.

OU (District Cooling System)

A standalone site of about 1 ha is allocated to the DCS. In choosing a location for the DCS, due considerations have been given to plant efficiency, the overall planning and design of the site. The detailed design of the DCS will be further examined in the next stage of detailed technical assessment.

OU (Ecological Area)

This is a multi-functional area which is mainly to preserve the existing birds’ flight path and mammal movement corridors, provide a flood amelioration pond and compensate for the loss of existing reedbed in Loop. This Ecological Area would include about 12 ha of dedicated reedbed compensation area along the Old SZ River Meander where development and public access would not be permitted. The width of the Ecological Area may be refined based on the detailed Ecological Impact Assessment at the next stage.


Public Open Space

Within the Loop, about 10.5 ha of the site along the SZ River and the Old SZ River Meander is earmarked as open space. This riverside promenade will provide a pleasant and green environment for the Loop users. In order to maintain the function of the boundary fence and to act as a visual buffer, a 50m-wide landscaped open space along the SZ River is proposed to serve as a visual buffer area.

Amenity / Activity Corridor

In order to promote social interaction, a central activity corridor which runs in north-south and east-west directions is proposed to create a comfortable environment for the Loop users. It also serves a platform to facilitate exchange of ideas and enhance social harmony and economic vibrancy with the provision of a variety of leisure facilities such as cafes, restaurants and shops, etc. Linear strips of green corridors are also proposed within the Loop to provide visual and green connections between the Loop and Area C in SZ.

Transport

The general transport strategy for the Loop is to provide a pedestrian friendly environment. Transport strategy to restrict car movements inside the campus could be achieved by providing two transport interchanges (TI) with ancillary park-and-ride (P&R) facilities at both ends of the main access route. It is envisaged that most private cars will be parked at the fringe of the Loop away from the main campus area. The internal areas will be accessed mainly by walking and public modes of transport including EFTS / electric shuttle buses, which will be integrated with the cycling facilities as a comprehensive internal transport and pedestrian network.

The main cross boundary movements between the Loop and SZ are anticipated to utilize the Mass Transit Railway LMC Spur Line (MTR LMCSL) Station. A long-term possible linkage is proposed at the northern part of the Loop for providing a more direct connection with the future Metro Line 7 in the SZ side. Reserve is allocated for the possible demand for a major public transport facility due to the possible linkage and the associated boundary crossing facilities.

The connection between the Loop and the MTR LMCSL Station may be served by a possible non-road based EFTS, or feeder buses. The journey between Sheung Shui or future Kwu Tung North (KTN) MTR station and the Loop is expected to be either by feeder buses or by taxis. The San Tin Public Transport Interchange, together with the use of the adjacent open-air car park spaces nearby, a park-and-ride system may be implemented to control the volume of traffic using LMC Road and entering the Loop.

Several alignment options have been investigated for the Western Connection Road. Based on the assessments from various technical considerations, the alignment to San Tin Interchange through upgrading of the existing LMC Road and Ha Wan Tsuen Road is considered as a possible option as it would provide the most direct linkage to the Loop.

It is anticipated that the Western Connection Road alone will not be able to handle all the anticipated traffic generated by the Loop during full occupation stage. An additional road linkage at the eastern part of the Loop connecting with the proposed road network of KTN New Development Area (NDA) will possibly be necessary to handle the traffic generated. It will also serve as a backup access route in the event of major accidents causing severe blockage of the Western Connection Road or seasonal traffic surges. Connections through a new at-grade road or other possible design options will be further investigation in the detailed assessment stage.
Other Infrastructure and Utilities

Drainage

In order to minimize any impact to the Old SZ River Meander, the peak runoff from the development site will be restricted to the existing peak discharge from the site. Excess runoff will be directly discharged into the SZ River with detailed scheme to be developed as part of the Drainage Impact Assessment. In order to minimise any adverse impact to the Old SZ River, the proposed reedbed as part of the wetland compensation will be used to attenuate the flows from development site subject to further investigation.

Water Supply

Based on the preliminary analysis, there are two options to provide water supply to the Loop. Under Option 1, the supply can be provided by tee off from the existing 300DN and 150DN watermains along the LMC Road. However, this may require upgrade of the existing watermains to meet the additional water demand from the development site subject to detailed assessment. Under Option 2, a new watermain can be laid from the proposed new Fresh Water Service Reservoir (FWSR) in KTN under the NENT NDA Planning and Engineering Study. Both options will be analyzed as part of Water Supply Impact Assessment to identify the preferred option.

Power Supply

China Light and Power Company (CLP) advised that two 132kV electricity substation (ESS) with size of about 35m x 53m on plan and 20m tall, plus a 6m setback from any buildings might be required. The purpose of reserving land for two ESS in the Loop is to allow for flexibility in catering for the high power demands of the future development. New 132 kV cable circuits can be laid along LMC Road, Ha Wan Tsuen Road and the proposed road extension to the Loop to connect with the proposed electric substation. This new 132kV arrangement will meet the high power demands of the future development. Should the future demand of the Loop development be low, the land reserved for the ESS might be released for development. In this case, CLP might only need to lay 11 kV cable circuits from outside area, i.e. the existing 132kV circuits along Ha Wan Tsuen Road, to feed the Loop if feasible. This will be subject to review with regard to further details and information from the development planning at later stage.

Gas Supply

The future plan for gas supply to the Loop would depend on the predicted gas demand of the proposed development. From the existing gas pipeline along LMC Road, a new branch of pipeline can feed gas into the Loop if the spare capacity of the existing pipeline can meet the demand. Otherwise, a new gas pipeline should be laid from Castle Peak Road to the Loop via LMC Road and Ha Wan Tsuen Road. Details are subject to further assessment at a later stage. Approximately 12m² of land within the Loop is reserved for the construction of a gas governor kiosk.

Telecommunication

From the information provided by the telecommunication providers, telecommunication cables can be fed from the existing services along LMC Road to the west of the Loop. With the planning of NENT NDAs, feeding services from the proposed developments in KTN NDA via a possible new approach road to the Loop is also an alternative.

Site Formation

A preliminary assessment based on the maximum water levels predicted under the Estuary Study for SZ River indicates that site formation levels between +5.80mPD to +5.90mPD would be adequate to overcome flooding risk.
PMUDLP

The urban design framework is based on the urban design principles and concepts to deliver a permeable and flexible urban layout, an accessible urban structure via a network of access routes interlinked with landscape routes and a varied and diversified mix of land uses. The urban design for the Loop has given due consideration to ecological sensitivity and context of its neighbouring areas. The future development of the Loop should be responsive to the development needs, in terms of development mix and delivery. Environmentally-friendly modes of transport and environmentally-conscious features are encouraged so as to reinforce the guiding principle of developing the Loop as a low carbon economy. The PMUDLP can be found in Figure 2.

The building height profile is derived in response to the urban context on SZ side and the rural character on HK side, as well as the ecological concern to preserve the birds’ flight line. To create a diverse and interesting skyline for the Loop, low-rise developments ranging from 7 to 8 storeys are proposed along the edge facing the SZ River. The building heights increase towards the centre to a maximum of 15 storeys and progressively reduce to 3 storeys towards the south, whilst the building heights are gradually reduced to 7 to 8 storeys towards the east and west and increase to a maximum of 12 and 15 storeys at the two ends. The photomontage showing the building height profile can be found in Figure 4.

The proposed landscape framework is an integral part of the overall development and blends seamlessly with the built environment. It makes reference to the context of the adjacent rural landscape and adopts the ‘embracing hands’ concept with the urban form extending from the northwest feeding into the more naturalistic landscape environment to the southeast. In order to achieve the landscape objectives for the Loop, the landscape and open space framework adopts a hierarchy of Primary, Secondary and Tertiary Open Spaces together with their associated landscape components. The supporting drawings are shown in Figures 5 to 7.

Land Use Proposals Alongside Connection Roads in Area B

Area B is mainly intended for the provision of connection roads to serve the development of the Loop. Having examined the existing and planned land uses in Area B and the surrounding areas, it is considered that there is scope to strengthen the synergy between the land uses of the Loop and its surroundings. KTN NDA has potential to provide some ancillary facilities that could complement the function of the LMC Loop and such development opportunities are being studied under the NENT NDA Study.

Fish ponds adjoining the Eastern Connection Road are of high ecological significance. They will pose challenges to other developments of this area. With regard to the western part of Area B, particularly along LMC Road, gradual changes are observed near the use of the San Tin Public Transport Interchange as the terminus of the LMC-Huanggang Shuttle Bus and other land uses. Gradual organic evolution in land uses and activities are taking place and some form of rural commercial activities of compatible scale could possibly evolve to serve the development of the Loop. Rural economic activities such as restaurants, cafes, pub/bars, retail shops, convenience stores, commercial, supermarket, guesthouse and holiday camp etc. are considered complementary to the development of the Loop. However, since most of these areas are privately owned, developments within these areas will mainly rely on private sector initiatives. As the existing developments in most of these areas are low-rise and low density in nature, the development parameters should echo and be compatible with the nearby village type developments and rural characteristics. A maximum plot ratio of 0.4 and a maximum building height of 3 storeys could serve as a reference.
Way Forward

The PODP formulated at this stage would serve as the initial development framework for the Loop development. In order to assess the feasibility of the PODP and the basic infrastructure to the developments, a broad assessment of cost, technical, environmental and air ventilation will be undertaken as an upcoming task and will be presented in Technical Report No. 3.
Preliminary Outline Development Plan

Road Alignment to Kow Tung North
New Development Area Under Consideration

Road Alignment to San Tin Interchange: Under Consideration.

Possible Link with MTH Lok Ma Chau Spur Line Station (Under Investigation)

Boundary Patent Road

Long-Term Possible Link with SC and Associated Boundary Crossing Facilities

Boundary Patent Road
Preliminary Master Urban Design and Landscape Plan

LEGEND
- Interaction Zone
- Ribbon Park
- Courtyard
落馬洲河套區 - 功能分區
LMC Loop – Land Use Zoning

教育區
Education Zone

創新區
Innovation Zone

交流區
Interaction Zone

生態區
Ecological Zone

濱河休憩區
Riverside Promenade Zone

通風走廊
Ventilation Corridor

視覺走廊
Visual Corridor

與周邊地區的連接
Linkage with Surrounding Areas
Landscape Perspective – Interaction Zone
Landscape Perspective – Courtyard