

Storm Water Pollution Control Plan

Construction Phase

- At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. According to DSD's Stormwater Drainage Manual, to handle a 10 year-return-period storm, the sizes of drains for LMC Loop, WCR, Direct Link and ECR should be no less than 986mm, 409mm, 321mm and 444mm in diameter, respectively, subject to detail design. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction.
- Diversion of natural stormwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipments in order to avoid or minimize polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m³ capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped.
- The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates.
- The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction.
- Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.
- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.
- Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.
- All open stockpiles of construction materials (for example, aggregates, sand and fill material) of should be covered with tarpaulin or similar fabric during

rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.

- Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.
- Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events.
- All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.
- Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.
- Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.
- All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.
- Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the meander, wetlands and fish ponds.
- During the construction of ECR, proper site drainage system with adequate silt removal facilities should be deployed in order to prevent polluted runoff discharged to the Ma Tso Lung Nullah and the meander. A discharge license should be obtained from EPD prior to any site runoff discharge.
- The construction works of underpass should be conducted during dry season to prevent excess stormwater runoff to the meander. Cofferdams or diaphragm walls should be deployed to fully separate the works area and the river waters.

Operational Phase

Silt traps and oil interceptors should be installed in advance. Manually cleaned should be provided as necessary.

Subject to detail design and requirement of relevant government departments, the capacities of road drainage system shall cater the runoff from 50 year-return-period rainstorm. Proper drainage systems with silt traps and oil interceptors should be

installed. According to DSD's Stormwater Drainage Manual, the drainage pipe size of WCR, Direct Link and ECR should be no less than 1050mm, 778mm and 1130mm, respectively.

Appendix 5-2a: Construction Runoff and Site Drainage

According to DSD's Stormwater Drainage Manual, for a 10-year return period rain storm, it is assumed:

a=	603
b=	4.4
c=	0.44
td=	240
i=	53.65
C=	0.15

According to DSD's Stormwater Drainage Manual (SDM) Section 8.3.1 & Table 12 of SDM
where:

n=	0.02
S _f =	0.0015

$$\bar{V} = \frac{R^{1/6}}{n} \sqrt{RS_f}$$

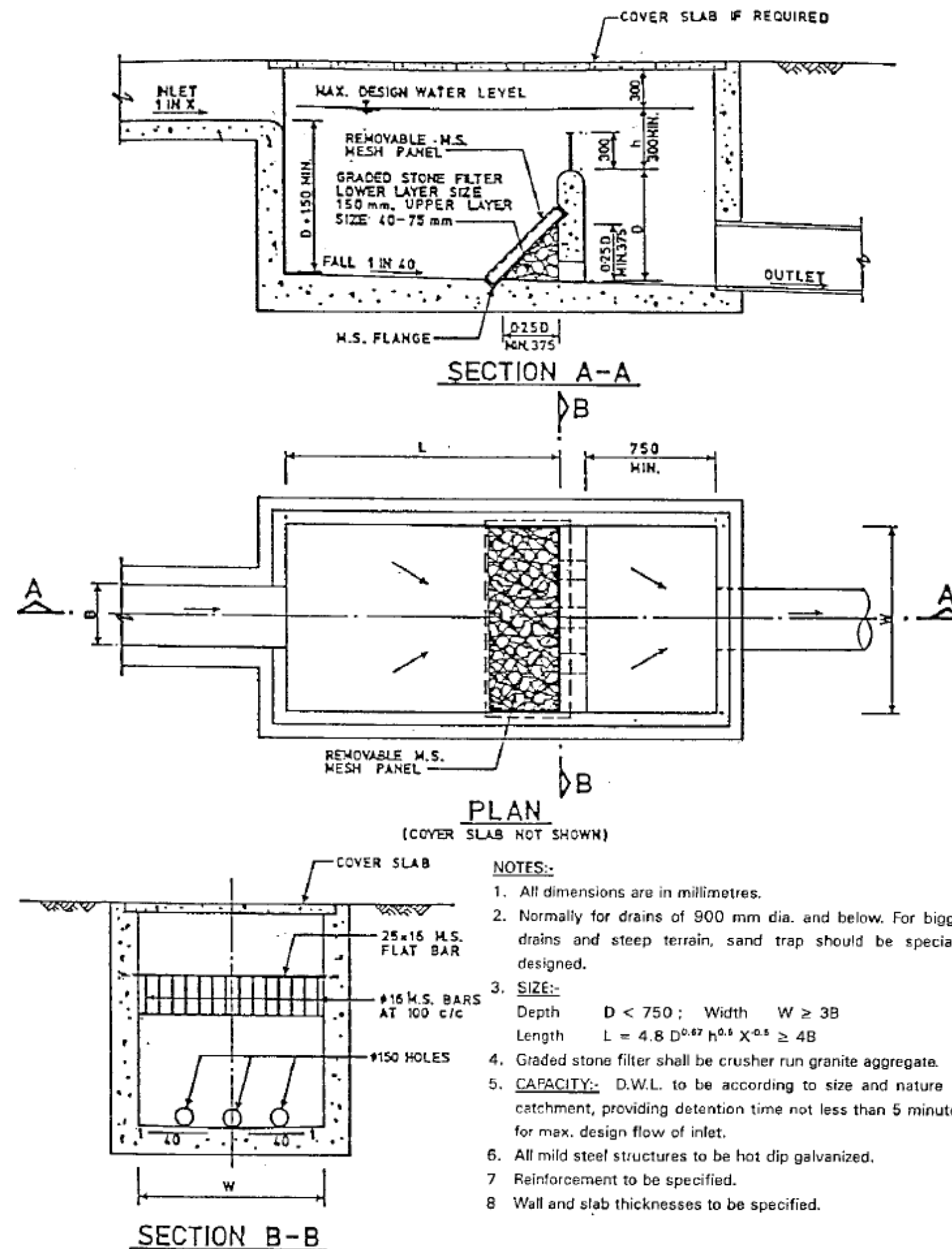
	LMC LOOP ^[1]	WCR	Direct Link	ECR
Site Areas A (km ²)	0.26	0.025	0.013	0.031
Peak Runoff Q _p (m ³ /s)	0.58	0.056	0.029	0.069
Diameter D (mm) ^[2]	986	409	321	444

Note:

[1] It is assumed that 30% of the site would be the active area during construction.

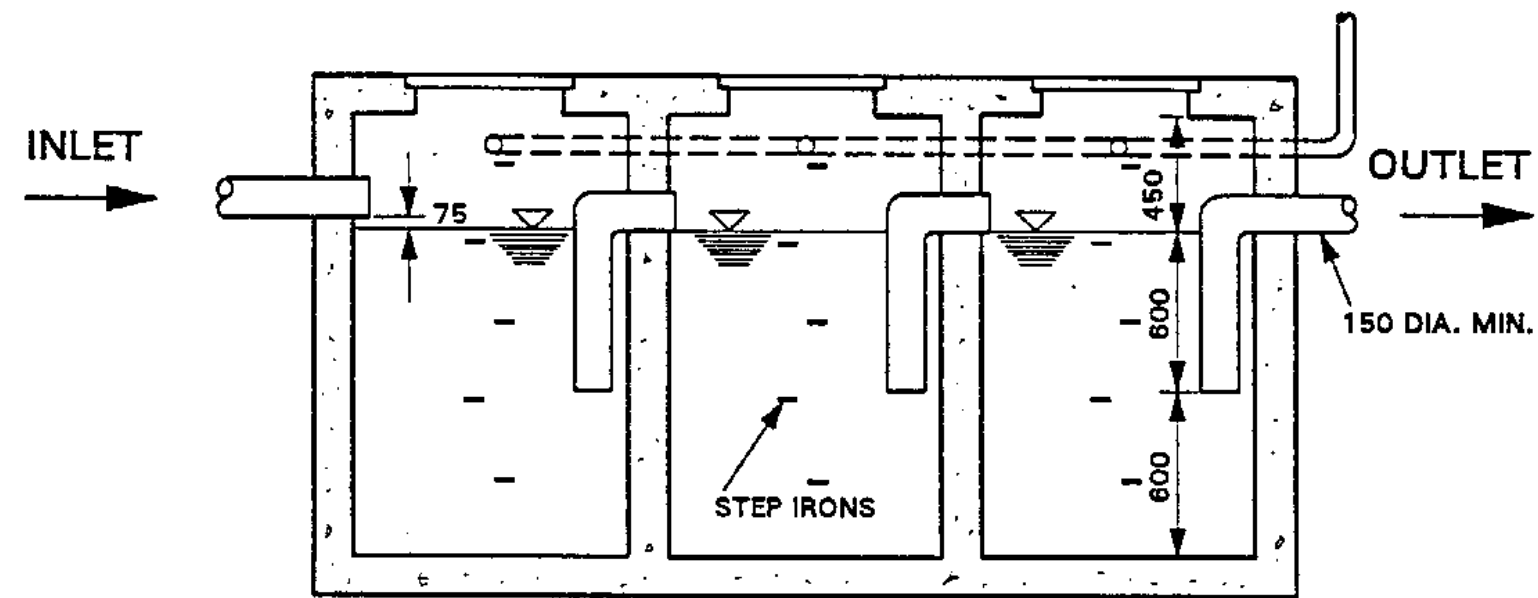
[2] The semi-circular channel is recommended to be applied during construction.

- Typical Size and Design of Sand Trap at Outfall as recommended in ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)
- Alternative options such as package plant could be proposed by the Contractor.
- The Contractor should update stormwater pollution control plan.

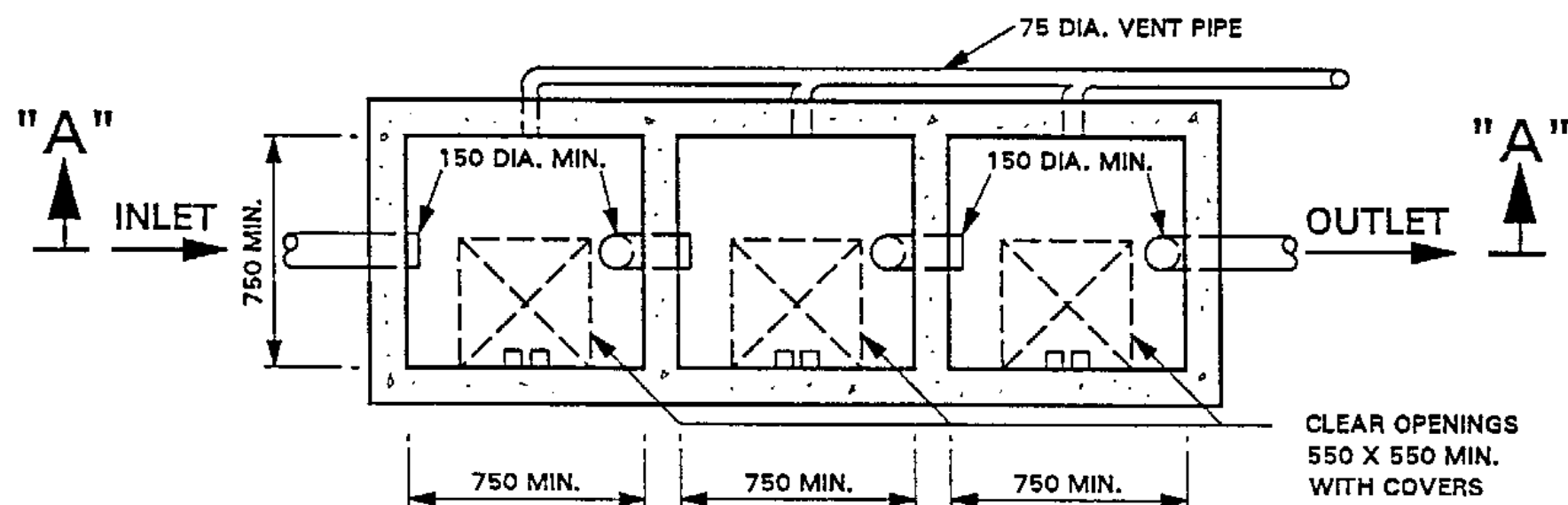


Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

- Typical Size and Design of Petrol Interceptor at Outfall as recommended in ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)
- Alternative options such as package plant could be proposed by the Contractor.
- The Contractor should update stormwater pollution control plan.



SECTION A - A



PLAN

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

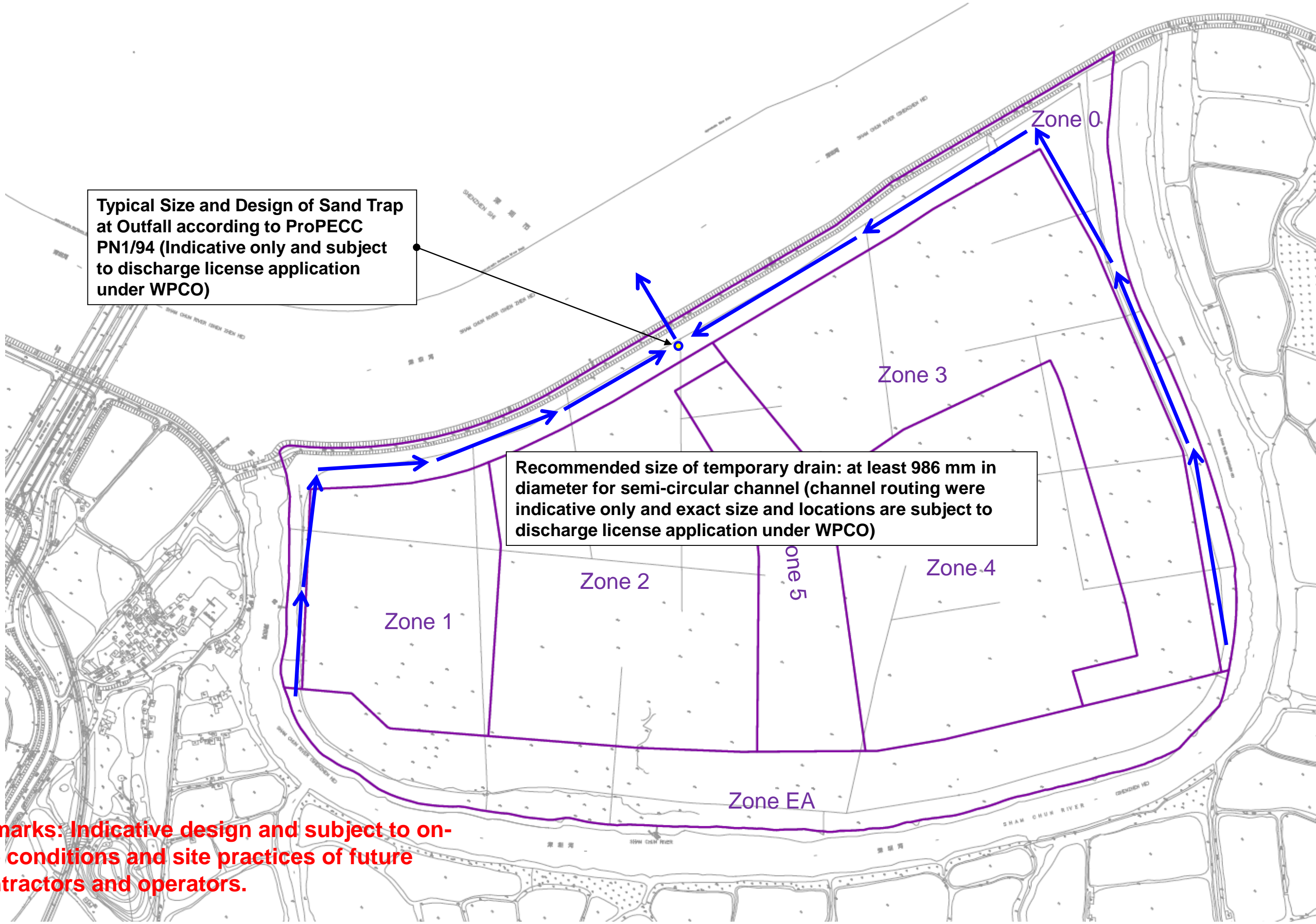
NOTES :

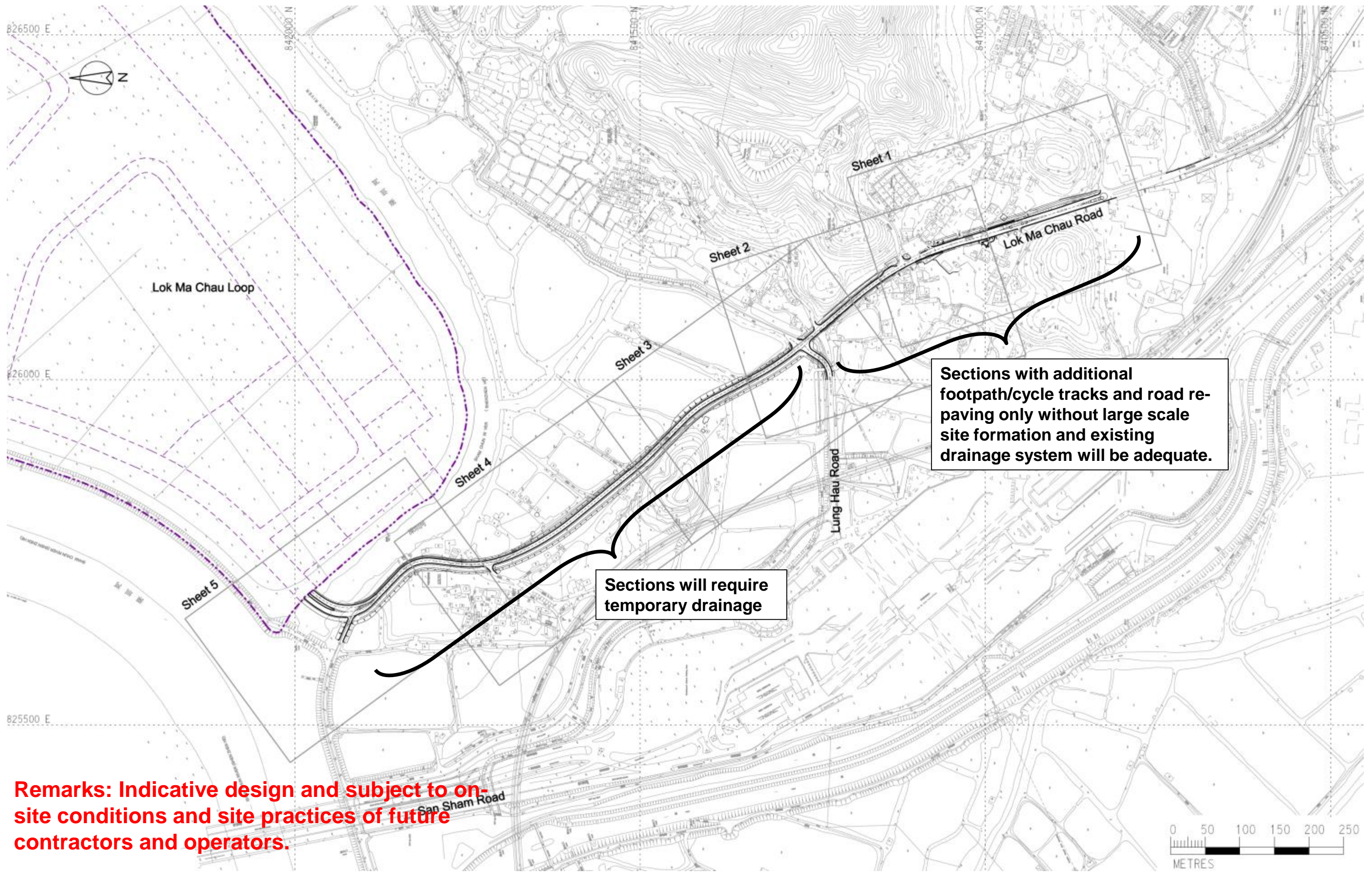
1. ALL DIMENSIONS ARE IN MILLIMETRES

Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)

Recommended size of temporary drain: at least 986 mm in diameter for semi-circular channel (channel routing were indicative only and exact size and locations are subject to discharge license application under WPCO)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

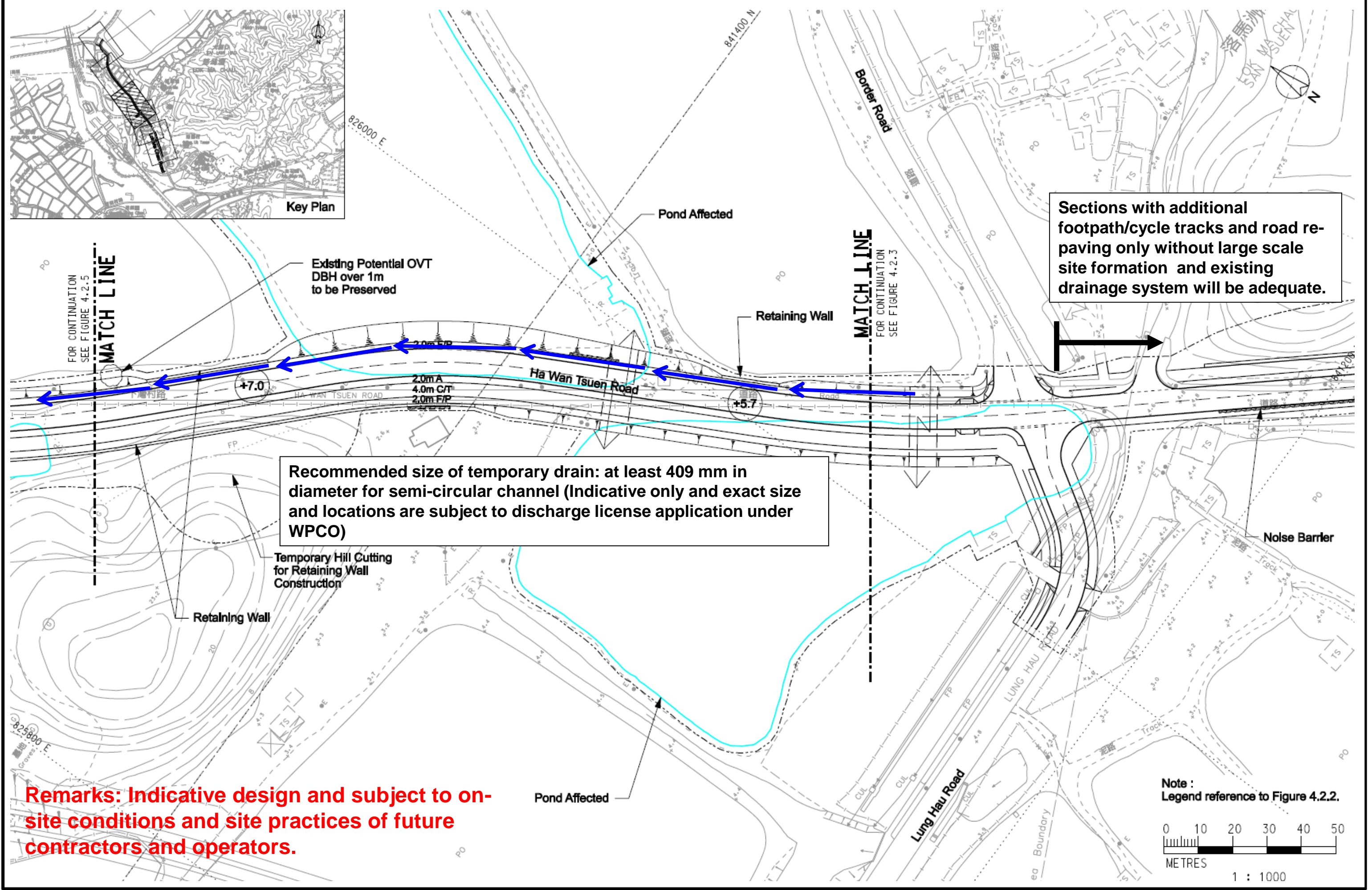




Sections with additional footpath/cycle tracks and road re-paving only without large scale site formation and existing drainage system will be adequate.

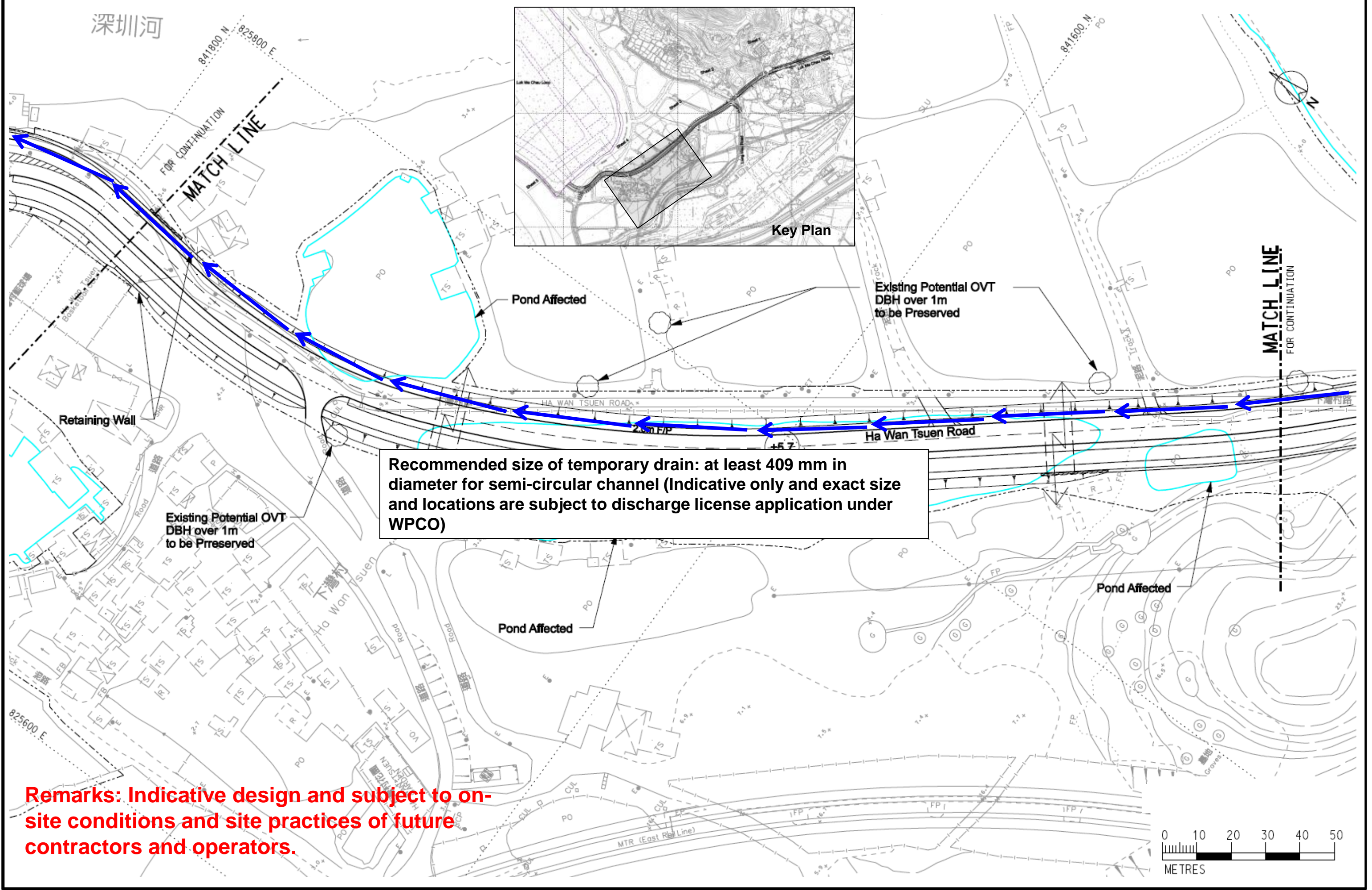
Sections will require temporary drainage

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



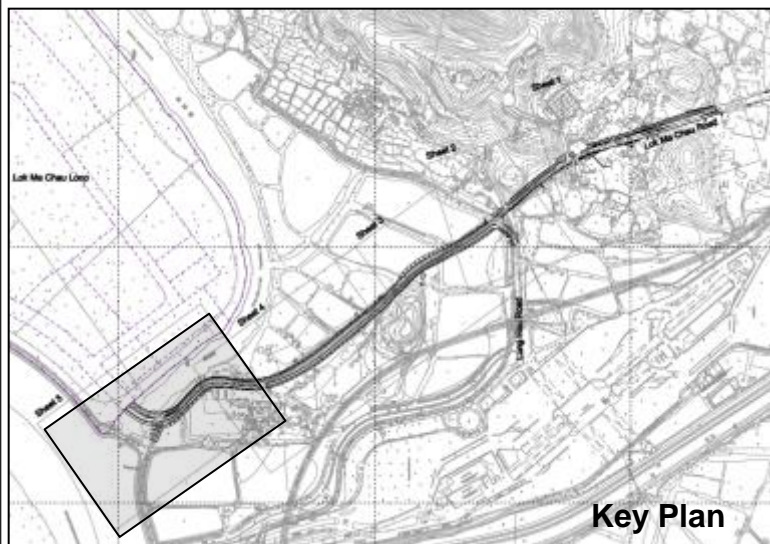
Sections with additional footpath/cycle tracks and road re-paving only without large scale site formation and existing drainage system will be adequate.

Recommended size of temporary drain: at least 409 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)



Recommended size of temporary drain: at least 409 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)

Recommended size of temporary drain: at least 409 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Box Culvert to Allow Meander Passage

Ha Wan Tsuen Road

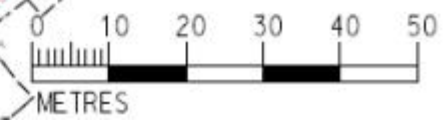
Existing Potential OVT DBH over 1m to be Preserved

Pond Affected

深圳河

MATCH LINE FOR CONTINUATION

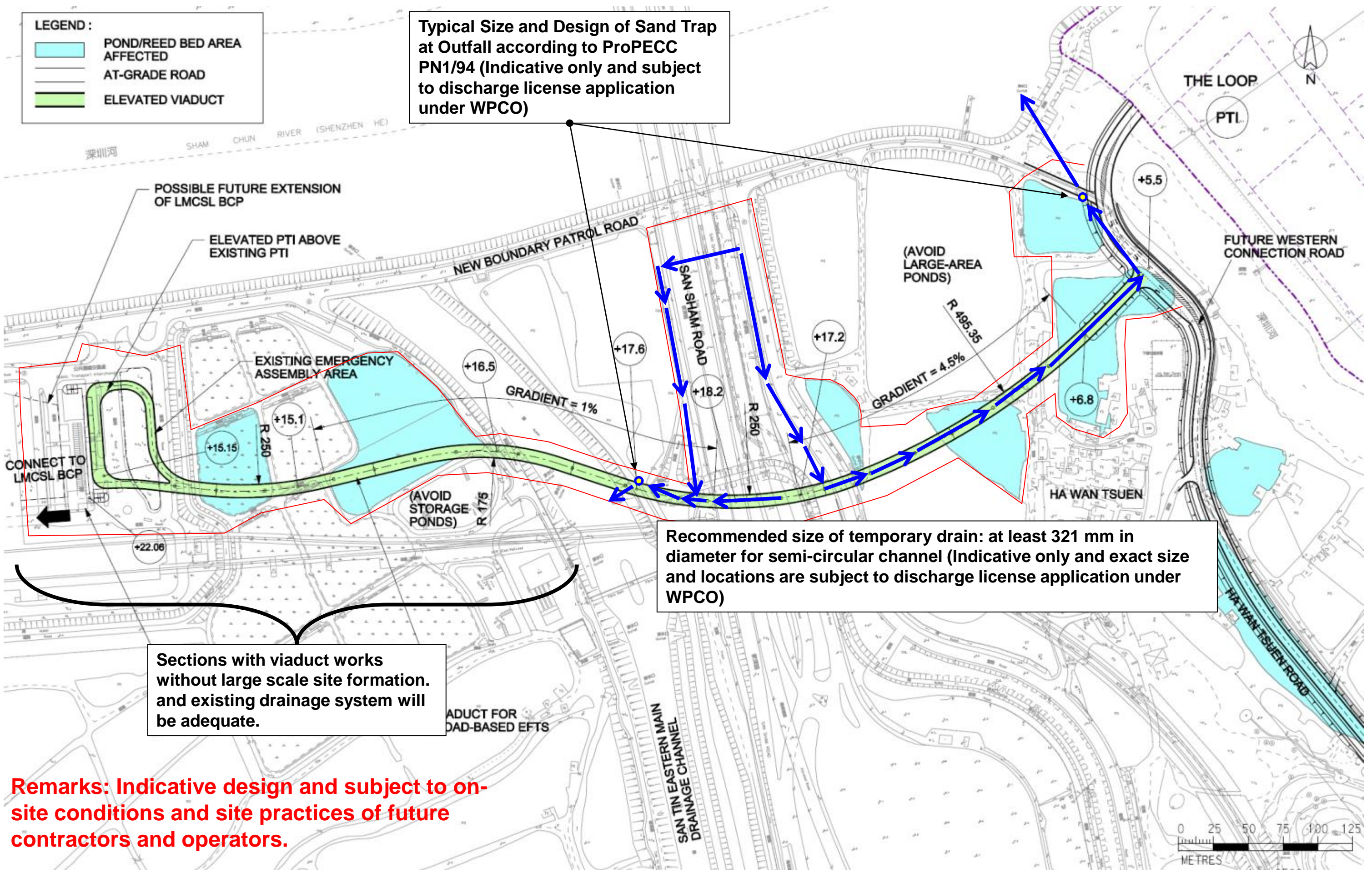
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



LEGEND :

- POND/REED BED AREA AFFECTED
- AT-GRADE ROAD
- ELEVATED VIADUCT

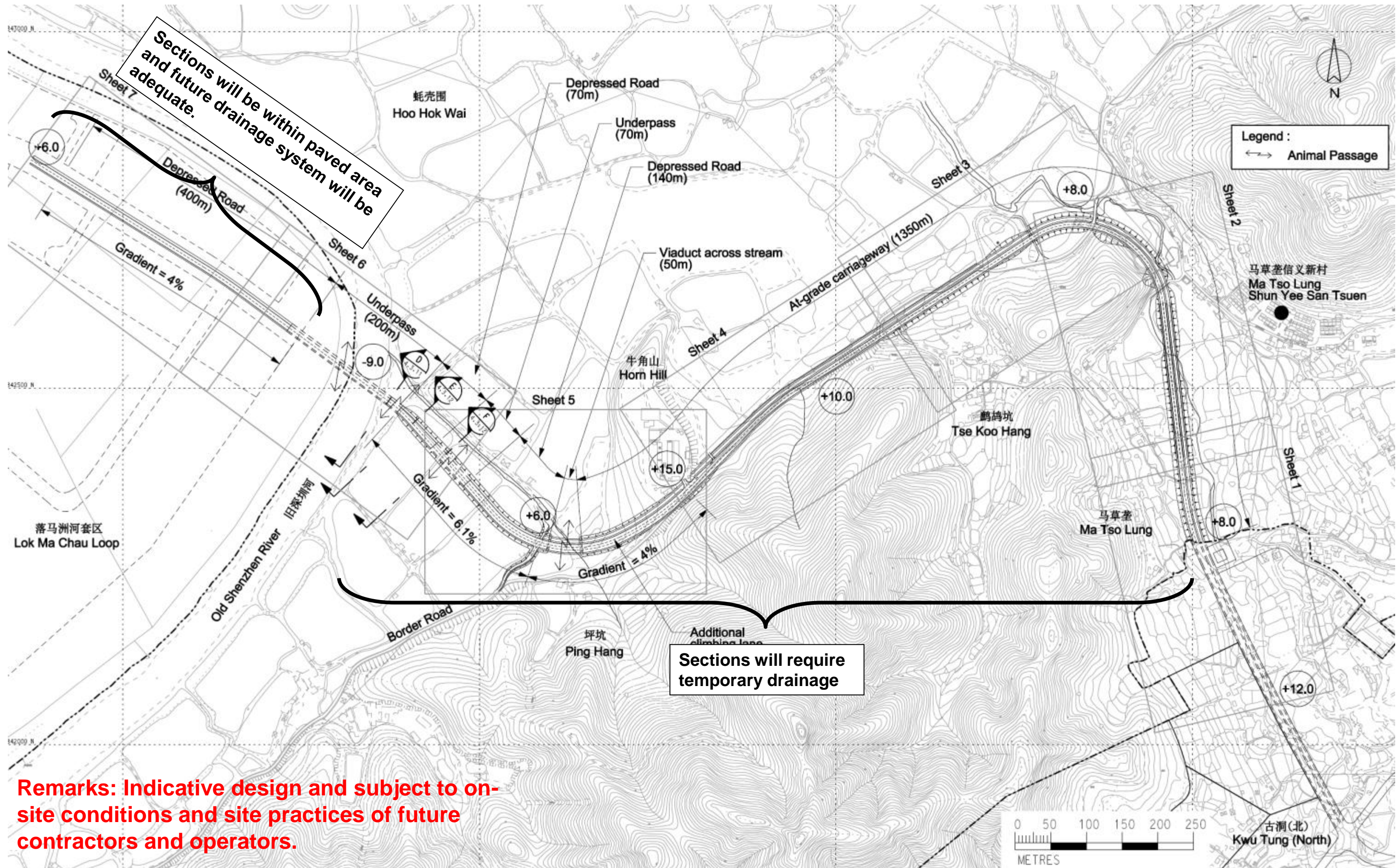
Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)

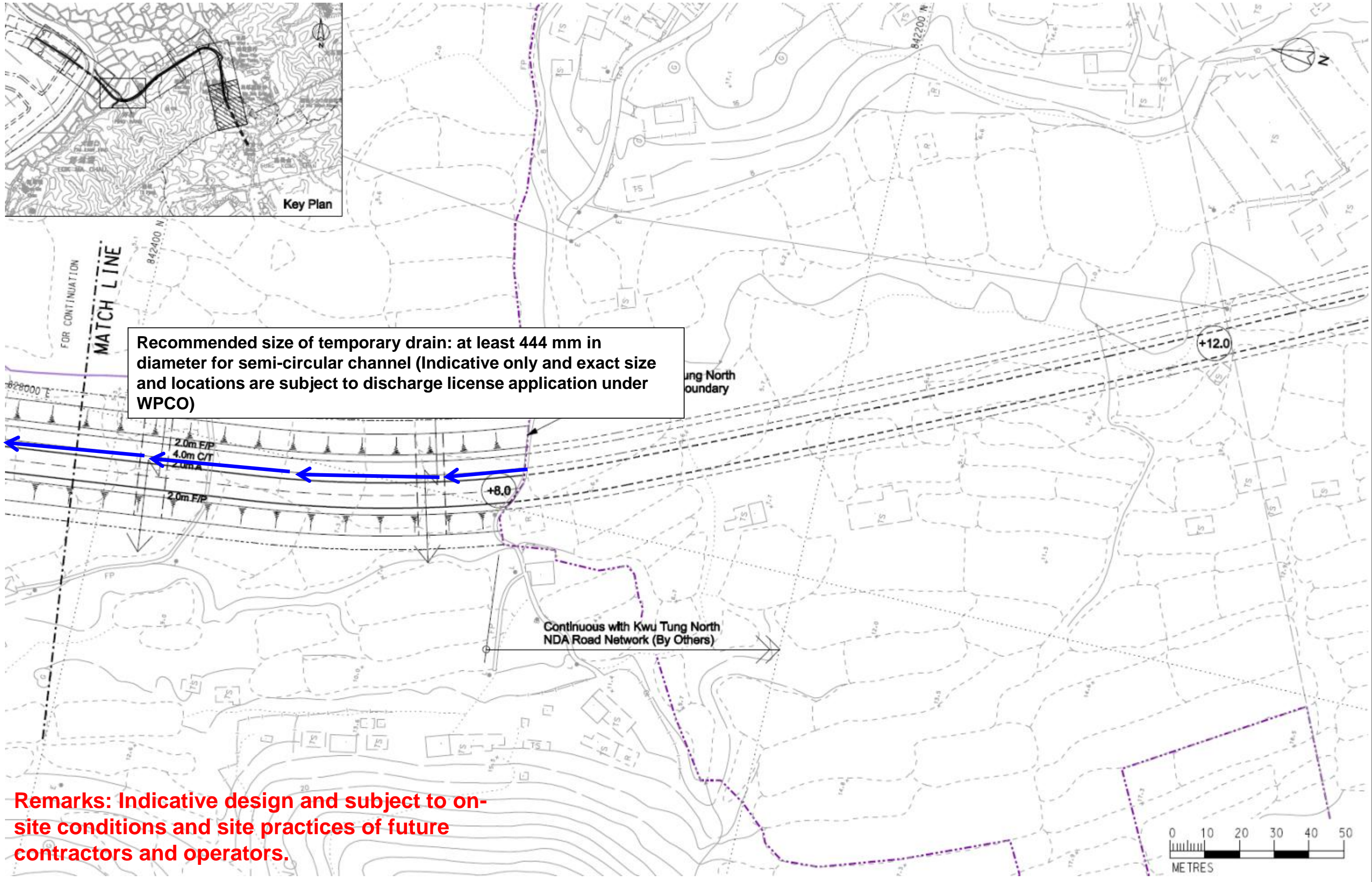
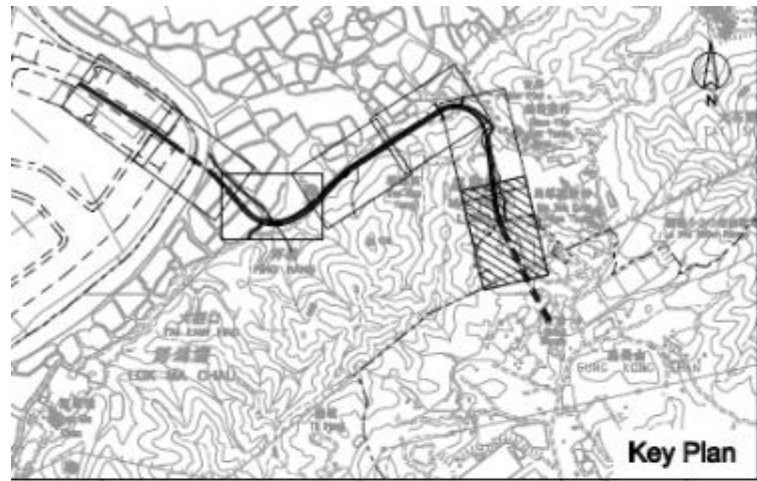


Recommended size of temporary drain: at least 321 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Sections with viaduct works without large scale site formation and existing drainage system will be adequate.

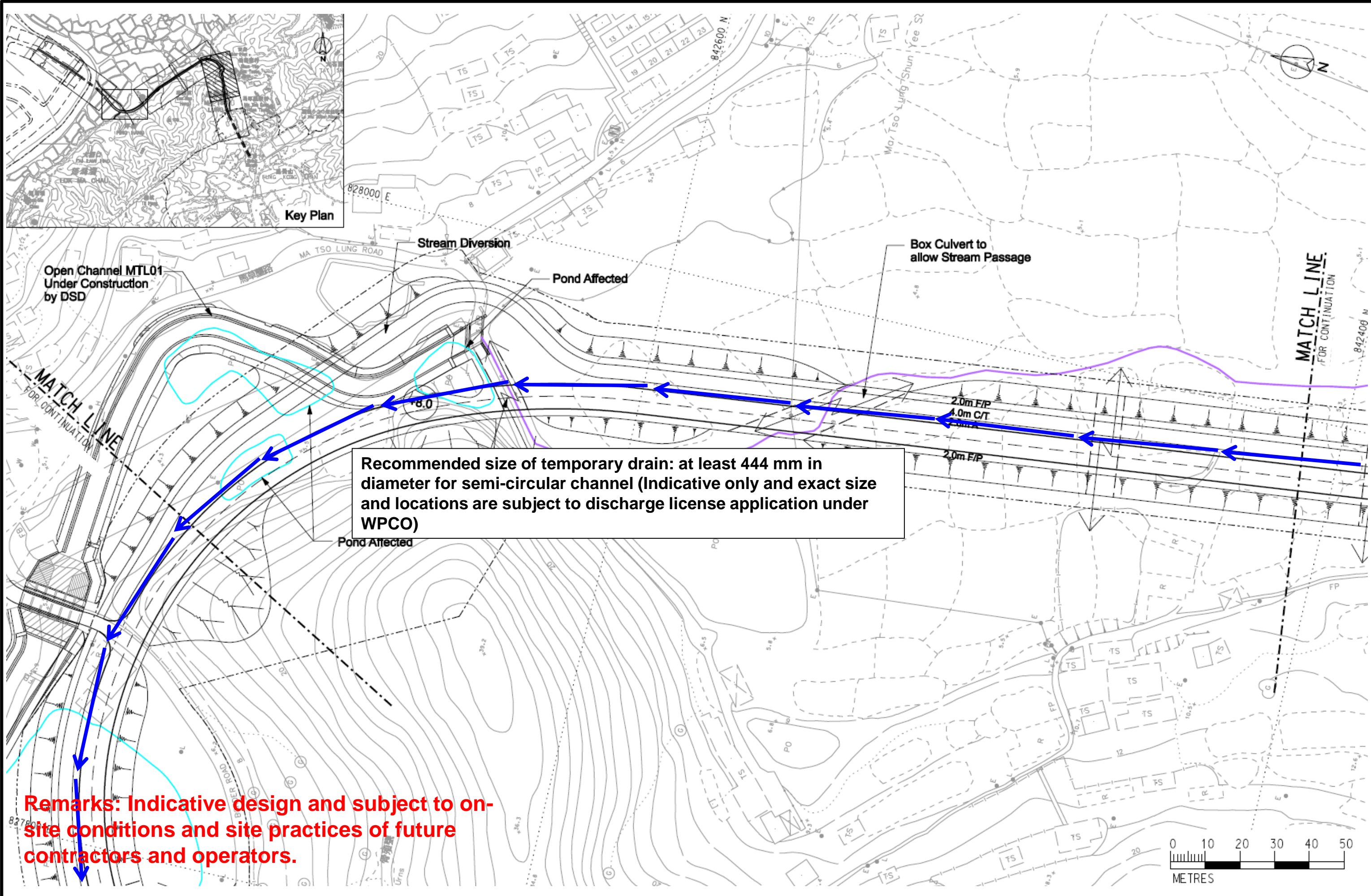
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

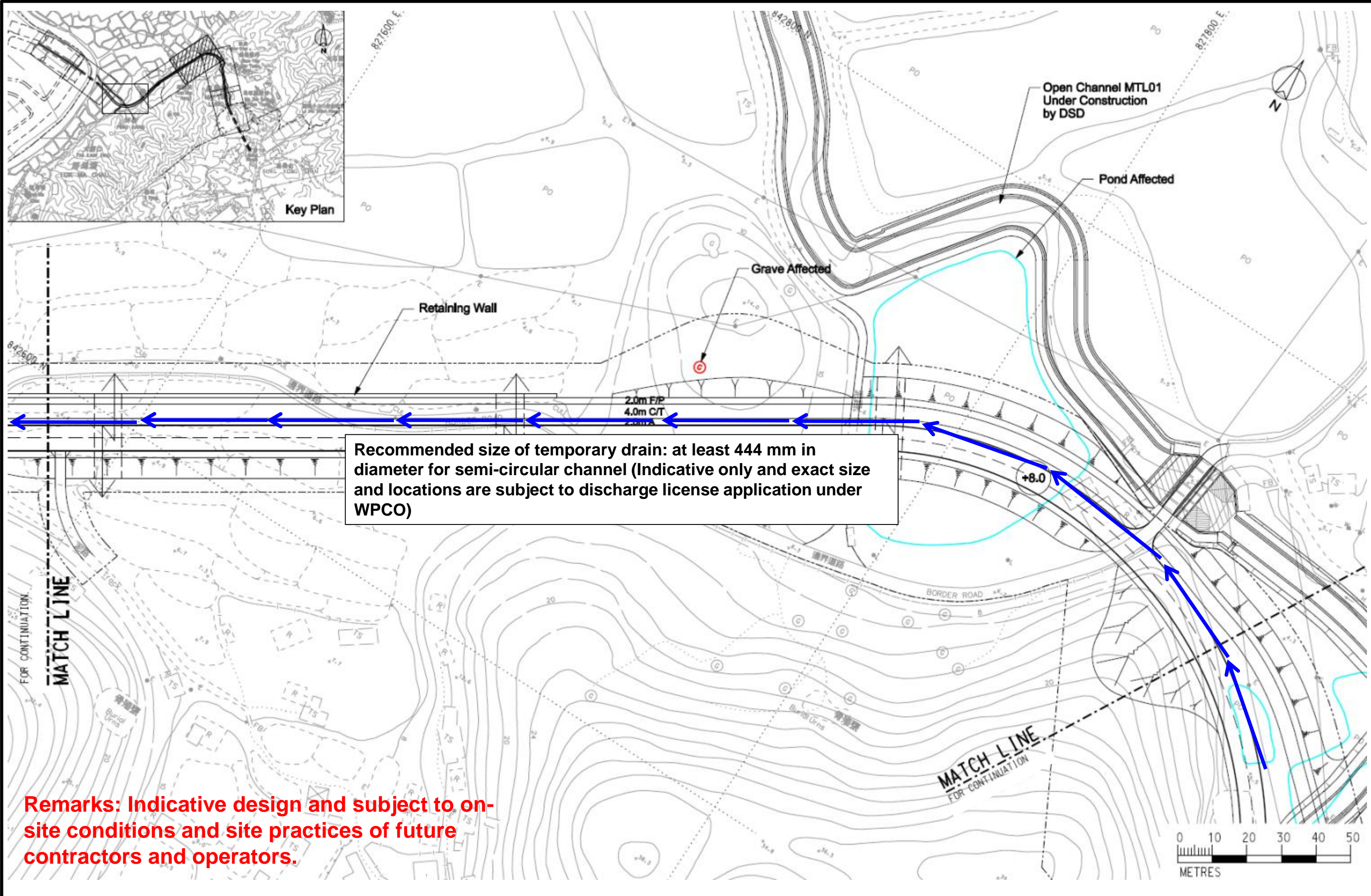




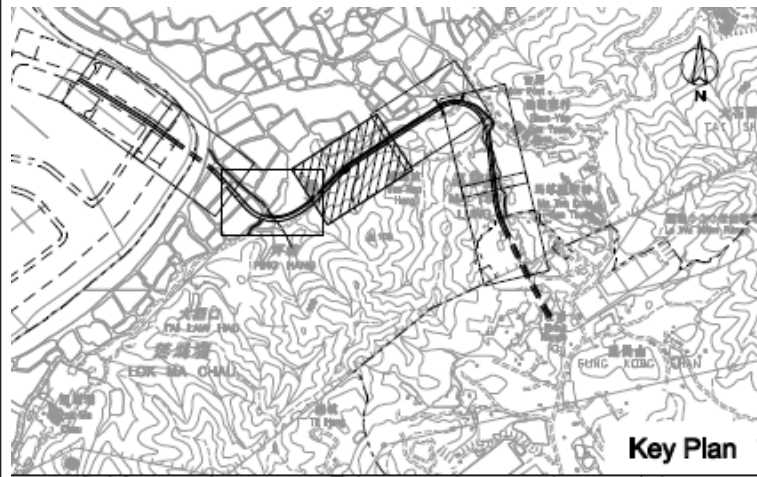
Recommended size of temporary drain: at least 444 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

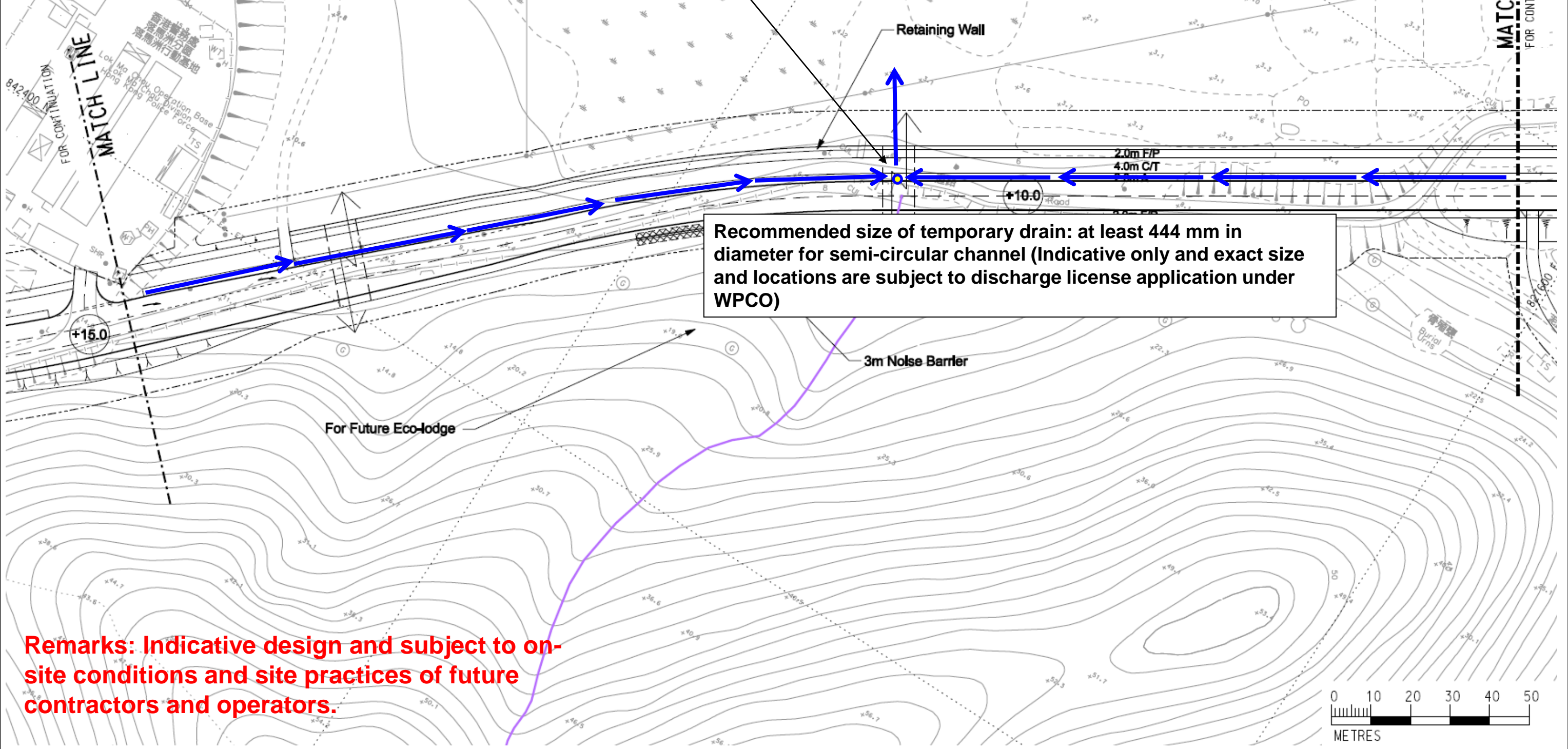




Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

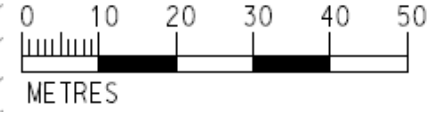


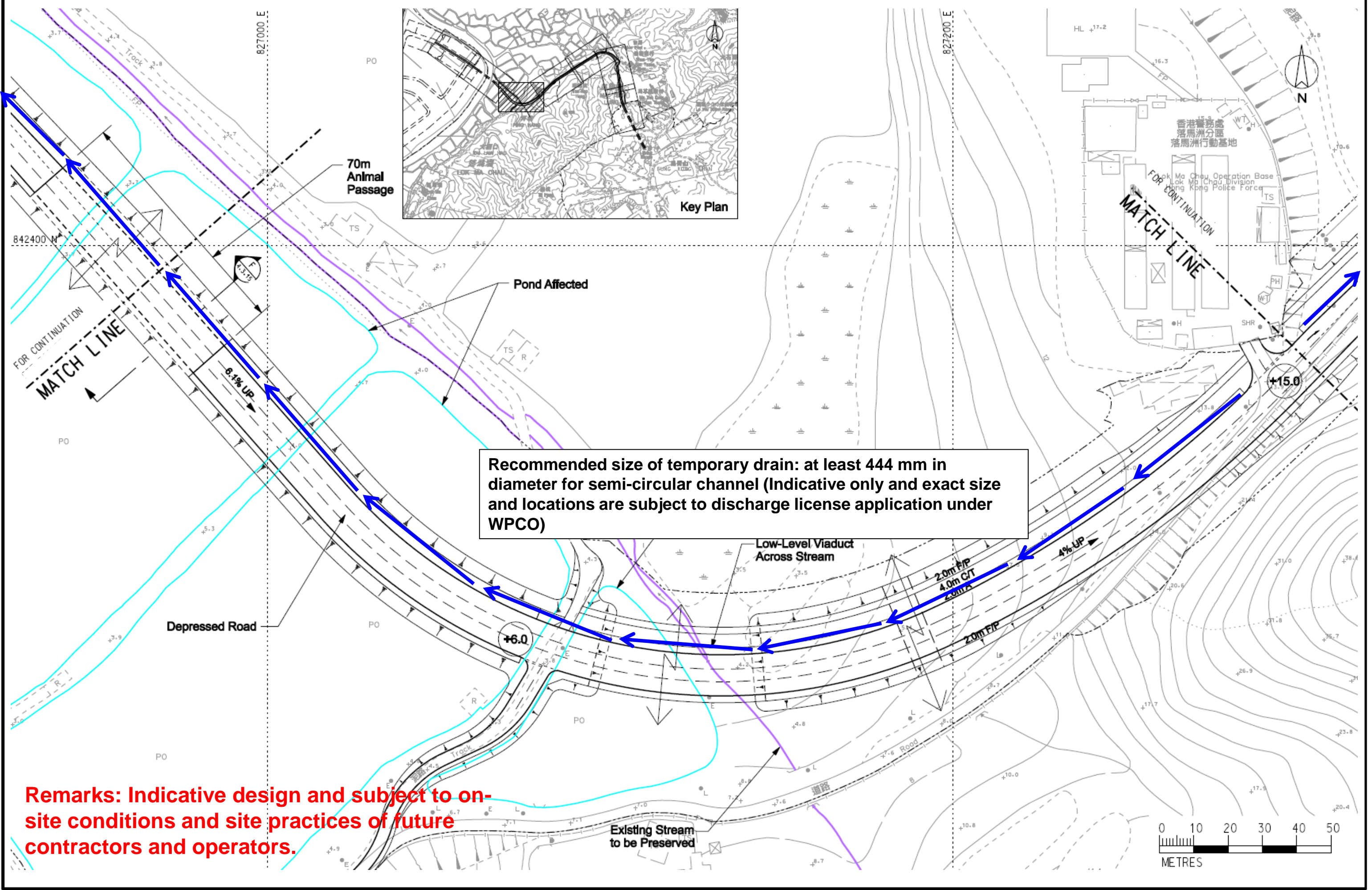
Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)



Recommended size of temporary drain: at least 444 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

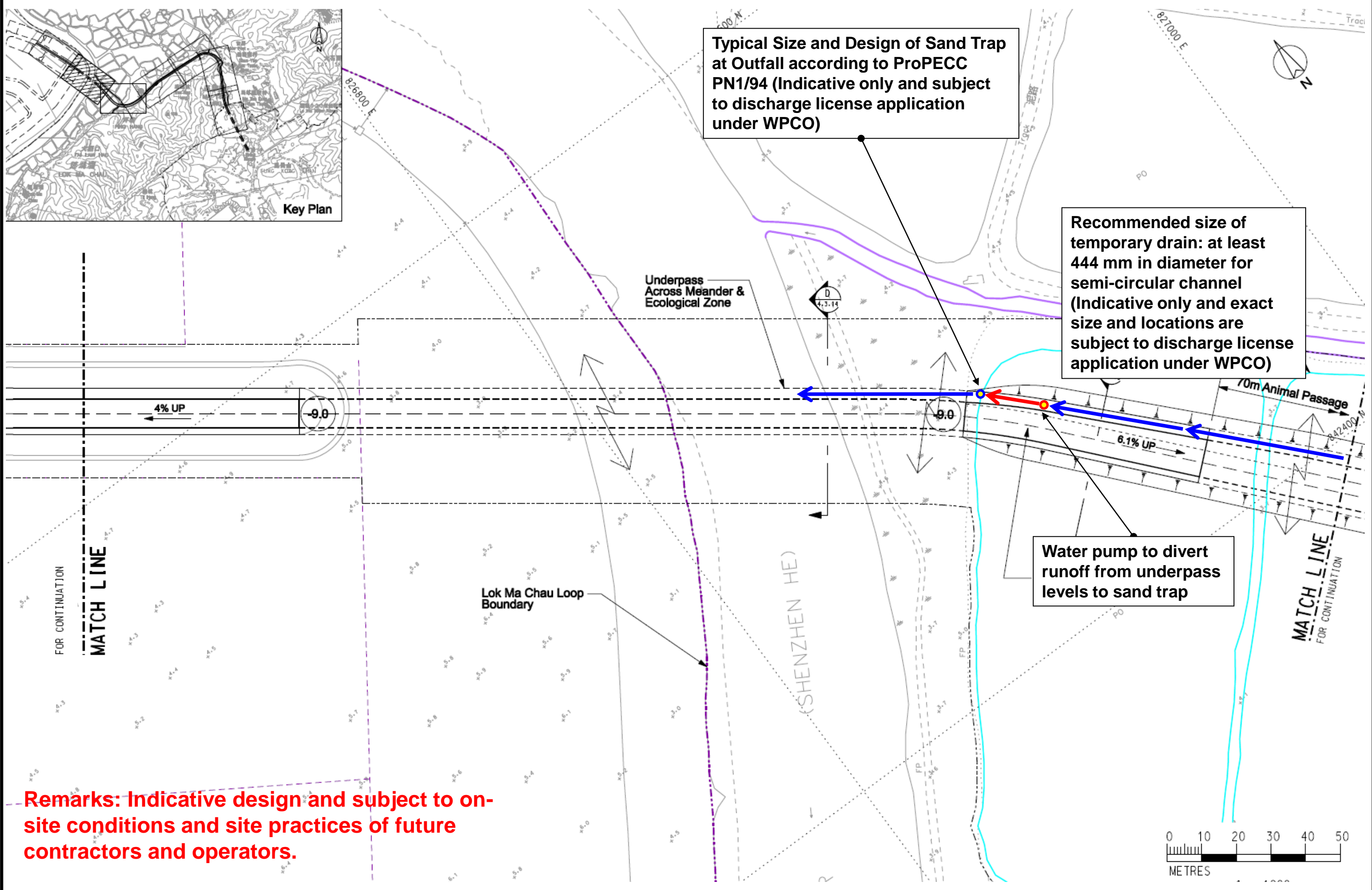
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

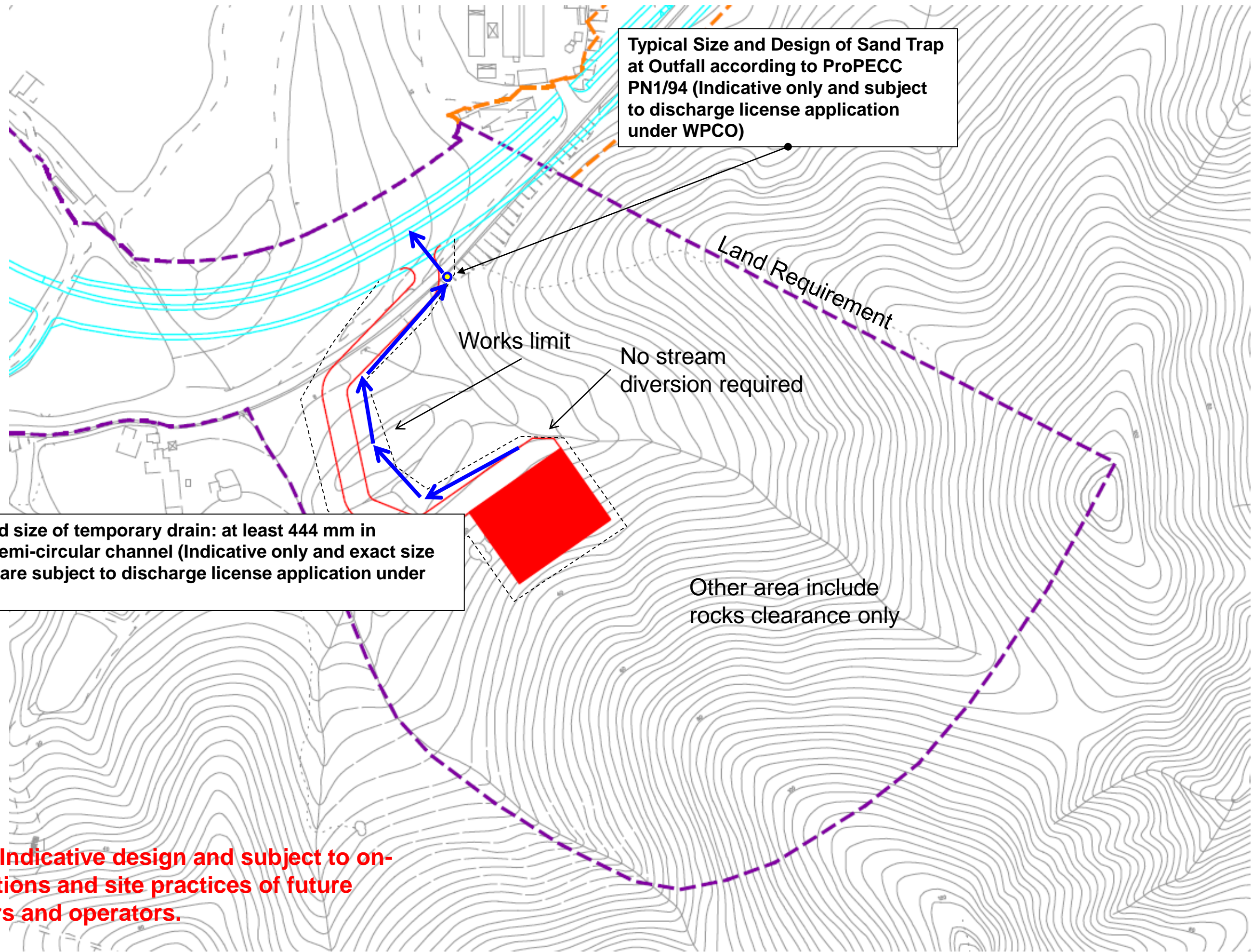




Recommended size of temporary drain: at least 444 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.





Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)

Land Requirement

Works limit

No stream diversion required

Recommended size of temporary drain: at least 444 mm in diameter for semi-circular channel (Indicative only and exact size and locations are subject to discharge license application under WPCO)

Other area include rocks clearance only

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

Appendix 5-2b: Operation Surface Runoff Drainage

According to DSD's Stormwater Drainage Manual, for a 50-year return period rain storm, it is assumed:

a=	687
b=	4.2
c=	0.42
td=	240
i=	68.25
C=	0.9

According to DSD's Stormwater Drainage Manual (SDM) Section 8.3.1 & Table 12 of SDM
where:

S _f =	0.0015
ks=	0.15
v=	1.00E-06

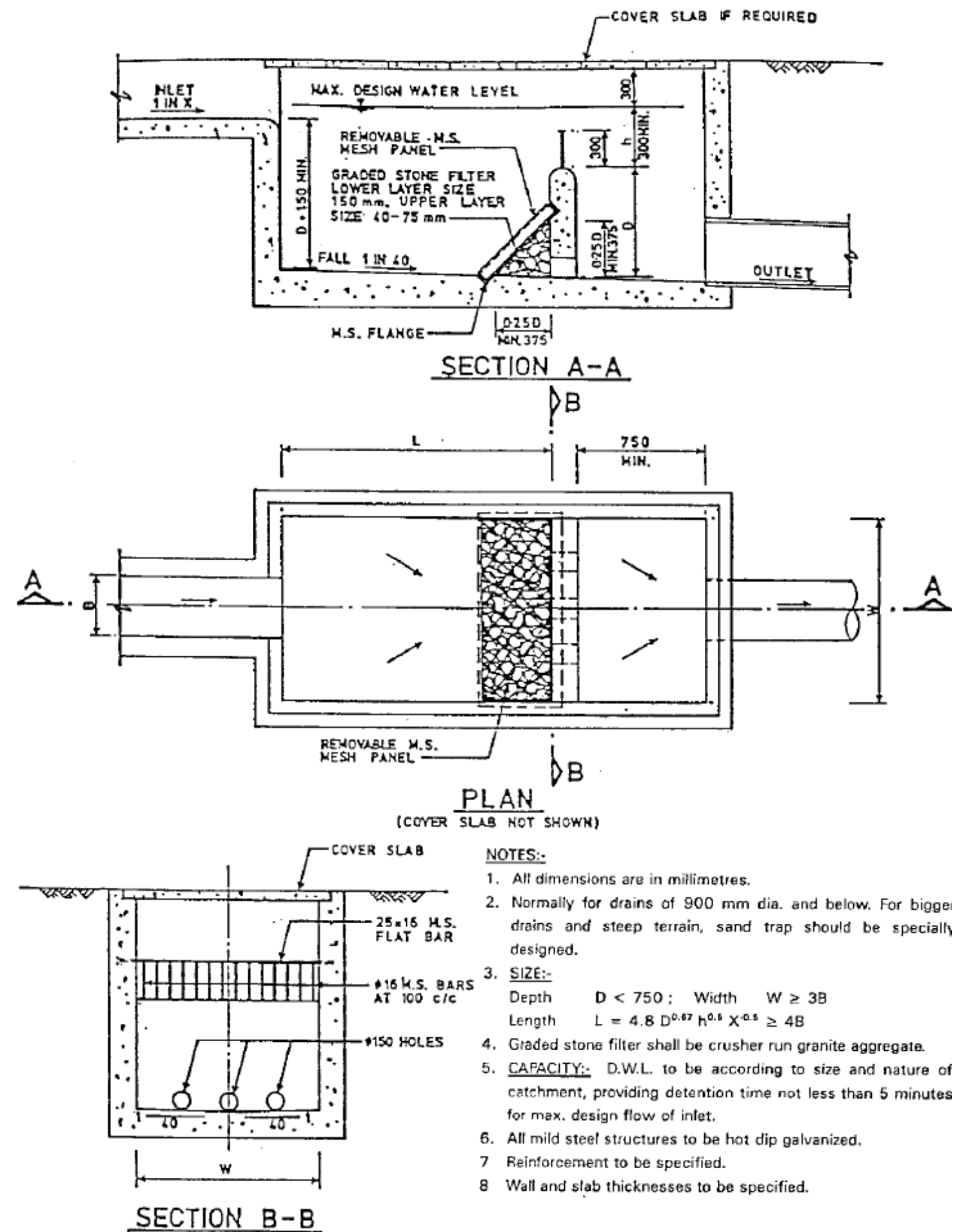
$$\bar{V} = -\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255v}{R\sqrt{32gRS_f}} \right]$$

	WCR	Direct Link	ECR
Road Surface Area A (km ²)	0.025	0.011	0.031
Peak Flow Q _p (m ³ /s)	0.426	0.184	0.528
Diameter D (mm) ^[1]	1050	778	1130

Note:

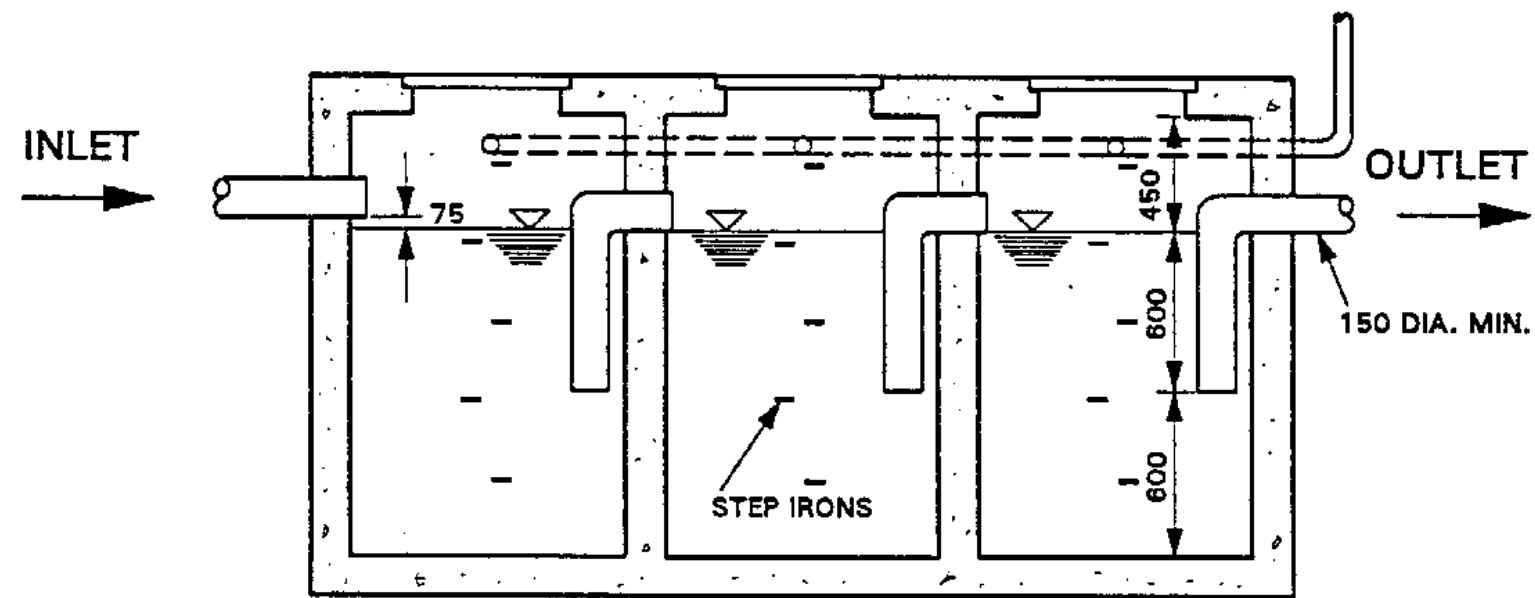
[1] The circular channel is recommended to be applied during operation.

- Typical Size and Design of Sand Trap at Outfall as recommended in ProPECC PN1/94 (Indicative only)
- Alternative options such as package plant could be proposed by the Contractor.
- The Contractor should update stormwater pollution control plan.

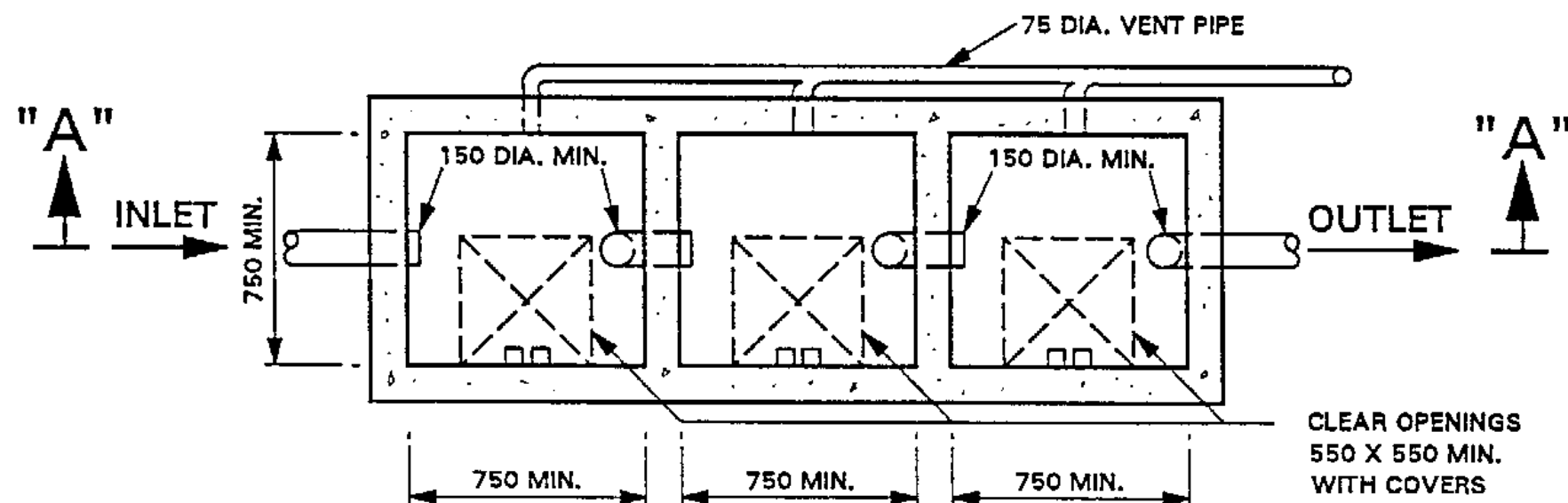


Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

- Typical Size and Design of Petrol Interceptor at Outfall as recommended in ProPECC PN1/94 (Indicative only)
- Alternative options such as package plant could be proposed by the Contractor.
- The Contractor should update stormwater pollution control plan.



SECTION A - A



PLAN

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES

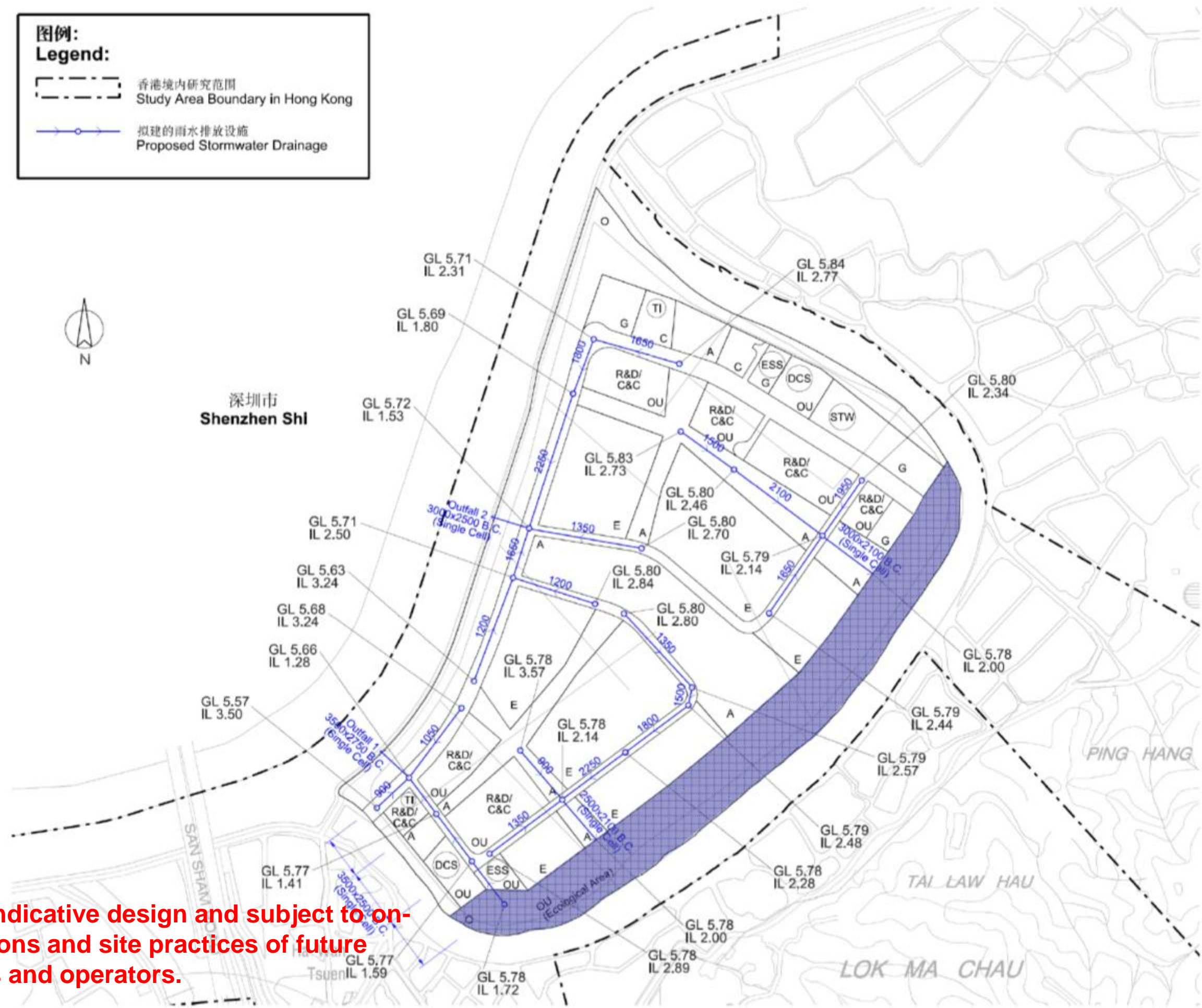
图例:
Legend:

--- 香港境内研究范围
Study Area Boundary in Hong Kong

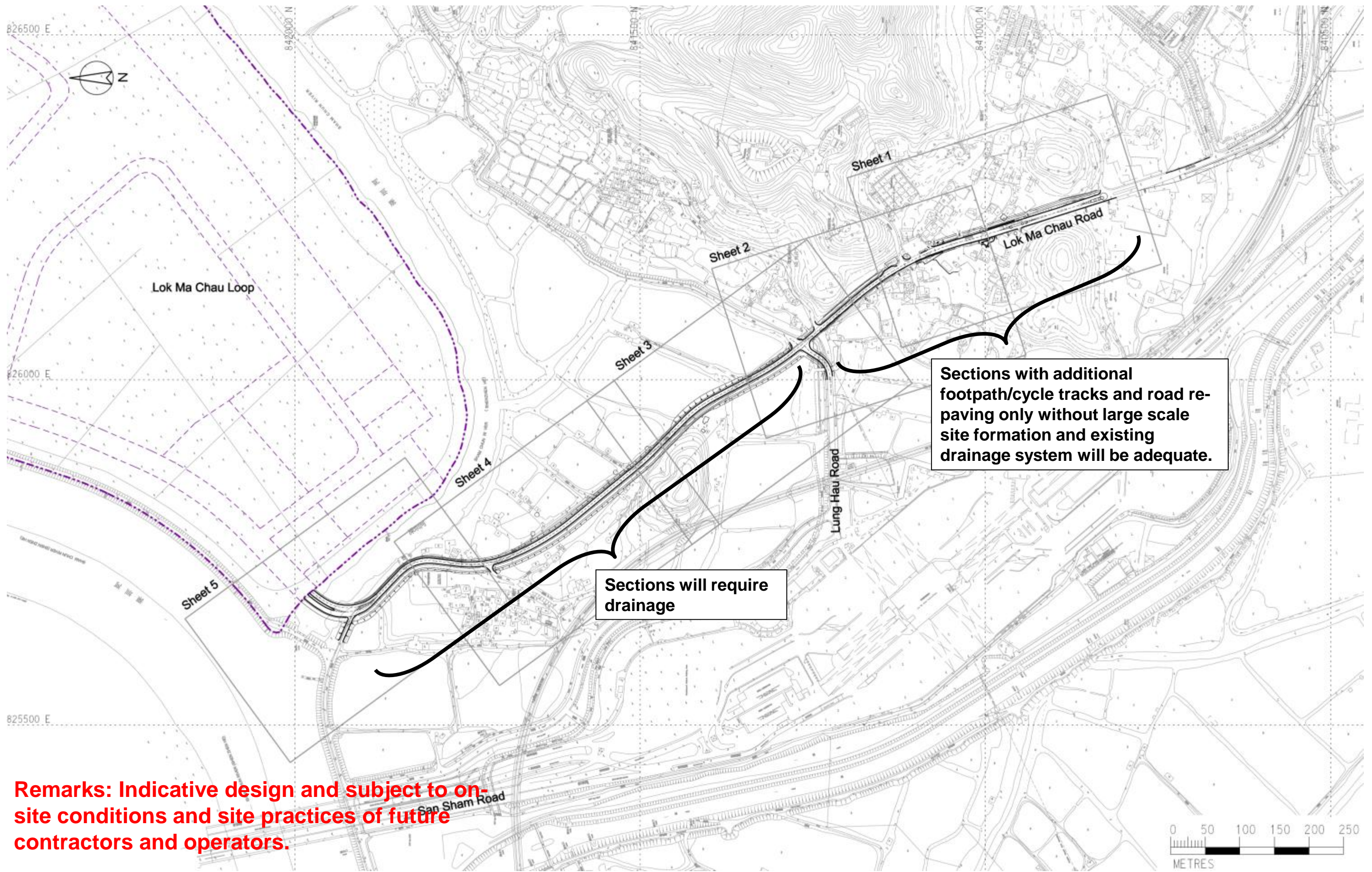
--- 拟建的雨水排放设施
Proposed Stormwater Drainage



深圳市
Shenzhen Shi



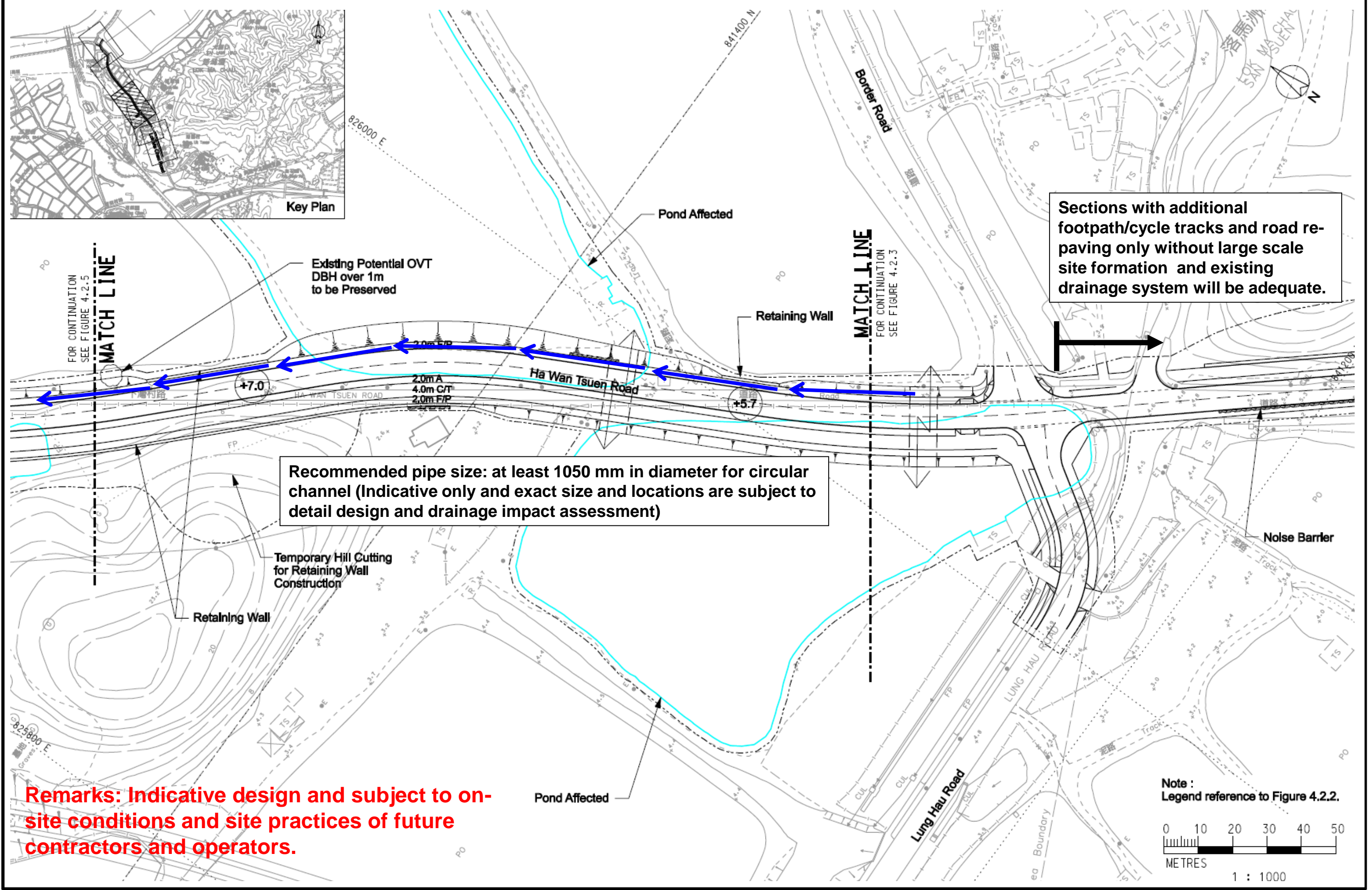
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

Sections with additional footpath/cycle tracks and road re-paving only without large scale site formation and existing drainage system will be adequate.

Sections will require drainage

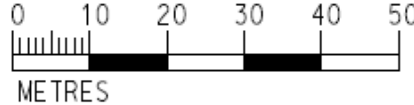


Sections with additional footpath/cycle tracks and road re-paving only without large scale site formation and existing drainage system will be adequate.

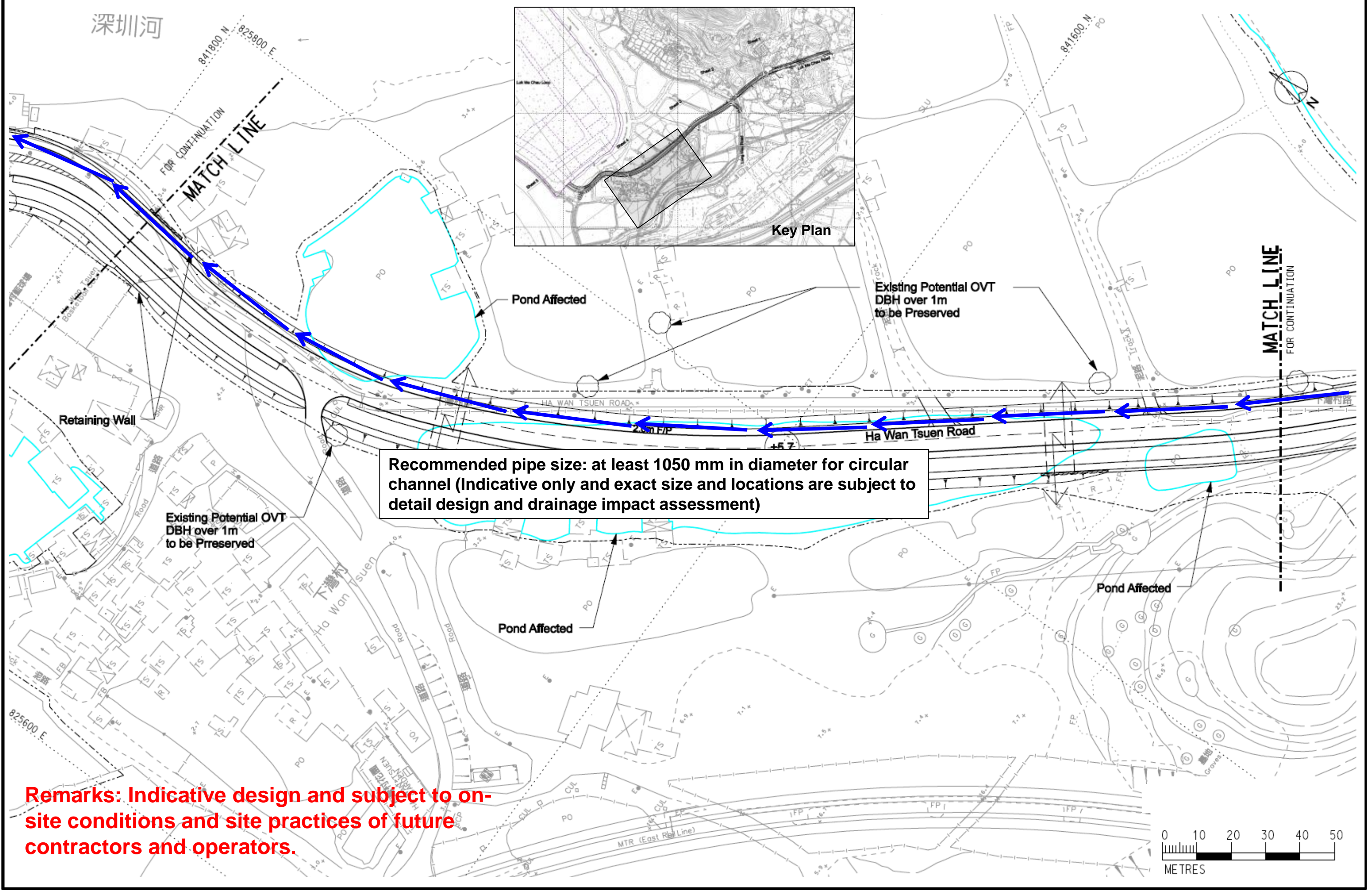
Recommended pipe size: at least 1050 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

Note: Legend reference to Figure 4.2.2.

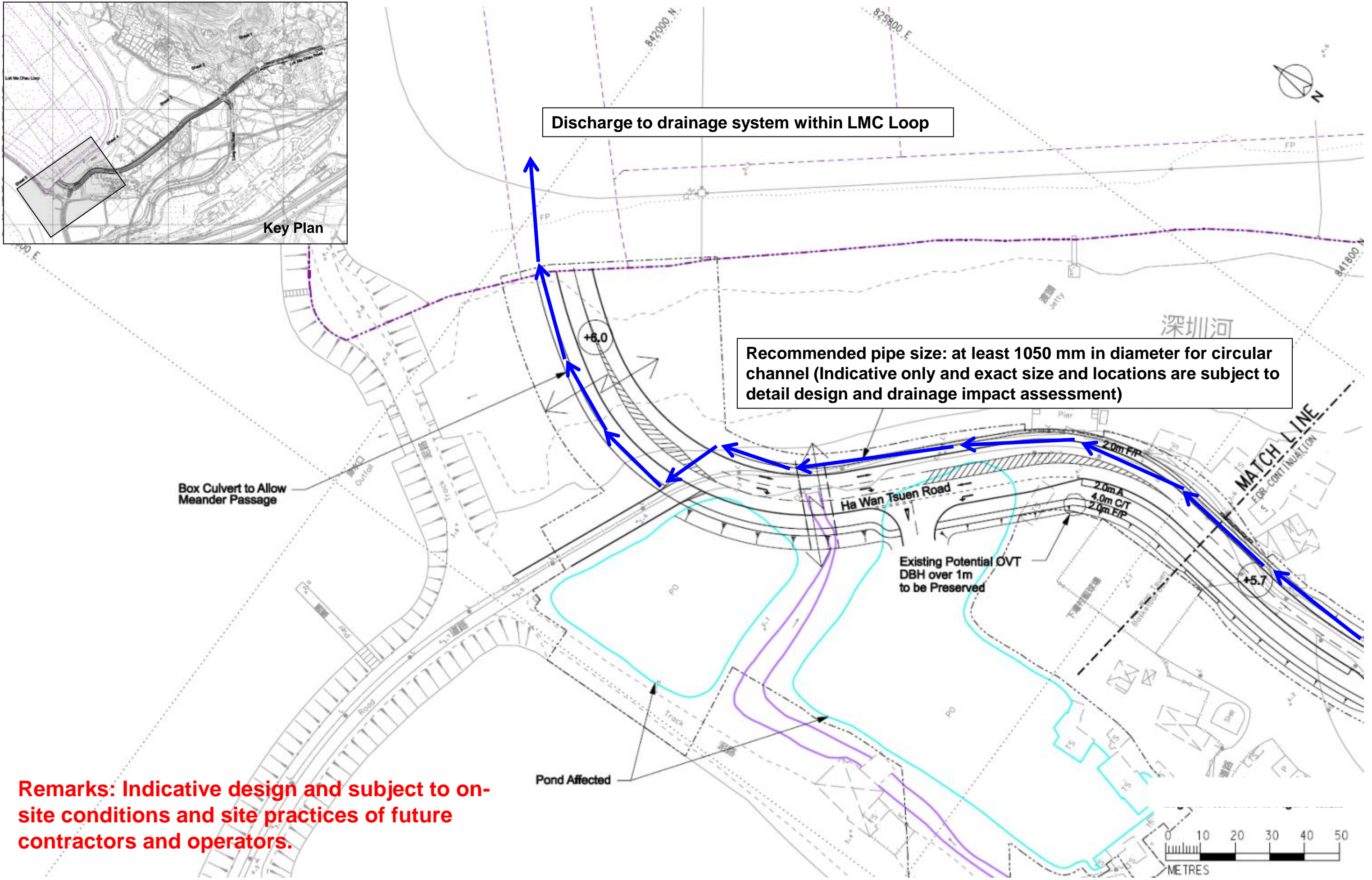
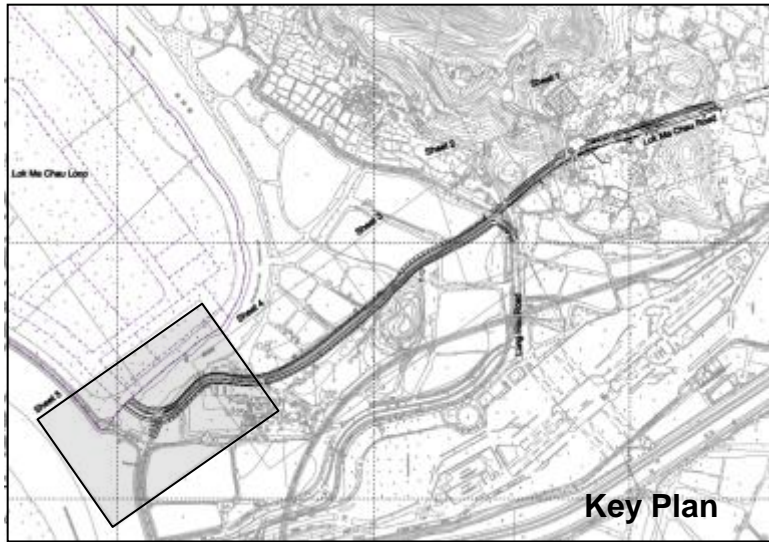


1 : 1000



Recommended pipe size: at least 1050 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

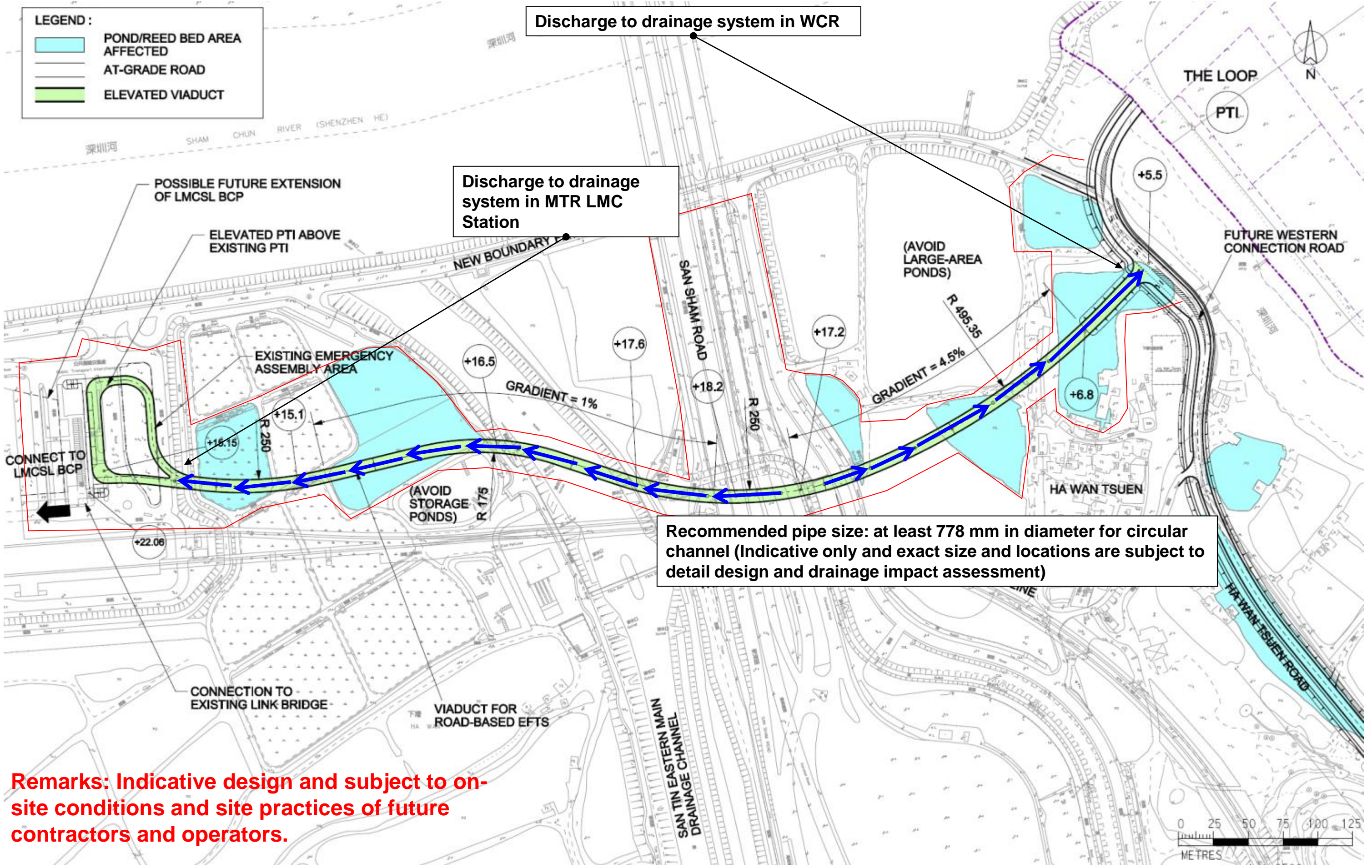
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

LEGEND :

- POND/REED BED AREA AFFECTED
- AT-GRADE ROAD
- ELEVATED VIADUCT

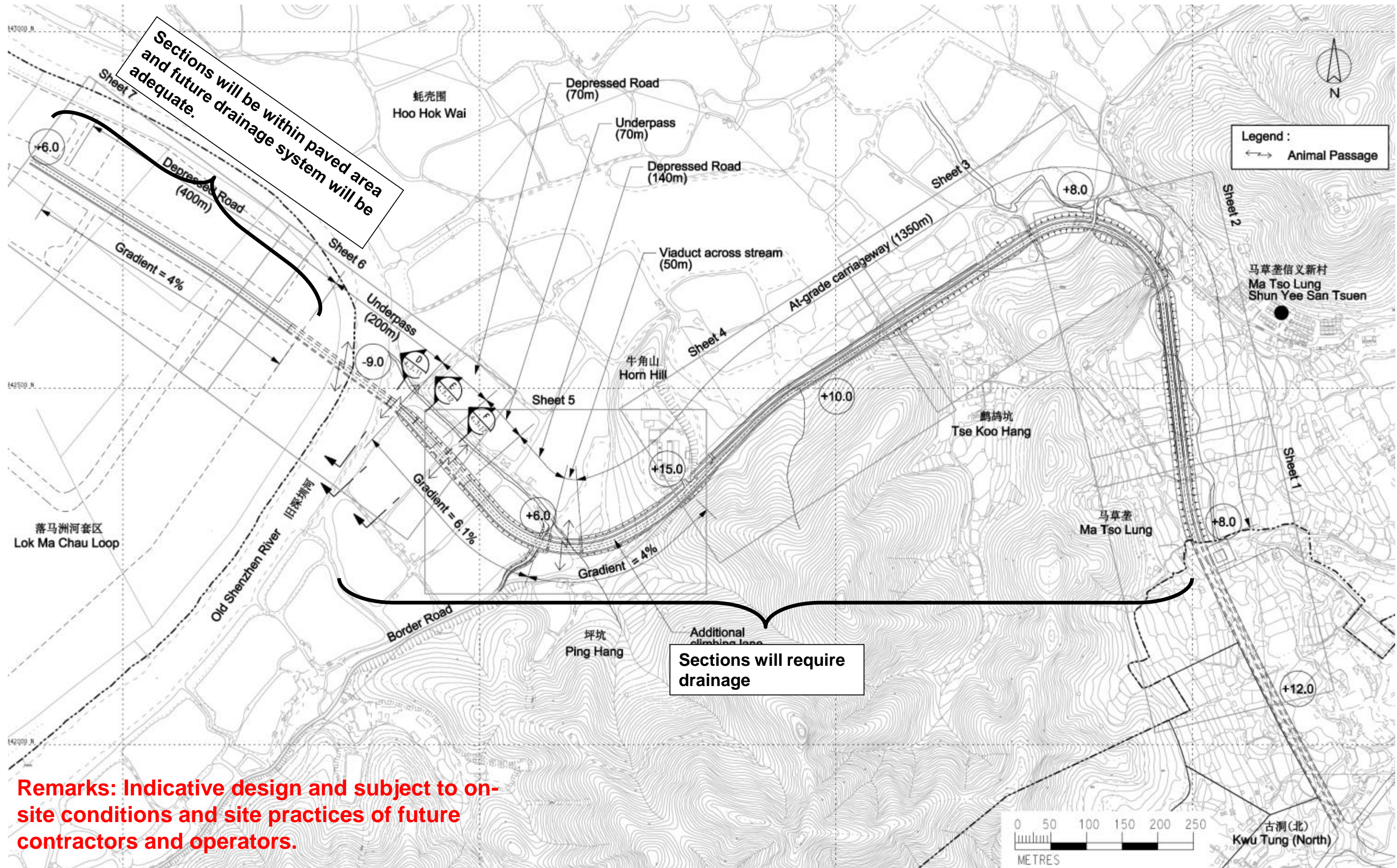


Discharge to drainage system in MTR LMC Station

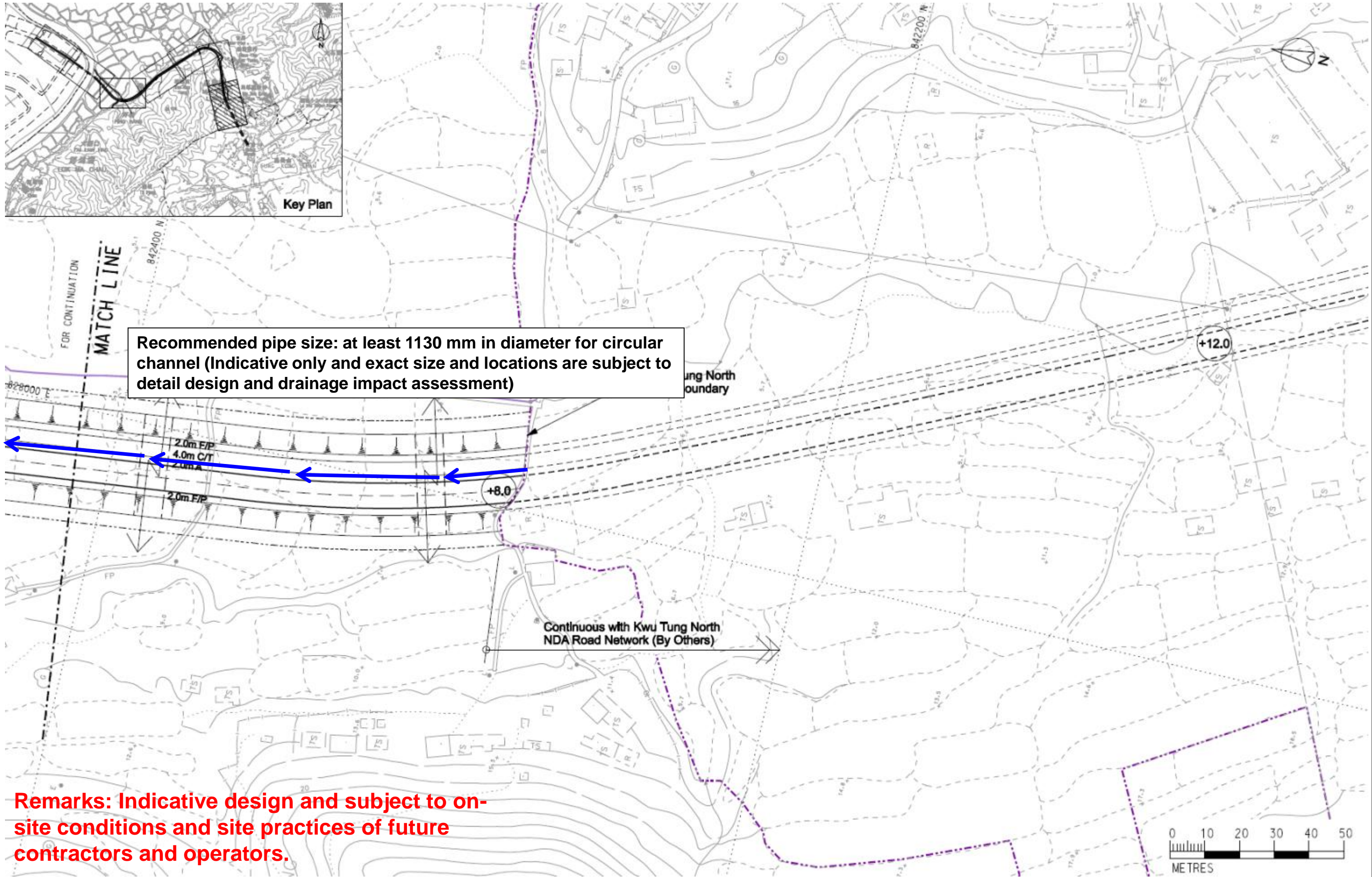
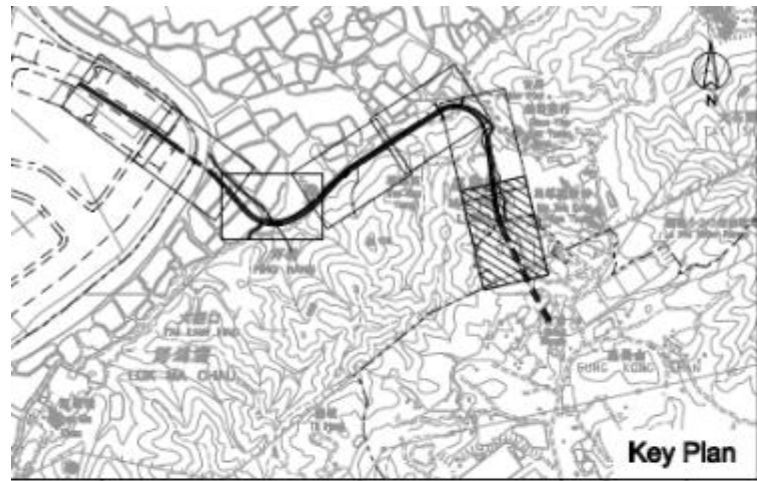
Discharge to drainage system in WCR

Recommended pipe size: at least 778 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

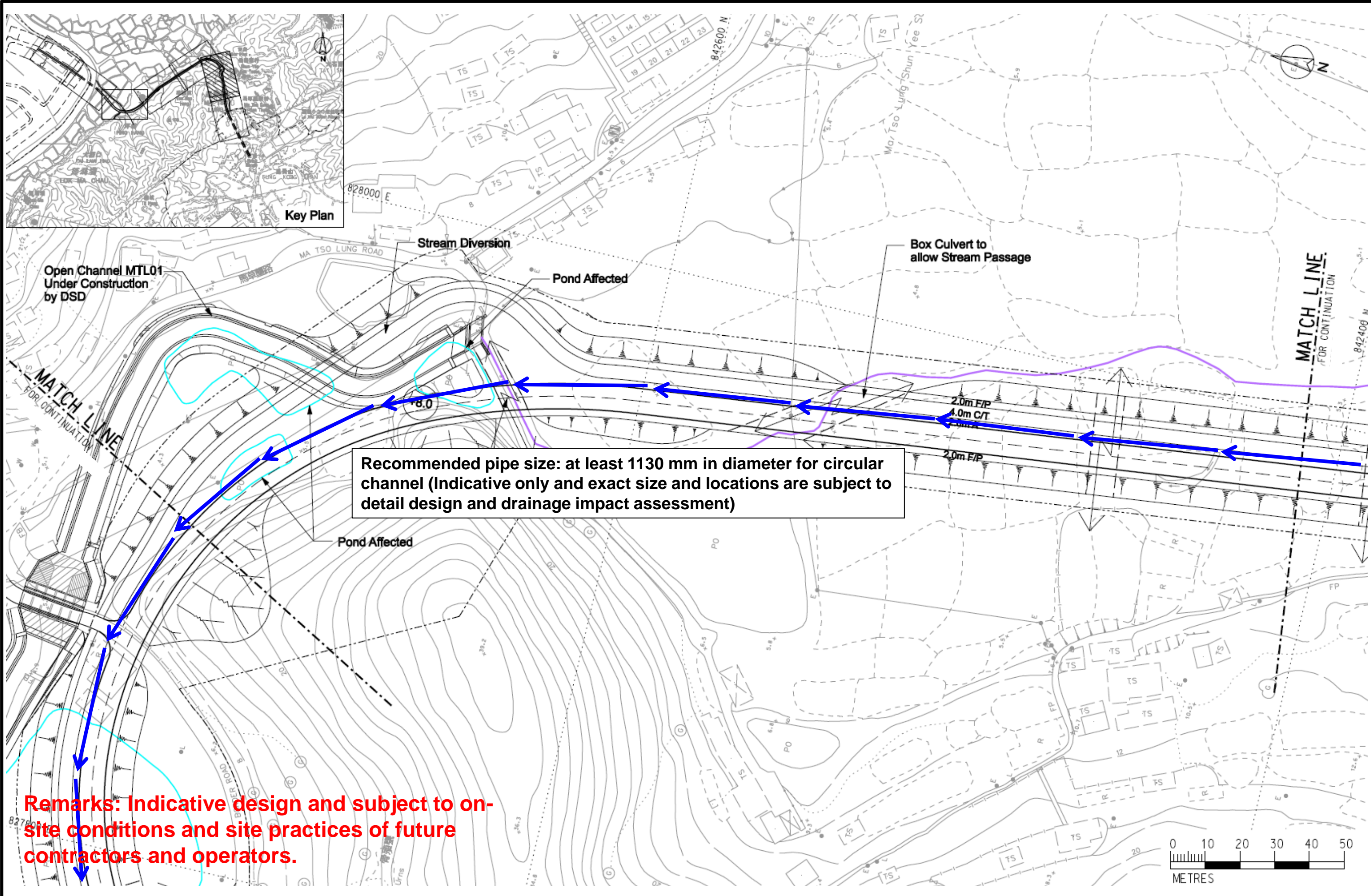


Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

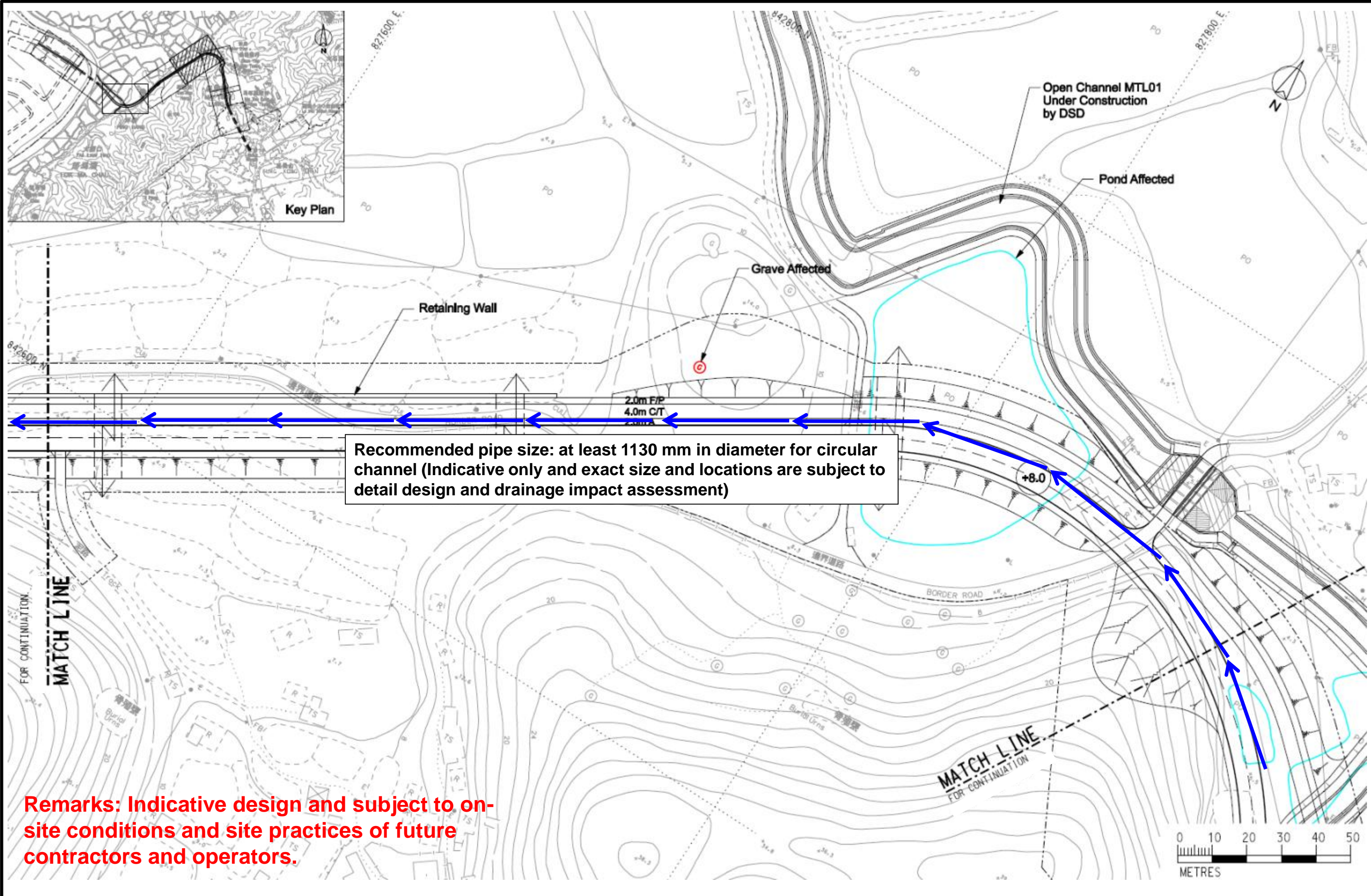


Recommended pipe size: at least 1130 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

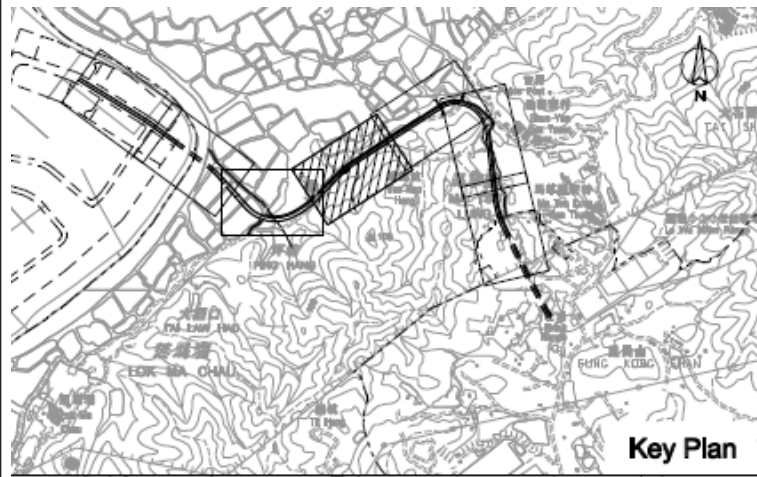
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



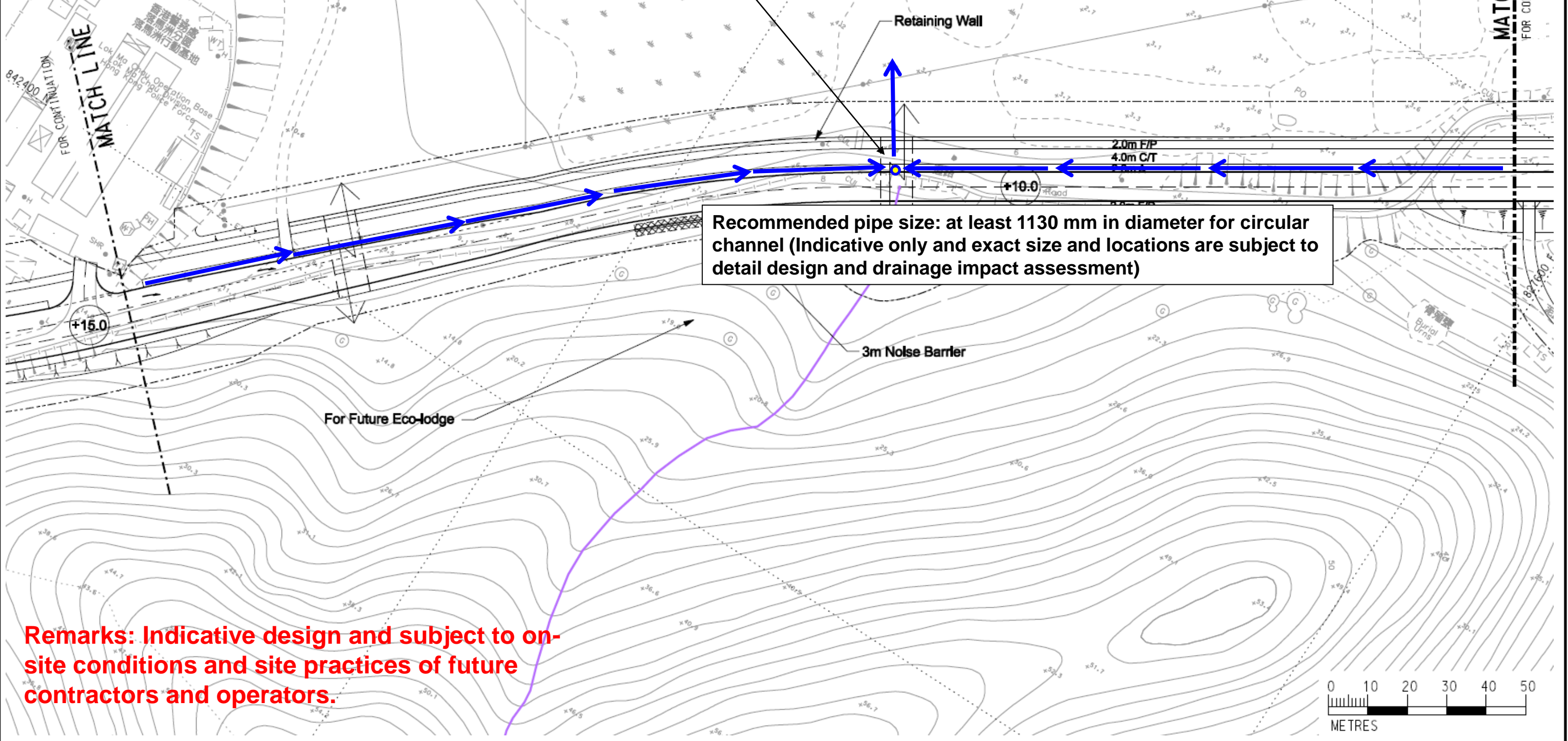
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.



Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

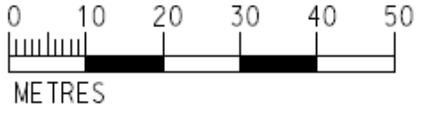


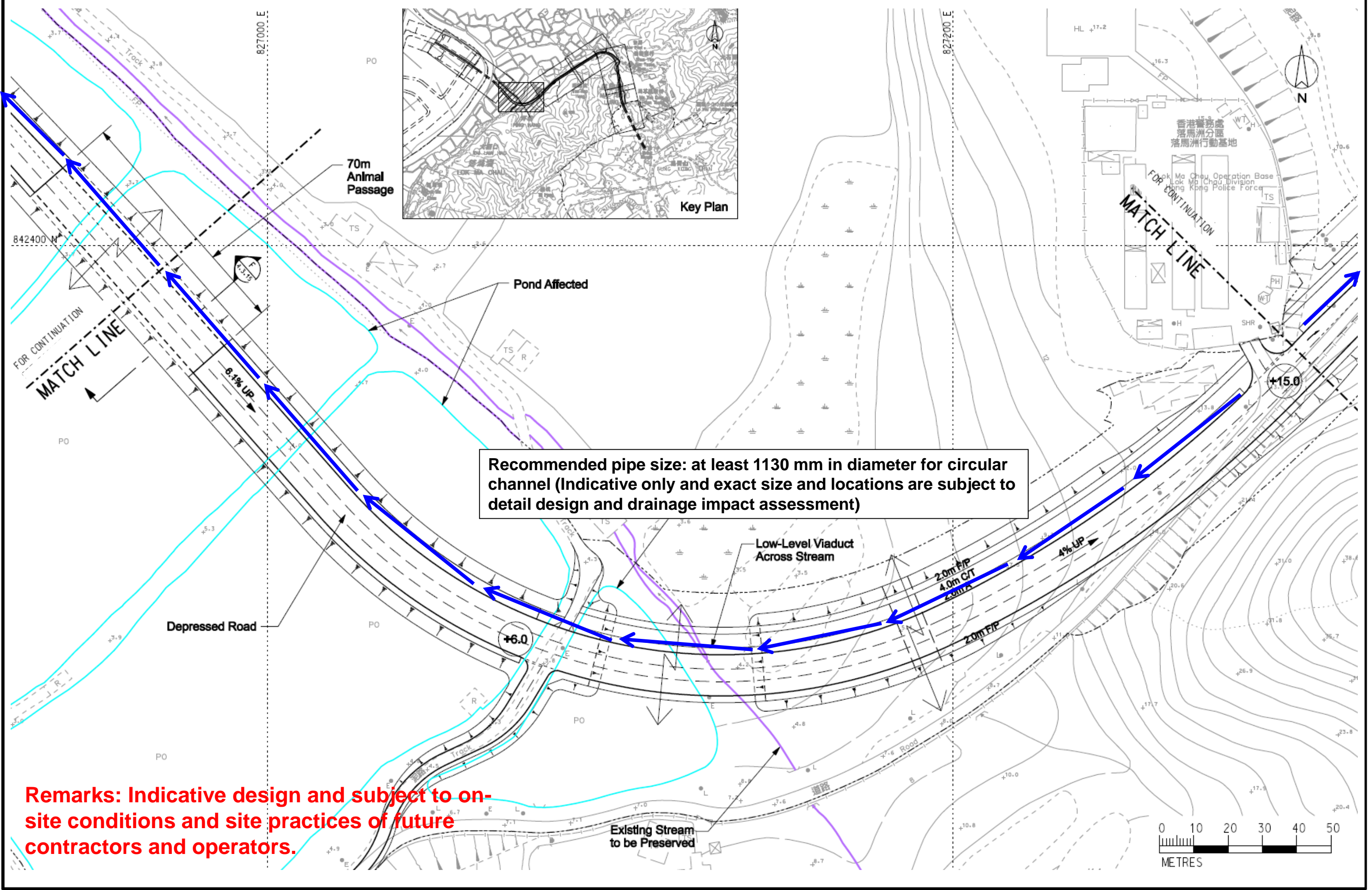
Typical Size and Design of Sand Trap at Outfall according to ProPECC PN1/94 (Indicative only and subject to discharge license application under WPCO)



Recommended pipe size: at least 1130 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

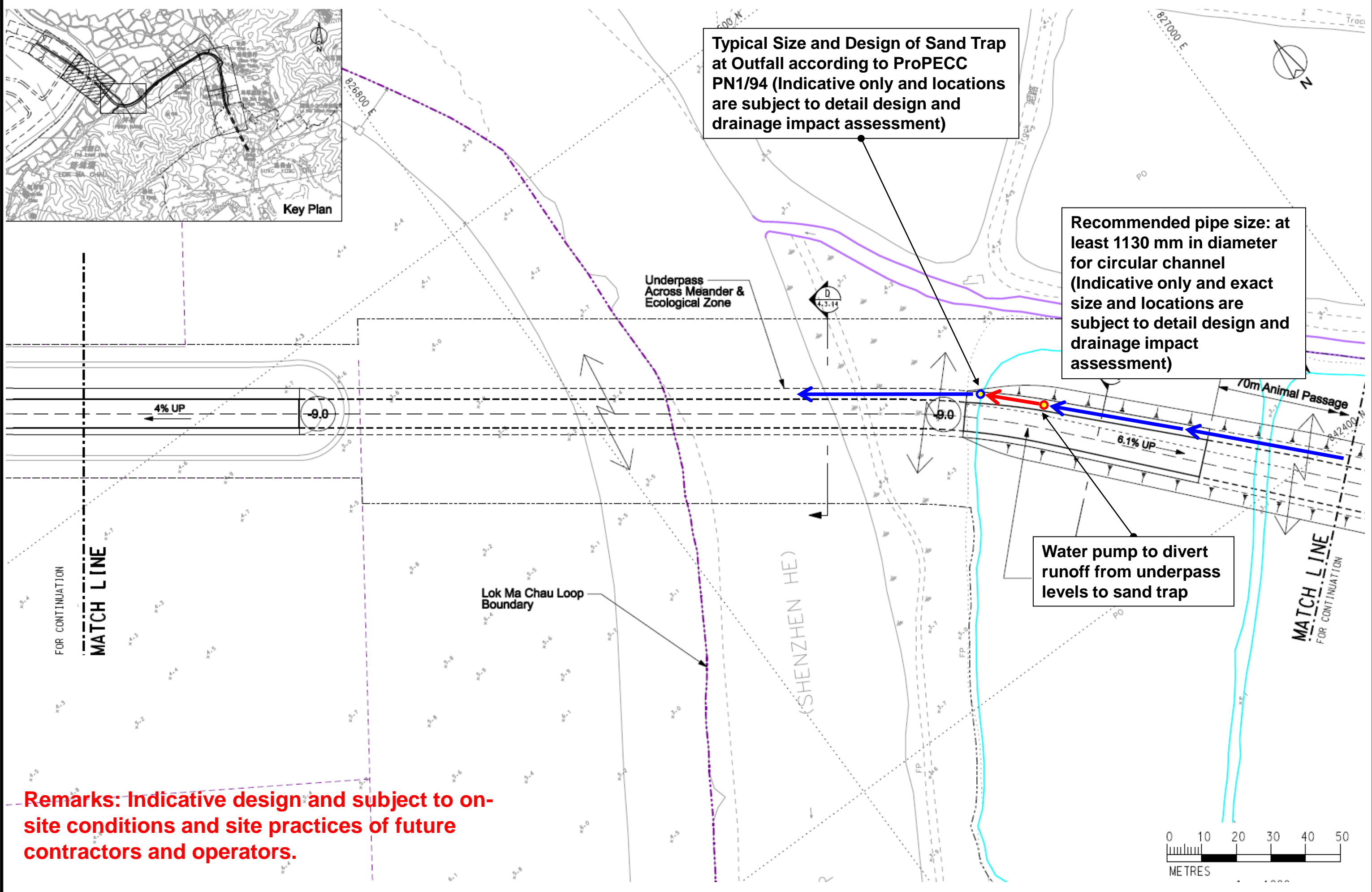
Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.

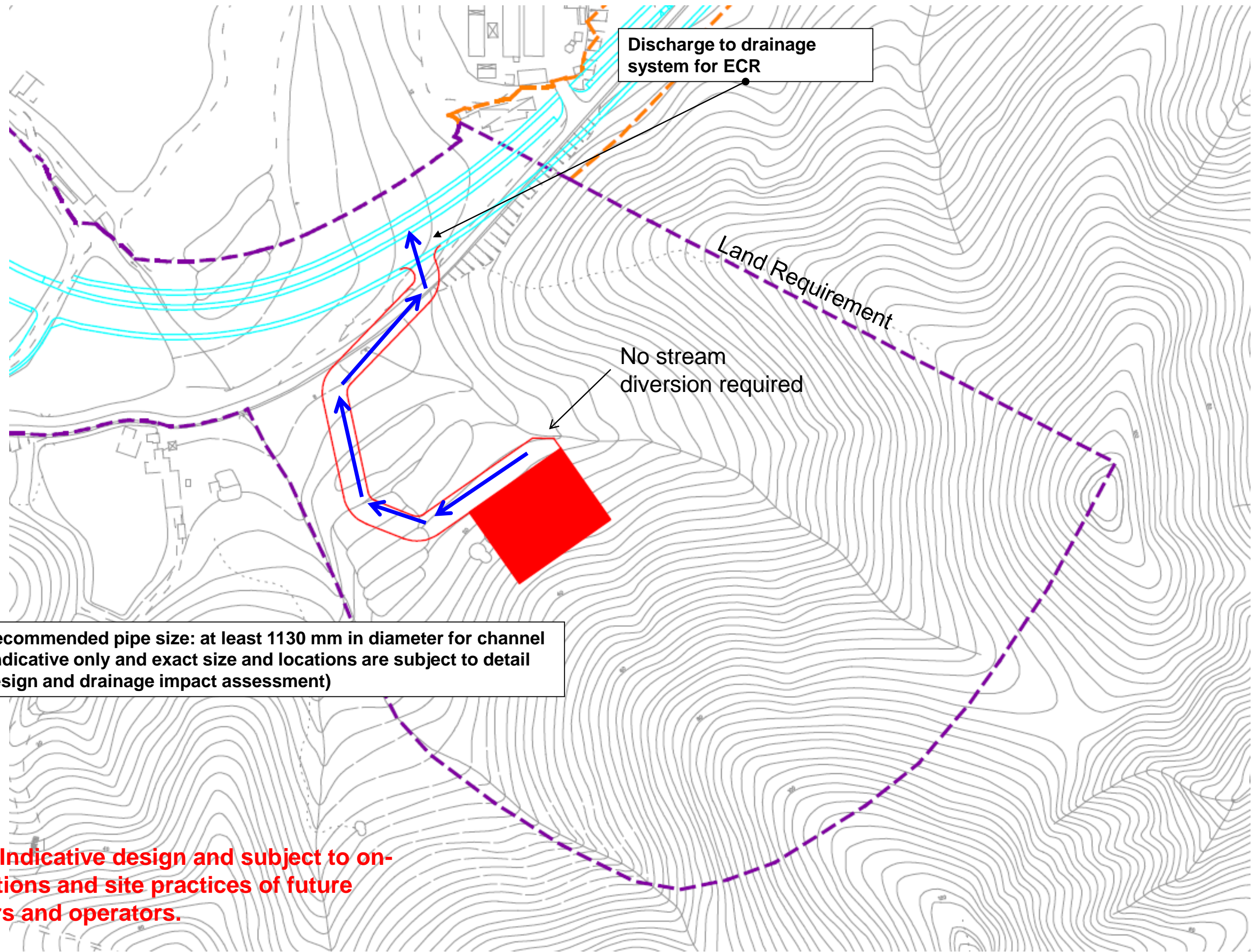




Recommended pipe size: at least 1130 mm in diameter for circular channel (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.





Discharge to drainage system for ECR

Land Requirement

No stream diversion required

Recommended pipe size: at least 1130 mm in diameter for channel
 (Indicative only and exact size and locations are subject to detail design and drainage impact assessment)

Remarks: Indicative design and subject to on-site conditions and site practices of future contractors and operators.