Annex B - Drainage Impact Assessment (DIA) of Chai Wan Road and adjacent Steep Roads

There are two key components in the DIA of a road. First is to investigate whether there are any additional lateral or upstream inflows to the road and to provide interception roadside channels or inlets to prevent them flowing onto the road. Second is to assess the adequacy of the existing drainage facilities of the road and check them with reference to RD/GN/035. Chai Wan Road and adjacent steep roads are used as a study case and the steps of analysis are shown below.

For the ease of reference of the readers, some remarks and detailed elaboration of the assessment have been added to this DIA. Further information is shown in the Supplementary Guidelines.

Step 1 Realistic delineation of the actual catchment area of the road by making use of the available topographic survey maps.

Using the topographic information on the 1:1,000 survey maps to:

a) delineate the rural catchments along ridges of hills and edges of slopes; and
b) delineate the urban catchments along road boundaries.

Please refer to plan No. CWR-Stage 1.pdf for the preliminary delineation based on the topographical information on the survey maps.

Remark

Catchments with boundary highlighted in red are potential additional catchments to the concerned sections of Chai Wan Road and adjacent steep roads.

Step 2 Identification of existing drainage provision for interception of stormwater in the catchment area outside the steep road reserve.

Identify the existing drainage provision by reviewing the drainage record plans from DSD and conducting site inspection.

Step 3 Fine tune the actual boundary of the additional catchments outside the road and evaluate the additional stormwater that will eventually flow onto the road pavement.

Based on the identified drainage provision along the boundaries of the adjacent catchments, assess whether they are adequate to intercept the stormwater flow from those catchments and then evaluate additional stormwater runoff will flow from the adjacent catchments to the road pavement under 1 in 50 years rainstorm event.

Please refer to plan No. CWR-Stage 2.pdf and the Notes for CWR-Stage 2.doc for the fine-tuned catchment boundaries.

Remarks:

1) In the evaluation it is assumed that the existing drainage facilities of other parties (e.g., drainage channels, catch pits, natural watercourses) have adequate intercepting capacities and function properly.
2) Stormwater runoff in the catchments with boundary highlighted in green (i.e. Areas C1, C2, part of C5 and part of C7) will unlikely be discharged onto the concerned road section (i.e. road section hatched in yellow in CWR-Stage 1.pdf).
3) For simplicity, it is considered that the stormwater runoff in the catchments with boundary highlighted in red (i.e. Areas C3, C4, the concerned part of C5, C6, the concerned part of C7and C8) will likely be discharged onto the revised concerned road section (i.e. road section hatched in red in CWR-Stage 2.pdf).

Step 4 Evaluation of the time of concentration for the catchment areas.

Using the Brandsby William's Equation, check the time of concentration of Area C3, Area C4, the concerned part of Area C5, Area C6, the concerned part of Area C7 and Area C8 as below:

For Area C3, L ~ 60m, H ~9%, A~90 m^2, t_o~ 3.6min;
For Area C4, L ~ 60m, H ~6%, A~160 m^2, t_o~ 3.7min;
For Area C5(part), L ~ 25m, H ~32%, A~110 m^2, t_o~ 1.1min;
For Area C6, L ~ 30m, H ~5%, A~65 m^2, t_o~ 2.1min;
For Area C7(part, L ~ 40m, H ~9%, A~195 m^2, t_o~ 2.2min; and
For Area C8, L ~ 40m, H ~6%, A~285 m^2, t_o~ 2.3min.

As all the above six areas are suited in mid-way of the steep roads, (i.e. not at upstream end of the roads), the actual time of concentration for their flows to the nearest inlets of the carrier drains will be controlled by the time of concentration of the most upstream catchment (i.e. the road section from upstream end of the road section to the concerned drainage inlet nearest to the above six areas), which will be much longer than those of the six areas. In this regard, it is considered sufficiently conservative if the time of concentration of 5 min is used to calculate the stormwater runoff discharging from the six areas and the concerned road sections to the relevant carrier drains.

Steps 5 & 6 Evaluation of the actual stormwater runoff that will flow from the catchments onto the road.

Assuming that the surfaces of Area C3, Area C4, the concerned part of Area C5, Area C6, the concerned part of Area C7 and Area C8 are paved, therefore using the runoff coefficient of C = 1; and
using the rainfall intensity of 1 in 50 year 5-min duration design rainstorm stated in Table 1 of RD/GN/035(= 270mm/hr),
calculate the additional runoff from Area C3, Area C4, the concerned part of Area C5, Area C6, the concerned part of Area C7 and Area C8.

The additional runoff are found to be 0.01m^3/s (for each of Area C3, Area C4, the concerned part of Area C5, Area C6 and the concerned part of Area C7) and 0.02m^3/s (for Area C8) respectively.

Step 7 Evaluation of the stormwater interception capacity of the existing drainage provisions at critical locations of the road section.

Based on DSD Drainage Record Plans "Drainage Record-11SE19A1.pdf", "Drainage Record-11SE19A3.pdf", "Drainage Record-11SE19A4.pdf", "Drainage Record-11SE19C1.pdf", "Drainage Record-11SE19C2.pdf" and using the equation 6 of RD/GN/035, the drainage capacity of the existing drainage facilities are calculated as follow:

Drain 1 (manhole SMH7041492 - manhole SMH7041495)
Length~40m, U/S Invert Level~43.92mPD, DS Invert Level~41.98mPD, Slope~0.05, Diameter = 0.75m, Capacity C~2.73m^3/s

Drain 2 (manhole SMH7041439 - manhole SMH7041494)
Length~16m, U/S Invert Level~44.95mPD, DS Invert Level~42.95mPD, Slope~0.13, Diameter = 0.3m, Capacity C~0.40m^3/s

Drain 3 (manhole SMH7040354 - manhole SMH7040335)
Length~165m, U/S Cover Level~15.59mPD, DS Cover Level~12.04mPD, Slope~0.02, Diameter = 1.35m, Capacity C~8.45m^3/s (Remark: As invert levels of the pipe are not shown on the drainage record plans, cover levels are used to calculate the pipe capacity)

Drain 4 (manhole SMH7040335 - manhole SMH7059774)
Length~105m, U/S Cover Level~12.04mPD, DS Cover Level~6.45mPD, Slope~0.05, Diameter = 1.35m, Capacity C~13.31m^3/s (Remark: As invert levels of the pipe are not shown on the drainage record plans, cover levels are used to calculate the pipe capacity)

Drain 5 (manhole SMH7061143 - manhole SMH7061148)
Length~20m, U/S Invert Level~34.29mPD, DS Invert Level~32.72mPD, Slope~0.08, Diameter = 0.75m, Capacity C~3.47m^3/s

Drain 6 (manhole SMH7052704 - manhole SMH7027350)
Length~65m, U/S Invert Level~6.92mPD, DS Invert Level~2.72mPD, Slope~0.06, Diameter = 2.44m, Capacity C~68.65m^3/s

Drain 7 (manhole SMH7027381- manhole SMH7027378)
Length~30m, U/S Invert Level~31.49mPD, DS Invert Level~28.13mPD, Slope~0.11, Diameter = 0.525m, Capacity C~1.63m^3/s

For tentative locations of Drain 1 – Drain 7, please refer to plan No. CWR-Stage 3.pdf. For detailed locations of the drains and manholes, please refer to the above drainage records.

Besides, with reference to plan No. CWR-Stage 3.pdf:

Road Area 1, Area ~ 2,200m^2, Q=0.278CiA ~0.17 m^3/s

Road Area 2, Area ~ 12,400m^2, Q=0.278CiA ~0.93 m^3/s
Road Area 3, Area ~ 5,500m^2, Q=0.278CiA ~0.41 m^3/s
Road Area 4, Area ~ 1,500m^2, Q=0.278CiA ~0.11 m^3/s
Road Area 5, Area ~ 5,500m^2, Q=0.278CiA ~0.41 m^3/s
Road Area 6, Area ~ 500m^2, Q=0.278CiA ~0.04 m^3/s
Road Area 7, Area ~ 3,400m^2, Q=0.278CiA ~0.26 m^3/s;
Road Area 8, Area ~ 4,500m^2, Q=0.278CiA ~0.34 m^3/s
Road Area 9, Area ~ 1,500m^2, Q=0.278CiA ~0.11 m^3/s

For Drains 1 to Drain 7, it appears that they are not exclusively for the concerned road sections and upland catchments but may also convey stormwater runoff from some other catchments. Therefore, it is not certain whether they are adequate to convey the stormwater from the concerned road sections and upland catchments (i.e. Road Areas 1 – 9, Area C3, Area C4, the concerned part of Area C5, Area C6, the concerned part of Area C7 and Area C8) despite that their capacities may be larger than the stormwater runoff from the concerned road sections and upland catchments. In such situation, it is recommended to consult DSD to acquire their advice and findings from their relevant drainage studies.

For this DIA, DSD has provided their advice on whether Drains 1 - 7 are adequate to handle the stormwater runoff under a 1 in 50 year rainfall intensity based on their past Drainage Master Plan study in the Northern Hong Kong Island. (please refer to "Adequacy of Drains 1 - 7.pdf"). Based on this information, it is considered that Drains 1 and 3 – 6 are incapable to handle the stormwater runoff from the concerned road sections and upland catchments. It is suggested to liaise with DSD to further investigate whether these drains are required to be upgraded.

Remark:
For Drains 3 and 4, their invert levels cannot be found in the drainage record plans. It is suggested that further site surveys can be conducted to ascertain their invert levels as required.

Step 8 Review of the history and causes of previous flooding incidents (flooding may be due to reasons other from excess stormwater flow such as debris blockage).

Within the study area seven flooding incidents were reported during the specified period. Four cases occurred near the Chai Wan Road Roundabout. The other cases occurred at various locations along Chai Wan Road. The causes of flooding have not been identified. The flooding history however indicates that the area near the Chai Wan Road Roundabout is the most problematic area. A possible reason for the flooding there is its low-lying ground level (~5.2mPD). As the drainage networks there are of low invert levels, they are suspicious to severe backwater effect from sea during high-tide scenario (please also refer to Item 2 of the last section of the DIA).

Step 9 Identification of improvement measures such as providing optimum crossfall, more effective road gully arrangement, transverse drains, on-site road side flood storage, bypass/excess surface runoff diversion/interception plan at upstream, and the use of porous pavement, etc. at suitable locations.

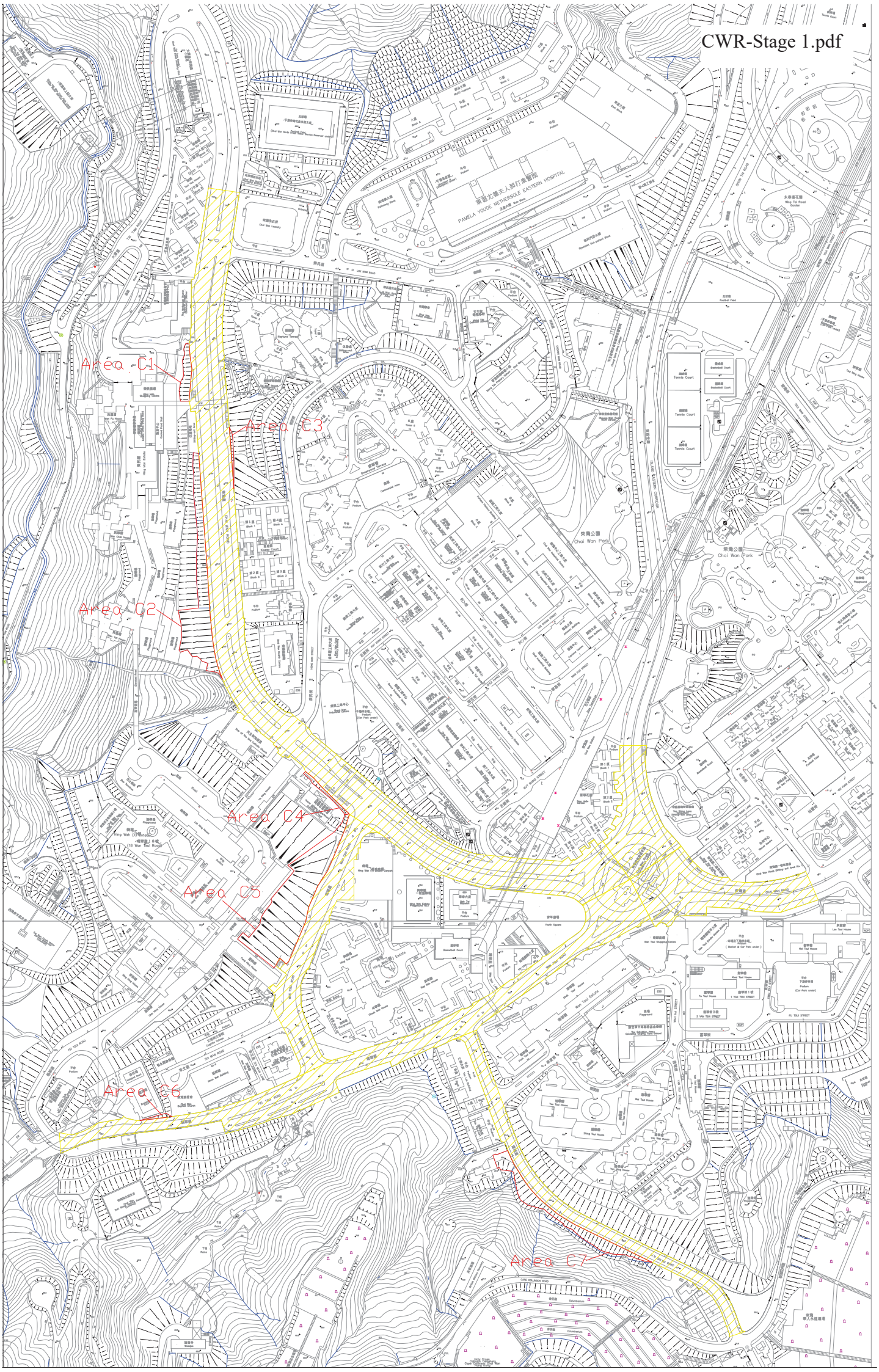
1. The flooding problem at the Chai Wan Road Roundabout is likely due to the tide induced backwater effect and thus is not directly related to adequacy of the drainage facilities of the steep roads. Remedial measures may include the use of tide gate together with an underground floodwater storage tank.
2. Based on this assessment, it is preliminarily identified that the capacity of Drains 1 and 3 – 6 are inadequate to convey the stormwater runoff from the concerned road pavements and additional catchments. Further detailed assessment should be conducted to confirm this finding and, if essential, DSD may be consulted to resolve this problem together.

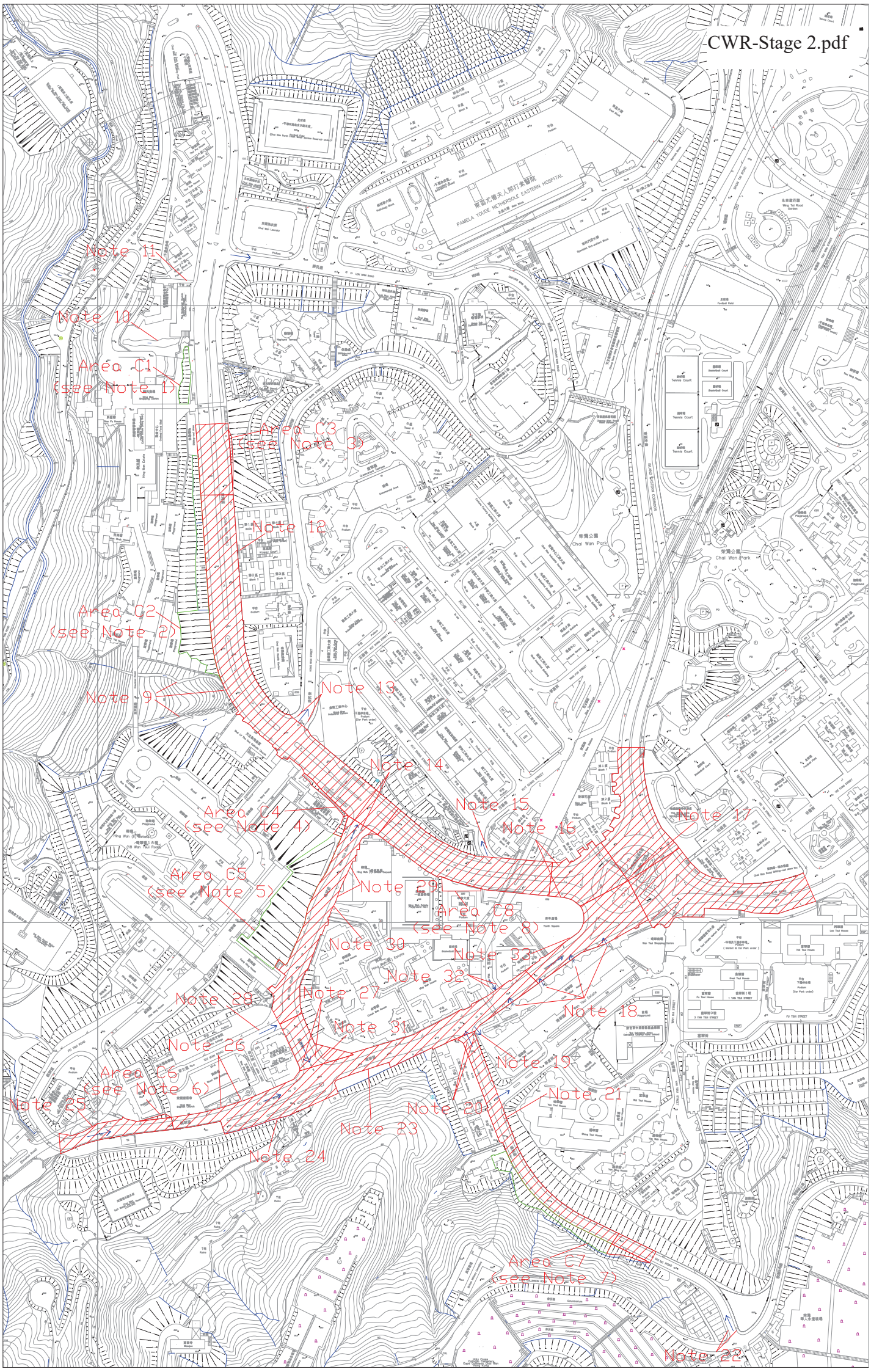
Other Points to Note

The following additional points are suggested for the consideration of the designers on road pavement drainage works by making reference to the assessment carried out under this DIA:

1. For simplicity, the drainage networks are regarded as exclusively only for the concerned road pavements in the above calculation. However, for urban areas (also for this case), the drainage networks are in general not exclusively for road pavements only and they will also be used to convey stormwater runoff from adjacent developments, slopes, other catchments, etc. Therefore, it is suggested to liaise with DSD to determine whether the concerned carrier drains are capable to convey the stormwater runoff from relevant catchments if the carrier drains are not exclusively for road pavements only based on the findings in DSD's past relevant studies (such drainage master plan studies).
2. At downstream ends of Chai Wan Road and Wan Tsui Road (near the large roundabout), there is a large box culvert provided for conveying stormwater runoff from upstream areas. However, adequate information for assessment of the capacity of the box culvert is not available on the drainage record plans. It is recommended to contact DSD to acquire the required information. Besides, as the ground level at the roundabout is just about 5.2mPD, the drainage capacity of the box culvert underneath will likely be affected by tide (As the height of the culvert is 2.9m, for the ground level of 5.2mPD and assuming the cover depth of the culvert of 1m or more, the invert level of the culvert will be 1.3mPD or lower, which is lower than high tide level). In this case, the drainage capacity of the culvert cannot be simply calculated using the equation 6 of RD/GN/035, which has assumed that the flow is uniform and is not affected by backwater. Therefore, it is suggested to liaise with DSD to determine whether the concerned carrier drains are capable to convey the stormwater runoff from relevant catchments if their flow capacities are suspected to be affected by tide.
3. For steep watercourses running towards roads, regular desiliting and maintenance for the sections of watercourses near the roads is suggested to avoid overflow of stormwater runoff from the watercourses onto the road pavements due to blockage.
4. For gullies, channels, intakes suited next to amenity, regular desiliting is suggested to avoid overflow of stormwater runoff from the drainage networks onto the road pavements due to blockage.
5. At low-lying road sections/sag points (such as ground level of about 5mPD or less), stormwater runoff may be difficult or even unable to be conveyed into carrier drains during high tide due to backwater effect. In that case, interception of the stormwater runoff at more upstream road sections is suggested.

- End -


CWR-Stage 1.pdf
Area C1
Area C2
Area C3
Area C4
Area C5
Area C6
Area C7
PAMELA YOUDE NETHERSOLE EASTERN HOSPITAL
Chai Wan Park
Tennis Court
Basketball Court
Football Field
Playground
Columbarium


CWR-Stage 2.pdf
Note 11
Note 10
Area C1
(see Note 1)
Area C3
(see Note 3)
Note 12
Area C2
(see Note 2)
Note 9
Note 13
Note 14
Area C4
(see Note 4)
Note 15
Note 16
Note 17
Area C5
(see Note 5)
Note 29
Area C8
(see Note 8)
Note 30
Note 33
Note 32
Note 28
Note 27
Note 31
Note 18
Note 26
Note 19
Area C6
(see Note 6)
Note 25
Note 21
Note 20
Note 23
Note 24
Area C7
(see Note 7)
Note 22

Note 1

As there is a retaining wall at the toe of slope with interception channel immediately next to the wall, it is expected that the stormwater runoff in Area C1 will not run onto the road pavement.

Retaining wall with interception channel at slope toe

Note 2

As there is an interception channel at the toe of slope, it is expected that the stormwater runoff in Area C2 will not run onto the road pavement.

Interception channel at slope toe

Note 3

As there is no interception channel at the toe of slope, it is expected that the stormwater runoff in Area C3 will run onto the road pavement.

No interception channel at slope toe

Note 4

As there is no interception channel at the toe of slope, it is expected that the stormwater runoff in Area C4 will run onto the road pavement.

No interception channel at slope toe

Note 5

There is an interception channel along almost the entire section (except a short section) of the toe of slope. Eventually, it is expected that only the stormwater runoff in a small part of Area C5 (highlighted in red in CWR-Stage 2.pdf) will run onto the road pavement.

Interception channel along almost the entire section of slope toe

No interception channel along a short section of slope toe

Note 6

As there is no interception channel at the toe of slope, it is expected that the stormwater runoff in Area C6 will run onto the road pavement.

No interception channel at slope toe

Note 7

There is an interception channel along almost the entire section (except a short section) of the toe of slope. Eventually, it is expected that the stormwater runoff in a small part of Area C7 (highlighted in red in CWR-Stage 2.pdf) will run onto the road pavement.

Interception channel along almost the entire section of slope toe

No interception channel along a short section of slope toe

Note 8

There is no interception channel at the entrance/exit. Stormwater on Area C8 will likely run onto the road pavement.

No interception channel at entrance/exit

Note 9

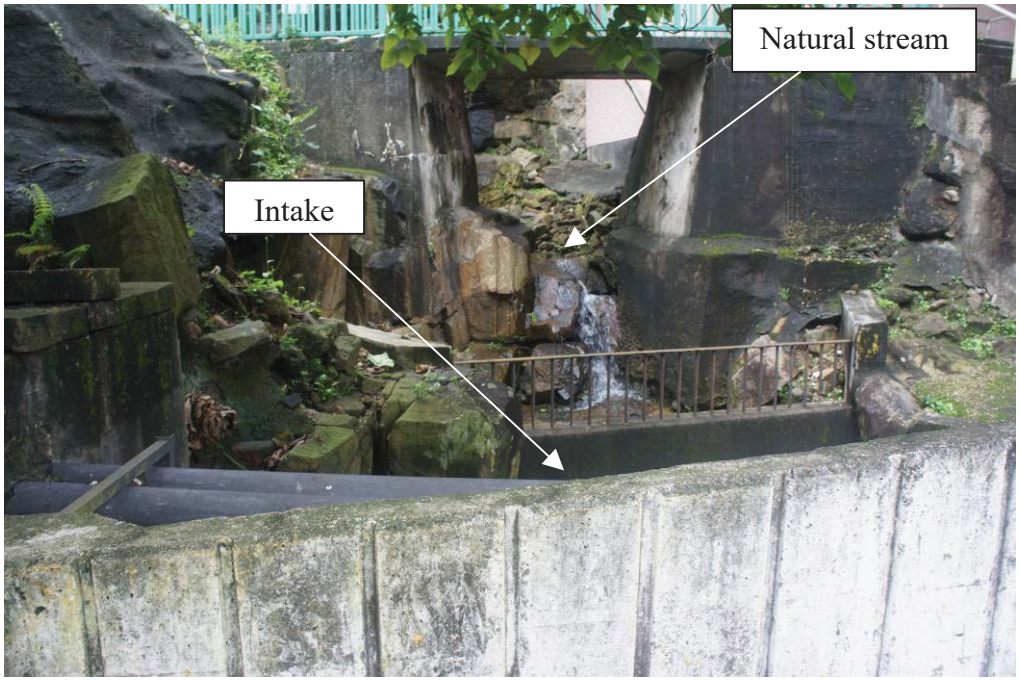
There are two natural streams conveying stormwater runoff from slope and they will run into two intakes suited next to the road pavement. If the intakes are blocked (e.g. by large size stones and rubbish), considerable quantity of stormwater may overflow onto the road pavement. Also, as there is no interception channel at the toe of slope between the streams, a small portion of stormwater runoff from the slope my run onto the road pavement.

Natural streams and intakes

No interception channel at toe of the slope between the two natural streams

Note 10

There is a natural stream conveying stormwater runoff from slope and it will run into an intake suited next to the road pavement. If the intake is blocked (e.g. by large size stones and rubbish), considerable quantity of stormwater may overflow onto the road pavement.



Natural stream and intake

Note 11

There is a steep channel conveying stormwater runoff from a slope to a drain pit next to the road pavement. It is considered that the drain pit is suspicious for blockage by leaves or debris and overflow to road pavement may occur.

Steep channel

Note 12

There is no interception channel at the entrance/exit Stormwater will likely run from the development onto the road pavement.

No interception channel at entrance/exit

Note 13
Double gullies are provided at both sides of the road junction.


Double gullies at both sides of road junction

Note 14
Double gullies are provided at both sides of the road junction.


Double gullies at both sides of road junction

Note 15
Double gullies are provided at one side of the road junction.

Double gullies at one side of road junction

Note 16
Many gullies are provided at both sides of the road junction.

Many gullies at both sides of road junction

Note 17
Many gullies are provided at roundabout (roughly around 40 nos. or more).








Many gullies at roundabout

Note 18

There is no interception channel at the entrances/exits of the development; stormwater will likely run from the development onto the road pavement.




No interception channel at entrances/exits

Note 19

There is no interception channel at the entrance/exit. Stormwater on the road pavement will likely run into the development.

No interception channel at entrance/exit

Note 20
Triple gullies are provided at both sides of the road junction.

Triple gullies at both sides of road junction

Note 21
Triple gullies are provided at road junction.

Triple gullies at road junction

Note 22
Triple gullies are provided at both sides of the road junction.

Triple gullies at both sides of road junction

Note 23

As there is an interception channel next to amenity, it is expected that no stormwater runoff will run from the amenity onto the road pavement.

Interception channel next to amenity

Note 24

As there is an interception channel at the toe of the slope, it is expected that no stormwater runoff will run from the slope onto the road pavement.

Interception channel at slope toe

Note 25

As there is a number of interception channels in the park, it is expected that almost no stormwater runoff will run from the park onto the road pavement.

Interception channels in park

Note 26

As there are interception channels at the entrances/exit of the park, it is expected that almost no stormwater runoff will run from the park onto the road pavement.

Interception channels at entrances/exits

Note 27
Double gullies are provided at both sides of the road junction.

Double gullies at both sides of road junction

Note 28
Multiple gullies are provided near the road junction.

Multiple gullies near road junction

Note 29

As there are interception channels at the entrances/exits of the parking area, it is expected that almost no stormwater runoff will run from the parking area onto the road pavement.

Interception channels at entrances/exits

Note 30

As there is no interception channel at the entrance/exit of the development, it is expected that stormwater runoff may run from the road pavement into the development.

No Interception channel at entrance/exit

Note 31

As there is no interception channel at the entrance/exit of the park, it is expected that stormwater runoff will run from the small park onto the development.

No Interception channel at entrance/exit

Note 32

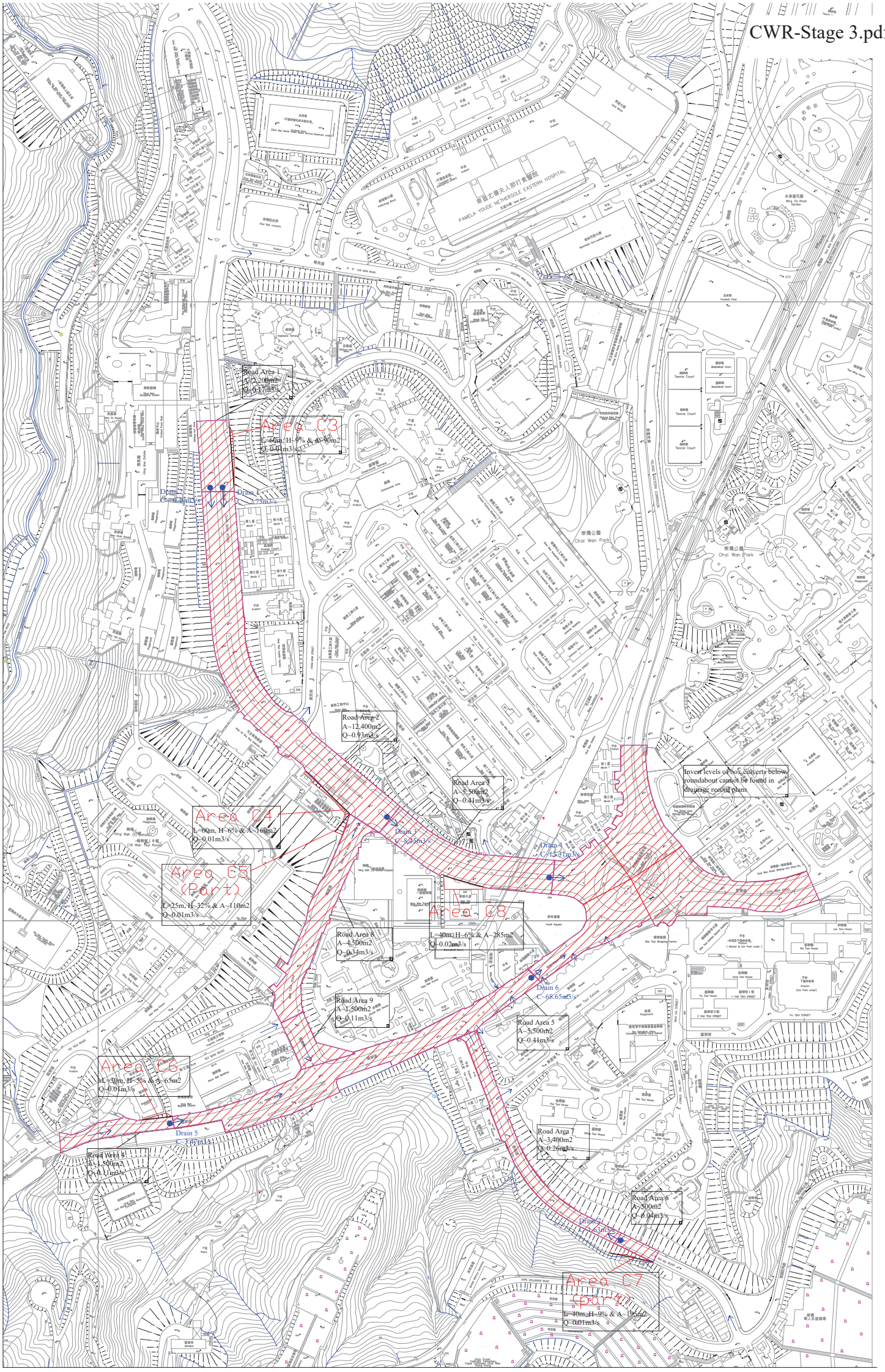
Double gullies are provided near both sides of the road junction.

Double gullies near both sides of road junction

Note 33

Multiple gullies are provided near the road junction.

Multiple gullies near road junction


Road Area 1
A~2,200m2
Q~0.17m3/s
Area C3
L~60m, H~9% & A~90m2
Q~0.01m3/s
Drain 2
C~4.43m3/s
Drain 1
C~4.77m3/s
Road Area 2
A~12,400m2
Q~0.93m3/s
Road Area 3
A~5,500m2
Q~0.41m3/s
Area C4
L~60m, H~6% & A~160m2
Q~0.01m3/s
Drain 3
C~8.45m3/s
Drain 4
C~15.31m3/s
Area C5 (Part)
L~25m, H~32% & A~110m2
Q~0.01m3/s
Area C8
L~40m, H~6% & A~285m2
Q~0.02m3/s
Road Area 8
A~4,500m2
Q~0.34m3/s
Drain 6
C~68.65m3/s
Road Area 9
A~1,500m2
Q~0.11m3/s
Road Area 5
A~5,500m2
Q~0.41m3/s
Area C6
L~30m, H~5% & A~65m2
Q~0.01m3/s
Drain 5
C~2.47m3/s
Road Area 4
A~1,500m2
Q~0.11m3/s
Road Area 7
A~3,400m2
Q~0.26m3/s
Road Area 6
A~500m2
Q~0.04m3/s
Drain 7
C~5.63m3/s
Area C7 (Part)
L~40m, H~9% & A~195m2
Q~0.01m3/s
Inver levels of box culverts below roundabout cannot be found in drainage record plans
Chai Wan Park
PAMELA YOUDE NETHERSOLE EASTERN HOSPITAL

Adequacy of Drains 1 - 7

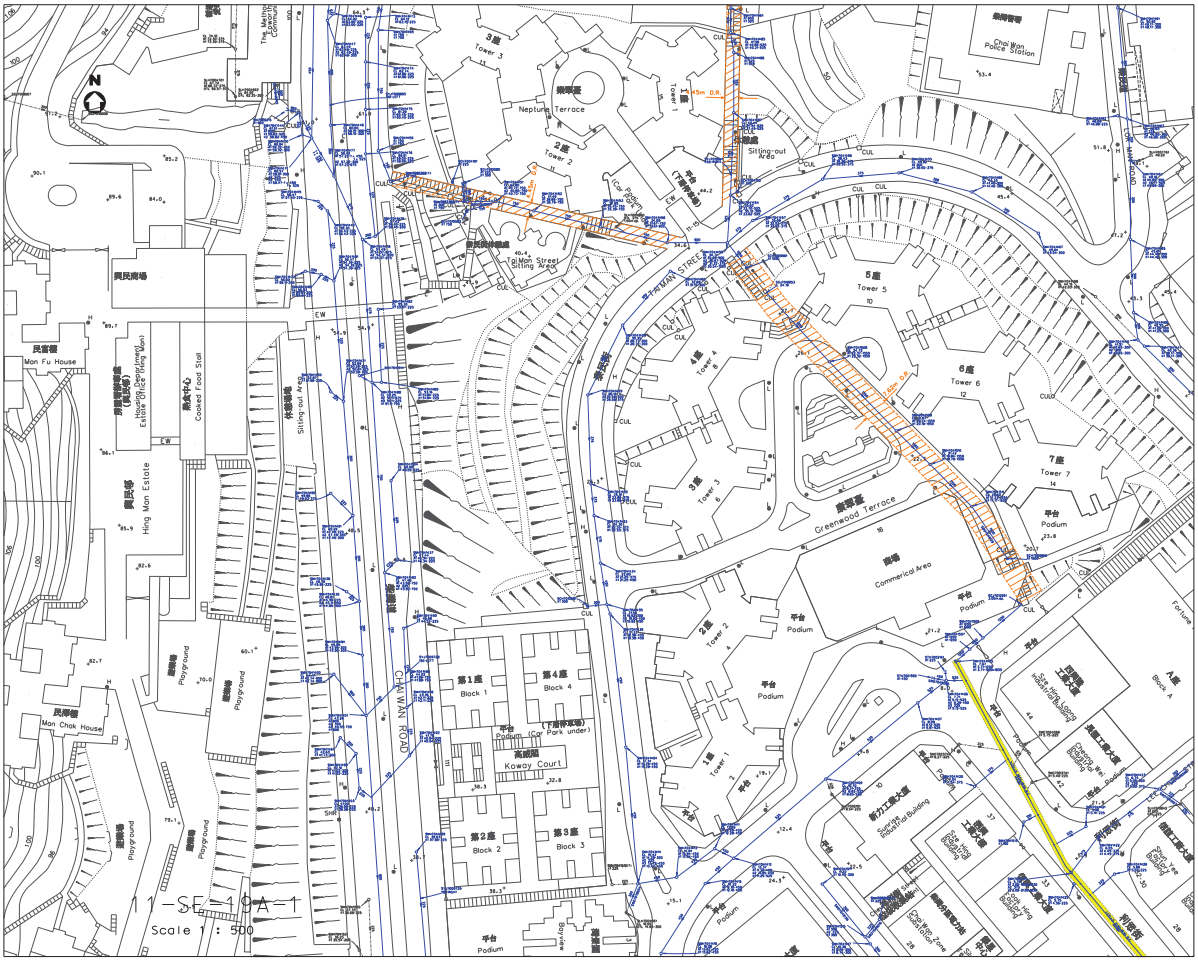
Result of 1 in 50 Yrs Design Period

Location of Pipes

	Node No.	Flood Depth (m)	Node No.	Flood Depth (m)	Pipe Size (mm)	Handle 50 Yrs Design Storm ?
Drain 1	SMH7041492	0.316	SMH7041495	1.905	750	No
Drain 2	SMH7041439	0	SMH7041494	0	300	Yes
Drain 3	SMH7040354	0	SMH7040335	0.002	1350	No
Drain 4	SMH7040335	0.002	SMH7059774	1.184	1350	No
Drain 5	SMH7061143	0.071	SMH7061148	no record *	750	No
Drain 6	SMH7052704	0	SMH7027350	0.27	2440	No
Drain 7	SMH7027381	0	SMH7027378	0	525	Yes

* no record exists in DMP model

Please note that the above figures are ***for information only*** . All records are extracted from the past DMP Study submitted by Consultants, pipe network in the model may be not updated and not tallied with existing drainage record.


11-SE-10A-1
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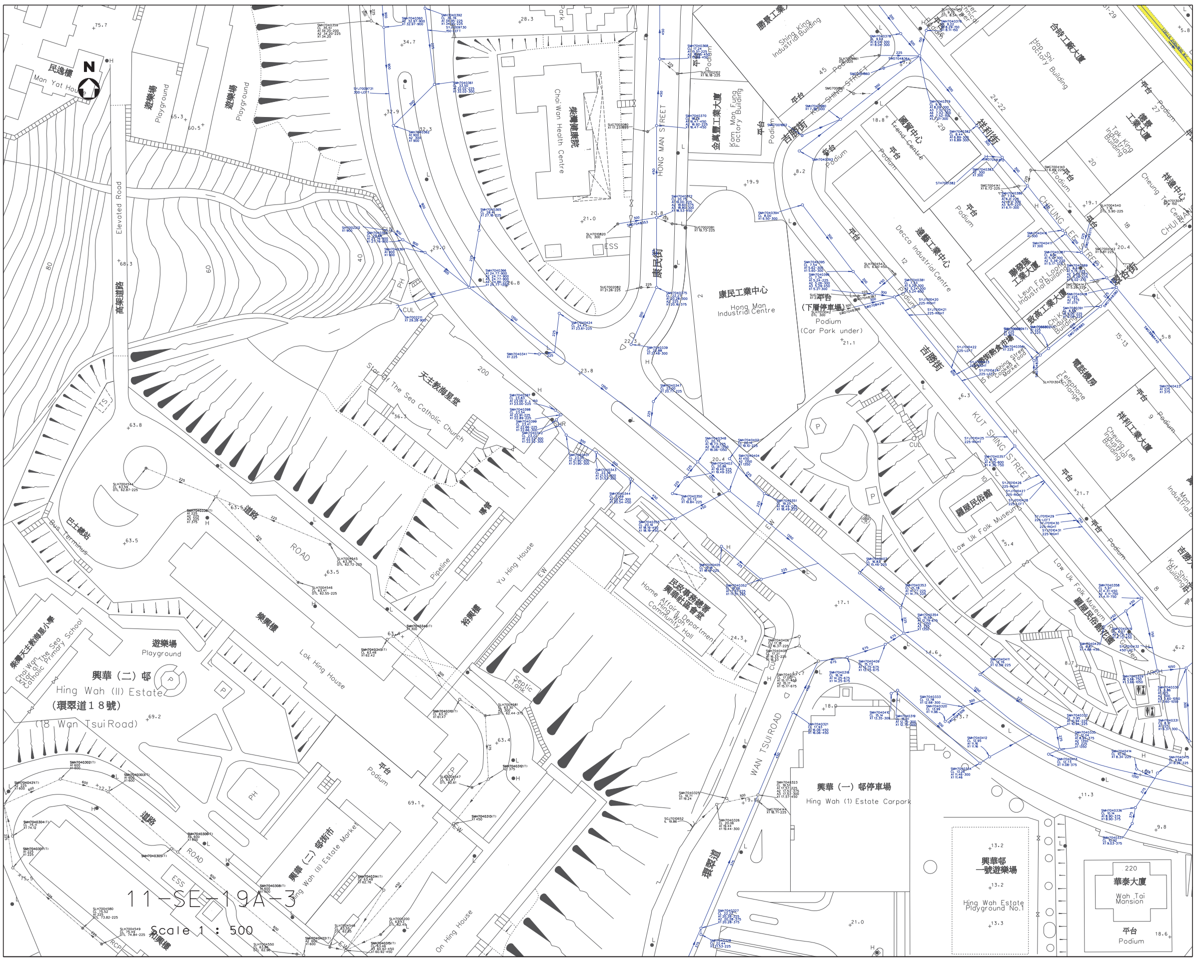
CHAI WAN ROAD
MAN STREET
Neptune Terrace
Greenwood Terrace
Koway Court
Hing Man Estate
Man Fu House
Man Chak House
Choi Wan Police Station
Tai Man Street Sitting Area
Sitting-out Area
Commercial Area
Podium
Playground
Block 1
Block 2
Block 3
Block 4
Tower 1
Tower 2
Tower 3
Tower 4
Tower 5
Tower 6
Tower 7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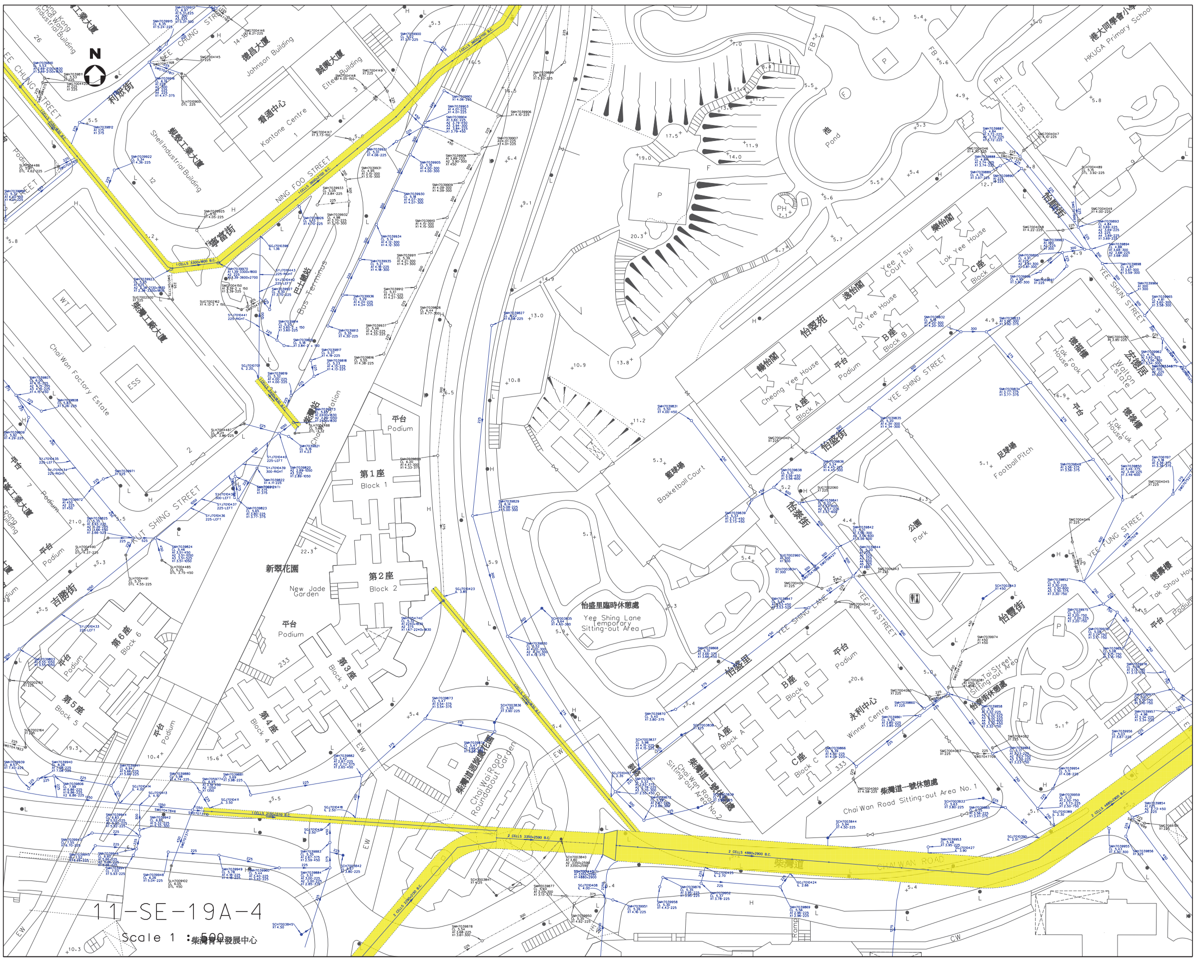
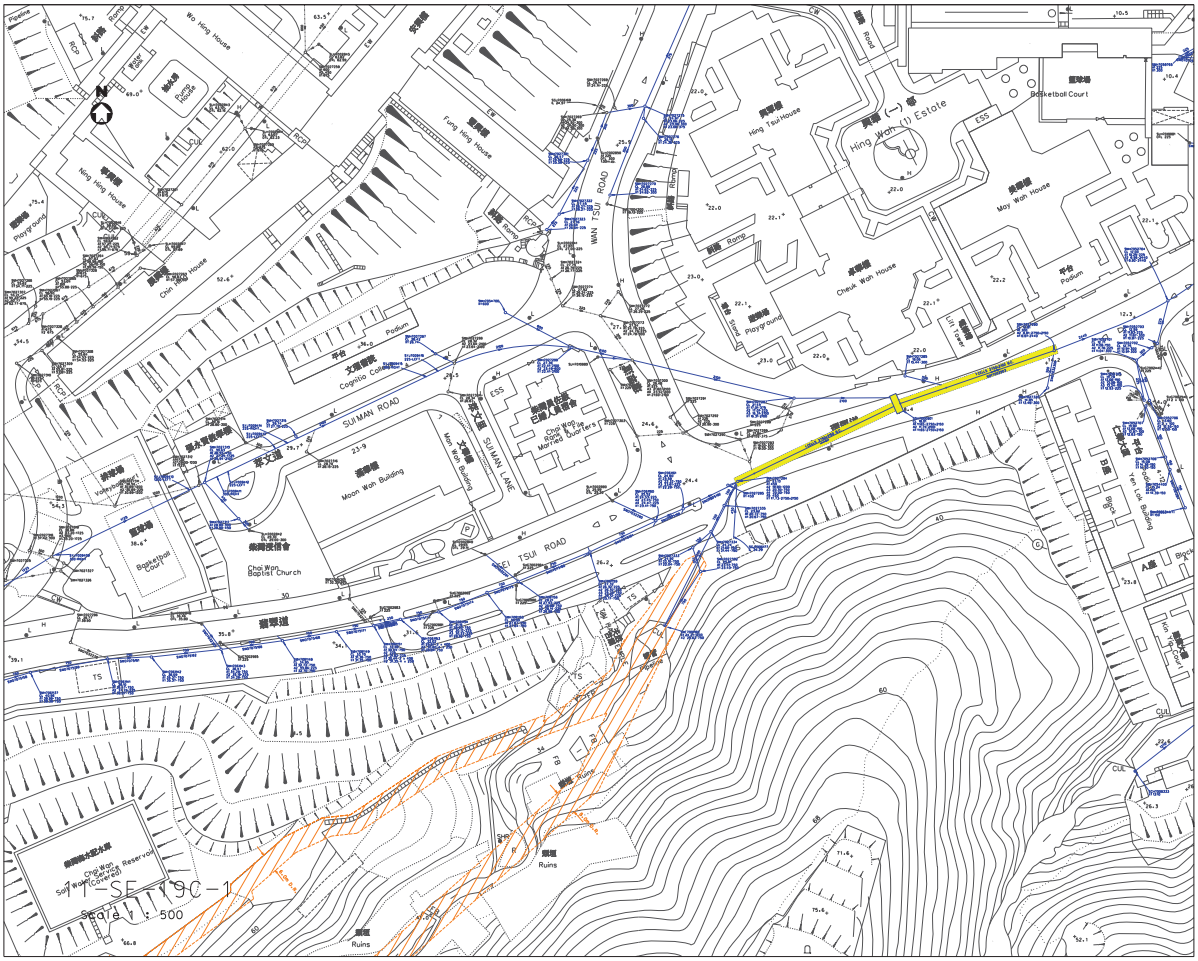
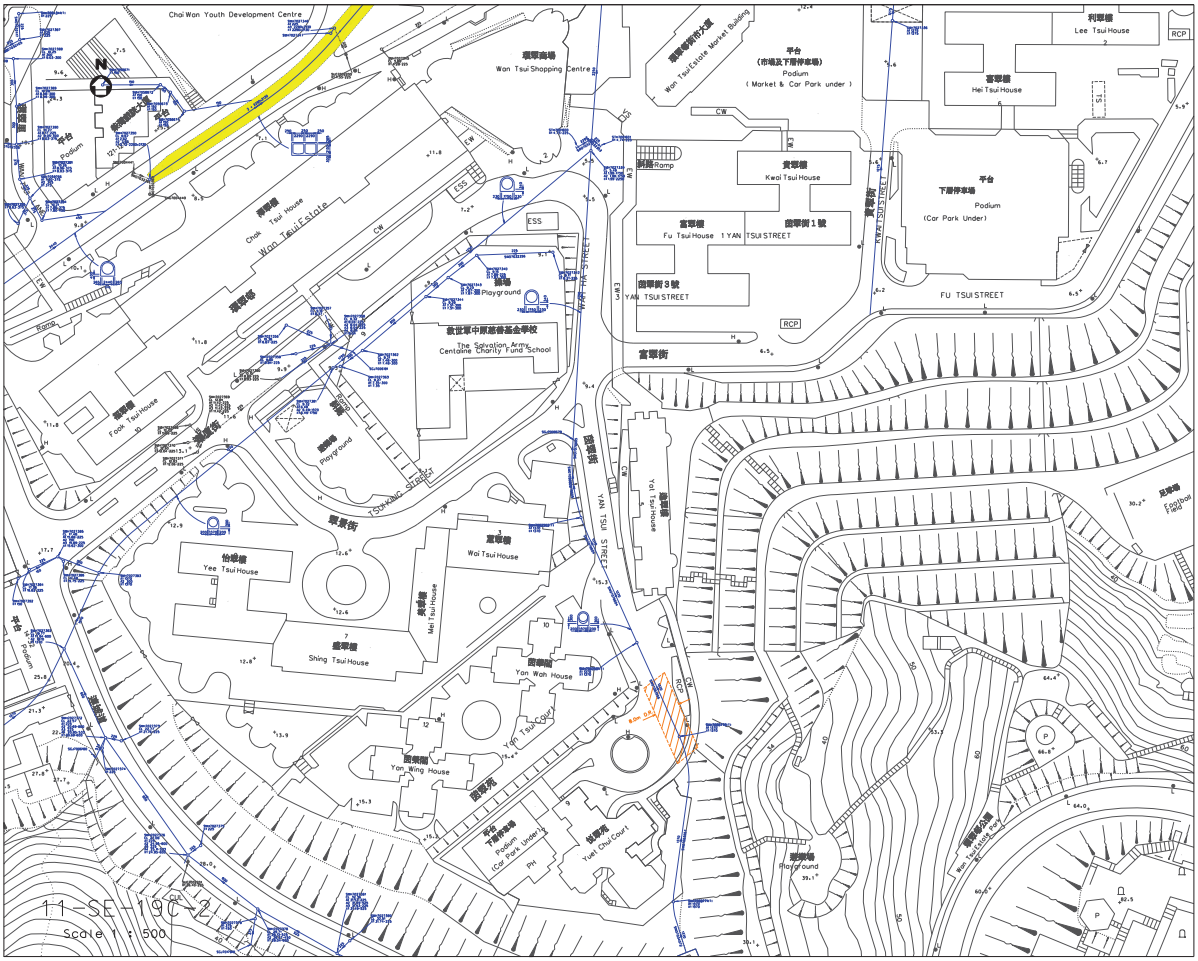
Scale 1 : 500
民逸樓
Man Yat House
遊樂場
Playground
高架道路
Elevated Road
巴士總站
Bus Terminus
天主教海星堂
The Sea Catholic Church
樂興樓
Lok Hing House
裕興樓
Yu Hing House
興華（二）邨
Hing Wah (II) Estate
（環翠道18號）
(18 Wan Tsui Road)
平台
Podium
興華（二）邨街市
Hing Wah (II) Estate Market
On Hing House
柴灣健康院
Chai Wan Health Centre
HING MAN STREET
康民街
金萬豐工業大廈
Kam Man Fung Factory Building
康民工業中心
Hong Man Industrial Centre
（下層停車場）
(Car Park under)
民政事務總署
興華社區會堂
Home Affairs Department Community Hall
WAN TSUI ROAD
環翠道
興華（一）邨停車場
Hing Wah (I) Estate Carpark
興華邨
一號遊樂場
Hing Wah Estate
Playground No.1
華泰大廈
Wah Tai Mansion
達藝工業中心
Decca Industrial Centre
KUT SHING STREET
吉勝街
CHEUNG LEE STREET
祥利街
羅屋民俗館
Law Uk Folk Museum
電話機樓
Telephone Exchange
合時工業大廈
Hop Shi Factory Building
誠興工業大廈
Shing King Industrial Building
祥利工業大廈
Cheung Lee Industrial Building
平台
Podium


N
11-SE-19A-4
Scale 1 : 500
柴灣青年發展中心
NING FOO STREET
寧富街
利眾街
LEE CHUNG STREET
Johnson Building
Kantone Centre
Eltee Building
Shell Industrial Building
柴灣工廠大廈
Chai Wan Factory Estate
ESS
WT
新翠花園
New Jade Garden
第1座
Block 1
第2座
Block 2
第3座
Block 3
第4座
Block 4
第5座
Block 5
第6座
Block 6
平台
Podium
吉勝街
KUT SHING STREET
Bus Terminus
Station
池
Pond
P
PH
怡翠苑
Yee Tsui Court
樂怡閣
Lok Yee House
逸怡閣
Yat Yee House
暢怡閣
Cheung Yee House
A座
Block A
B座
Block B
C座
Block C
YEE SHING STREET
怡盛街
YEE SHUN STREET
怡順街
籃球場
Basketball Court
足球場
Football Pitch
公園
Park
怡盛里
YEE SHING LANE
怡盛里臨時休憩處
Yee Shing Lane Temporary Sitting-out Area
怡豐街
YEE FUNG STREET
永利中心
Winner Centre
柴灣道一號休憩處
Chai Wan Road Sitting-out Area No. 1
柴灣道迴旋處花園
Chai Wan Road Roundabout Garden
柴灣道
CHAI WAN ROAD
YEE CHUNG STREET
TAI FUNG STREET
HKUGA Primary School
港大同學會小學
Tak Fook House
Tak Lok House
Tak Shou House
EW
CW
Sitting-out Area


SUI MAN ROAD
SUI MAN LANE
TSUI WAN ROAD
Hing Wan (1) Estate
Hing Tau House
Cheuk Wah House
Moy Wah House
Fung Hing House
Wo Hing House
Wing Hing House
Chi Hing House
Moon Wah Building
Moy Wah Building
Chui Wah Baptist Church
Basketball Court
Podium
Ruins
Scale : 1 : 500

SE 19C-1


11-SE-19C-2
Scale 1 : 500