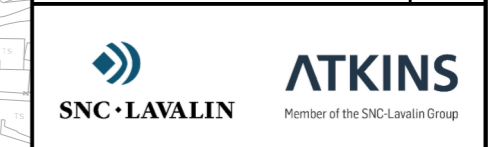


KEY PLAN
N.T.S.

- LEGEND:**
- PROPOSED HOUSING DEVELOPMENT BOUNDARY (SUBJECT TO DETAILED SURVEY AND DESIGN)
 - EXISTING CHANNEL / STREAM
 - CATCHMENTS BOUNDARY
 - CATCHMENTS SURFACE FLOW DIRECTION
 - EXISTING STORM DRAINAGE SYSTEM
 - PROPOSED STORM DRAINAGE SYSTEM
 - EXISTING DRAINAGE SYSTEM TO BE DEMOLISHED

| Rev. | Date | Description | By | Crkd | App'd |
|------|----------|----------------------------|----|------|-------|
| C | OCT 2022 | FOURTH ISSUE (FINAL REV.2) | CC | KL | DL |
| B | JUN 2022 | THIRD ISSUE (FINAL REV.1) | CC | KL | DL |
| C | MAR 2022 | SECOND ISSUE (FINAL) | CC | KL | DL |
| A | DEC 2021 | FIRST ISSUE (DRAFT) | CC | KL | DL |

FEASIBILITY STUDY



Client
CEDD 土木工程拓展署
 Civil Engineering and Development Department

土木工程處
 房屋工程3部
 Civil Engineering Office
 Housing Projects 3 Division

Project Title
 AGREEMENT NO. 46/2020 (CE)
 TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING DEVELOPMENT IN ZONE 1 (2021-2024) - FEASIBILITY STUDY (TASK ORDER 4 - SHAP PAT HEUNG ROAD)

Drawing Title
 CATCHMENT PLAN AT SHAP PAT HEUNG ROAD - AFTER DEVELOPMENT

| Scale | Designed | Drawn | Checked | Authorised |
|---------------|----------|----------|----------|------------|
| 1:1000 | CC | CAD | KL | DL |
| Original Size | Date | Date | Date | Date |
| A1 | DEC 2021 | DEC 2021 | DEC 2021 | DEC 2021 |

Drawing Number: 5210095-ATK-DIA-1031
 Revision: D

Agreement No. CE 46/2020(CE)
Term Consultancy for Site Formation and Infrastructure Works
for Proposed Housing Developments in Zone 1 (2021 - 2024) - Feasibility Study (Task Order 4)
Appendix A2 – Hydraulic Modelling Results – Baseline and Proposed

CRITICAL NODE LOCATION PLAN



Agreement No. CE 46/2020(CE)
Term Consultancy for Site Formation and Infrastructure Works
for Proposed Housing Developments in Zone 1 (2021 - 2024) - Feasibility Study (Task Order 4)
Appendix A2 – Hydraulic Modelling Results – Baseline and Proposed

RESULTS AT CRITICAL NODES:

| Node name | Baseline (Mid 21st Century Climate Change) | | | | | | Proposed (Mid 21st Century Climate Change) | | | | | | Difference (Proposed-Baseline) |
|-------------------------------|--|------------------------------|-----------|------------------------------|-----------|---------------------|--|------------------------------|-----------|------------------------------|-----------|---------------------|--------------------------------|
| | Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | |
| | | Water Level | Freeboard | Water Level | Freeboard | | | Water Level | Freeboard | Water Level | Freeboard | | |
| [-] | [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] | |
| SCH1026461/ Proposed STMH2 | 5.54 | 5.56 | -0.02 | 5.39 | 0.15 | 5.56 | 6.50 | 4.96 | 1.54 | 4.99 | 1.51 | 4.99 | -0.57 |
| SCH1028421/ Proposed STMH1 | 5.57 | 5.91 | -0.34 | 5.62 | -0.05 | 5.62 | 6.50 | 4.95 | 1.55 | 4.96 | 1.54 | 4.96 | -0.67 |
| SMH1045840 | 6.60 | 5.99 | 0.61 | 5.71 | 0.89 | 5.99 | 6.60 | 4.95 | 1.65 | 4.95 | 1.65 | 4.95 | -1.04 |
| SMH1047868 | 6.97 | 5.53 | 1.44 | 5.36 | 1.61 | 5.53 | 6.97 | 4.94 | 2.03 | 4.94 | 2.03 | 4.94 | -0.59 |
| SMH1047869 | 6.75 | 5.42 | 1.33 | 5.28 | 1.47 | 5.42 | 6.75 | 4.94 | 1.81 | 4.95 | 1.80 | 4.95 | -0.47 |
| SMH1047870 | 6.41 | 5.40 | 1.01 | 5.15 | 1.26 | 5.40 | 6.41 | 4.95 | 1.46 | 4.95 | 1.46 | 4.95 | -0.45 |
| SGJ1028420 | 6.54 | 5.35 | 1.19 | 5.06 | 1.48 | 5.35 | 6.54 | 4.97 | 1.57 | 4.96 | 1.58 | 4.97 | -0.38 |

| Proposed (End 21st Century Climate Change) | | | | | | Difference (Proposed-Baseline) |
|--|------------------------------|-----------|------------------------------|-----------|---------------------|--------------------------------|
| Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | |
| | Water Level | Freeboard | Water Level | Freeboard | | |
| [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] |
| 6.50 | 5.10 | 1.40 | 5.30 | 1.20 | 5.30 | -0.26 |
| 6.50 | 5.08 | 1.42 | 5.20 | 1.30 | 5.20 | -0.42 |
| 6.60 | 5.08 | 1.52 | 5.21 | 1.39 | 5.21 | -0.78 |
| 6.97 | 5.07 | 1.90 | 5.19 | 1.78 | 5.19 | -0.34 |
| 6.75 | 5.08 | 1.67 | 5.20 | 1.55 | 5.20 | -0.23 |
| 6.41 | 5.08 | 1.33 | 5.29 | 1.12 | 5.29 | -0.11 |
| 6.54 | 5.10 | 1.44 | 5.21 | 1.33 | 5.21 | -0.14 |

Preliminary Assessment of Water Level and Freeboard with Corrigendum No. 1/2022

Adoption of Corrigendum No. 1/2022

| Node name | Baseline (Mid 21st Century Climate Change) | | | | | | Proposed (Mid 21st Century Climate Change) | | | | | | Difference (Proposed-Baseline) | Difference (Corrigendum-SDM) |
|-------------------------------|--|------------------------------|-----------|------------------------------|-----------|---------------------|--|------------------------------|-----------|------------------------------|-----------|---------------------|--------------------------------|------------------------------|
| | Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | | |
| | | Water Level | Freeboard | Water Level | Freeboard | | | Water Level | Freeboard | Water Level | Freeboard | | | |
| [-] | [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] | [mPD] |
| SCH1026461/ Proposed STMH2 | 5.54 | 5.56 | -0.02 | 5.39 | 0.15 | 5.56 | 6.50 | 4.99 | 1.51 | 5.02 | 1.48 | 5.02 | -0.54 | 0.03 |
| SCH1028421/ Proposed STMH1 | 5.57 | 5.91 | -0.34 | 5.62 | -0.05 | 5.62 | 6.50 | 4.98 | 1.52 | 4.99 | 1.51 | 4.99 | -0.63 | 0.03 |
| SMH1045840 | 6.60 | 5.99 | 0.61 | 5.71 | 0.89 | 5.99 | 6.60 | 4.98 | 1.62 | 4.98 | 1.62 | 4.98 | -1.01 | 0.03 |
| SMH1047868 | 6.97 | 5.53 | 1.44 | 5.36 | 1.61 | 5.53 | 6.97 | 4.97 | 2.00 | 4.97 | 2.00 | 4.97 | -0.56 | 0.03 |
| SMH1047869 | 6.75 | 5.42 | 1.33 | 5.28 | 1.47 | 5.42 | 6.75 | 4.97 | 1.78 | 4.98 | 1.77 | 4.98 | -0.44 | 0.03 |
| SMH1047870 | 6.41 | 5.40 | 1.01 | 5.15 | 1.26 | 5.40 | 6.41 | 4.98 | 1.43 | 4.98 | 1.43 | 4.98 | -0.42 | 0.03 |
| SGJ1028420 | 6.54 | 5.35 | 1.19 | 5.06 | 1.48 | 5.35 | 6.54 | 5.00 | 1.54 | 4.99 | 1.55 | 5.00 | -0.35 | 0.03 |

| Proposed (End 21st Century Climate Change) | | | | | | | |
|--|------------------------------|-----------|------------------------------|-----------|---------------------|--------------------------------|------------------------------|
| Ground level | 50Yrs Rain + 10Yrs Sea Level | | 10Yrs Rain + 50Yrs Sea Level | | Maximum Water Level | Difference (Proposed-Baseline) | Difference (Corrigendum-SDM) |
| | Water Level | Freeboard | Water Level | Freeboard | | | |
| [mPD] | [mPD] | [m] | [mPD] | [m] | [mPD] | [mPD] | [mPD] |
| 6.50 | 5.74 | 0.76 | 5.97 | 0.53 | 5.97 | 0.41 | 0.67 |
| 6.50 | 5.72 | 0.78 | 5.85 | 0.65 | 5.85 | 0.23 | 0.65 |
| 6.60 | 5.72 | 0.88 | 5.86 | 0.74 | 5.86 | -0.13 | 0.65 |
| 6.97 | 5.71 | 1.26 | 5.84 | 1.13 | 5.84 | 0.31 | 0.65 |
| 6.75 | 5.72 | 1.03 | 5.85 | 0.90 | 5.85 | 0.43 | 0.65 |
| 6.41 | 5.72 | 0.69 | 5.95 | 0.46 | 5.95 | 0.55 | 0.66 |
| 6.54 | 5.74 | 0.80 | 5.86 | 0.68 | 5.86 | 0.51 | 0.65 |

Updated factor of rainfall increase due to climate change in Corrigendum was applied to update the water level calculations.

Rainfall Increase due to Climate Change-
 Mid Century: 10.4% (SDM) & 11.1% (Corrigendum)
 End Century: 13.8% (SDM) & 28.1% (Corrigendum)

Example: SCH1026461 / Proposed STMH2 in 50 yrs Rain + 10 Yrs Sea Level
 $4.96 / (1+10.4\%) * (1+11.1\%) = 4.99$

Minimum Freeboard occurs for SMH1047870 = 0.46 m
 All affected manholes could maintain a freeboard not less than 300 mm