Relocation of Sha Tin Sewage Treatment Works to Caverns – Feasibility Study
Stage 2 Public Engagement Focus Group Meeting

September 2013
## Rundown

<table>
<thead>
<tr>
<th>Time</th>
<th>Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 p.m.</td>
<td>Introduction of Rundown</td>
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<tr>
<td>7:05 p.m.</td>
<td>Welcoming Remarks</td>
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<tr>
<td>7:10 p.m.</td>
<td>Presentation</td>
</tr>
<tr>
<td>7:45 p.m.</td>
<td>Discussion</td>
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<tr>
<td>8:45 p.m.</td>
<td>Conclusion and Closing Remarks</td>
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</tbody>
</table>
Progress of the Feasibility Study
Progress of the Feasibility Study

- Completed the re-confirmation review of the proposed relocation site
- Completed Stage 1 Public Engagement
- Substantially completed all preliminary technical assessments, including odour impact, blasting vibration and traffic impact
- Ground Investigation works are in progress
- Stage 2 Public Engagement activities are in progress
Proposed Relocation Site
(Nui Po Shan of A Kung Kok)
The geology of this area, belonging to hard granite with no obvious weak zones and faults, is most suitable for construction of large caverns

- Minimize the effect on the upstream sewerage and the downstream disposal network
- Majority of the area belongs to government land
- With appropriate measures, the traffic impact due to the relocation of the STSTW could be minimized
- An independent panel comprised of three professors from HKUST examined the methodology and result of the review
Examples of Cavern Sewage Treatment Works in Nordic Countries and Underground Sewage Treatment Works in Asia
Examples of Cavern Sewage Treatment Works in Nordic Countries

- **Viikkumäki Wastewater Treatment Plant**
  - Location: Helsinki, Finland
  - Commissioned: 1994
  - Design Capacity: 270,000 m³/day
  - Distance from the closest community: 50 m

- **Kakolannäki Wastewater Treatment Plant**
  - Location: Turku, Finland
  - Commissioned: 2008
  - Design Capacity: 144,000 m³/day
  - Distance from the closest community: 60 m

- **Bekkelaget Wastewater Treatment Plant**
  - Location: Oslo, Norway
  - Commissioned: 1964
  - Design Capacity: 125,000 m³/day

- **VEAS Wastewater Treatment Plant**
  - Location: Oslo, Norway
  - Commissioned: 1982
  - Design Capacity: 414,700 m³/day

- **Käppala Wastewater Treatment Plant**
  - Location: Stockholm, Sweden
  - Commissioned: 1969
  - Design Capacity: 220,000 m³/day

- **Henrikadals Wastewater Treatment Plant**
  - Location: Stockholm, Sweden
  - Commissioned: 1941
  - Design Capacity: 388,800 m³/day
Examples of Underground Sewage Treatment Works in Asia

- Dong Bu STP
- Suyeong STP
- Ochiai WRC
- Ariake WRC
- Hayama Purification Center
<table>
<thead>
<tr>
<th></th>
<th>Hayama Purification Center</th>
<th>Ochiai WRC</th>
<th>Ariake WRC</th>
<th>Dong Bu STP</th>
<th>Suyeong STP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td>Japan</td>
<td>Japan</td>
<td>Japan</td>
<td>Korea</td>
<td>Korea</td>
</tr>
<tr>
<td><strong>City</strong></td>
<td>Kanagawa</td>
<td>Tokyo</td>
<td>Tokyo</td>
<td>Busan</td>
<td>Busan</td>
</tr>
<tr>
<td><strong>Commissioning Year</strong></td>
<td>1999</td>
<td>1964</td>
<td>1995</td>
<td>2006</td>
<td>1988</td>
</tr>
<tr>
<td><strong>Design Capacity (m³/d)</strong></td>
<td>14,100</td>
<td>450,000</td>
<td>30,000</td>
<td>135,000</td>
<td>452,000</td>
</tr>
<tr>
<td><strong>Distance with Adjacent Residential/Sensitive Building (m)</strong></td>
<td>70</td>
<td>20</td>
<td>200</td>
<td>80</td>
<td>200</td>
</tr>
</tbody>
</table>
Stage 1 Public Engagement (8.11.2012 – 31.3.2013)
Stage 1 Public Engagement Activities

- Media Briefing – 8.11.2012
- Focus Group Meeting – 1.3.2013
- STDC/HEC Meeting – 7.3.2013
- Community Group Meeting – 16, 17, 23.3.2013
Stage 1 Public Engagement Activities

Roving Exhibition
The Interviewees believe the relocation of STSTW to caverns could benefit the community and enhance the environment of Sha Tin.

- **Agree**: 944 replies (72%)
- **Not Agree**: 216 replies (16%)
- **No Comment/ No Idea**: 158 replies (12%)
Questionnaire Survey

The Interviewees believe the relocation of STSTW to caverns can improve the following aspects (More than one option can be chosen)
Questionnaire Survey

The interviewees have the following concerns on the relocation of the STSTW to caverns (More than one option can be chosen)
# Stage 2 Public Engagement

<table>
<thead>
<tr>
<th>Roving Exhibitions</th>
<th>Date</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30/7 – 18/10</td>
<td>Community Centres/ Halls of Sha Tin District Office (Except for Sun Tin Wai Community Hall and Lek Yuen Community Hall)</td>
</tr>
<tr>
<td></td>
<td>26/7 – 29/10</td>
<td>Ground Floor, Kam Tai Shopping Centre, Ma On Shan</td>
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<tr>
<td></td>
<td>5/8 – 9/8, 23/9 – 30/9, 11/10 – 18/10</td>
<td>Ground Floor, Sha Tin Government Offices</td>
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<tr>
<td></td>
<td>9/8 – 12/8</td>
<td>Ground Floor, Sunshine City Plaza, Ma On Shan</td>
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<tr>
<td></td>
<td>16/8 – 19/8</td>
<td>Ground Floor, Fortune City One Plus, City One Sha Tin</td>
</tr>
<tr>
<td></td>
<td>23/8 – 26/8</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Floor, Sha Tin Plaza, Sha Tin</td>
</tr>
<tr>
<td></td>
<td>29/8 – 1/9, 21/9 – 28/9</td>
<td>Chevalier Garden, Ma On Shan</td>
</tr>
<tr>
<td></td>
<td>30/8 – 2/9</td>
<td>Ground Floor, Chung On Shopping Centre, Ma On Shan</td>
</tr>
<tr>
<td></td>
<td>31/8 – 1/9, 5/10 – 6/10</td>
<td>Hang Shun Street Public Transport Interchange, Ma On Shan</td>
</tr>
<tr>
<td></td>
<td>2/9 – 30/9</td>
<td>Ma On Shan Public Library</td>
</tr>
<tr>
<td></td>
<td>6/9 – 9/9</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Floor, Ma On Shan Plaza</td>
</tr>
<tr>
<td></td>
<td>20/9 – 23/9</td>
<td>MTR University Station</td>
</tr>
<tr>
<td></td>
<td>27/9 – 30/9</td>
<td>Public Footpath near Exit B of MTR Fo Tan Station</td>
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<thead>
<tr>
<th>Public Forum</th>
<th>Date</th>
<th>Venue</th>
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<tr>
<td></td>
<td>28/9 (2:30p.m. – 4:30p.m.)</td>
<td>Sha Tin Town Hall (Cultural Activities Hall)</td>
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</tbody>
</table>
Preliminary
Odour Impact Assessment
Preliminary Odour Impact Assessment

Tentative Location of Proposed Ventilation Shaft

Relationship between the Proposed Ventilation Shaft and Nearby Local Community
Preliminary Odour Impact Assessment

- Conduct Wind Tunnel Test to analyze wind speed, wind direction and develop wind rose for the proposed relocation site.
Preliminary Odour Impact Assessment

Tentative Location of Proposed Ventilation Shaft

<table>
<thead>
<tr>
<th>Nearby Estate / Village</th>
<th>Distance from Ventilation Shaft (About)</th>
<th>Predicted Maximum Odour Level (OU)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Horizontal Distance</td>
<td>Vertical Distance from Rooftop</td>
</tr>
<tr>
<td>Chevalier Garden</td>
<td>750m</td>
<td>150m</td>
</tr>
<tr>
<td>Kam Tai Court</td>
<td>1050m</td>
<td>100m</td>
</tr>
<tr>
<td>A Kung Kok Fishermen Village</td>
<td>700m</td>
<td>200m</td>
</tr>
<tr>
<td>Tai Shui Hang Village</td>
<td>950m</td>
<td>200m</td>
</tr>
<tr>
<td>Mui Tsz Lam Village</td>
<td>1200m</td>
<td>100m</td>
</tr>
</tbody>
</table>
Preliminary Odour Impact Assessment

Proposed Mitigation and Control Measures:
- Caverns as natural barriers
- Covering up the odour sources
- Applying negative pressure inside cavern to prevent leakage from access tunnel
- Installation of deodourising units
- Discharging exhausted air at height

- Enhancing the odour management of the sludge transportation
  - Sludge carrying vehicles with enclosed containers
  - Cleaning and drying before leaving the caverns
  - Regular inspections
Preliminary Blasting Vibration Assessment
Preliminary Blasting Vibration Assessment

- The allowable vibration limit for building/structure: 25mm/s
- For a more stringent control: 13mm/s

Predicted Blasting Vibration of Nearby Estates and Villages

<table>
<thead>
<tr>
<th>Nearby Estate/ Village</th>
<th>Predicted Blasting Vibration (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevalier Garden</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Kam Tai Court</td>
<td>&lt;5</td>
</tr>
<tr>
<td>A Kung Kok Fishermen Village</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Tai Shui Hang Village</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Mui Tsz Lam Village</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

Preliminary Proposed Mitigation and Control Measures:
- Pre-construction survey & set up monitoring points
- Hoarding, noise barrier and other blasting containment
- The blasting operation to be controlled and monitored
- Liaison office to be set up to update nearby estates/villages regularly on schedule of blasting operations
Preliminary Traffic Impact Assessment
Preliminary Traffic Impact Assessment

**Construction Stage**
- Preliminary Mitigation Measures for A Kung Kok Street
  - 2 temporary traffic management schemes should be further studied in the design stage
  - The anticipated traffic impact to the nearby area will be very minimal
- Restriction on construction vehicles during morning peak hours

**Operation Stage**
- The amount of sludge production and traffic volume of sludge carrying vehicles would be similar to current situation (about 20 vehicles per day) after relocation
- The operation of relocated STSTW will not cause any adverse traffic impact to the nearby road network.
Preliminary Traffic Impact Assessment

TTM Scheme 1
Connecting Cavern Portal and the southbound of Ma On Shan Road
Preliminary Traffic Impact Assessment

TTM Scheme 2
Connecting Cavern Portal and the northbound of Ma On Shan Road
Preliminary Ecological Survey
Preliminary Ecological Survey

- Species with conservation interest are found away from proposed cavern site
- Detailed monitoring & mitigation measures would be recommended when conducting EIA
Species with Conservation Interest

植物 (Flora)  
- Cibotium barometz  
- Diospyros vaccinioides  
- Pavetta hongkongensis  
- Goodyera prosera  
- Acampe rigida  
- Cleisostoma simondii var. guangdongense  
- Rhodoleia championi  
- Ormosia pachycarpa  
- Artabotrys hongkongensis  
- Ludisia discolor  
- Liparis bootanensis  
- Eria corneri  
- Ania hongkongensis  
- Euonymus tsoi  
- Aquilaria sinensis  
- Acer Reticulatum

鸚類 (Avifauna)  
- Otus bakkamoena  
- Centropus bengalensis  
- Spilornis cheela  
- Milvus migrans  
- Coracina melaschistos  
- Ardeola bacchus  
- Casmerodius alba  
- Egretta garzetta  
- Stachyris ruficeps  
- Pycnonotus aurigaster  
- Caprimulgus Jotaka

爬行動物 (Herpetofauna)  
- Paramesotriton hongkongensis  
- Amolops hongkongensis  
- Paa exilispinosa  
- Gekko Gecko  
- Sphenomorphus Indicus

魚類和無脊椎動物 (Fish and Macroinvertebrate)  
- Nanhaipotamon hongkongense  
- Eriocheir sinensis  
- Parazacco spilurus

哺乳類 (Mammal)  
- Hystrix Brachyura  
- Muntiacus Muntjak  
- Paguma Larvata  
- Viverricula Indica

蝴蝶 (Butterfly)  
- Neope muirheadii  
- Lamproptera Curius  
- Mentor elisa  
- Pontia edusa  
- Vanessa atalanta  
- Astraptes hyacinthus  
- Araschnia levana  
- Biblis io  
- Hestina hestina  
- Automeris io  
- Caligo memnon  
- Danaus plexippus  
- Papilio maackii  
- Papilio xuthus  
- Papilio rumanzovia  
- Papilio dardanus  
- Papilio rutulus  
- Papilio machaon  
- Papilio polyxenes  
- Papilio polytes  
- Papilio maackii  
- Papilio xuthus  
- Papilio dardanus  
- Papilio rutulus  
- Papilio maackii  
- Papilio xuthus  
- Papilio dardanus  
- Papilio rutulus  
- Papilio maackii  
- Papilio xuthus  
- Papilio dardanus  
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- Papilio dardanus  
- Papilio rutulus  
- Papilio maackii  
- Papilio xuthus  
- Papilio dardanus  
- Papilio rutulus  
- Papilio maackii  
- Papilio xuthus  
- Papilio dardanu
Conclusion and Closing Remarks
Conclusion

Benefits of the Relocation Project:

- Enhance Community and Environment
- Support Sustainable Development
- Upgrade Sewage Treatment Facilities and Technology
- Plan for the aging STSTW
### Stage 2 Public Engagement Activities – Public Forum

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>28 September 2013 (Saturday)</td>
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<td>2:30pm – 4:30pm</td>
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![Map of Sha Tin Town Hall](image)

![Image of public forum hall](image)
Thank you